

Social-Class Inequality in Educational Attainment and Participation in England

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Abstract

The University of Manchester

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Social Class Inequality in Educational Attainment and Participation in England

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This thesis examines social-class inequalities in educational attainment. The central aims of the thesis are to assess the applicability of Bourdieu's cultural reproduction theory and Goldthorpe's rational choice theory. Drawing on the Millennium Cohort Study and the Longitudinal Study of Young People in England, the thesis conducts rigorous analyses on class differences in educational attainment (termed 'primary effects') and in educational decision making, controlling for previous attainment (termed 'secondary effects').

The analyses find support for Bourdieu's notion that cultural competence and particular class-characterised dispositions can generate educational advantage. For young children, however, these are not found to mediate the link between class and cognitive performance substantially, and are unable to account for the growing divergences that occur in the first few years of compulsory schooling. For older children, these are shown to be the main mechanism through which those from advantaged homes realise educational success.

The thesis also examines trends in continuation in post-compulsory academic study and evaluates the usefulness of rational action theory for understanding the secondary effects of social class. Choice-based differences are shown to be of little importance for understanding the further disadvantage some pupils face once attainment has been controlled for. However, this finding is subject to the important caveat that the secondary effects of social class differ for white and non-white pupils. The thesis considers the implications of this finding for the Breen-Goldthorpe (1997) model of educational decision making and suggests the important assumption of relative risk aversion may not be appropriate for non-white groups.

A range of statistical methods are used in this thesis, including some advanced techniques such as multilevel growth curve modelling. The thesis also makes a series of methodological recommendations for future studies.

Finally, the analyses in this thesis show the overriding importance of parents' education for children's cognitive and educational attainment. This is demonstrably the most influential way in which social origin perpetuates differences between the advantaged and disadvantaged, at all stages of pupils' educational careers. This thesis contributes to existing knowledge in this field in the theoretical, substantive and methodological domains.

Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Introduction

Background

Social-class inequalities in education are substantial in contemporary British society. The government has for years aimed at reducing the attainment gap between those from advantaged and disadvantaged homes, but until now it has had limited success. Over the past century, educational reforms have been implemented to reduce the financial burden associated with schooling; the introduction of free and compulsory secondary education in the 1940s, and means-tested financial incentives for those from lower-income households to stay on in post-compulsory education are prime examples. Despite these reforms, the strong association between social class and educational attainment has proven largely intractable (Halsey et al 1980; Shavit and Blossfeld 1993).

Educational sociologists have advanced various explanations for this pattern of continuing inequality, though there is a lack of a firm consensus over the causal mechanisms involved in the process. Pierre Bourdieu developed the concept of 'cultural capital' in the 1970s, in an attempt to provide an account of how and why working-class children struggle to succeed in their pursuit of educational qualifications relative to their middle- and upper-class peers (Bourdieu 1973; Bourdieu and Passeron 1977; 1979). The overarching idea is that pupils from higher class backgrounds possess, over and above their superior financial resources, other resources which promote educational privilege. The school is said to value pupils who display familiarity with 'dominant' culture, and children from higher class backgrounds therefore enjoy an inherent advantage in formal educational settings. He showed that participation in the arts and high culture, for example, is stratified among class groups (Bourdieu 1984) – a finding verified in more contemporary contexts (Chan and Goldthorpe 2007a; 2007b; Notten et al

2013) – and this generates cultural competences in children that can be expressed to their teachers.

Cultural capital is a key concept in Bourdieu's broader theory of social reproduction. This aims to explain how, principally through unequal experiences of education, individuals' class of destination tends to reflect their class of origin. At the time his 'culturalist' perspective was well received as an alternative to theories that had thus far focused on differences in family economic resources and which, in light of the limited success of educational reforms to address the socioeconomic divide, were seemingly unable to provide an account of the full story. Cultural capital – Bourdieu's 'signature concept' (Lareau and Weininger 2003: 568) – has received ample attention in sociological research and there exists a prominent divide, particularly among quantitative social scientists, between those who accept and endorse the theoretical foundations of Bourdieu's ideas and those who reject his assertions based on what they understand to be contrary empirical evidence.

John Goldthorpe is Bourdieu's most notable critic. Like Bourdieu, he has focused on enduring patterns of social-class inequality; he concurs that relative rates of intergenerational mobility in Britain have remained largely constant over time (Goldthorpe 1980; Goldthorpe and Payne 1986; Erikson and Goldthorpe 1992; Goldthorpe 2012), and he discusses the role of education in contributing to this cycle. He claims, however, that Bourdieu's grand theory has been 'overwhelmingly contradicted' (2007a:2) and that the concept of cultural capital has been subject to empirical invalidation which details precisely how Bourdieu's account of social reproduction is flawed (2007a:14).

For Goldthorpe, exponent and defender of rational action theory, the role of family cultural resources in shaping educational attainment is not denied, but he insists that these are only part, and indeed only a small part, of the story. More

important, in his view, is that family resources, chiefly economic, play a fundamental role in the joint decisions between children and their families at crucial branching stages: whether to stay in education after the compulsory schooling age, for example. For Goldthorpe, actors are seen as risk averse, seeking as a first priority to avoid intergenerational social demotion. Due to the different 'starting points' of students from each class group, the strategies of choice pursued by middle- and working-class decision makers will differ as they strive to achieve this goal. Thus 'relative risk aversion' is further differentiated into 'strategies from above', where the middle classes aim to preserve their advantaged social position by making educational choices which will maximise their chances of subsequent entry into middle-class occupations, and 'strategies from below' where the working classes make decisions to pursue qualifications only to the point that these will minimise their risk of experiencing unemployment. For Goldthorpe, this is the key element that shapes children's educational pathways, and consequently their ultimate attainment.

The main theoretical division, therefore, relates to the prominence of cultural versus economic resources in their effects on educational outcomes. Social origin factors are differentiated into 'primary' and 'secondary' effects, with the former referring to class differences in children's attainment and the latter to class differences in the subsequent choices made by children who have achieved comparable levels of attainment (Boudon 1974). This thesis seeks to make a contribution to knowledge in this area.

Thesis Aims

This thesis aims to examine social-class differences in educational attainment and participation, and to appraise the relevance of Bourdieu's social reproduction theory for the former and Goldthorpe's rational choice theory for the latter.

Previous education research seeking to test Bourdieu's ideas has overwhelmingly dedicated its efforts to measuring and examining cultural capital, giving little or no attention to his other concepts. Moreover, such research has been disproportionately dominated by a focus on the experiences of pupils in secondary school and, in the case of the UK, their achievement in GCSE examinations. The first of these tendencies involves what I, following Goldthorpe (2007a), argue is a misplaced test of Bourdieu in that it effectively prises the concept away from the grand theory in which it is embedded and, in so doing, neglects the potentially mediating influence of other theoretical components – in particular, 'habitus'. According to Bourdieu, the conditions of one's social class result in a set of internalised beliefs about how one understands oneself relative to wider society, and these dispositions he terms 'habitus'. The present thesis argues that an adequate test of Bourdieu should involve examining his key concepts simultaneously, and implements this perspective.

The second of these tendencies partly reflects researchers' focus upon Bourdieu's contention that it is teachers' perceptions of students' cultural capital – and the education system which places a hidden value on such competences – which results in higher grades being awarded to middle-class children. This thesis recognises that the achievement of formal academic qualifications is thus worthy of examination in accordance with his theoretical assertions, but also draws on evidence from wider education research which demonstrates that class differences in knowledge and ability are present even before children enter the classroom (DfE 2012b); such evidence cannot be overlooked if one is hoping to gain a detailed picture of how social origin effects impact upon educational outcomes. To enhance the knowledge that thus far exists on the mechanisms of Bourdieu's theory, therefore, this thesis argues for the necessity of testing his concepts for various age groups, including very young children.

Readers of Bourdieu will be aware of the 'recurrent obscurity' of his prose (Goldthorpe 2007a), which is most problematic when (particularly quantitative) researchers are tasked with operationalising his concepts and testing his theories. The most theoretically coherent way to 'operationalise Bourdieu' is a running theme in the literature. The empirical analyses presented in this thesis, constrained like all other studies by data availability, are undertaken using proxies which have been carefully selected with due attention to Bourdieu's definitions and to the merits and limitations of previous strategies; an important aim of this thesis is, amidst ambiguities and inconsistencies, to provide a justifiable method for operationalising Bourdieu's concepts.

All sociological theories must be subject to continual revalidation in response to changing contexts and circumstances to which they are applicable. For education research, the tendency for girls to outperform boys has endured for some decades. Patterns in attainment and participation by ethnicity have recently been subject to more dramatic fluctuations: pupils of Chinese origin are now the highest-attaining group in the UK, followed by Indians, and black Caribbean pupils have for some time been achieving lower than the national average.¹ Furthermore, examinations of the complex interactions between class, gender and ethnicity have highlighted the particularly low achievement of white working-class males (Demie and Lewis 2014). These trends were markedly different at the time of Bourdieu's writing, reflected in his lack of attention to the ways in which the possession of, and returns to, cultural resources might differ not only by class but also by gender² and ethnicity.

These concerns can also be directed at many rational action accounts of decision making, which often neglect to address differences in ethnicity, in particular because their assertions rest on assumptions that decisions are made according to

¹ These patterns refer broadly to GCSE attainment.

² Bourdieu did provide some discussion of the ways in which habitus might be useful for different genders, but he did not develop this in detail.

variations in economic resources and constraints, all of which vary by class, but in a way which is constant across other subgroups. Indeed the most dominant account of rational choice in an educational context specifically seeks to ‘dispense with ... any assumption that these actors will also be subject to systematic influences of a (sub)cultural kind’ (Breen and Goldthorpe 1997:278). In the context of an increasingly diverse ethnic demography in the UK, and with gender differences which are clearly pervasive, a main aim of this thesis is to consider the applicability of both culturalist accounts and rational choice accounts across key subgroups.

This thesis seeks to advance upon previous studies, both methodologically and substantively, to contribute to the theoretical domain in four main ways:

- (i) To use advanced statistical techniques, combined with both traditional and novel operationalisation strategies, to provide evidence which determines how useful Bourdieu’s main concepts are for describing how children from higher socioeconomic backgrounds are able to transform their initial advantage into educational success;
- (ii) To apply the aim stated in (i) to two of the most crucial stages, as identified by previous research, in determining unequal class-based attainment patterns: the pre-through-early school years, and the period marking the end of compulsory education;
- (iii) To elucidate the importance of primary versus secondary effects, and to consider the extent to which rational choice perspectives are useful for our understanding of the mechanisms involved in the latter;
- (iv) To acknowledge the substantial shifts in trends regarding the most and least educationally successful groups according to other key characteristics – gender and ethnicity – and, in so doing, determine the extent to which:
 - a. Bourdieu’s culturalist account of social-class attainment inequality differs for these subgroups; and

- b. rational choice accounts of social-class decision making are applicable for all subgroups.

Thesis Structure

Chapter 1 will provide an introduction to the theoretical ideas related to the research undertaken in this thesis. In large part, this will involve an introduction to Bourdieu's social reproduction theory, with a particular focus on the concepts of cultural capital and habitus which will be put to test in empirical Chapters 5 and 6. It will also include an introduction to rational choice perspectives of educational decision making which are relevant to the empirical enquiry in Chapter 7, though these perspectives are not subject to empirical test.

Chapter 2 is a literature review, synthesising: first, the findings of prominent studies which have previously sought to test Bourdieu, and the methods these studies have employed; and second, the findings of prominent UK studies which have examined the role of secondary effects in generating educational disadvantage for children from working-class homes and also those which have attempted to empirically examine the mechanisms of rational choice perspectives.

Chapter 3 describes the data and methods employed for analysis in the empirical chapters to follow.

Chapter 4 is devoted to a discussion of the operationalisation strategy used for Bourdieu's concepts.

Chapter 5 examines the role of cultural reproduction theory in accounting for social-class differences in scores in cognitive tests for children aged three to seven. The extent to which Bourdieu's key concepts can explain the social-class gradient in test scores is examined, as is the extent to which these can explain the tendency for class differences to *widen* over these early and crucial years. Variations by ethnicity and gender are explored as further tests of the theory.

Chapter 6 examines the role of cultural reproduction theory in accounting for the social-class gradient in GCSE attainment. These examinations marked the end of compulsory education for this cohort. Variations by ethnicity and gender are explored as further tests of the theory.

Chapter 7 seeks to examine class-based inequalities in an important educational decision pupils are faced with once they complete compulsory education: whether or not to pursue further academic study in the form of A-levels. The extent to which class continues to exert an influence over the likelihood of continuation once GCSE attainment has been controlled for is examined; i.e. a test of whether secondary effects are important for this transition decision. Variations in the influence of secondary effects are considered across genders and ethnicities, and the implications of the findings for rational choice theory are discussed.

Chapter 8 provides a discussion and conclusions, also suggesting avenues for future research.

Chapter 1

Theoretical Introduction

1.1 Introduction

This chapter begins by arguing the case that social processes which result in a lack of social fluidity exist and persist in contemporary British society. In particular, the education system fails to behave as a fair means through which opportunities for social advancement can be realised by all pupils alike. Bourdieu's theoretical assertions are then presented; these seek to describe exactly how social inequalities are manifest, with a focus on differences in class cultures. Finally, the rational action perspective is outlined; this provides an alternative focus on social inequalities deriving from class differences in economic resources.

1.1.1 The Myth of Meritocracy

Sociological research has posed a direct challenge to the assertion that modern Western societies are based on processes of legitimate reward according to natural abilities, competence, intelligence, degree of effort or quality of endeavour. Evidence has cast severe doubt on the reality of meritocracy, implying that over and above intelligence or effort are the decisive effects of social-class inequality, manifest in the unequal distribution of resources, as well as mechanisms inherent in the education system which are rigged – largely covertly – to favour the socioeconomic conditions and characteristics of the most advantaged. People arrive at their occupational destinations not purely by virtue of merit, but through intergenerational advantage; the social structure of British society does not promote unhindered social fluidity. Halsey warned that there exists a danger of a widespread belief that Britain is a meritocratic society; rather, it is one in which

'ascriptive forces find ways of expressing themselves as "achievement"' (1977:184).

Goldthorpe and Jackson claimed that the idea of 'meritocracy' originates in sociological fantasy (2008:93). Michael Young (1958) first used the term in *The Rise of the Meritocracy* to serve as a 'warning' that ideas of meritocracy – or rather, 'IQ plus effort' – would be used as the basis of social selection, the apparently legitimated consequence of which would be the creation of a system of social stratification where those who performed badly would tend to be regarded by themselves and others as deservedly worse off. For Goldthorpe and Jackson, the fact that, shortly after the book's publication, the term 'meritocracy' had come to be used in social commentary and debate 'without any ironic or critical connotation' would have been to Young highly disturbing (2008:94). In the 1990s, New Labour made widespread use of this 'progressive' goal for meritocracy in Britain. The focus, more precisely, was with education-based meritocracy (Goldthorpe and Jackson 2008:95), and the idea of succeeding via educational attainment continues to be considered one of the most legitimate ways of determining a person's social-class destination.

Sociologists have paid much attention to social-class mobility, often also stressing the importance of distinguishing between absolute and relative rates (Breen and Goldthorpe 1999; Erikson and Goldthorpe 2010). Relative mobility compares the chances of those from different class backgrounds achieving different class destinations. Goldthorpe and Jackson (2007), following many others (e.g. Halsey et al 1980; Shavit and Blossfeld 1996; Goldthorpe and Mills 2004; 2008), alluded to the finding that while there has been substantial *absolute* social mobility in Britain since the 1940s, *relative* social class mobility has remained largely unchanged (Breen and Goldthorpe 2001:81); the rate of fluidity in British society is, according to these studies, much the same as it was over fifty years ago. Thus, while merit indeed plays a part in determining individuals' social-class destinations, the effect

of class origin remains: 'children of less advantaged origins need to show substantially *more* merit than children from more advantaged origins in order to gain similar class positions' (Breen and Goldthorpe 1999:1, emphasis in original).

1.2 Introduction to Bourdieu

' [Capital is] what makes the game of society – not least, the economic game – something other than simple games of chance offering at every moment the possibility of a miracle. Roulette, which holds out the opportunity of ... changing one's social status quasi-instantaneously, and in which the winning of the previous spin of the wheel can be staked and lost at every new spin, gives a fairly accurate image of this imaginary universe of perfect competition or perfect equality of opportunity, a world without inertia, without accumulation, without hereditary or acquired properties, in which every moment is perfectly independent of the previous one ... and every prize can be attained, instantaneously, by everyone, so that at each moment anyone can become anything. Capital, which, ... as a potential capacity to produce profits and to reproduce itself ... is a force inscribed in the objectivity of things so that everything is not equally possible or impossible. And the structure of the distribution of the different types and subtypes of capital at any given moment in time represents the immanent structure of the social world, i.e., the set of constraints, inscribed in the very reality of that world, which govern its functioning in a durable way, determining the chances of success for practices' (Bourdieu 1997:46).

The concept of cultural capital is one of the leading theoretical contributions to the explanation of educational inequalities (Lareau and Weininger 2003). Contributors from within educational sociology have advanced various causes for unequal attainment patterns across social-class groups; some focused on economic and material disparity, others on inherent intelligence, and some on social networks and social capital, but those who theorise that cultural differences are the main

cause consistently cite Bourdieu's concept of cultural capital which has largely monopolised this strand of the debate (Winkle-Wagner 2010).

Cultural capital is an attempt to explain class-based differentials manifest in specific forms of culture (Bourdieu and Passeron 1977). Pierre Bourdieu introduced the concept to describe how children from higher social origins have cultural advantages which operate beyond, though are often parallel to, their favourable economic situation. It is an (mainly intangible) asset possessed and deployed by the middle and upper classes to preserve, protect and maintain their social position. These parents instil in their children a culture rich in intellectual content which is complementary to the requirements of educational institutions and formal examinations. Bourdieu's theory of social reproduction states that, through the disparate possession – or lack – of cultural capital, children who are born into higher class backgrounds achieve educational success and are able to subsequently gain positions of high occupational prestige and monetary reward, largely reflecting their class of origin, while their working-class counterparts struggle to no avail.

Bourdieu took the concept of 'capital' as developed in economics, and applied it to culture; 'cultural capital is like money in that it can be saved, invested, and used to obtain other resources (such as access to economic positions)' (Kingston 2001:89). The use of the term 'capital' reflects Bourdieu's insistence that what he is referring to is valuable and can generate a return for its holders. Capitals are considered to be a 'set of actually usable resources and powers' (Bourdieu 1984:114) which have a "'market value" in the struggle for privilege' (Kingston 2001:89). It 'is subject to hereditary transmission which is always heavily disguised ... It thus manages to combine the prestige of innate property with the merits of acquisition' (Bourdieu 1997:48), undermining notions of meritocracy.

Different kinds of knowledge are considered to be more or less 'rich' in culture; as long as it is culturally appropriate, knowledge is considered an 'asset', in the same sense that economic theory ascribes value to capital. 'The cultural system assigns more value to some tastes than others. We are not intrinsically altered by preferring Mozart over Morrissey or Manet over Man Ray, but the judgements of value made between our preferences ... have consequences for both our economic and our social position taking' (Robbins 2000:32).³

By engaging with their children over the dinner table in conversation about politics, art or other topics of intellectual content, parents instil in them cultural aptitude, interests and knowledge which are assigned a high value by society. Taking children to visit historic sites, museums or the opera similarly ensures that they are socialised into the highbrow activities of interest, predominantly, to others in their social strata. By filling their homes with literature and playing music by classical composers, parents ensure that both cognitive abilities are enhanced and that awareness of 'high culture' is acquired. These strategies, according to Bourdieu, are used by middle- and upper-class parents – consciously or otherwise – to cultivate their children and to prepare them as capable competitors for credentials in the education process. Theoretically, these methods could equally be adopted by working-class parents, but typically they are not, and according to Bourdieu cultural capital is ultimately the possession of the elite in society because it is only really valuable to those who have ingrained in them an aptitude to appreciate and appropriate it for themselves (Winkle-Wagner 2010:14).

Bourdieu attempts to clarify his theory by describing the concept of cultural capital in distinct forms. He defines three types that can be possessed by individuals: objectified, institutionalised and embodied. There are, however, also

³ This relates to Bourdieu's concept of 'cultural arbitrary', which essentially suggests that the standards of a society are set according to the principals of the most dominant, rather than necessarily reflecting any actual intrinsic or pragmatic value (Bourdieu and Passeron 1977).

other mechanisms at play in social reproduction theory that operate alongside cultural capital, and these are also crucial to Bourdieu's conceptualisation.

1.2.1 The Forms of Cultural Capital and the Other Components of Social Reproduction Theory

Objectified, Institutionalised and Embodied Cultural Capital

Bourdieu suggests that culture can be 'objectified in material objects and media, such as writing, paintings, monuments, instruments, etc' (Bourdieu 1997:50).

Tangible commodities, therefore, can be culturally appropriated, containing or being representations of 'high culture'. Literature, art, classical music, 'worldly' goods or educational resources, for example, can be considered objectified cultural capital, as can any good that has the capacity to convey status symbolically.

Bourdieu's extensive writings on the subject of 'taste' (1984) suggest that particular goods are affiliated with dominant class consumption patterns, driven by a taste for aestheticism rather than necessity, and certain material objects have thereby come to be expressive of social status.

Cultural proficiency is typically institutionalised in the form of academic credentials. Bourdieu sees educational institutions as encompassing value systems, and 'by bestowing titles and awards on individuals they appear to be giving expression to the differences between those individuals' (Robbins 2000:35).

'With the academic qualification, a certificate of cultural competence which confers on its holder a conventional, constant, legally guaranteed value with respect to culture, social alchemy produces a form of cultural capital which has relative autonomy vis-à-vis its bearer and even vis-à-vis the cultural capital he effectively possesses at a given moment in time' (Bourdieu 1997: 50-51).

Institutionalised cultural capital is therefore a recognition of academic and cultural competence, and this has a 'universally recognised value in the labour market' (Weininger 2005:104).

Embodied capital is 'external wealth converted into an integral part of the person' (Bourdieu 1997:48). To embody cultural capital means to have an ingrained appreciation of things 'high cultured', to engage, with ease and enjoyment, in activities such as the arts, opera, dance or theatre, and to be largely comfortable with distinguished forms of consumption, elaborate and articulate linguistic structures, and all things in general which are aspects of 'highbrow culture'.

A particular form of embodied cultural capital is linguistic capital, 'defined as the mastery of and relation to language' (Dogaru 2008:9). With respect to schooling, pupils of higher social class backgrounds are assumed to understand and utilise somewhat advanced language, which largely corresponds (or at least is more closely aligned, relative to their working-class peers) with the language used by teachers; conversations are more expressive, fluent, and communication is facilitated with ease, comfort and common ground. The 'elaborate' linguistic structure used by middle- and upper-class students (Bernstein 1971; 2003) puts them at an advantage in academic and scholarly writing, and also, indirectly and symbolically, ensures they are portrayed as the culturally superior students, in the eyes of both their teachers and their fellow students.

Habitus

According to Bourdieu, every person has a habitus which characterises their personality. One's habitus is a set of internalised 'structured, structuring dispositions' (Bourdieu 1990a:53), expectations and values that is determined by their life experiences and contributes towards the regular tendencies of human action and practices exhibited by social group. Bourdieu contends that the formation of habitus begins in early socialisation, and these experiences carry disproportionate weight because the continual shaping of one's habitus throughout life experiences occurs in the context of all prior experience (Bourdieu 1990a:60), but, although durable, it is continually redefined. It acts as a blueprint

for semi-routined behaviour and a guide to action. It is unconscious (Bourdieu 1998); individuals engage with it in a way that is largely independent of purposive goal-oriented rational calculation or attention to consequences (Abercrombie et al 2000:32; Swartz 2002:62S). Bourdieu's notion of habitus has particularly strong links to embodied cultural capital (Bennett et al 2009:154), but these are conceptually distinct.

Habitus involves both individual- and group-based components (McDonough 1998:184), though Bourdieu stresses the consequences of the latter. An individual is 'never more than a deviation' from his or her collective reference (Bourdieu 1990a:60; Swartz 2002:64S). Habitus incorporates a sense of power relations, in that individuals are predisposed to identify themselves as being positioned in a particular location in the social hierarchy. Perhaps the most important aspect of habitus in relation to social inequality is that 'people internalise basic life chance available to their social milieu – what is possible, impossible, and probable for people of their kind. Chances of success or failure are internalised and then transformed into individual aspirations or expectations ... In other words, much of people's everyday practices, Bourdieu suggests, are self-fulfilling prophecies' (Swartz 2002:64S); 'the most improbable practices are therefore excluded, as unthinkable, by a kind of immediate submission to order that inclines agents to make a virtue of necessity, that is, to refuse what is anyway denied and to will the inevitable' (Bourdieu 1990a:54). Individuals, according to Bourdieu, subconsciously internalise the 'objective chances' of their socioeconomic group by observing what others 'like them' have been able to achieve previously.

One's habitus is shaped according to 'the conditions associated with a particular class of conditions of existence' (Bourdieu 1990a:53); i.e. by the amount of social, economic and cultural capital their family possesses. Dispositions developed at a young age incline children to aspire to similar levels of capital as their parents. Children of the middle and upper classes are set the example that valued

resources are within their reach and that high achievement and success are perfectly feasible. One key characteristic of the dominant class habitus, relevant especially in relation to cultural reproduction, is that it is pro-education. Bourdieu describes middle-class dispositions towards the school, 'understood as a propensity to consent to the investments in time, effort and money necessary to conserve and to increase cultural capital' (Bourdieu 1977a:495; Sullivan 2002:149).

Field

The theory of social reproduction understands individual experiences to take place within a given structured social environment: a 'field' is 'the space in which cultural competence, or knowledge of particular tastes, dispositions or norms, is both produced and given a price' (Winkle-Wagner 2010:7). The notion of a 'field' is defined 'as a network, or configuration, of objective relations between positions objectively defined, in their existence and in the determinations they impose upon occupants, agents or institutions, by their present and potential situations ... in the structure of the distribution of species of power (or capital) where possession commands access to the specific profits that are at stake in the field' (Bourdieu, cited in Gewirtz et al 1995:23).

Bourdieu developed the concept of field to explain the relational context in which the different kinds of capital acquire their value, and in which the effects of cultural capital and habitus take place (Robbins 2000:37). A field is any structure of social relations where actors compete by utilising their capitals. In *Homo Academicus* (1988) Bourdieu identified universities as a field, in which conflicts are manifestations of battles between the students over gaining cultural capital. This same idea is applied to schools. Pupils deploy their objectively available resources in competition with other possessors of capital who are attempting to gain the same returns – educational qualifications; the field is where this struggle takes place, and where the unequal distribution of capital takes effect (Bourdieu

1997:49). Weininger made the analogy that the term should be thought of as a battlefield or playing field, in which actors who enter into competition do so from a position more or less advantageous than their opponents (2005:96). The school is where those of 'high culture' can realise their competences as 'assets'.

The notion of field acknowledges the importance of the wider context (Reay 1998:32). One's habitus, and the field within which one operates, are crucial to Bourdieu's theory; success in a given field depends on the degree of alignment between the two, which can result in social comfort or discomfort, ease or struggle. Middle- and upper-class children are expected to thrive in a surrounding that is natural to them, the milieu of which is familiar. Schools are considered middle-class fields, and teachers fulfil a middle-class profession; middle-class pupils, therefore, are likely to enter into education already aware of the linguistic patterns, authority structures, forms of autonomous learning and accepted modes of conduct. For them, 'neither the content of what they are taught (syllabus) nor the manner in which they are taught (pedagogy) are likely to appear strange to them' (Goldthorpe 2007a:3). Bourdieu claims that middle-class children 'move in their world as a fish in water' (1990b:108). Those with a working-class habitus, in contrast, will struggle; they are expected to feel uncomfortable, ill at ease, anxious, unsure how to behave and thus lack in the ability to flourish within the school environment.

In *Distinction* (1984: 101) Bourdieu maps out a formula which illustrates the interconnection of habitus, cultural capital and field:

$$(\text{Habitus} \times \text{Capital}) + \text{Field} = \text{Practice}$$

Practice denotes social practice, which in this instance can be understood to equate to educational outcomes. The formula is elaborated graphically alongside other components of social reproduction theory in Figure 1.1.

Social and Economic Capital

Most of Bourdieu's conceptual work and writing was dedicated to explaining and developing cultural capital, and in his later work he paid a lot of attention to the concepts of habitus and field. He did, however, also discuss the role of economic and social capitals as alternative resources which generate returns, contributing in different ways to the overall cycle of social reproduction.

Bourdieu considers social networks and connections, the advantages and benefits gained from having (formal or informal) social links to others who occupy similar positions in social space. 'Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition – or in other words, to membership of a group – which provides each of its members with the backing of the collectively-owned capital' (Bourdieu 1997:51). Social networks behave alongside cultural capital and have a part to play in his theory of cultural reproduction by providing members with yet another avenue for securing material or symbolic profits. Bourdieu claims that social capital 'exerts a multiplier effect' on other forms of capital already possessed (Bourdieu 1997:51) and results in ever-increasing chances of success for those occupying the higher social class positions. Economic capital requires less explanation than the other forms; it is financial wealth, either inherited or generated.

The Conversion of Capitals

An important part of Bourdieu's theory of social reproduction is the conversion of capitals, and this involves the intergenerational transmission of advantage. 'The convertibility of the different types of capital is the basis of the strategies aimed at ensuring the reproduction of capital' (Bourdieu 1997:54).

Most conversions are difficult to observe. Embodied cultural capital, for example, 'cannot be transmitted by purchase, gift or exchange' (Bourdieu 1997:48). Instead,

it can be used in an attempt to gain institutionalised cultural capital, by applying the relevant cultural knowledge to study and academia, for example. Conversions can thus occur within one's lifetime, but also between generations, through the transmission of capitals from parents to their children; this is what Bourdieu considers to be the decisive mechanism for social reproduction. Parents' expenditure of their economic and cultural capitals in their attempts to increase their children's institutionalised cultural capital is important as regards cultural and social reproduction. Swartz claims that in modern societies educational credentials are increasingly important, and therefore we see more middle-class families 'investing' in education for their children (Swartz 1997:181). As with the acquisition of any type of capital, the conversion process also requires expenditure of time and effort (Bourdieu 1997:54).

Legitimation

Bourdieu's theory is premised on the idea that the unequal processes involved are heavily masked. The middle class are able, according to Bourdieu, to make use of their advantageous resources in a way that is concealed and therefore goes unchallenged. 'Cultural capital whose diffuse, continuous transmission within the family escapes observation and control (so that the educational system seems to award its honours solely to natural qualities) ... when validated by the educational system, i.e., when converted into a capital of qualifications, is subject to a more disguised but more risky transmission than economic capital' (Bourdieu 1997:55).

Cultural capital, in its embodied form, is often perceived as 'inborn' talent, innate competence, and its holder 'gifted'; teachers, parents and children themselves interpret differences as a matter of natural ability (Weininger and Lareau 2007:2). 'Bourdieu's arguments ... vociferously challenged the widespread view of modern schooling as a mobility engine ... Indeed, from Bourdieu's highly critical vantage point, modern systems of schooling are far more adept at validating and

augmenting cultural capital inherited from the family than they are at instilling it in children who enter the institution with few or none of the requisite dispositions and skills. Consequently, he maintained, the educational systems of modern societies tend to channel individuals towards destinations that largely (but not wholly) mirror their class origins. Moreover, they tend to elicit acceptance of this outcome (i.e. legitimation), both from those who are most privileged by it and those who are disfavoured by it' (Weininger and Lareau 2007:2).

Bourdieu accuses schools of having an important role to play in perpetuating the status quo: schools convey, convince and impose dominant class values.

Educational establishments institutionalise the culture of the dominant classes as superior, and lower classes have this impressed upon them as a distinguished ideal. 'Formal schooling contributes to the maintenance of an unequal social system by privileging certain cultural heritages and penalising others' (Swartz 1997:199). Bourdieu describes schools as a mechanism for the reproduction of the social structure and describes three purposes they serve: first, a 'cultural reproduction function', in which the cultural heritage of the dominant class is conserved; second, a 'social reproduction function', which acts to reproduce the class structure; and third, legitimation – the educational process is masked by notions of meritocracy and just reward (Bourdieu and Passeron 1977).

Bourdieu does very little to try to explain working-class children who are able to escape their predicament and achieve high grades in school. He labels these working-class successes as 'anomalies' (Paton 2007:14), and simply claims that the education system requires a very small degree of upward mobility among working-class students in order to give 'credence to the myth of the school as a liberating force' (Bourdieu, cited in Hargreaves 1982:73).

Cultural Reproduction and Social Reproduction

'The specific role of the sociology of education is assumed once it has established itself as the science of the relations between cultural reproduction and social reproduction. This occurs when it endeavours to determine the contribution made by the educational system to the reproduction of the structure of power relationships and symbolic relationships between classes, by contributing to the reproduction of the structure of the distribution of cultural capital among these classes' (Bourdieu 1997:173).

Bourdieu's concept of cultural capital is therefore situated within a wider theoretical framework of social reproduction. Previous researchers have very often neglected to acknowledge the different elements or components of the theory when studying cultural capital. Winkle-Wagner has pointed out that if cultural capital is not fully understood in its initial intent – as a mechanism of social reproduction – 'it is possible to *misuse* it, resulting in misinterpreted research findings and the absence of nuances in the interpretation of data' (2010:2-3, emphasis in original).

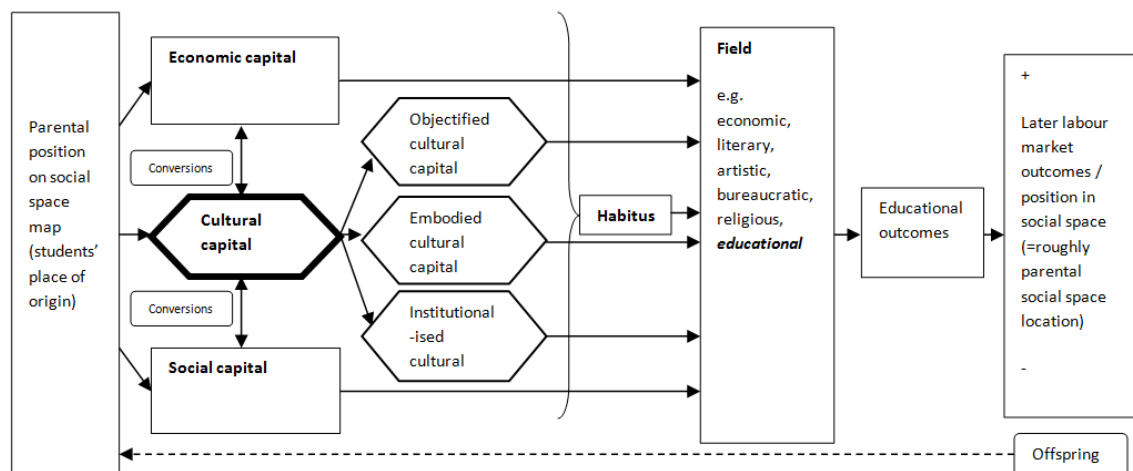
The theory assumes that one's educational level will translate to their relative position in the labour market. The focus here is on the processes that generate unequal educational outcomes (i.e. institutionalised cultural capital) and this, according to Bourdieu, occurs through *cultural* reproduction. In this thesis, therefore, I later refer to testing Bourdieu's *cultural reproduction theory* (as opposed to the grander theory of social reproduction) as I do not also seek to examine whether educational success subsequently facilitates occupational success.

Parental social class determines the degree to which one possesses economic, social and cultural capital. The different forms of cultural capital – objectified, embodied and institutionalised – become active in relation to the field in question to produce outcomes. Habitus is formed based on the amount of economic, social

and cultural capital one possesses. These dispositions, expectations and values interact with the milieu of the given field, also generating outcomes. Economic and social capital each have their own independent influence in the context of the field. Most importantly, it is the process of intergenerational cultural reproduction, according to Bourdieu, that drives social reproduction via educational achievement.

See below for a graphical portrayal of social reproduction theory and where cultural capital and habitus are located within this framework.

Figure 1.1: Social Reproduction Theory Framework



Bourdieu described how class inequalities in educational outcomes are expressed in terms of differences in actual exam scores. The mechanism of choice inequality, as opposed to attainment inequality, has been taken as the main focus of other theorists.

1.3 The Rational Choice Perspective

Rational action theory (RAT) advances a rival approach to theorists such as Bourdieu who seek explanation for social regularities in cultural norms and subcultural difference. Bourdieu offered no explicit discussion of decision making or secondary effects of class differentials; however, his theory of social

reproduction – and specifically his notion of habitus – is inherently opposed to the view that actors are rational decision makers who, in the rhetoric of classical economics, are out to maximise utility:⁴ ‘an action in conformity with the interests of the agent who performs it is not necessarily guided by the conscious and deliberate search for the satisfaction of this interest posited as an end. In a number of social universes, one of the privileges of the dominant ... resides in the fact that they need not engage in rational computation in order to reach the goals that best suit their interests. All they have to do is to follow their dispositions which, being adjusted to their positions, “naturally” generate practices adjusted to the situation’ (Bourdieu 1990b:108). Advocates of the rational choice perspective have acknowledged the potential role of class-cultural influences in primary effects, but generally argue that these do not suffice in relation to decision making (Boudon 1974).

1.3.1 Primary and Secondary Effects

Boudon (1974) introduced an important theoretical distinction between ‘primary’ and ‘secondary’ effects, which both operate to create social-class differences in educational outcomes. Inequality of educational opportunity, Boudon contends, ‘is generated by a two-component process’ (Boudon 1974:36): ‘primary effects are all those, whether of a genetic or socio-cultural kind, that are expressed via the association between children’s class backgrounds and their actual levels of academic performance. Secondary effects are those that are expressed via the educational choices that children from differing class backgrounds make within the range of choice that their previous performance allows them’ (Jackson et al 2007:211). The importance of the distinction between primary and secondary effects arises when those from advantaged socioeconomic backgrounds take up

⁴ Note that advocates of RAT do not see actors as rational decision makers in the same sense that economists tend to. Assumptions involving the ‘economic man’ out to maximise their utility or profit function under conditions of ‘perfect information’ are only held in ‘extreme’ sociological accounts of RAT, and are not usually necessary, as explained by Goldthorpe (1998).

further or higher education at higher rates than their less advantaged peers, even at comparable levels of prior attainment; this leads to an additional mechanism through which middle- and upper-class children are able to secure superior qualifications.

Following Boudon's 1974 publication, there was some debate over his interpretation of data and the realism of his assumptions (e.g. Hauser 1976; Boudon 1976). However, many subsequent authors built upon his work, and his theoretical distinction between the two domains, or stages, relating to the process of inequality of educational opportunity has been highly influential. To ignore the role of secondary effects in creating class-based educational inequality, it has been argued, would be a 'serious error' (Jackson et al 2007:224).

The main principle of RAT is that the actions of individuals are shaped by a conscious evaluation of the costs and benefits associated with particular decisions, and that actors are, at least to a degree, knowledgeable about the opportunities and constraints they face relative to their 'outcome-oriented' goals (Goldthorpe 1998:170); individuals will therefore pursue their goals in ways that are 'more or less appropriate to the situations in which they find themselves' (Goldthorpe 1996:485). Rational action theory 'assumes that those of working class backgrounds predominantly pursue the rational practice of acquiring the kind of qualifications which are likely to lead to realistically attainable occupational outcomes ... rather than risky high level educational qualifications in which they might fail' (Scherger and Savage 2009:6).

Boudon (1974), and the most well-known advocate for RAT to follow his work, Goldthorpe, both understand class aspirations not to be determined by cultural variations, but by individuals' relative positional origin; i.e. a working-class child with an ambition to go to university would be seen as holding higher aspirations than a middle-class child with the same ambition (Goldthorpe 1996:489-490). The

important assumption is made that there is no systematic distortion between subgroups in terms of educational aspirations, values, beliefs or attitudes. Class-based variations in decisions thus arise from the fact that 'in pursuing any given goal from different class origins, different "social distances" will have to be traversed ... [so] ... different opportunities and constraints, and thus the evaluation of different sets of probable costs and benefits, will be involved ... Even among children who, through the operation of primary effects, reach similar educational standards early in their school careers, secondary effects will still produce class differentials in attainment in so far as these children start from – and view their prospective careers from – differing class origins' (Goldthorpe 1996:490-491).

Goldthorpe sees the growing importance of secondary effects in creating class-based inequality because, with educational expansion and reform of the kind that has occurred since the 1940s in Britain and with higher absolute numbers of pupils staying on beyond the compulsory years from all backgrounds, the constraints on choice imposed by primary effects will weaken and the scope for secondary effects to operate will grow (Goldthorpe 1996:491). It is as a result of evidence that such expansion has not led to a reduction in the relative class differentials of educational participation that rational choice accounts have sought to provide some explanation.

1.3.2 Breen and Goldthorpe's (1997) Model and the Relative Risk Aversion Assumption

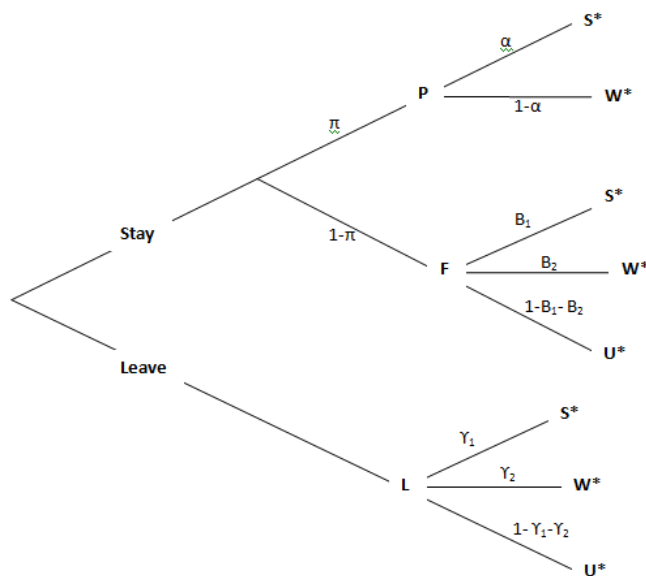
Boudon (1974), and later Erikson and Jonsson (1996), described models which sought to explain the decision-making processes faced by pupils from different class backgrounds. Breen and Goldthorpe (1997) advanced upon Boudon's model, providing a testable formulation which made explicit certain crucial assumptions.⁵

⁵ Breen and Goldthorpe's model is similar to that proposed by Erikson and Jonsson. Both include the costs, benefits and probabilities of success, and include the relative risk aversion assumption for creating class differentials. Erikson and Jonsson also posit that norms, values and other psychological mechanisms are not

Breen and Goldthorpe's model is the most widely cited, and has been tested (e.g. Breen and Yaish 2006). It is this version of the RAT model of decision making I will focus on here. This is a simple version of the model which assumes there are only two outcomes to be considered: whether to stay in education or whether to leave. Of course in practice students are faced with a number of different options at branching points, and Breen and Goldthorpe suggest their model can be easily modified to account for multiple options, but the aim here is not to describe the technical underpinnings of any model to a detailed extent – just to provide the theory – and, in any event, the dichotomous decision described by this simple model is in accordance with the transition decision described in Chapter 7.

Figure 1.2 below depicts the 'decision tree':

Figure 1.2: Rational Action Theory Decision Tree



Source: Breen and Goldthorpe (1997:280)

In Figure 1.2, pupils are faced with a decision whether to stay in or leave (L) education. Staying is met with two possible outcomes: success (P) or failure (F) of

distorted by class (an assumption which is in contrast to the perspective of Gambetta (1987)); they suggest differences in *actual* conditions are enough to bring about differentials in continuation rates (Erikson and Jonsson 1996).

that course. In making the decision, Breen and Goldthorpe (1997) suggest pupils and their parents consider three factors: the first are the costs of remaining in education, which include direct costs and earnings foregone; the second is the probability of success (denoted π), which is the subjective conditional probability of passing the subsequent examination, given continuation; and the third is the value that pupils ascribe to each of the outcomes (P, F, L) which is expressed in terms of subjective beliefs about the chances of access each outcome will provide to each destination class – the service class (S^*), the working class (W^*) or the ‘underclass’ (U^*), which in this case needs just to be taken to represent a position less desirable than a working-class destination (e.g. unemployed).

For pupils who stay on in education and pass, their probability of access to the professional-managerial class is given by α , and the probability of entering the working class, conditional upon having been successful in the educational course taken, is thus $1-\alpha$. For those who remain in education and fail, the probability of access to the service class is β_1 , for the working class β_2 and for the underclass $1-\beta_1-\beta_2$. Similarly, the likelihoods of access into each class for those who leave education are represented by the parameters γ . Breen and Goldthorpe then make various assumptions regarding the relative magnitude of the parameters; for example, $\gamma_1+\gamma_2 > \beta_1+\beta_2$, i.e. remaining at school and failing increases the chances of entering the underclass relative to the working class, so this implies there is risk involved in choosing to continue in education. The plausibility of their assumptions will not be discussed here, but has been scrutinised elsewhere, and some assumptions have been considered dubious in light of empirical evidence (e.g. Sullivan 2003).

What will be discussed here, however, are the assumptions which are considered the most crucial, and which, according to Breen and Goldthorpe, act as mechanisms that affect the decision calculus in a way which generates class

differentials in the proportions who continue in education. Their discussion is simplified so that one's class of origin is either working class, W, or service class, S.

The most important mechanism they describe which generates class differentials relates to aspirations and is what they term 'relative risk aversion' (RRA): that is, the main objective of children and their parents, for all classes alike, is to avoid downward social mobility. In this way, service-class children will seek to maximise their probability of entry to S*, while working-class children will seek to minimise their probability of entry to U*; in other words, the utility to be gained from entry into W* or S* is equal for those of working-class origin.⁶ The authors provide equations to show that, assuming the subjective probability parameters π , γ , β and α do not differ by class, and that actors seek to follow the strategies defined above, children from middle-class homes will more strongly prefer to stay on in education (Breen and Goldthorpe 1997:284-285):

$$P_{iS} = \frac{\pi_{i\alpha} + (1 - \pi_i)\beta_1}{\pi_{i\alpha} + (1 - \pi_i)\beta_1 + \gamma_1}$$

and

$$P_{iW} = \frac{\pi_i + (1 - \pi_i)(\beta_1 + \beta_2)}{\pi_i + (1 - \pi_i)(\beta_1 + \beta_2) + (\gamma_1 + \gamma_2)}$$

where P_{iS} is the value that determines whether a child from the service class will see it in their best interests to continue in education, and analogously, P_{iW} for a working-class child. If P exceeds 0.5 the educational choice will be considered worthwhile. The authors assert that $P_{iS} > P_{iW}$ for any value of π less than 1.

The second mechanism relates to pupils' subjective probabilities of success, which they posit is determined essentially by prior attainment levels. It is in this way that

⁶ Sullivan asserts that the phrase 'relative risk aversion' is misleading: 'Risk aversion refers to a preference for a large probability of a small gain rather than a small probability of a large gain ... perhaps Breen and Goldthorpe's model is more accurately described as one of 'loss aversion' ... Pupils perceive themselves as already having a particular social class (i.e. that of their parents), and they will risk everything to maintain that status' (Sullivan 2003:38, emphasis in original).

Breen and Goldthorpe incorporate primary effects into their model (without any further discussion of what generates these). They suggest there is likely to be a certain threshold, k , that must be met before students can decide to continue on in education, and since on-average prior scores of those in the service class are higher than those in the working class, higher proportions of those from advantaged backgrounds will meet this threshold and higher proportions will continue. Finally, the third mechanism assumes that students can only continue in education if the resources they have available to them exceed the costs of continuing. Those from higher class backgrounds have greater access to resources so the proportions of those who meet this criterion are, quite clearly, going to be higher in the service class than in the working class.

Goldthorpe (2007d) has described the RRA perspective in more detail by distinguishing between the mobility strategies of individuals from different socioeconomic backgrounds. Working-class pupils pursue 'strategies from below' and middle-class pupils pursue 'strategies from above'. The latter strategy simply involves middle-class children attaining an educational level which will later translate to a middle-class career. For working-class pupils it does not always follow that attempting to maximise educational attainment will be the most effective route towards the students' first priority (Goldthorpe 2007d:169-170). For these children, the safest option to ensure that they remain in the skilled – as opposed to the unskilled or unemployed – class may be to leave mainstream education and pursue vocational training. Staying in education would involve a degree of risk, and if these pupil stay in education and are unsuccessful it can prove costly in terms of earnings foregone or opportunities missed (Goldthorpe 2007d:170).

Breen and Goldthorpe (1997) do consider conditions under which the expected returns to various destination classes differ between classes of origin. They propose a situation where, instead of the working classes seeking to minimise the

probability of entry into U^* (because their preferences regarding entry into the working class and the service class are undifferentiated), they attach different weights to the outcomes, so that more utility is presumably gained from entering S^* than W^* , and still $W^* > U^*$. They show that, as long as the minimum threshold in prior ability is gained, higher proportions of service-class children will still make the decision to continue than will working-class children: 'the central result of our risk aversion assumption, namely that children from middle class backgrounds will more strongly prefer to continue in education, is robust to other choices of pay-off, which seek to capture distinctions in the attractiveness of upward mobility rather than immobility and in the aversion to the amount of downward mobility' (1997:292-293). Importantly, however, Breen and Goldthorpe never fully relax the assumption that 'young people and their families value upward mobility less than they fear downward' (1997:292), i.e. their model would not explain persisting class differentials in participation rates under situations where, for the working classes, the benefits of upward mobility outweigh the costs of downward mobility.

1.4 Summary

Bourdieu's theory of social reproduction seeks to provide an explanation for social-class differences in educational scores, citing, as the crux of his argument, variations in cultural competence which benefit the higher social classes. His thesis inherently supposes that the most important processes leading to educational inequality are manifest through differences in grades achieved in formal examinations, and is therefore relevant to the study of primary effects.

Goldthorpe's position is instead focused on differences in economic resources which generate a class differential in the propensity for continuing in education in the post-compulsory stages, and is therefore relevant to a study of secondary effects. Thus these arguments are applicable to different stages of pupils'

educational careers, and this thesis seeks to examine their separate contributions to our understanding of the link between social origin and educational attainment.

Chapter 2

Literature Review

2.1 Studies of Cultural Capital and Habitus

The introduction of the theory of cultural reproduction represented a shift in sociological conceptions of culture (Weininger and Lareau 2007:1). Prior to the 1960s, culture had been understood as a source of shared norms, values, customs and beliefs, a common consciousness that bound people as collectives and largely constrained behaviour. Bourdieu, instead, asserted that culture shares many of the same properties as economic capital – that it can behave as a resource and functions as a means for generating profit, if deployed in accordance with wider cultural understandings (Weininger and Lareau 2007:1). Bourdieu used the concept of cultural capital to examine the French education system and, given the prominence of his ideas, many sociologists have attempted to employ or examine the concept in subsequent studies.

It would be apt to begin a review of the literature by describing results of empirical analyses Bourdieu has himself presented; however, as Sullivan notes, Bourdieu simply ‘assumes much of what he sets out to prove’ (2002:155). He cites a positive association between parental education and children’s academic achievements as evidence for the transmission of cultural capital and as evidence for cultural capital as the mechanism through which the advantaged realise disproportionate educational success (Bourdieu 1973). An adequate empirical test of his theoretical assertions quite clearly requires greater efforts.

Few have been able to offer unambiguous empirical support to reinforce Bourdieu’s assertions. Quantitative sociologists have, at best, provided evidence to confirm that cultural capital does exist (as operationalised in divergent ways), and

does indeed have an association with educational attainment; however, often this is found to be true only under certain conditions: more so for females, for example, or that the positive effects of cultural capital are in fact more influential for working-class children than for children from middle- and upper-class backgrounds. There is a lack of consistency across studies in their ability to show unequivocally that cultural capital is not only directly useful for increasing scores, but also that it operates to mediate the association between social background and attainment. Further, less attention has been given to his other concepts.

2.1.1 Qualitative Evidence

Qualitative studies have typically employed an inclusive definition of cultural capital, and in turn have found much evidence in support of its existence and its effects. Such studies have shown that the importance placed on education and cultivating children's skills differs according to social class, with working-class parents having more often to prioritise other competing demands (e.g. Ball et al 1997; Reay 1998).

Lareau (2003) used observation and interviews to study 88 families of white and black ten-year-olds in the US. She identified how, across both ethnicities, middle-class parents saw the importance of, and expended substantial time and effort in, actively involving their children in structured cultural activities and classes in their out-of-school time, such as piano lessons or team sports; she termed this approach to parenting 'concerted cultivation'. In contrast, across ethnicities, the working-class parents she observed faced formidable financial circumstances which constrained their ability to devote their resources to such activities for their children and, in any case, they did 'not consider the concerted development of children, particularly through organized leisure activities, an essential aspect of good parenting' (2003:3). Lareau claimed the working classes adopted the

'accomplishment of natural growth' approach to parenting, which partly involves allowing children to manage their own leisure time.

Middle-class parents' interactions with teachers were enacted with ease, and they were confident in addressing their children's educational issues. They were more likely to establish closer connections with the school in ways which were likely to benefit their children. Working-class children were not encouraged to challenge or behave on a par with authority figures, nor were they provided with set examples of parents themselves doing so (e.g. acting subdued in interactions with teachers at parents' evenings). Working-class children therefore do not develop a sense of self-worth – a 'robust sense of entitlement' (Lareau 2003:2) – in the way that the middle classes do. Finally, the working-class parents in Lareau's study were more likely to give their children direct instructions without negotiation or explanation and, in contrast to middle-class parents, their styles of speech and language contradicted those typically valued by the school.

In addressing Bourdieu's ideas of linguistic capital which are manifest as a part of one's embodied cultural capital (Swartz 1997:199), Lareau applied Bernstein's notion of 'restricted' and 'elaborated' codes (1971; 2003). The basic notion is that the middle classes, speaking with an elaborated code, have knowledge of a wider vocabulary from which to construct effective and articulate speech and arguments. This is in contrast to the restricted linguistic code of the working classes, who possess a more limited and constrained knowledge of words to articulate their thought and intent. Lareau found that the linguistic structures employed in schools are largely synonymous with those encountered by middle-class children in the home (1997:7), providing yet another means of cultural continuity for these children. She concluded that it is the middle-class parenting strategy that generates the highest pay-off in the school environment.

In another study of white first-grade children in the US, Lareau found that working-class parents' relative lack of institutionalised cultural capital (educational qualifications) reinforced their dependency on teachers, in many cases resulting in them being seen as the sole educators of their child (1997:710). Directly in line with Bourdieu's theory, she found that working-class mothers envisaged a 'separation of spheres' between the school and the home, whereas middle-class mothers saw their child's intellectual maturity as a joint responsibility (Lareau 1997) and established close relationships with their school to prevent underachievement (Lareau 1993). Middle-class parents in the UK and US have been shown to 'invest' in their children's educational competence by paying for additional lessons, home tutoring and providing a 'repertoire of cultural activities, thereby imparting the capacity to acquire educational competences' (Schereger and Savage 2009:5). More generally, middle-class parents have also been found to instil a 'work ethic' in their children which contributes to their successful educational outcomes (Devine 2004).

Reay (1998) used case studies to examine mothers' involvement in their children's primary schooling in England. Her results mirror, in many fundamental ways, those described in Lareau's studies above. She found little differences between working-class and middle-class mothers in regard to the value placed on education or the 'mental energy' devoted to children's schooling; however, 'working-class women's support of their children's education did not count to the same extent that middle-class women's did' (1998:70). Reay found that working-class mothers' lack of cultural capital, including academic competence, limited their ability to effectively identify or help rectify any problems in their children's educational work (1998).

Devine's (2004) study involved qualitative interviews with parents in America and Britain. Comparing the educational and cultural experiences of the working and middle classes, she finds no lack of aspiration in the working class. She found, in

fact, that working-class parents applied similar strategies to the middle-class parents in attempting to help their children through their educational careers, though they were somewhat less ambitious than their middle-class counterparts (Devine 2004:69-94; Scherger and Savage 2009:6).

Qualitative studies have contributed much to our understanding of the different approaches to socialisation taken by middle- and working-class parents, and the implications these might have for generating cultural competences for their children. Such studies have 'established the manner in which cultural capital operates, but they have not made the link between these behaviours and actual educational success' (Bugyi 2008:2).

2.1.2 Quantitative Evidence

One of the earliest and most prominent quantitative studies looking into the effects of cultural capital on students' educational outcomes was undertaken by DiMaggio (1982), who analysed the grades of a sample of 2,906 white high school students in the US. DiMaggio tested Bourdieu's cultural reproduction model against an alternative model which he termed 'cultural mobility'; the latter suggests that 'active participation in prestigious status cultures may be a practical and useful strategy for low status students who aspire for upward mobility' (1982:190), and the corresponding hypothesis is that cultural capital is not the resource of any particular class, and that it can in fact be more useful for low-status children.

The results of DiMaggio's study suggested that cultural capital, in the form of cultural knowledge, does indeed have a significant impact on high school grades, in line with both his and Bourdieu's theses. However, he found relatively low correlations between social background measures and cultural capital, and also limited support for the idea that cultural capital mediates the relationship between family background and educational success (1982:194-195), both of which are

central to social reproduction theory. Further, dividing the sample by gender, he found that the data supported the social reproduction model among women, but instead supported the cultural mobility model among men: returns to cultural capital are greatest to women from high-status families but among males the positive impact is restricted to students from lower- and middle-status households (Di Maggio 1982:195-196). On this basis, DiMaggio concluded that cultural capital plays a different role in the mobility strategies of men and women (1982:197).

The impact of DiMaggio's seminal work on subsequent research into the effects of cultural capital has been two-fold: first, and most prominently, his theory of cultural mobility implies that prestigious-status knowledge can be learned and used by the working classes, suggestive of the possibility for cultural acquisition through means external to one's immediate family, which is largely at odds with Bourdieu. Many quantitative studies have since been inspired by the idea, and have sought to replicate the test between the two hypotheses (e.g. Katsillis and Rubinson 1990; Aschaffenburg and Maas 1997; De Graaf et al 2000; Dumais 2008; Jaeger 2009; Dumais and Ward 2010). Second, his finding that cultural capital operates in divergent ways for male and female students has important implications for the universal applicability of Bourdieu's theory, and subsequent studies have sought to examine returns to cultural participation by gender and other subgroups.

DiMaggio and Mohr (1985) followed up on DiMaggio's (1982) study, using the same sample but with additional information from a resurvey conducted 11 years later. They found that cultural capital had a significantly positive effect on educational attainment and university participation. When the male and female samples were disaggregated by father's educational level, they found that for women the effects of cultural capital did not vary positively with respect to father's education or occupation (both employed as indicators of social class background). They also suggested that the cultural mobility model would be of

most use in further investigations, because the impact of cultural capital is least for sons with the most educated fathers (1985:1254).

Some authors have suggested that Bourdieu's focus on disadvantage, social exclusion and culture – all features so intimately associated with ethnic minority groups – encourages the idea that the concept of cultural capital may be transferable to studies of race (May 1999; Modood 2004). DiMaggio and Ostrower (1990) demonstrated that in the US there are important black–white differences in arts consumption: white people are more likely to attend classical music, opera and ballet performances and to visit museums or sites of historic interest, while black people are more likely to engage in traditional African-American art forms, such as attending jazz or blues concerts (1990:772). Most black–white differences in Euro-American high-culture participation reflected educational inequalities, but even with controls black Americans participated at lower rates (DiMaggio and Ostrower 1990:753). These findings are somewhat dated now, but more recent research into arts and other cultural participation in the UK suggests, in general, those from lower social class and ethnic minority backgrounds are still underrepresented (Widdop and Cutts 2011).

Kalmijn and Kraaykamp (1996) examined the link between ethnicity, cultural participation and educational attainment using a sample of 6,248 black and non-Hispanic white men and women aged over 25. They found that socialisation into highbrow cultural activities in childhood was more common in white families, but there had been a significant increase throughout the 1980s in black Americans' participation (1996:32). Similarly, Roscigno and Ainsworth-Darnell (1999) analysed a study of 16,189 black and white eighth graders in the USA (also followed up two years later) and found cultural and educational resources differed by ethnicity, with white students participating significantly more in cultural classes and the arts, and having more educational resources in the home. This was largely accounted for by socioeconomic status, however.

Kalmijn and Kraaykamp also found, in line with cultural reproduction theory, that, for both races, higher exposure to cultural capital was associated with higher levels of schooling; the theory, therefore, was found to extend to the black ethnic minority group (1996:32). By showing that cultural capital explains part of the black–white convergence in schooling, the authors illustrated that the higher levels of integration and participation in ‘high culture’ may also serve as a route to upward mobility for those in less privileged groups in society (1996:33), though they did not assert that black children benefit any *more* than whites. Roscigno and Ainsworth-Darnell (1999), on the other hand, found cultural capital and educational resources did little to mediate the gap in black–white achievement, and they found that black students and those from low socioeconomic households tend to receive less of a return.

Aschaffenburg and Maas (1997) used a sample of 12,984 adults aged 18 and older in the US from surveys conducted in 1982, 1985 and 1992 with separate samples. They drew on ideas of cultural reproduction and cultural mobility to examine a set of competing hypotheses regarding the importance of cultural capital on making various transitions to higher levels of education in the US. They therefore examined the influence of Bourdieu’s theory for secondary effects (Boudon 1974), and looked at multiple stages of pupils’ educational careers. Their findings ‘leave no doubt that Bourdieu and others are right ... cultural capital ... matters for educational attainment. Where the social reproduction model falls short, however, is in the *way* it matters’ (Aschaffenburg and Maas 1997:584).

Aschaffenburg and Maas find support for Bourdieu’s idea that early cultural participation affects school success (with variations over time). As regards cultural consumption, Bourdieu’s ideas are reinforced: the context of cultural participation is significant in that cultural education which occurs outside school has a greater effect than in-school cultural education, throughout a student’s trajectory (Aschaffenburg and Maas 1997:584-585). The authors find that DiMaggio’s theory

of cultural mobility (1982) is an appropriate framework from which to understand the processes of choice at all stages of education transition measured, with the exception of that which occurs between high school and college (university); however, they consider this to be the most important transition as previous research has highlighted it as the biggest educational distinction in the US (Aschaffenburg and Maas 1997:585). Contrary to other research (DiMaggio 1982; DiMaggio and Mohr 1985), the authors find 'no evidence that the process of cultural transmission is gendered' (Aschaffenburg and Maas 1997:585).

De Graaf et al (2000) used data from 1,653 18–64 year olds in the Netherlands. They sought to examine cultural reproduction versus cultural mobility hypotheses. The novelty of their study lay in the decision to examine, separately, the effects of different manifestations of cultural capital via cultural resources: parental beaux arts participation and parental reading behaviour. In distinguishing these, the authors concluded that in the Netherlands 'it is much less parents' mastery of highbrow cultural codes than parental reading behaviour that brings advantages in children's educational careers' (2000:107). This finding complemented the results of a previous study undertaken by Crook (1997) in Australia which highlighted the benefits derived from linguistic and reading skills over and above beaux arts.

De Graaf et al (2000) found that returns to cultural capital are most for children from middle and lower socioeconomic backgrounds, contradicting the 'core implication' of Bourdieu's theory and again finding support for DiMaggio (De Graaf et al 2000:108). 'In Dutch society, cultural capital hardly matters for children of highly educated parents, whether it is measured in the classical way a la Bourdieu or by parental reading behaviour ... However, those from low- and middle-level socioeconomic backgrounds, irrespective of their cultural capital, do not catch up with those from high socioeconomic backgrounds' (De Graaf et al 2000:106,107).

Sullivan (2001) surveyed 465 16-year-old pupils in their final year of compulsory schooling in England. She examined both their own and their parents' cultural capital, attempting to examine the effects on educational attainment. Observing the social distribution of cultural capital, she found that it is mostly found among parents in middle- and upper-class homes. She also explicitly examined Bourdieu's important assumption that cultural capital is transmitted by higher-class parents to their children. In accordance with the theory, Sullivan (2001) showed that parental cultural capital and students' cultural activities are correlated.

She found further evidence to support the view that cultural capital is transmitted in the home with a lack of a school effect in determining the cultural activities component of cultural capital. However, Sullivan notes that 'the link between parental cultural capital and pupils' knowledge and language scores is weaker, but this is unsurprising given that my measure of parental cultural capital is a measure of activities. There is no school effect on the test of linguistic ability, and there is only a small school effect on cultural knowledge. This contrasts with a strong school effect on GCSE attainment, and suggests that linguistic ability and cultural knowledge are more strongly transmitted within the home than in the school' (Sullivan 2001:909).

Sullivan's study suggests that cultural capital does indeed have a significantly positive impact on performance at GCSE; however, a large effect of social class on attainment remains after cultural capital has been controlled for; social reproduction theory can therefore only provide a partial explanation of social-class differences in educational attainment (Sullivan 2001:893). She concludes that 'cultural capital is one mechanism through which higher-class families ensure educational advantage for their children, but it leaves most of the social class differential in attainment unexplained' (Sullivan 2001:910).

Scherger and Savage (2009) analysed a large sample of 28,000 young adults in England. Their study was concerned not only with the effects of class origin on educational attainment (via cultural capital), but also on subsequent socioeconomic positions, to determine the mechanisms through which social mobility occurs in contemporary society. The analyses revealed that the 'disposition of parents (and other adults) to take children to cultural events and facilities and encourage them to read, to do arts, music and sport is unequally distributed across classes. This is part of the reason why children of less privileged class backgrounds obtain lower levels of educational qualification. Furthermore, and over and above the class effect, the transmission of cultural capital also has a direct impact on educational attainment' (2009:20-21).

Scherger and Savage found that 'respondents who have experienced a higher intensity of cultural socialisation are more likely to be upwardly mobile, and likewise, cultural transmission has a positive effect on the prevention of downward mobility among service class children' (2009:2). Their results are indicative of the importance and relevance of Bourdieu's social reproduction theory – they state 'clearly, the transmission of cultural capital ... contributes to the reproduction of class'. They also find that the direct positive impact of cultural socialisation is similar across the working, the intermediate and the salariat classes, and the same is said as regards mobility (2009:22-23).

Jaeger (2010) used a longitudinal survey in the UK of 12,686 young people aged between 14 and 22. She set out to provide new estimates of the causal effect of cultural capital on academic achievement, offering findings which reflected upon the validity of previous studies by attempting to control for family and individual unobserved heterogeneity. She found, first, that children's cultural capital has positive effects on their reading recognition, reading comprehension and maths test scores, in support of cultural reproduction theory. However her second main conclusion is that the magnitude of the effect is generally smaller than has been

suggested by previous studies, and that 'while cultural capital has a statistically significant effect on academic achievement, its substantive impact in terms of explaining educational inequalities is modest' (Jaeger 2010:26).

The study differentiated between several components of cultural capital, and Jaeger found that the effects of these different dimensions varied systematically between socioeconomic groups. Participation in highbrow culture, according to Jaeger's models, only affects educational attainment among children from higher socioeconomic origins; 'i.e., in environments which recognise this type of cultural capital' (2010:26). The provision of a reading climate – measured by the number of books a child has – was found to matter more for lower socioeconomic pupils, while the amount a child reads – considered by Jaeger to be indicative of the extent to which children internalise this literary climate – matters more for higher socioeconomic pupils (2010:26).

There are notably few studies which seek to examine the impacts of cultural capital and habitus simultaneously, which is partially a consequence of Bourdieu's lack of conceptual clarity. Dumais (2002) used a sample of 24,599 white eighth graders in the US. Her study was concerned with gender differentials, which she believed had not been adequately resolved since DiMaggio's (1982) work, and the role of Bourdieu's concept of habitus on educational attainment. Dumais asserted that male and female students may have differential experiences of schooling due to their 'gendered habitus', and indeed, Bourdieu had argued that there were differences in dispositions associated with gender which can affect educational outcomes (Bourdieu 1984:105).

Dumais posited that 'if cultural capital is as important as Bourdieu (1973) argued it is for educational outcomes, then a cultural capital effect should be present even after habitus is added to the model, and it should be present for both boys and girls' (2002:50). Her study concludes that cultural capital does affect educational

outcomes, 'but in a limited way' (2002:59). Habitus, ability and socioeconomic background are found to be more important predictors than cultural capital, which does not raise students' grades considerably and at times, plays no role for the models predicting boys' educational outcomes (2002:59). Her study showed that females and students from higher socioeconomic backgrounds are more likely to participate in cultural activities (2002:44) and, similar to the work of DiMaggio (1982), Dumais' research shows that female students receive better returns to their cultural participation than do males.

Wildhagen (2009) used panel data of eighth-grade students in the US. She examined the mediating impact of teachers' perceptions of students' ability and students' own habitus (self expectations) on the positive effect of cultural capital for educational outcomes among high school students. Her study confirmed that the unequal distribution of cultural capital across students contributed to some of the gap between socioeconomic groups, and also that habitus mediated some, but not all, of the cultural capital effect. Wildhagen's study supports the idea that the concepts are related but provide distinct advantages.

Gaddis (2013) used a study of 969 (mostly disadvantaged) youth between the ages of 9 and 16 in the US. He also stressed the need for a closer examination of the independent and moderating effects of cultural capital and habitus on educational outcomes, arguing the latter has been overwhelmingly overlooked in quantitative research. He finds that high-arts participation and reading behaviour both have positive effects on educational scores, but that these are entirely mediated through habitus. The contrasting conclusions generated by the few studies which have examined habitus reveal the scope for further analysis.

The literature surrounding the impact of cultural capital and habitus for educational outcomes is inconclusive, and the explanatory power these hold for explaining social-class inequalities is even further debated.

2.1.3 Quantitative Methods Employed

The aforementioned studies have differed not only in their substantive aims and their strategies of operationalisation (to be discussed in Chapter 4), but also in the methods employed to examine the influence of cultural capital and/or habitus on educational outcomes. This section will offer a brief discussion of the methodological advantages and limitations of the studies mentioned, all of which have been taken into account in this thesis.

Studies of cultural capital claiming to assess the impact on educational attainment must first show that cultural capital is related to attainment net of other determinants of achievement – i.e. demonstrate that the association is ‘non-spurious’ – and second, determine the extent to which endowments of cultural capital statistically mediate the net effect of social privilege (Kingston 2001:91).

In addressing the first of these, several previous studies immediately fall short. One of the most fundamental controls is prior attainment. Unobserved heterogeneity thwarts the ability of studies to identify causal effects (Halaby 2004); if cultural capital, habitus and educational outcomes are correlated with omitted variables (which we know to be the case with respect to prior scores, as will be shown), the likely consequence is upwardly biased estimates of predictor variables for those that have previously scored highly and downwardly biased estimates for those with low prior scores (Mayer and Peterson 1999). Including a lagged dependent variable, such as prior attainment, into the regression model serves as a proxy for unobserved influences, and can reduce the extent of this bias (Gaddis 2013; Wooldridge 2008). A number of studies did not, or for lack of data were not able to, do this (Kalmijn and Kraaykamp 1996; Aschaffenburg and Maas 1997; Sullivan 2001; De Graaf et al 2000; Dumais 2002). Other important controls include measures of learning difficulties, English as a first language, lone parenthood and so on.

Though the operationalisation of cultural capital will be mainly attended to in Chapter 4, it is relevant to note here that several studies have used parental education in place of social class (e.g. Kalmijn and Kraaykamp 1996), which is out of keeping with the approach Bourdieu himself took in empirical analyses (1973) and with his theoretical assertions which explicitly deem formal qualifications to be cultural capital in the institutionalised state (Bourdieu 1997:50). Other studies have, rightly, employed parental qualifications as a measure of cultural capital (e.g. Jaeger and Holm 2003).

Some authors included only a measure of parents' cultural capital (DeGraaf et al 2000) or only children's cultural capital (DiMaggio 1982; DiMaggio and Mohr 1985), either of which is substantively flawed since both play a crucial role in Bourdieu's theory (Tzanakis 2011). With cross-sectional data the latter approach is also insufficient on methodological grounds as it does not justify unambiguous statements regarding the direction of causation; we cannot be sure the cultural capital occurs causally prior to outcomes (DeGraaf 1986; Bugyi 2008). The strongest approach is to include both, which only few studies have done (Sullivan 2001; Aschaffenburg and Maas 1997). Other studies, with appropriate data, have taken advantage of repeated measures by predicting outcomes at a later point in time to 'bolster confidence in the causal ordering' (e.g. Roscigno and Ainsworth-Darnell 1999:162; Sullivan et al 2013). Jaeger (2010) has advocated the use of longitudinal panel data for analysing cultural capital.

Most studies have not prioritised analysing differences by other important subgroups. Many datasets do not provide large enough subsample sizes to make comparisons between ethnic groups, for example, possible. Those which have been able to do so have contributed to our understanding of the ways in which the possession of cultural capital is unequally distributed and how returns might differ (e.g. Kalmijn and Kraaykamp 1996; Roscigno and Ainsworth-Darnell 1999), though these have tended to focus on dichotomous measures of race, comparing

white and black groups, for example. With the increasing diversity of the non-white population in England (CoDE 2012) and substantial shifts in the profiles of the highest and lowest achievers, analysis using more nuanced categories for ethnic classification seems appropriate. Some authors, whose focus has not been upon ethnic differences, have restricted their sample to white pupils (e.g. Dumais 2002).

Over time, new statistical techniques have become available and advances in statistical methods, survey tools and software have created research opportunities that were previously infeasible. We know that attainment is dependent upon individual-level characteristics, but there is also ample evidence that school-level characteristics (such as the average income of students or ethnic composition) affect school effectiveness, and these aggregate factors impact upon pupils' educational chances. Multilevel modelling is frequently used in education research for this reason (Clarke et al 2010; Townsend 2007) (see Chapter 3). Winkle-Wagner (2010:102) has stressed the usefulness of multilevel models for cultural capital research in particular.

Dumais used pooled within-school regression estimates to separate individual effects from school-level resource-deprivation effects (2002:50), though she is one of few to have done so. Her study controlled for socioeconomic status and the percentage of ethnic minority students at the school level, and, at a higher level, by region. In defence of the work of previous authors, multilevel modelling (and fixed and random effects modelling) is a relatively new technique, which has not been possible with many of the datasets previously employed. Acknowledging the multilevel structures within a population, however, is increasingly important for statistical models (O'Connell and McCoach 2008:5). Anderson and Jaeger (2013) used multilevel modelling to show that class differences in individuals' returns to cultural capital varied between high- and low-achieving schools, including in the

UK context. The merits of using such models, even if differences at the school level are not of direct substantive interest, are quite apparent.

Aschaffenburg and Maas's (1997) study provided useful indicators of where students' cultural acquisition took place (inside or outside of school) which provides a method for verifying Bourdieu's assertion that cultural capital is transmitted in the home, versus other accounts (of re-socialisation) which suggest it might be developed in the school environment (DiMaggio 1982; Goldthorpe 2007a). Authors who have found evidence for the possession of cultural capital among non-elite students and have shown that all students can benefit from it, regardless of social background, have tended to conclude that the theory of cultural mobility (DiMaggio 1982) is more appropriate than that of cultural reproduction. De Graaf et al (2000) asserted that, in the absence of a significant class-by-cultural capital interaction demonstrating it is only children from high socioeconomic backgrounds that benefit from a culturally rich home environment, Bourdieu is undermined (2000:105).

I argue that this is a common misconception – it is, in fact, not a necessary requirement to demonstrate that children from higher-class backgrounds receive better returns to their cultural capital in order to identify support for Bourdieu. As long as cultural capital is unequally distributed across the social classes, is shown to have a direct positive effect on attainment and also to mediate the link between social origin and educational outcomes, Bourdieu's description of cultural reproduction is intact. Nonetheless, studies which have examined the class-by-cultural capital interaction have provided an essential test – those that have found returns to cultural capital are greater among low socioeconomic students indeed demonstrate that it is not a mechanism for cultural reproduction. It is crucial to test for this.

Finally, some previous studies have been limited by small sample sizes (e.g. DiMaggio 1982; DiMaggio and Mohr 1985; DeGraaf et al 2000; Sullivan 2001; Noble and Davies 2009), low response rates (e.g. DeGraaf et al 2000), non-representative samples (e.g. Sullivan 2001) or retrospective information which is less reliable (e.g. Kalmijn and Kraaykamp 1996).

2.1.4 Cultural Capital and Habitus Effects for Young Children

Attempts to directly examine the effects of cultural capital for very young children are less common. All the above-mentioned studies have analysed data with samples aged 12 or over. This is, interestingly, the case despite overwhelming empirical evidence that shows early social experiences and early educational outcomes to be highly predictive of later attainment (DfE 2012b; Feinstein 2003) and, importantly, despite Bourdieu's assertion that class differences begin at birth (Bourdieu 1997:49). The general methodological concerns associated with conducting research on very young populations are much the same as those described above.

Dumais' (2006) study, *Early Childhood Cultural Capital, Parental Habitus and Teachers' Perceptions*, attempts to observe the impact of cultural capital on children in the early years of elementary school in the US. She uses data from the Early Childhood Longitudinal Study, with teachers' perceptions of children's ability as the dependent variable. She found that students' cultural capital – measured as cultural activities – has a positive effect on teachers' evaluations, but only for children from low socioeconomic backgrounds. Her results imply support for DiMaggio's (1982) cultural mobility model, and she claims on this basis that 'the traditional definitions of cultural capital may not be appropriate for young American children' (2006:83). Arguably, however, it would have been more appropriate for her to include direct measures of parental cultural capital since young children may possess it themselves but be less effective at demonstrating

such competence to teachers. She also finds that one measure of parental habitus – expectations for their child to attain a bachelor's degree – does indeed have a consistent positive effect on teachers' evaluations.

Cheadle (2008) used longitudinal data from a sample of approximately 14,500 young children in the US, following their scores in maths and reading from entering kindergarten to the third grade. The intention of the study was to examine Lareau's (2003) notion of 'concerted cultivation' for educational outcomes, and to determine whether proxies for such a parenting style were able to mediate the socioeconomic gap and/or racial disparities in test scores. Using multilevel growth models, Cheadle's findings were that concerted cultivation is related to children's academic skills at kindergarten entry and their academic growth in the early stages of their school life. Educational investments of the type described by Lareau are able to account for a substantial amount of the ethnic gap both upon entry to kindergarten and in the growth parameters. However, as a mediator of socioeconomic background, concerted cultivation is only able to explain a small part of the variation.

Because of the very little work on cultural capital that has addressed young children, it is necessary to draw on the findings of wider education research on the socio-cultural factors which affect development and to try to synthesise this information with Bourdieu's conceptual ideas.

Kiernan and Mensah (2011) employed Millennium Cohort Study (MCS) data to explore the experiences of young children living in poverty. They examined the link between initial disadvantage and achievement in the first year of schooling. Their outcome measure was taken from children's performance on the Foundation Stage Profile, which is a teacher assessment. The authors showed that, as well as financial resources, children's performance was determined by their family's level of other socioeconomic resources. They also found that different approaches to

parenting were able to account for some of the disadvantage faced by low-income children, though this measure of 'parenting' was broad and covered things such as activities undertaken to promote children's learning as well as aspects of the child's family organisation and nutrition. Gutman and Feinstein (2007) also looked at parenting behaviours and, using the Avon Longitudinal Study of Parents and Children (ALSPC), demonstrated that mothers with higher incomes and educational qualifications provided a more intellectually stimulating home environment for young children, which was related to developmental outcomes.

Sullivan et al (2013) used data from the MCS to observe the impact of parenting practices (among other things) on young children's cognitive ability. They find that parental education is the strongest predictor of children's test scores (2013:1202). They also find a positive effect of 'authoritative parenting' (consistently applied rules and routines) and of a rich 'home learning environment', which, they suggest, might be seen as reflecting Lareau's (2003) notion of a 'concerted cultivation' approach to children's socialisation by middle- and upper-class parents (2013:1202). They suggest that cognitive and cultural resources are more important mediators than economic resources, since parental education is a stronger predictor of test scores than is parental income.⁷ A strong social-class effect remained after controlling for a number of influences, however.

A 2010 report from the Joseph Rowntree Foundation documented interesting findings which can be related to cultural socialisation and educational outcomes (Goodman and Gregg 2010). This research also used data from the MCS (among other datasets). Firstly, the report highlights the importance of looking at the effects of socio-cultural socialisation on cognitive progression in the early years because differences in this regard are apparent among children as early as three years old, and this gap between children of advantaged and disadvantaged

⁷ Note, however, that Sullivan et al (2013) point out the unreliability of the income measure provided in the MCS, which is a point that was considered in the empirical analyses presented in Chapter 5 of this thesis.

backgrounds is shown to widen by the age of five (2010:5). The idea that children's educational careers have been determined this early in life has worrying implications, the significance of which is made clear with the finding that children from disadvantaged backgrounds who perform well at Key Stage 1 (age seven) are more likely than advantaged children to fall behind by age 11, and disadvantaged children who perform badly at Key Stage 1 are less likely to improve compared with children from more advantaged social backgrounds (2010:6).

Secondly, the report finds that parental aspirations and attitudes to education vary substantially by socioeconomic group, with large disparities between mothers of the most and least advantaged social groups in their hopes for their children to partake in higher education (Goodman and Gregg 2010:6). These authors find that such 'adverse attitudes to education' from disadvantaged mothers are one of the most important factors associated with lower educational attainment of pupils later in life, alone accounting for 6% of the total attainment gap between the richest and poorest children at age 11, even after accounting for prior ability (using data from the ALSPC).

Interestingly, however, Sullivan et al (2013) found that mothers had universally high aspirations for their 7 year olds to attend university (97%), and Hansen and Jones (2010) found the same. These stark differences could be due partly to measurement error, a (highly unlikely) sharp divergence in parental aspirations by socioeconomic position during the last few years of primary education or, most plausibly, because Goodman and Gregg defined differences in advantaged and disadvantaged families by income quintiles, whereas those using the MCS compared social class groups.⁸ Aspirations, attitudes, expectations and beliefs have, in relevant studies (Dumais 2002; 2006; Gaddis 2013), largely been related to Bourdieu's notion of habitus.

⁸ The approach taken here is that social class is far more adept than simple measures of income for examining socioeconomic disparities in educational attainment, since, as well as economic conditions, classes capture variations in longer-term prospects, job security and status (Sullivan et al 2010a; 2010b; 2013).

The last finding presented by Goodman and Gregg (2010) which is significant as regards Bourdieu's conceptual framework is that children from disadvantaged backgrounds are much less likely to experience a 'rich home learning environment' in the early years than children from the richest families. 42% of children from the most disadvantaged backgrounds are found to be read to every day, compared with 79% of children from the most advantaged backgrounds (2010:20). This is largely congruent with cultural reproduction theory. Reading habits and educational and cognitive development and stimulation activities have often been understood as components of embodied cultural capital. Reading habits and literacy climate in the home have long been identified within education research as strong determinants of educational advantage (Tizard et al 1982; Hewison 1988; Plewis et al 1990; Neuman and Dickinson 2011; Jeynes 2011).

Finally, Becker (2010) showed that the levels of cultural knowledge among 3–4 year-old children in Germany differs greatly: children of highly educated parents native to Germany score higher on cultural knowledge tests than those of immigrants, who have a low level of education and who are from a lower social class. She also found that children of (Turkish) immigrant parents have a lower level of cultural knowledge even when parents' social and educational backgrounds are controlled for, though the study was not able to determine the influence of this knowledge on educational outcomes.

2.2 Goldthorpe's Opposition to Bourdieu

John Goldthorpe believes that the theory of social reproduction, as Bourdieu describes it, can be shown to have inherent weaknesses and to be contradicted by empirical evidence. He summarises Bourdieu's work by stating, 'what is original is not sound, and what is sound is not original' (2007a:1).

Goldthorpe sees quantitative research seeking to empirically apply Bourdieu's ideas as having taken one of two forms: 'Bourdieu domesticated' or 'Bourdieu

wild'. In the domesticated understanding of Bourdieu, authors effectively prise away the concept of cultural capital from the central role that it plays in his theory of social reproduction. In so doing, serious divergences from the original, in-context concept regularly arise and 'lead to the true significance of the research findings being misconstrued, at least so far as the evaluation of Bourdieu's work is concerned' (Goldthorpe 2007a:12). Goldthorpe considers the work of DiMaggio (1982), De Graaf (1986) and De Graaf et al (2000), among others, to be examples of the appropriation of 'Bourdieu domesticated', which all involve 'radical misconceptions' of Bourdieu's position. Their work involves the concept of cultural capital, 'but so modified that the hypotheses do not follow closely from Bourdieu's theory [and they] face consequent difficulties: this is, in determining just what the theoretical implications of their empirical findings are' (Goldthorpe 2007b:3).

According to Goldthorpe, if Bourdieu had been understood in wild – and more authentic – terms, it would be 'difficult to see quite how the concept is to be used in research at all, given the loss of the credibility of the theory in which it is embedded' (2007a:14). The work of Halsey et al (1980) showed in the course of 20th century educational expansion substantial educational mobility did occur for the working classes, and according to Goldthorpe this demonstrates that Bourdieu's account of social reproduction theory fails: 'In a Bourdieusien world in which the children of subordinate classes are alienated from the educational system and deprived of all hope or aspiration for success within it, the expansion of the system would then be disproportionately exploited by children of dominant classes, and class differentials in attainment would *widen*. But, whatever disagreements may exist on whether or how far such differentials have narrowed, no evidence of a sustained shift in the *opposite* direction has been produced for any modern society' (Goldthorpe 2007a:9). Thus Bourdieu's view of cultural capital as a key process in social reproduction is 'simply wrong', and the findings of those in

support of cultural mobility theory show exactly why it is wrong (Goldthorpe 2007a:14).

Goldthorpe's position is not to disregard social reproduction; on the contrary, he has provided highly influential mobility research revealing constant rates of relative social fluidity (e.g. Erikson and Goldthorpe 2009) and declares that Britain is far from an ideal meritocracy (Goldthorpe 1997). However, while Bourdieu seeks explanation for these patterns in cultural phenomena, Goldthorpe believes a theory of rational action is more plausible, conceiving economic capital as far more deterministic and of most importance in processes of inequality which in fact occur, most influentially, in the creation of secondary effects.

2.3 Evidence on the Impact of Secondary Effects

In relation to the British education system, secondary effects begin to take effect after GCSE. It is at this point students must decide whether to continue in education to undertake further academic study, pursue further vocational study or leave education to get a job or work-based training placement. The choices available to individuals are constrained in part by prior academic performance, but relevant literature has suggested that social class operates to perpetuate further differences between those from advantaged and disadvantaged homes, even if the option to continue is feasible. This section considers the literature derived from relevant studies in England.

Micklewright (1989) used logistic regression to model the likelihood of students in England and Wales leaving school at age 16, examining pupils in the 1958 cohort of the National Child Development Study (NCDS), who made the transition decision in the year 1974. He produced separate estimates for males and females. Family background, measured as both parental class and education, had a substantial impact on the rates of continuation. 63% of males and 55% of females made the decision to leave education at age 16. Micklewright notes that girls had

traditionally lower rates of leaving at the minimum age because of a relative lack of alternative options – most notably, employer-based training schemes. His study controlled for school type (secondary modern, comprehensive, grammar and private school) which is useful for comparing his results to later studies conducted in England after the tripartite system was abolished.⁹ He found that between one-half and two-thirds of the social-class background effect on the transition decision remained once ability and school type were controlled.

Comparing pupils in the top 10% of the ability distribution, boys of parents from a manual background who did not themselves stay on at school had a predicted probability of leaving of 33%, and for girls the probability was 27%; these are in contrast to children of parents from professional occupational backgrounds who had post-compulsory education themselves, for whom the predicted probabilities are 'negligible' (Micklewright 1989:36). Micklewright points out, however, that this cohort made the transition decision in the face of a particularly low unemployment rate for age-16 school leavers (4%) so more alternative options were available and thus the magnitude of secondary effects might well have been overstated.

Karlson (2013) compared the magnitude of primary and secondary effects for a cohort born in 1958 using NCDS data and a cohort born in 1970 using BCS data. He also examined educational attainment at A-level. Even under conditions of increasing inequality in educational opportunity, Karlson suggests, the relative contribution of secondary effects was largely unchanged between the two cohorts, contributing to approximately two-thirds of the class differential.

A group of studies have been presented since 2005 which seek to quantify the relative importance of primary and secondary effects for post-compulsory transition decisions in England using counterfactual analysis. Erikson et al (2005)

⁹ Though it still exists in some parts of England.

developed a method proposed by Erikson and Jonsson (1996) applied to Swedish data, to determine the relative importance of primary and secondary effects. Analysing data from the Youth Cohort Study with a sample who were 16 in 2001, the authors proposed that the impact of social origin on the likelihood of making the transition to A-level study can be decomposed by combining the performance distribution of one class with the choice distribution of another. They compose a measure of social-class origin which is collapsed into three classes (using father's occupation) from the seven-category NS-SEC scale: salariat, intermediate and working. Their measure of ability assigns scores to the grades received in English and mathematics GCSEs, which are summed and standardised. Their outcome variable is a binary measure, distinguishing between those who continued to A-level study and those who did not. The authors showed that the influence of secondary effects was substantial, accounting for roughly one-quarter of class differences in the transition.

Jackson et al (2007) later employed the same method, using grade point averages of GCSE scores in mathematics and English to represent ability on the analyses of three sets of data from cohorts who made the A-level transition decision in the years 1974, 1986 and 2001. They show that, over the period covered, substantial increases in the absolute numbers of pupils continuing in further education occurred, although through an analysis of odds ratios relative differences between classes revealed no consistent decline.

Their findings suggested that students who perform very poorly in their examinations at age 16 will have a low probability of going on to A-levels and those who perform very well will have a high probability, almost regardless of their social class origins, while it is at *intermediate* levels of performance that the scope for secondary effects to operate is largest (2007:218); Erikson and Jonsson (1996) suggested that the middle and upper classes more often hold the view that you do not necessarily need to be very clever to succeed in education, whereas

many more working-class families assume that you do (1996:23), which perhaps offers a tentative explanation for this. The estimated (relative) importance of secondary effects, considered as a proportion of the log-odds ratios that they take to define class differentials, is in the region of one-fifth to one-quarter for 2001 (2007:221).

The authors also discuss the relevance of anticipatory decisions in secondary effects – students may, at some earlier point, have come to the view that they would, or would not, go on to A-levels, and in so far as these anticipatory decisions do occur, the authors contend that this is likely to lead to an underestimation of secondary effects. This is because anticipatory decisions are assumed to have a positive or negative impact on motivation and to influence students' performance in examinations accordingly (2007:221-222). In order to adequately measure the effect of anticipatory decisions, Jackson et al suggest future research could combine their method with data on students' level of performance at around age 14 linked to information on their educational plans and intentions. Considering their estimates to be biased downwards, Jackson et al still conclude that they are sufficient to show that the role of secondary effects in the creation of educational credentials 'can by no means be regarded as negligible' (2007:222). It is a '*serious error*', they concluded, to ignore Boudon's distinction between primary and secondary effects (Jackson et al 2007:224).

The factors influencing the different choices made by students can be approached from a Bourdieusian perspective: they may be determined by the particular class habitus of the individual, which is reflective of their ambitions and expectations. Bourdieu used the example of the rapid period of educational expansion in 1960s France to explain that working-class youth did not aspire to take advantage of increased opportunities or high levels of attainment 'because they had internalised and resigned themselves to the limited educational opportunities that previously existed for their class' (Swartz 2002:64S). Further, middle-class pupils' habitus

would presumably align better with the field of higher education; their level of comfort in academic contexts might result in a heightened drive for continuation.

Jackson et al point out, however, that such arguments 'do not accord well with the very fact of transition rates to A-level work rising steadily and substantially among students of all class backgrounds ... By 2001 ... more than half of all students from intermediate class background and more than a third of all those from working class background *did* achieve a level of academic performance that allowed them to go on to A-level work and they *did* take up this option. Even allowing for a degree of upward bias in these figures, they scarcely bear out the idea of static and homogeneous class subcultures in which prevailing values and norms are powerfully inimical to educational aspirations' (Jackson et al 2007:224). The suggestion is that it is far more appropriate to seek explanation based on a rational choice. In terms of social policy, they suggest that those aiming to overcome the resource and informational constraints that bear on children from less advantaged backgrounds would be of most use (2007:224).

To summarise, Jackson et al (2007:225) use the obverse of their previous example to illustrate how far the persistence of secondary effects might qualify the complete elimination of primary effects. Assuming that all students have the same performance distribution as observed from their 2001 data for higher social class background (but that class differences in specific transition propensities persist), they find that in comparison with the 76% transition rate to A-level work predicted for those of high social class background, the rate predicted for students of intermediate social class background rises from the 'real' figure of 54% to 71%, and that for students of working-class background from 39% to 68%. Thus while class differentials would indeed be substantially narrowed, working-class students would still lag some way behind their more advantaged counterparts (Jackson et al 2007:225).

The most recent findings relating to the relative importance of primary and secondary effects in the UK were published in 2013 by Jackson (2013b). Her study analysed first the transition to A-level controlling for GCSE attainment and second the transition to university controlling for A-level attainment. Again, Jackson used a number of datasets beginning with a cohort born in 1958 and ending with a cohort born in 1991. After demonstrating the substantial magnitude of social-class inequality in the transition to A-level for the earliest cohorts, she finds that for those born in 1991 (and who hence made the choice decision in 2007), primary effects account for around 84% of total inequality in the A-level transition between the highest and lowest socioeconomic groups and only 16% was contributed by secondary effects; in other words, she concluded that secondary effects have greatly *declined* in importance in A-level transitions over time in Britain.

Jackson suggests her results are potentially in keeping with the theory of maximally maintained inequality (MMI) (Raftery and Hout 1993). MMI predicts that quantitative social class differences in enrolment rates at higher levels of education will be 'maximally maintained' as educational expansion takes place and will diminish only once the enrolment rate for the most advanced groups reaches saturation point (Boliver 2010:1). In other words, intergenerational educational inequality will persist despite educational reforms expected to remove class barriers (Hout 2004:1). Lucas (2001) refined the ideas of Raftery and Hout, proposing the hypothesis of Effectively Maintained Inequality (EMI) which argues that 'meaningful inequality reduction is elusive because qualitatively different types of education maintain consequential inequality, even at universal transitions' (Lucas 2009:459), and these qualitative inequalities 'may even increase once quantitative inequalities in enrolment begin to decline' (Boliver 2010:2).

The evidence that exists as regards the relative importance of secondary effects for educational decisions made among pupils in England at age 16 has shifted quite drastically in recent years from a firm assertion that these are highly influential in

creating inequality in educational opportunity to a suggestion that performance effects are by far, and increasingly, the most important. Notably, Jackson (2013b) also analyses the transition to university, controlling for A-level attainment. She finds more stability over time in both the absolute and relative importance of secondary effects at this level, which she suggests is unsurprising given that the population of interest has largely already been filtered into those who have demonstrated an interest in continued education by continuing at A-level. Further, the financial resources required for university attendance are far greater than they are for further education. Thus, she considers the A-level decision to be of most importance.

2.3.1 Variations by Key Subgroups

Differences in achievement vary along the lines of social class, ethnicity, gender, and also by various complex interactions among these characteristics. In contemporary Britain the most prominent cause for concern has, for some time, been the low GCSE scores of white working-class boys. With regard to participation in further education, there is also evidence that rates differ according to ethnicity and gender, with higher proportions of particular ethnic groups tending to take up further educational opportunities than their white peers; most notably some black students and some Asian students (Bhattacharyya et al 2003). Similarly, girls are shown to be more likely to stay on in post-16 full-time education and to take A-levels than their male peers (DfES 2007).

However, the literature relating to the ways in which secondary effects might differ by these subgroups is relatively scarce. Heath and Brinbaum (2007) considered the experiences of the 'new generation' of immigrants – that is, the large second-generation minority ethnic populations – in the educational system. They suggested that while the primary and secondary effects of social class are shown to contribute cumulative disadvantages for working-class pupils, the

primary and secondary effects of ethnicity might behave to provide educational advantages at one stage and disadvantages at the other. The empirical evidence that exists in this area implies their suggestions were plausible.

Jackson et al (2012) examined the relative importance of primary and secondary effects for different ethnic groups in order to determine whether choice-driven systems,¹⁰ such as that in the UK, can provide educational opportunities for ethnic minority students. They refer to the primary and secondary effects of *ethnic group* rather than socioeconomic origin. Their findings for England suggest that attainment effects appear to operate to the detriment of some, but not all, ethnic minority groups, while secondary effects behave to increase the transition rates of these students; at a given level of attainment, most ethnic minority pupils are more likely to make the transition to A-level than their white peers. This pattern was accentuated when they took account of socioeconomic background. The findings of Jackson (2012) largely mirror these results, showing that ethnic minority groups in the UK are making 'bold' educational choices, given their levels of prior performance, and thus the secondary effects of ethnicity in fact have an *equalising* impact. Waters et al's (2013) findings also reinforced this, finding an absence of a negative secondary effect for ethnic minority pupils after controlling for social class.

Many authors have discussed the 'ethnic penalty' that many non-white groups experience in the labour market (Heath and McMahon 1996; Li et al 2008; Li and Heath 2008a; Li and Heath 2008b; Cheung and Heath 2007; Li and Heath 2007; Platt 2007; Li 2010; Li and Heath 2010; Tackey et al 2011). Li et al (2008), among others, demonstrate that educational qualifications can protect against disadvantage in employment and earnings; however, only to a certain extent, as

¹⁰ Jackson et al (2012) describe the UK mass education system as one in which selection on the basis of educational performance has given way to educational choice; that is, in the context of significant expansion from the 1940s when the 1944 Education Act established free compulsory secondary education for all (up until age 15), and then more so over the 1960s when the tripartite system of secondary education was abolished and in 1965 when the vast majority of local authorities were instructed to go comprehensive.

many ethnic minority groups experience higher rates of unemployment – particularly black African and black Caribbean – and lower incomes than similarly qualified white people. Torgerson et al (2008:2) found that wanting a job or training place was given as the principal reason for leaving education at 16, but this was particularly so for white students, which perhaps reflects relatively lower concerns regarding discriminatory factors they might face. Employer behaviour, therefore, is a ‘key structural factor influencing the benefits of education for different ethnic groups’ (Tackey et al 2011).

Connor et al explored ethnic differences in higher educational (HE) participation and found that, from a survey of potential HE entrants, the sample of ethnic minority students were less likely to be put off by the costs of continuing education than white students (2004:33). This also implies that, for these students, the strain on family economic resources is perceived to be worthwhile considering the potential benefits they expect to be gained or, in other words, the less harsh barriers they might face in future labour market experience. The same study also found that minority ethnic students were more likely to participate in post-compulsory education for instrumental reasons than white students (2004:129).

Little has been done to examine the relative importance of primary and secondary effects between boys and girls in the UK, whilst also accounting for ethnicity. Ressa and Azzolini (2014) examined gender differences using data from Italy. They find that girls display a particularly high propensity to make general school transitions and that this is less dependent on their social background, net of prior performance, as compared with their male peers. The research by Ressa and Azzolini, however, is based on data from a country with a much more varied educational structure to that of the UK, and in conditions under which secondary effects are found to be substantially more important than primary effects (Contini and Scagni 2011; 2013) – a situation which Jackson et al (2013b) have recently contended is not the case for the UK.

2.4 Evidence Relating to the Breen-Goldthorpe (1997) Model and the Relative Risk Aversion Assumption

Breen and Goldthorpe (1997) suggest that differences between classes in the proportions who decide to continue in education (or, indeed, undertake any more ambitious educational option than the possible alternatives, since the authors suggest their model is universally applicable to all choices)¹¹ will be driven by three mechanisms (outlined in Chapter 1); the most important of these is that educational aspirations are relational – based on class of origin – and, in pursuing the primary objective of minimising the risk of downward mobility *at all costs*, perceptions of the benefits to be gained from various educational options will differ across classes. This important assumption – the relative risk aversion (RRA) mechanism – has been subject to empirical validation, and it is to this literature that I now turn.

Breen and Yaish (2006) used data from the 1958 National Child Development Study and the 1972 Oxford Mobility Survey to examine RRA among students in the UK. Their first test involved formulating three hypotheses regarding whether to continue to A-level, to take up vocational study or to enter the labour market. Hypothesis I predicted that the choice to continue to A-level would be: (i) most likely among those from salariat backgrounds, (ii) less likely for those from intermediate backgrounds, and (iii) least likely for those from working-class backgrounds. They found (i) to be true, but found no significant difference between those from intermediate and working-class backgrounds in this respect. Hypothesis II predicted that those from working-class backgrounds would be most likely to prefer direct entry into the labour market, but their findings instead suggested those from intermediate backgrounds were most likely. Hypothesis III predicted that all students would prefer vocational study over direct labour

¹¹ The assumption they make regarding the universality of their model has been scrutinised by Sullivan (2003).

market entry, which was supported by their results. The authors suggest that the RRA assumption is, in most part, verified with their data, though they discuss that their results were sensitive to the proxy used to measure students' beliefs about the returns to education.

Need and de Jong (2001) employed panel data from the Netherlands to test how far rational action theory can be applied to the choice of education following secondary education to: (1) leave and not enter higher education, (2) stay and enter higher professional education, or (3) stay and enter university education. They include in their model: parental education; the aspirations of students, measured according to which of the three educational routes they wanted to pursue two months prior to the transition decision; students' ability; students' expectations of success relating to the three educational routes; and parental income. They derive two hypotheses relating to the RRA assumption. The first is that students should desire a level of education at least as good as that of their parents, and the second is that class differentials in participation should decrease significantly once educational aspirations are controlled for. They find that the direct effect of parental education on educational aspirations is stronger than its effect on educational choice, and infer that this suggests 'relative risk aversion might indeed be the driving force in the model' (Need and de Jong 2001:88). Need and de Jong (2001) also state that they could not find any convincing evidence that RAT is able to explain gender differentials in participation, a finding which has been consistent across other countries also (e.g. Becker and Hecken 2009).

Davies et al (2002) analyse panel data from Denmark, testing the RRA hypothesis. They examine a number of transition combinations which students are faced with after the completion of compulsory education. They consider class of origin based on parental education, and control for both parental resources and students' ability, to isolate the impact of the RRA mechanism. The authors were unable to

confirm evidence that RRA, as opposed to alternative mechanisms offered by other human capital theories, is the principal driver of differential class decisions.

Holm and Jaeger (2008) used the same data from Denmark, exploiting three waves of information in what they refer to as a Dynamic Decision Process (DDP) model. They sought to test two assumptions of the RRA mechanism: first, that individuals seek to maximise utility, and second, that RRA is an important component in the decision-making process. They analysed transitions to both secondary education and tertiary-level education. The analysis presented by Holm and Jaeger builds upon previous attempts to test RRA by using the DDP model to simultaneously analyse the instantaneous and future utility to be gained from educational decisions; i.e. individuals are assumed to make decisions in light of their present utility of occupying various educational options, as well as the expected utility of occupying future educational options and corresponding class locations. In so doing, they test the assumption of RRA that actors make choices with the intention of achieving at least the same social class as their parents. The authors conclude that, in taking into account the 'forward-looking behaviour' of individuals, strong evidence is found that RRA explains some of the correlation between class background and educational choice. They suggest that the study provides evidence in favour of the RRA mechanism.

Van de Werfhorst and Horstede (2007) examined the cultural capital and the RRA mechanisms in educational decisions using data from secondary school pupils in Amsterdam. They found support for the idea that cultural capital is an important predictor of primary effects (i.e. differences in ability), which affect decisions. They operationalised RRA according to the extent to which respondents were concerned with downward mobility, summing Likert scales of (dis)agreement to statements of such things as 'I want to reach equally as high as my parents on the social ladder' and 'I am afraid to achieve a lower position than my parents later in life.' They found that RRA strongly affected schooling ambitions (and cultural capital

had no effect). The authors conclude, therefore, with relevance to all aspects of this project, that cultural capital is useful for understanding class differences in educational attainment and that the RRA mechanism is useful for explaining class differences in decision making.

Jaeger and Holm (2012) use data from the 1958 cohort of the NCDS to test the RRA assumption in the case of the UK. They find that RRA accounts for some of the class differential in educational decisions and that more than 90% of individuals gain utility from obtaining the same social class position as their parents. They also show that RRA is of particular importance in the A-level decision for pupils from high class backgrounds. Interestingly, the authors suggest that there is some evidence of variation between individuals in the extent to which reproducing their parents' class is an important priority; they point out that this challenges the assumption that the RRA effect is homogeneous across subgroups and suggest this as an avenue for future research.

Studies from other countries, not explicitly testing the RRA mechanism, have offered empirical support for RAT and some of the other assumptions made by the Breen-Goldthorpe model (e.g. Stocke 2007; Becker 2003; Gabay-Egozi et al 2010), while others have found that despite variations in ability and perceived beliefs regarding the returns to education across social classes, these mechanisms cannot explain the stratification of choices (e.g. Manzo 2013).

Finally, rational choice theorists are often subject to criticism as regards their definition of rationality (e.g. Wong 2007; Ball et al 2000). It has been asserted that rational choices are made within a cultural framework (Savage 2000) – whether a decision is considered rational is contingent on cultural context (Devine and Savage 2000) – and that 'any action can be interpreted as rational in the light of some set of beliefs and desires' (Sullivan 2006:5). Sullivan provided evidence that pupils' beliefs regarding their likelihood of success in education vary by both

social background and gender, with males and those from higher socioeconomic backgrounds tending to overestimate their abilities, thus undermining one of the 'untested auxiliary assumptions' made by RAT theorists (2006:5).

2.5 Summary

Across the extensive body of literature, evidence relating to the applicability of Bourdieu's concepts for understanding primary effects is inconclusive. On balance, previous research supports the notion that cultural competence, knowledge or resources can be considered capital, in the sense that they are found to generate a return for their holders. However, there is a pertinent lack of continuity across studies in relation to whether cultural capital is the most influential means through which the socially privileged secure educational advantages. This is a crucial assertion which requires validation for social reproduction theory to achieve ratification.

This lack of coherency might be attributable to widely varied operationalisation strategies, differences in the geographical locations or time periods under study, the data, populations and/or methods employed. However, there also exists a lack of comparability between studies because there is little uniformity regarding precisely what is required for the validation of Bourdieu; researchers expect proxies for cultural capital (and/or habitus, depending on one's position) to have enough explanatory power to account for a substantial portion of the social-class differences in outcomes, but what is meant by *substantial*? Chapters 5 and 6 suggest a benchmark definition which could go some way to facilitating cross-study comparisons.

Findings with regard to differences in the returns of cultural capital by subgroup are also varied. If DiMaggio's (1982) assertions are correct, Bourdieu's theory can be shown to have crucial deficiencies from which it is not possible to recover. As such, it is of prime importance for this thesis to determine which of the

alternatives is correct. A lack of a firm consensus regarding whether the returns to cultural capital and the operations of habitus differ according to gender or ethnicity drives a further aim of this thesis to provide some clarity in this regard.

There is some debate over whether habitus is a useful concept to attempt to measure and/or analyse. The position taken here is that, since habitus plays a major part in Bourdieu's theoretical model (see Chapter 1), it should be incorporated into a test of Bourdieu. Generally, there is a lack of evidence explicitly examining the applicability of Bourdieu for the experiences and outcomes of young children, in relation to both cultural capital and habitus. This is a notable gap which Chapter 5 seeks to rectify.

This chapter has also highlighted a number of methodological weaknesses in many previous studies, which Chapters 5 and 6 seek to overcome using: repeated measures panel data which is longitudinal, hierarchical, nationally representative and provides subsample sizes large enough to facilitate the examination of variations by key characteristics; appropriate controls; an 'authentic' approach to operationalising Bourdieu (see Chapter 4); and advanced statistical techniques.

As regards secondary effects, conclusions in the literature are far less varied, though this area is also somewhat less saturated. With regard to the UK, variability in the conclusions drawn across studies relate mostly to changes that appear to have occurred over time; this thesis will seek to verify such trends using contemporary data.

Much evidence has been found in support of the RRA assumption, though results are not without challenge, even between authors using the same data. Further, some studies have argued that educational ambitions are driven by factors which go beyond, and are far more complex than, the principal objective to avoid social demotion. This thesis does not seek to explicitly test the RRA assumption, but to

reflect on the plausibility of it as a mechanism for social-class inequality in the light of the findings presented in Chapter 7.

Finally, rational choice theorists examining secondary effects have done little to attempt to describe the influence of contextual-level factors. There is certainly reason to believe that institutions will have some bearing on the choices made by pupils; the extent to which this occurs and the influence this might have on the importance of secondary effects as quantified at the individual level are therefore both relevant, and may have implications for the findings of previous studies. Furthermore, school-level characteristics may help explain some variability between pupils. These are relevant lines of enquiry, and largely unattended gaps in the literature which this thesis will address.

Chapter 3 will provide an overview of the data and methods used in this thesis, which will elucidate some of the ways in which the above gaps in the literature can be attended to.

Chapter 3

Data and Methods

3.1 Introduction

This chapter will enumerate the data and methods employed to answer the research questions set out in each of the empirical chapters that follow. This study uses large-scale national longitudinal survey data in order to examine the social inequalities in contemporary British society, and the ways in which these translate into unequal educational outcomes. The chapter will begin with an explanation of the epistemological and ontological perspectives that underlie the empirical reasoning behind quantitative data analysis, of the kind employed here. It will then go on to discuss the data chosen for analysis, highlighting why the Millennium Cohort Study and the Longitudinal Study of Young People in England are most appropriate for the purposes of this study. Following this, the methods used for analysis will be described, and limitations associated with the methods are acknowledged.

3.1.1 Empirical Considerations and the Choice of Quantitative Data Analysis

This thesis essentially subscribes to a positivist epistemology, which assumes that the data observed can be effectively examined using methods akin to those employed in the natural sciences; it is understood that the data represent real and measurable information – facts – that are amenable to hypothesis-driven test and from which objective knowledge can be derived (Bryman 2012:28). The first two empirical chapters seek to test the usefulness and applicability of cultural capital and habitus, and thus are largely confirmatory and deductive. The third empirical chapter is instead driven by the aim to verify existing empirical evidence, not to test a grand theory, and is thus largely inductive; sociological theories –

principally, that of rational choice – are drawn upon in light of the analysis, in an attempt to conceptualise the findings.

Studies seeking to use or test Bourdieu's concepts have not been confined solely to qualitative or quantitative methods. 'Culture' is an inherently fluid topic and its study can be approached in a wide variety of ways. Qualitative studies of cultural capital, some of which have been outlined in Chapter 2, have been very useful for describing the complexity of class cultures and differing relationships within the home that facilitate the intergenerational transmission of knowledge, cultural familiarity and competence. However, they have been unable to make the link between the unequal distribution of these resources and actual educational outcomes (Bugyi 2008). The purpose of educational qualifications is to provide a comparable and measurable representation of individual ability, which is inherently a quantitative index and therefore is well suited to statistical analyses. Similar benefits and limitations exist for qualitative applications of rational choice theory. Driven by the desire to understand and measure this association – and also, the nature of any causality – this thesis employs a quantitative methodology.

Referring back to the introduction, the aims of this thesis involve examining educational inequalities as they exist at a national level. Employing large-scale survey data that have employed random sampling procedures to facilitate inference at this level is therefore necessary. Of course a disadvantage of using such data is that the survey instruments are not directly designed to meet the research objectives of any particular project. Indeed, this has been a consideration for this thesis. It is against this background that researchers such as Sullivan (2001) made the decision to conduct their own surveys, facilitating the possibility of asking for specific information from which proxies for cultural capital could be derived. While this project has faced some difficulties finding proxies which closely reflect Bourdieu's descriptions of his concepts (see Chapter 4), the decision was taken to make use of pre-existing data because of the considerable limitations

involved with primary data collection. To gather a large, representative random sample from the UK would be extensively time consuming and would involve significant funding. Further, response rates are likely to be considerably lower for a PhD project than they are for government-administered surveys. The drawbacks associated with primary data collection outweighed the potential benefits.

This study uses a range of methods appropriate for the research questions at hand, including advanced statistical modelling techniques to draw inferences about various populations of young people in England at different stages of their educational careers. Singer and Willett (2003) succinctly describe what a statistical model is, and what it is not: ‘Statistical models are mathematical representations of population behavior; they describe salient features of the hypothesized process of interest among individuals in the target population. When you use a particular statistical model to analyze a particular set of data, you implicitly declare that *this* population model gave rise to *these* sample data. Statistical models are not statements about sample behavior; they are statements about the *population processes* that generated the data’ (Singer and Willett 2003: 46, emphases in original).

3.2 Data

This thesis uses data from the Millennium Cohort Study (MCS), the Longitudinal Study of Young People in England (LSYPE) and the National Pupil Database (NPD). In order to examine the educational experiences of children at the crucial stages of interest, data were required from children of pre-school age, secondary school age, and pupils aged 16 and above. The MCS and the LSYPE met these criteria. For the present purposes, these datasets can be considered the most appropriate, up-to-date information available for a study with these objectives in the UK. Further notable benefits of both studies include the longitudinal nature of the surveys, which facilitates causal inference, and the multi-stage sampling

strategies which increase subsample sizes (e.g. by ethnic group) and allow for multilevel modelling techniques for more detailed analysis of the way variance in the outcomes are partitioned.

3.2.1 The Millennium Cohort Study

The MCS is the most recent of Britain's national longitudinal cohort studies, following an initial sample of 19,244 children throughout their early childhood and collecting information from them, their parents or guardians and their siblings (CLS 2013).¹² The first interview, at MCS1, took place when children were nine months old. At the time of analysis, four waves of data had been made publicly available for research use; at subsequent waves – MCS2, MCS3 and MCS4 – children were aged three, five and seven.¹³ The objectives of the MCS are very broad, though many of these – both substantive and technical – correspond with those of this study: to chart initial conditions of social and economic advantages and disadvantages; to focus on parents as the most immediate elements of a child's 'background'; to emphasise intergenerational links; to address key aspects of social and cognitive development; to record children's transition to primary school and the experience of their first few years of schooling; and to provide useable data for subgroups of children, in particular those living in advantaged and disadvantaged circumstances and those from ethnic minority groups (CLS 2013; Plewis 2007).

3.2.1.1 MCS Sample

Plewis (2007) summarises the fundamental aim of the MCS sample design as: 'to ensure a proper representation of the total population, while at the same time having sufficient numbers of key subgroups for analysis. Probability (or random) methods of selection combined with stratification and clustering would achieve

¹² Note the actual achieved sample for MCS1 was 18,552 households (18,818 cohort members). Additional eligible members of the cohort were recruited at wave 2, but only in England.

¹³ At the date of thesis submission MCS5 data had also been deposited.

[this]' (2007:6). The longitudinal population for the MCS is defined as: 'all children born between 1 September 2000 and 31 August 2001 (for England and Wales) and between 23 November 2000 and 11 January 2002 (for Scotland and Northern Ireland), alive and living in the UK at age nine months, eligible to receive child benefit at that age, and for as long as they remain living in the UK at the time of sampling' (Plewis 2004:7).

The MCS used a multi-stage stratified random sample. First, the population was stratified by country – England, Wales, Scotland and Northern Ireland. Then within England the population was stratified, via electoral wards as primary sampling units (PSUs), into three strata: (1) the 'ethnic minority stratum' comprised children living in wards which, according to the 1991 census, had at least 30% of residents who were either 'black' or 'Asian'; (2) the 'disadvantaged stratum' comprised children living in wards which fell into the upper quartile of the Child Poverty Index (CPI); and (3) the 'advantaged stratum' comprised children living in wards which did not fall into the top quartile of the CPI. Once the wards were selected, a list of all nine-month-old children living in those wards was generated from the Child Benefit register. Child Benefit is a universal provision meaning that it covers all of the child population except those whose family's residency status is temporary (e.g. armed forces, international students) or uncertain (e.g. recent immigrants including asylum seekers) (Plewis 2007).

This study is concerned only with those living in England; those born in Wales, Scotland or Northern Ireland were therefore excluded from analysis (7,019 cases), as were those who moved either in or out of England at any point over the course of data collection. Primarily this decision was taken in order to control for external influences – to examine only a cohort of children who had been exposed to the same educational and social policies over the time period. This study also ignores

multiple births, resulting in the exclusion of a further 266 cases at MCS1.¹⁴ The purposes of this study require information from MCS1 (namely, a measure of prior ability,¹⁵ so that it is possible to determine the direct effects of the variables of interest), where children are around nine months old, and those who entered the study after wave one were therefore also excluded (692 cases). Of the remaining 11,439 cases, 1,459 had missing information for all three time points at which cognitive development data were collected; these cases were not useful and were also dropped. The final sample size at MCS1 was 9,980, though this figure reduces over subsequent waves due to attrition. See Table 3.1.

The population of concern to this study are therefore all children born in England over the 12 months starting in September 2000, who have remained as residents in England at least until their interview at wave 4, the fieldwork dates of which were between January and August 2008.

Table 3.1: MCS Sample Size by Wave

Wave	N (used for analysis)
MCS1	9,980
MCS2	9,084
MCS3	8,989
MCS4	8,215

3.2.2 The Longitudinal Study of Young People in England

The LSYPE (now named ‘Next Steps’) is a large-scale longitudinal panel study of approximately 21,000 young people in England which began in 2004.¹⁶ Interviews took place annually thereafter. Respondents were first interviewed when they were 13 years old and about to begin Key Stage 4, which, for this cohort, was the final period of compulsory schooling in England. At the time of analysis, seven waves of LSYPE data had been made publicly available for research use. Chapter 6

¹⁴ There are too few cases to conduct any meaningful analysis of household-level effects, and leaving these cases in the analysis without accounting for clustering would lead to biased estimates.

¹⁵ In this instance, prior ability is in fact prior ‘development’ (the proxy for which will be described).

¹⁶ 15,770 was the achieved sample for wave 1.

makes use of the first four of these, and Chapter 7 uses information from the first six waves. The objectives of the LSYPE are to gather evidence relating to educational transitions and economic roles in early adulthood and to provide a way for monitoring and evaluating the effects of existing policy.

The study provides a range of detailed information on family and individual characteristics, family and individual activities (including cultural activities) and personal interests, socioeconomic background, attitudes, experiences, details of school attended and post-16 plans. Via linkage with the NPD, the LSYPE also provides the opportunity to link this information with formal attainment data. Note that the only other data source in England which provides rich data relevant to this study is the 'Cultural Capital and Social Exclusion: A Critical Investigation, 2003-2005' (UKDS 2015) dataset, though it does not provide information on educational attainment (in the respondents' school years) or transitions and is therefore of little use to this study.

3.2.2.1 LSYPE Sample

The population for the LSYPE is defined as: all young people born between 1 September 1989 and 31 August 1990 in Year 9 attending maintained schools, independent schools and pupil referral units (PRU) in England on February 2004.¹⁷ Children educated solely at home, pupils in schools with fewer than 10 (maintained sector) or 6 (independent sector) Year 9 pupils, children in boarding schools and children residing in the UK purely for educational purposes were excluded from sampling.

¹⁷ Maintained schools are funded by central government through local authorities. They include community schools, foundation schools, academies, grammar schools, faith schools, free schools and special schools. Independent schools (also known as 'private schools' or 'public schools') are not funded by the government but instead charge fees for attendance. PRUs are a type of alternative provision. They are funded by local authorities but provide education for children who are unable to attend mainstream schools because they, for example, have been permanently excluded, have behavioural issues, or are teenage mothers, etc.

The first stage of sampling was approached separately for each type of school. For the maintained sector, the sample was drawn using the Pupil Level Annual School Census, a two-stage probability proportional to size sampling procedure in which disproportionate stratification was adopted, with schools as PSUs. These schools were stratified into deprived and non-deprived, with the former over-sampled by a factor of 1.5 (deprivation was measured by the proportion of students in receipt of free school meals (FSM) and deprived schools were taken from the top quantile of this distribution). For the second stage, pupils were sampled within schools and pupils from major minority ethnic groups¹⁸ were over-sampled at the pupil level to achieve numbers of 1,000 in each group. The school selection and pupil selection probabilities ensured that within a stratum all pupils within an ethnic group had an equal chance of selection. 838 maintained schools were sampled.

Independent schools and PRUs were sampled using the School Level Annual Schools Census. Independent schools were stratified by percentage of pupils achieving five or more A*–C grade GCSEs in 2003 within boarding status, within gender of pupils. PRUs formed a stratum of their own. Independent schools and PRUs were sampled with probability proportional to the number of pupils aged 13 at that institution. 52 independent schools and two PRUs were sampled. For the second stage, pupils were sampled directly from school rolls by interviewers.

In total 15,770 households took part in the LSYPE at wave 1. For Chapter 6, information on GCSE attainment was required which was missing for 367 cases and these cases were therefore excluded, bringing the total sample size at wave 1 down to 15,403. See Table 3.2.

¹⁸ Mixed, Indian, Pakistani, Bangladeshi, black Caribbean and black African.

Table 3.2: LSYPE Sample Size by Wave for Chapter 6

Wave	N (used for analysis)
LSYPE 1	15,403
LSYPE 2	13,342
LSYPE 3	12,307
LSYPE 4	11,345

At wave 4, the LSYPE added an additional ethnic minority boost sample made up of 352 cases. These were included in the analysis for Chapter 7. For this chapter, of the total 16,122 cases in the LSYPE (15,770 who made up the original sample and 352 who made up the boost sample), 5,767 were missing information on the outcome variable of the A-level transition, so these were excluded from analysis, bringing the total sample size to 10,355. See Table 3.3.

Table 3.3: LSYPE Sample Size by Wave for Chapter 7

Wave	N (used for analysis)
LSYPE 1	10,032 [†]
LSYPE 2	10,029
LSYPE 3	10,013
LSYPE 4	10,016*
LSYPE 5	9,525*
LSYPE 6	9,004*

*Includes boost respondents

[†]Note that of the 352 boost respondents, 29 were missing information on the outcome, so this figure represents the 10,355 final sample minus the 323 valid boost cases who were introduced to the LSYPE at wave 4.

The population of interest for Chapters 6 and 7 is all children in England born between 1 September 1989 and 31 August 1990 in year 9 attending maintained schools, independent schools and pupil referral units in England on February 2004.

3.2.3 National Pupil Database

The LSYPE data is linked to the NPD (Gov.uk 2013) for the purposes of this study. The NPD is the richest educational dataset in England. It contains a wide range of

information about pupils, including some person-level characteristics (gender, ethnicity, eligibility for FSM, special educational needs status, etc.), examination results at each key stage, schools and colleges attended, and some school-level data (percentage of children in receipt of FSM, percentage of children in attendance by ethnic group, etc.). It is a census of pupils in England, and in principle contains information about all pupils from the point at which the first version of the NPD was produced in 2002.

3.3 Method

This thesis uses regression modelling to answer the research questions set.

Regression modelling is a statistical technique that allows researchers to quantify the relationships between variables. The aim is to determine the influence of an independent variable, or a set of independent variables, on a dependent variable of interest, and usually also to determine these influences net of each other. In the models used in this thesis, the dependent variables are: (i) cognitive ability; (ii) GCSE attainment; and (iii) an educational transition measure. The regression approach is suitable for a study of this kind, where the interest lies in explaining the variability in these outcomes. In testing Bourdieu's theory, the regression parameters for social class are the primary focus, as these represent the influence of social background on educational outcomes, and it is this I seek to explore with proxies for cultural capital and habitus.

In any regression approach, researchers rely on an absence of perfect collinearity so that the variance can be partitioned between variables; i.e. independent variables must be measuring different things. Bourdieu's assumption is that cultural capital is a resource which is possessed predominantly by the higher social classes, and that these social classes also embody a middle-class version of habitus; both of these concepts are assumed to have a direct positive impact on educational outcomes which will be expected to be demonstrated with significant

parameter estimates, but they are thus also assumed to statistically account for a proportion of the initial impact of class.

Economic capital and social capital are other unequally distributed resources which generate direct educational (dis)advantage. Cultural capital and habitus, therefore, are not theoretically expected to account for all of the variability between classes in educational outcomes (i.e. neither of these is perfectly correlated with class, so that measures of social background are not synonymous, or inseparable, from these proxies); however, the social reproduction framework does suggest that cultural reproduction is the most important mechanism for intergenerational educational advantage, and so it is hypothesised that they are able to explain a *substantial* proportion of the variability. It is possible to observe changes in the magnitude of social class estimates as various proxies are added to the models, making regression analysis a useful tool for a test of Bourdieu. Similarly, using regression modelling to examine variation in the likelihood of continuing in post-compulsory education involves first observing the impact of social class, and subsequently determining the impact of other predictor variables on each class estimate.

This section will describe the kinds of regression methods used for analysis. These are first summarised in Table 3.4 below, and are then discussed and the equations underlying the models explained. The merits and limitations of the methods, as well as a description of how these advance upon some previous studies, are given. The specific model-building stages employed are described within each of the empirical chapters.

Table 3.4: Data and Method Used in Empirical Chapters

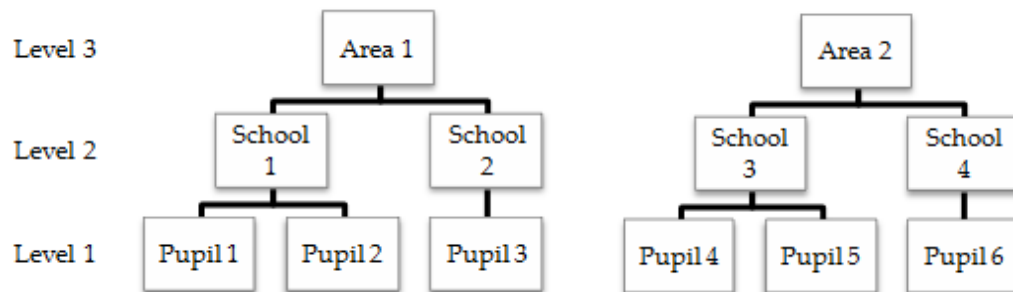
Chapter	Method and description		
	Data	Outcome variable	Model description
Five	MCS	Longitudinal (continuous) measure of cognitive ability measured at three time points	Multilevel growth curve model Level 1: Measurement occasion Level 2: Child
Six	LSYPE NPD	Continuous GCSE Points Score	Multilevel random intercepts model Level 1: Pupil Level 2: School
Seven	LSYPE NPD	Dichotomous measure of A-level participation: made transition / did not make transition	Multilevel logistic random slopes model Level 1: Pupil Level 2: School

3.3.1 Multilevel Modelling

Multilevel modelling is aptly used for complex data with hierarchical or nested characteristics. A hierarchical data structure refers to a dataset which provides information at more than one level of analysis; for example, a survey may collect individual-level information from pupils, but also collect school-level information from the institutions which they attend and area-level information about the geographic location of the school. In this instance, we would consider the pupil-level data to be ‘nested’ within the school-level ‘clusters’ or ‘groups’, and the schools to be nested within areas, at the highest level of the hierarchy. Pupil-level information might include gender, ethnicity or social class; school-level information might include the percentage of pupils in receipt of FSM, or the average years of teaching experience among teachers; and area-level information might include a deprivation index. In this example, pupils are considered the micro – lowest – units of analysis and are at level 1. Higher levels are termed ‘contextual levels’; schools would be level 2 and areas level 3. It can be of substantive and/or methodological importance to take account of the fact that each level is associated with variability that has a distinct interpretation (Snijders and Bosker 2012:1), and this is the essence of the multilevel model. Figure 3.1 below provides a graphical illustration of the example alluded to above, with six pupils

nested within four schools nested within two geographic areas (of course in practice there are far more units at each level).

Figure 3.1: Example of a Three-level Multilevel Data Structure



Data are often hierarchical because it is too time-consuming and expensive to collect information from a simple random sample. For the LSYPE, schools were used as the PSUs, making these the highest possible level of analysis, and then pupils were sampled from within these schools. For the MCS, electoral wards were used as PSUs and children were sampled from within these wards. All research questions concern the individual as the unit of analysis (with one exception which concerns cognitive progress) – the crucial individual-level variables to be examined are social class, ethnicity, gender, educational attainment, educational participation and proxies for cultural capital and habitus; however, the nested structure of the data prohibits the use of ordinary (single-level) regression because it violates the standard assumption of independence of observations.

A given pupil in a particular school is more likely to possess similar characteristics to another pupil in the same school than they are to a pupil in another school. For example, given the increased numbers of ethnic minority students in London as compared to Norfolk, two pupils selected from a London school are more likely to be non-white than would be the case if one student were selected from a London school and one from a school in Norfolk. This ‘dependence’ of observations is reflected in that there will be less between-pupil (level 1) variability within a

school (level 2) than between schools. Failing to deal with this properly in statistical analysis can lead to erroneous inferences (Snijders and Bosker 2012:7), including the 'ecological fallacy' (Robinson 1950) which, in broad terms, refers to researchers confusing aggregate-level and individual-level effects. It is theoretically possible to use a single-level model in the above instance by creating dummy variables for each higher level; however, with many schools (as is the case here) this would lead to an unfeasible number of parameters.

Accounting for this clustering is essential for valid statistical inference. Dorman (2008) has shown how as the degree of resemblance between lower-level units belonging to the same higher-level unit increases (measured via the intraclass correlation), the chances of finding a falsely significant impact is greatly increased (i.e. making a type I error).¹⁹ Further, there are higher-level influences that, even if not of substantive interest, can impact upon the estimates derived for lower-level units and it can be helpful to control for these. A relevant example here is that we know children attending schools with high proportions of low-income students fare worse in exam results (DfES 2006), and one might therefore be interested in controlling for the percentage of pupils eligible for FSM at the school level. Snijders and Bosker (2012) discuss both of these instances, the first being where hierarchical data arises as a result of sampling design and multilevel modelling is employed to account for this dependence as a 'nuisance', and the second being where multilevel modelling is used to actually examine this dependence as an interesting phenomenon.

Multilevel models are a kind of hierarchical linear regression model which differs from the usual multiple linear regression equation as it contains one or more error term(s) for each level (Snijders and Bosker 2012:42). The following notation has been borrowed (with slight adaptations) from Snijders and Bosker (2012) to help illustrate the algorithms applicable to two-level models (the models employed in

¹⁹ Note many studies have illustrated this same thing; e.g. O'Connell and McCoach (2008:5).

the empirical chapters here do not extend to the three-level framework). I refer to level 1 as the individual level and to level 2 as the group level. The equations provided below illustrate the general application of such models; these vary slightly for each chapter in ways which are discussed therein. For multilevel models, the subscript j is usually employed to denote the index for the group level ($j = 1, \dots, N$) and i for the individuals within the groups ($i = 1, \dots, n_j$). A classic model of multiple linear regression can be written as:

$$Y_{ij} = \beta_0 + \beta_1 x_{1ij} + \beta_2 z_{1j} + e_{ij} \quad (1)$$

where Y_{ij} is the dependent variable (which varies for each individual i within each group j), x_{1ij} is the individual-level explanatory variable, z_{1j} is the explanatory variable at the group level, β_0 is the intercept, β_1 is the coefficient for the individual-level variable x_1 , β_2 is the coefficient for the group-level variable z_1 , and e_{ij} is the residual (or error) term.

This classic model includes variables measured at different levels of analysis but does not represent the nesting structure of the data. In order to do this, the intercept, β_0 , must be allowed to vary from group to group. In so doing, the classic multiple linear regression model is adjusted to become:

$$Y_{ij} = \beta_{0j} + \beta_1 x_{1ij} + \beta_2 z_{1j} + e_{ij} \quad (2)$$

In this adjusted model, groups can have a higher or lower value for the intercept (β_{0j}) which reflects the tendency for some groups (i.e. the aggregate of the sum of all individuals within that group) to have higher or lower values of Y . Continuing the example above, this would be equivalent to acknowledging that each school has its own mean attainment score which is higher or lower than that given by the overall intercept of the regression line (which is the intercept for the average group). As such,

$$\beta_{0j} = \beta_{00} + U_{0j} \quad (3)$$

where U_{0j} is the group-level residual so that for any given value of x_1 , each group has a different value on the dependent variable, Y . Groups with a high value of U_{0j} have, on average, high values of Y , and vice versa.

The random variables U_{0j} and e_{ij} are assumed to have a mean of 0, to be mutually independent and to have variances $\text{var}(e_{ij}) = \sigma_{e0}^2$ and $\text{var}(U_{0j}) = \sigma_{u0}^2$. The total variance of Y , therefore, is made up of the sum of the level 2 and level 1 variances, $\text{var}(Y_{ij}) = \sigma_{u0}^2 + \sigma_{e0}^2$. The parameters to be estimated from (2) are the regression coefficients β_{0j} , β_1 and β_2 , and the variance components σ_{u0}^2 and σ_{e0}^2 (the random effects (e_{ij} and U_{0j}) are latent – not directly observable – variables).

Using multilevel models we are often interested in how much of the variation in Y is attributed to the lower level and how much is attributed to the higher level. This is calculated using the variance partition coefficient (VPC) so that to represent the proportion of the total unexplained variance at the higher level the following equation is employed:

$$VPC = \frac{\sigma_{u0}^2}{\sigma_{u0}^2 + \sigma_{e0}^2} \quad (4)$$

The above so far explains what is termed a random intercepts model; that is, a model which allows for average differences between groups in their effect on Y , but does not allow group differences in the effect of x_1 on Y . Put differently, while each level 2 group (school) differs with respect to the average value of Y (e.g. GCSE score), the impact of a level 1 (pupil-level) explanatory variable (e.g. prior test score) on Y is assumed to be the same for each level 2 unit. In many cases there is reason to doubt this assumption; for example, research shows that some schools are more effective than others. In such an instance, it is useful to model the fact that slopes (i.e. β_1) may also vary randomly. Equation (2) can be adjusted so that the coefficient for the individual-level variable x_1 now has its own associated error term; in other words, it becomes a group-dependent coefficient which is split into

an average coefficient and the group-dependent variation (Snijders and Bosker 2012:75):

$$Y_{ij} = \beta_{0j} + \beta_{1j}x_{1ij} + \beta_2z_{1j} + e_{ij} \quad (5)$$

and

$$\beta_{0j} = \beta_{00} + U_{0j}$$

$$\beta_{1j} = \beta_{01} + U_{1j}$$

The level-2 and level-1 residuals are assumed to have mean 0, given the values of explanatory variable x_1 . β_{1j} is the average effect of coefficient x_1 on Y and U_{1j} is the individual-level variation about the average group line. $\beta_{0j} + \beta_{1j}x_{1ij} + \beta_2z_{1j}$ represents the fixed part of the model and $U_{0j} + U_{1j} + e_{ij}$ represents the random part. The random effects U_{0j} and U_{1j} are usually correlated, so that:

$$\text{var}(U_{0j}) = \sigma_{u0}^2 \text{ and } \text{var}(U_{1j}) = \sigma_{u1}^2 \text{ and } \text{cov}(U_{0j}, U_{1j}) = \sigma_{u01} \quad (6)$$

For this random slopes model the parameters to be estimated are the regression coefficients – β_{0j} , β_{1j} and β_2 – as well as the variance at each level – σ_{u0}^2 , σ_{u1}^2 and σ_{e0}^2 – and the level 2 intercept-slope covariance σ_{u01} . The random slope variance has a specific interpretation and is interpreted along with the covariance and the intercept variance. This will be discussed within each of the empirical chapters.

The above generic random intercepts model (2) or random slopes model (5) can, of course, be extended to include multiple individual- or group-level explanatory variables. These are initially added to the fixed part of the model in the same way as in classic multiple linear regression models. In addition, interactions can be added to the fixed part of the model, representing the moderating effect of two variables either at the same level or between levels:

$$Y_{ij} = \beta_{0j} + \beta_{1j}x_{1ij} + \beta_2x_{2ij} + \beta_3z_{1j} + \beta_4x_{1ij} \cdot x_{2ij} + \beta_5x_{1ij} \cdot z_{1j} + e_{ij} \quad (7)$$

where x_{2ij} has been added as another level 1 explanatory variable, $\beta_4 x_{1ij} \cdot x_{2ij}$ represents an interaction effect between two level 1 variables and $\beta_5 x_{1ij} \cdot z_{1j}$ represents a cross-level interaction effect.

In equation (7), some variability in Y is explained by the regression on x_1 , x_2 and z_1 – i.e. by the terms $\beta_{1j} x_{1ij}$, $\beta_2 x_{2ij}$ and $\beta_3 z_{1j}$ – and the random coefficients U_{0j} , U_{1j} and e_{ij} each express different parts of the unexplained variability. Introducing level-1 variables can help diminish the individual-level variance σ_{e0}^2 and, ‘since group compositions with respect to level-1 variables can differ from group to group, inclusion of such variables may also diminish residual variance at the group level’ (Snijders and Bosker 2012:80). In order to reduce the unexplained variability associated with U_{0j} and U_{1j} , an attempt must be made, essentially, to predict the group-dependent regression coefficients β_{0j} and β_{1j} from level-2 variables z . There is an underlying ‘latent regression’ which occurs in doing this, referred to as an ‘intercepts as outcomes’ model for predicting β_{0j} and as a ‘slopes as outcomes’ model for predicting β_{1j} – the mathematical procedures involved in this are beyond the scope of the explanation required here, but essentially involve substituting these latent regressions into equation (5). This is analogous to introducing the cross-level interaction $\beta_5 x_{1ij} \cdot z_{1j}$ given in (7). In other words, the term $\beta_3 z_{1j}$ signifies the main effect of the level-2 variable on Y by explaining the intercept β_{0j} while $\beta_5 x_{1ij} \cdot z_{1j}$ signifies the product of x_{1ij} and z_{1j} on Y by explaining the slope, β_{1j} (Snijders and Bosker 2012:81). These cross-level interactions are used in the empirical chapters which follow to explain any significant random slopes found.

The above equations set out the generic two-level multilevel model. In practice, a null model is in fact built first (i.e. a model with no explanatory variables, usually termed a variance components model): the intercept coefficient is estimated along with the level 1 and level 2 variances (this would be analogous to equation (2)

above but without β_1 or β_2 and their associated x variables); the VPC as given in equation (4) is calculated, which describes how much of the total variability in Y is attributable to each level, and this is particularly relevant in the null model; and model statistics are noted (such as the -2 log likelihood or the Deviance Information Criterion) which are used as the basis from which to judge subsequent model fit. This is done for each of the models built in each chapter before level 1 or level 2 explanatory variables are added, and before random slopes are introduced, where applicable.

3.3.1.1 Multilevel Models for Dichotomous Outcomes

Dichotomous outcome variables – taking the form, for example, pass/fail, yes/no, or transition/no transition (the last is used in Chapter 7) – are treated slightly differently in regression modelling. In these instances, *generalised* linear regression models are required, as these can take account of the non-normal distribution of the outcome, its restricted range (between 0 and 1) and the dependence that arises between means and variances (Snijders and Bosker 2012:290).²⁰ The best known method for such outcomes, and that which is adopted here, is logistic regression²¹. In the discussion which follows, the two possible outcomes are considered as being coded 0 for ‘no transition’ and 1 for ‘transition’.

The transition probability in group j (level 2) is denoted P_j . The outcome for individual i (level 1) in group j (which must either take the value 0 or 1) is written as the average proportion of transitions in the group plus an individual-level residual:

$$Y_{ij} = P_j + e_{ij} \tag{8}$$

²⁰ In binomial outcome models, the variance is not a free parameter but is instead determined by the mean and it is not constant, which results in heteroscedasticity (violating one of the assumptions of a classical linear regression).

²¹ Note that the all models with binary outcomes were also run with using the alternative probit link function, and estimates were largely similar.

The individual-level residual has mean 0 but for binary variables it also has the unique property that it can only assume the values P_j and $1 - P_j$ since Y_{ij} must be either 0 or 1 (Snijders and Bosker 2012:291). The variance of the residual is:

$$\text{var}(e_{ij}) = P_j(1 - P_j) \quad (9)$$

The probabilities associated with binary outcomes (or rather, the expected values of the dependent variable) are restricted to the range between 0 and 1, which poses problems when explanatory variables are added to such models because it involves attempting to fit a linear trend which is likely to take fitted values outside this interval (Snijders and Bosker 2012:293). In such instances, we instead consider the odds of an event occurring, which is the ratio of the probability of the transition to the probability of no transition; these can take any value from 0 to infinity and constitute a ratio scale (Snijders and Bosker 2012:294). For probability P , the odds are given as $p/(1 - p)$. The logarithm ‘transforms a multiplicative to an additive scale and transforms the set of positive real numbers to the whole real line. Indeed, one of the most widely used transformations of probability is the log-odds’ (Snijders and Bosker 2012:294) which is given as:

$$\text{logit}(p) = \ln\left(\frac{p}{1-p}\right) \quad (10)$$

where $\ln(x)$ denotes the natural logarithm of x . The logit function is a link function, ranging from minus infinity to plus infinity. ‘The logistic regression model is a model where $\text{logit}(p)$ is a linear function of the explanatory variables’ (Snijders and Bosker 2012:294).

The null model for a dichotomous outcome specifies the probability distribution for the group-dependent probabilities P_j , without taking account of any explanatory variables (Snijders and Bosker 2012:295). The general link function is given by:

$$\text{logit}(P_j) = \beta_0 + U_{0j} \quad (11)$$

where β_0 is the average of the transformed probabilities across groups and U_{0j} is the group-specific deviation from this average. It is assumed that group-level residuals U_{0j} are normally distributed independent random variables with mean 0 and variance σ_0^2 .

A linear model can thus be constructed for the log odds. Since explanatory variables to be included in the regression model could be level-1 variables, the transition probability is not necessarily the same for all individuals in a given group, as assumed above. Accordingly, equation (8) is adjusted so that the transition probability now also depends on the individual:

$$Y_{ij} = P_{ij} + e_{ij} \quad (12)$$

and

$$\text{logit}(P_{ij}) = \beta_0 + \beta_1 x_{1ij} + U_{0j} \quad (13)$$

Unlike in the normal case, the level-1 variance in models such as this is a function of the predictor variables, and also, the level-2 variance is measured on the logistic scale and so is not directly comparable to the level-1 variance (Goldstein et al 2002:226); these factors make it more difficult to calculate the VPC. Snijders and Bosker (1999) describe a latent variable approach for computing the level-1 variance in logistic multilevel regression models, where the discrete outcome is thought of as representing a true underlying continuous variable. The variance for the standard logistic distribution is $\frac{\pi^2}{3} = 3.29$ so this is taken as the level-1 variance which has thus been converted to a continuous scale and facilitates the calculation of its ratio to the level-2 variance in order to determine how the variance is partitioned between levels (Goldstein et al 2002:228). This is the approach that is adopted for the binary outcome models in this thesis.

3.3.1.2 Multilevel Modelling with Longitudinal Data

With longitudinal panel data measures are taken from subjects repeatedly over time. The advantages of the longitudinal data used in this thesis are exploited in a number of ways, depending on the substantive questions. For Chapter 5, the use of longitudinal data allows for an understanding of the dynamics of change over time, which is arguably more relevant and useful to the study of cognitive outcomes than cross-sectional analysis can facilitate.

For other empirical chapters where change in the outcome over time is not applicable, longitudinal data still brings other advantages; namely, the incorporation of a temporal dimension, where predictor variables used have been measured prior to the outcome, meaning that drawing causal inferences are more justified. With cross-sectional data, for example, it is more difficult to discern whether participation in cultural activities has led to higher educational attainment, or whether educational attainment has led to higher levels of participation in cultural activities. A second way in which the longitudinal data are exploited in this project, even when the outcome is measured at one time point, is that predictor variables are created out of information from a number of prior waves. In Chapter 6, for example, the outcome is measured at wave 4 but fixed predictor variables are created with information from all prior waves which minimises the amount of item-missing data, represents a measure of activity that is representative of general action rather than that which might be, by chance, specific to the particular data collection point,²² and also creates possibilities for increasing variability between categories within an indicator if necessary.

Other general advantages of prospective longitudinal studies, which the MCS and LSYPE are, include minimising recall bias and other merits concerning the

²² For example, one might have attended a parents' evening by chance at one wave because teachers had called them in to discuss their child's poor behaviour; in such instances attendance would not be a indicative of general parental commitment to their child's education – which is the latent measure of interest – but a variable which measures consistent attendance is more likely to capture this.

techniques available to control for residual heterogeneity (or omitted variable bias). The main limitation unique to longitudinal data is sample attrition, where individuals drop out of the study over time. Like with item missing data, this has most severe implications when unit non response is not missing at random (MAR) (see Section 3.3.3.3 below).

Multilevel modelling has brought about the possibility of studying temporal change in a specific and reliable way (Singer and Willett 2003). The structure of longitudinal data lends itself well to multilevel techniques. The generic multilevel specifications outlined above can be adjusted to accommodate repeated measures data where the outcome is variable over time. In multilevel applications to longitudinal data, the factor ‘time’ is incorporated explicitly (Hox and Stoel 2005) as an independent variable. In the equations which follow, and which are used in Chapter 5 to which this discussion applies, ‘time’ is represented by the child’s age. Measurement occasions become the lowest level in the data hierarchy (level 1) which are nested within individuals (level 2). A multilevel growth curve model takes the form:

$$Y_{ti} = \beta_{0i} + \beta_{1i}x_{1ti} + U_{0i} + e_{ti} \quad (14)$$

where the subscript t now denotes time, or the measurement occasion, and i denotes the individual (i.e. the level-2 group). x_1 is a level-1 variable – in this instance, age. In this example, β_{0ti} represents an individual’s initial status, i.e. the value of the outcome when age=0 (though when this model is used in Chapter 5, the age variable is grand mean centred and thus involves a different interpretation which is explained therein).

Equation (14) essentially states that each individual not only has their own intercept, but they also have their own rate of progress, depicted by their unique slope value. It is possible to extend this model to allow for non-constant variation at level 1; i.e. that within-individual variation in Y also increases or decreases with

age. This is done in Chapter 5 but is not of substantive interest and the technical details are not described here.

Once the covariate for age has been declared random at the individual level, cross-level interactions between age and other substantive level-2 variables introduce different growth trajectories for subgroups. For example, an interaction between age and social class results in predictions not only for the average effect of each class category on the outcome (represented by the main effects) but also for the different slopes each category exhibits. Then, using the same logic as detailed above, further cross-level interactions can be introduced in an attempt to explain any significant random slopes identified.

3.3.1.3 Assumptions of the Hierarchical Linear Model

All statistical models involve a number of background assumptions which must be confirmed in order to produce reliable and accurate estimates. This section describes the assumptions of the hierarchical linear model (Snijders and Berkhof 2008). Primarily, assumptions checking involved: testing for non-linear relationships between the dependent variables and the independent variables (this was achieved by including quadratic terms into the fixed part of the models, and in no instances were these found to be statistically significant); examining whether residuals are normally distributed; testing for homoscedasticity and the independence of residuals at levels 1 and 2; the identification of any outliers which might introduce bias into the estimates; and determining whether the outcome variables are normally distributed. For all tables and figures discussed in this section refer to Appendix A.

In Chapter 5, the outcome variables at MCS2, MCS3 and MCS4 were each examined. See Figure A1. At MCS2, the variable exhibits a slight deviation from normality, highlighted in the left tail of the histogram, due to the high number of cases with raw scores of zero or close to zero; that is, a substantial number of

children failed the Bracken tests completely, or achieved very low scores, at age 3. This is in contrast to the higher end of the scale, where very small numbers of cases achieved the highest scores. This is unlikely to have any substantial effect on the results because the variable is considered *nearly*, or approximately, normally distributed (Patel and Read 1996).²³ The variable at MCS3 has a very close approximation to normality. At MCS4, the variable has very minimal deviations from normality, shown in the histogram, though less so than the variable at MCS2.

The assumption of normally distributed residuals is satisfied for Chapter 5 – see Figure A2 which plots a diagonal straight line between the standardised residuals for the intercept and the normal scores, as well as the standardised residuals for the slope and the normal scores, both at level 2. The assumption of homoscedastic and independent errors is also met – see Figure A3 which plots the standardised residuals for the intercept and standardised residuals for the slope against predicted scores from the fixed part of the model at level 2 – residuals are randomly distributed across different predicted values. Figure A4 attempts to identify any outliers that have the potential to distort estimates, by plotting slope and intercept residuals at level 2 against each other. All cases conform to the general pattern that those with high values on the intercept have high slopes values and vice versa; none suggest a cause for concern.

For Chapter 6, Figures A5 and A6 plot a diagonal straight line between the standardised residuals for the intercept and the normal scores at levels 1 and 2, as well as the standardised residuals for the slope and the normal scores at level 2. These show that the assumption of the normality of residuals is satisfied. Figure A7 plots the standardised residuals for the intercept and the standardised residuals for the slope against the predicted scores from the fixed part of the model at level 2. The residuals exhibit a slight pattern, suggesting that they are not

²³ Defined as such because 99.2% of the sample have a standardised score within three standard deviations of the mean (Mean \approx 0, SD = 0.78), comparable with a normal distribution for which the fraction would be 99.7%.

randomly distributed across different predicted values. Multilevel modelling, however, allows for a greater similarity of cases within clusters than cases between clusters, so it is reasonable to expect to find some heteroscedasticity at level 2. The plots do suggest, however, that a non-linear term might be appropriate for these data; note that a quadratic term for prior attainment was included in the model and was found to be non-significant. Figure A8 shows that the assumption of homoscedastic errors at the person level is met. Figure A9 shows that, due to the relatively large number of pupils who achieved no (or very few GCSEs), the outcome variable exhibits a slight deviation from normality, however there are no possible methods of transformation that will overcome the issue of zero scores.²⁴ This should be borne in mind, however is unlikely to cause any substantial bias in the estimates produced by the model. In addition, intercept and slope residuals at level 2 were plotted against each other in order to look for outliers that might be distorting the estimates. See Figure A10. The plot suggests there are a small number of schools with particularly high intercepts and notably low slopes (i.e. the least 'effective' schools), however these still adhere to the general pattern of the data and are unlikely to result in any significant downward bias in variance or parameter estimates.

For Chapter 7, Markov Chain Monte Carlo (MCMC) estimation was used (described below), and the estimates require inspection to determine whether the chains generated have converged and whether they are mixing well. This is easily checked in MLwiN software, which produces plots of trajectories and provides parameter diagnostics. Diagnostics were calculated and checked to ensure that: (i) sampling traces appeared healthy, (ii) posterior distributions for each parameter were (at least approximately) normally distributed, (iii) the effective sample sizes (ESS) were sufficiently large, (iv) the Raftery-Lewis figures suggested that the credibility intervals generated were reliable, and (v) low levels of second- and

²⁴Logarithmic transformations, for example, do not avoid the problem of having a large number with a zero score.

third-order autocorrelation were found.^{25, 26} When necessary, the monitoring chain length was increased²⁷ (in order to improve chain convergence, mixing, effective sample sizes or credibility intervals) or thinning was increased (in order to reduce autocorrelation, for example). The burn-in period (the period during which the Markov chains are settling down) is run by default in MLwiN for 500 iterations. Browne (2009:6) suggests that, since MCMC estimation in MLwiN usually starts from good starting values (IGLS is used to produce maximum likelihood estimates before MCMC estimates are generated), 500 iterations is considered a conservative length. The burn-in length used was therefore left at the default setting.

Figure A11 provides the trajectory plots for all parameters from the final model, excluding that for the constant term. These display the last 32,000 iterations. Figure A12 gives MCMC accuracy diagnostics and summary statistics for the example parameter of prior attainment, which is based on 60,000 iterations. Overall the estimates produced from the final model can be considered reliable based on the above listed criteria.

3.3.2 Estimation Methods

Iterated generalised least squares (IGLS) estimation is used to produce maximum likelihood (ML) estimates for parameters in Chapters 5 and 6 which both involve modelling an outcome measured on a continuous scale. IGLS is an iterative procedure with partial estimation processes where the fixed part of the model and the random part of the model are each computed separately, assuming the other part is correct (using generalised least squares methods). The provisional starting values are replaced with the improved estimates and the process continues,

²⁵ Strong first-order autocorrelation is very often found using MCMC procedures. This is inevitable given that the values estimated in the simulation procedure (chain) each depend on the one prior to it.

²⁶ Autocorrelation refers to the correlation between consecutive values generated by the chain as a function of the time lag. For first-order autocorrelation, the lag is one. Second-order autocorrelation refers to the correlation between values two time-lags apart, and so on.

²⁷ The increase in chain length needed was at times vast, requiring up to 60,000 iterations and resulting in lengthy computational times.

alternately, until the estimates converge to ML point estimates (Snijders and Bosker 2012:89; Browne and Goldstein 2002:5; Goldstein 2011). IGLS is appropriate as an unbiased estimation algorithm given that the sample size is large (Rice et al 1997), and maximum likelihood methods are convenient given that deviance tests are conducted to assess model fit.

A Bayesian approach is instead adopted in Chapter 7 for the non-normal dichotomous response variable. Bayesian statistics differ from frequentist statistics in the interpretation of probability, as well as in their ability to include prior information in estimates. The process of hypothesis testing under the frequentist approach involves finding evidence to disprove the null hypothesis, so that all statistics have an associated p-value (probability) used to indirectly conclude a relationship is likely to be present in a population. In contrast, Bayesian probabilities represent a belief in how likely a given estimate is (Snijders and Bosker 2012). In Bayesian statistics, the unknown parameters of a statistical model are thought to have a 'probability distribution, expressing the beliefs and uncertainty of the researcher as to their likely values. The probability distribution of the parameters, entertained by the researcher before having seen the data, is called the prior distribution. Observing the data, and applying the statistical procedures, transforms this into the posterior distribution. This transformation is effectuated formally through Bayes' rule, which is a direct application of the rules of conditional probability' (Snijders and Bosker 2012:195).

MCMC methods work by producing a chain of values using simulation-based algorithms drawn from the posterior distribution. With MCMC methods, the aim is no longer to derive point estimates but to use the simulated random draws to derive summaries of the underlying distributions of parameters (Browne 2014:3). MCMC estimation is widely recognised as superior to alternative IGLS methods for fitting Bernoulli multilevel models, which give marginalised and penalised quasi-likelihood (MQL and PQL) estimates. Brown and Draper (2006) used

simulation studies to judge the performance of first-order MQL and second-order PQL estimation against Bayesian methods of fitting variance components and random effects logistic regression models. They found the quasi-likelihood methods performed poorly in generating unbiased point estimates and coverage intervals for random effects variances while the MCMC method was well calibrated in these respects.²⁸ Further, neither MQL nor PQL provide reliable deviance diagnostics (Snijders and Bosker 1999:219). The downsides to using MCMC estimation are that prior distributions are required for all unknown parameters (though, in MLwiN, IGLS estimates can be used as starting values which are sufficient), and the algorithm is much slower than IGLS, requiring lengthy execution times for the chains to reach convergence.

3.3.3 General Points Regarding Model Specification

The model-building strategy in each empirical chapter is slightly different, and this section seeks mainly to outline just the basic approach taken across all analyses. First, it is relevant to note that each model built in this thesis is driven by existing evidence or theory that an association exists between the outcome of interest and various predictors (subject-matter knowledge); the inclusion of all covariates – including those treated as control variables – as well as decisions to test for significant alternative model specifications such as random slopes or interaction effects are therefore driven by substantive concerns. All decisions are also taken with the general, but not restrictive, preference for model parsimony.

All models start from a null model (i.e. a variance components model, described above) which provides the basis for comparisons. It gives the within- and between-group variances, and the total variance partition is calculated from these estimates. Where applicable, tests were then conducted to determine how many

²⁸ These Bayesian calibration findings were also in keeping with other similar studies conducted by these authors (see Browne and Draper 2000; Browne et al 2002; Rodriguez and Goldman 1995; Rodriguez 2008; Austin 2010; Goldstein and Rasbash 1996; Browne and Draper 2004). Snijders and Bosker state MQL and PQL are ‘not satisfactory for inference about the random effects’ (2012:301).

levels were suitable to be taken into account. All models presented in this thesis have then been built upon by following a ‘forward-steps’ approach – i.e. additional effects are selected, statistical significance is tested, and decisions regarding whether to keep the effects in the model follows from this (Snijders and Bosker 2012:104). Depending on the substantive focus of the research questions, the order of the model-building stages (i.e. the inclusion of substantive independent variables, the inclusion of control variables, testing for random slopes, and testing for within- and cross-level interaction effects) differed; this will be outlined in brief before the results of modelling are presented in each instance.

Note that, throughout this thesis and in the appendices, significant parameter values are highlighted in bold. Where the magnitude of estimates is very small and the finding is relevant, numbers are given to more than two decimal places.

3.3.3.1 Independent Variable Construction

All independent variables (with the exception of age in Chapter 5) are constructed by incorporating information across a number of waves. This decision is taken primarily to reduce the amount of missing data, and is taken in the light of preparatory analysis which showed that there is more variability between people than there is over time for the majority of indicators. Further, some variables have a largely common response (e.g. the vast majority of parents *do* attend parents’ evenings, the vast majority of children *do not* attend private schools, and so on); combining information over time can increase the number of cases in the less common category so that overall variability is increased. Also, some important variables are only measured at two time points (e.g. attendance at cultural events), in which case there is little to be gained from modelling this change.

3.3.3.2 Measuring Social Class

Approaches to the study of social inequality differ according to academic discipline. Economists tend to examine patterns in the distribution of income

while sociologists contend that inequalities, particularly in education, cannot be explained by poverty alone (Sullivan et al 2013) and stress the importance of examining social class (Grusky and Weeden 2006; Li and Devine 2011).

This thesis uses the National Statistics Socio-Economic Classification (NS-SEC), which is currently the most widely used social-class schema in Britain. The NS-SEC is an occupational scale which conceptualises social classes based on employment relations in modern societies (Rose and Pevalin 2005:14; Goldthorpe 2000; Goldthorpe 1997; Erikson and Goldthorpe 1992). Beyond income, it attempts to capture labour market position, power, status, long-term economic security and prospects, as well as relationships of authority and command in the workplace (Sullivan et al 2013:5; Goldthorpe and McKnight 2006). The NS-SEC is an adaptation of the Goldthorpe Schema, regarded by many as possessing a strong theoretical and conceptual basis (Rose and Pevalin 2005:14), and which has been amended over time to reflect what is largely considered to be important in the context of modern social employment structures (Erikson and Goldthorpe 1992; Rose et al 2001).

It has been subject to a number of validity tests²⁹ which, on balance, confirm the schema is an appropriate representation of social class in modern Britain.

Furthermore, the widespread use of the NS-SEC facilitates ease of comparison between the findings presented here and those of other education research. More information regarding the history and origins of the NS-SEC, the conceptual basis, example occupations and other information can be found in other publications (ONS 2013a; Rose and Pevalin 2005).

²⁹ e.g. see Blackburn 1998:737; Prandy 1998a; Prandy 1998b; Prandy 1998c; Evans 1998; 1992; McKnight and Elias 2003; Mills and Evans 2003; Coxon and Fisher 2003; Rose and Pevalin with O'Reilly 2005 for criterion validity and see e.g. Harrison 2010; Rose and Pevalin 2003; Chandola and Jenkinson 2000; Evans 1992; Pevalin 2003 for construct validity.

3.3.3.3 Missing Data

A frequent limitation of using longitudinal data arises when unit non-response is not missing at random – i.e. individuals with unmeasured characteristics who drop out of the study are different from those who remain, meaning that the probability sample selected in order to facilitate generalisable inference is affected by bias. Patterns of missing data were addressed to determine whether this is likely to influence the results presented in this thesis. With respect to the data and variables used in Chapter 5, see Appendix A, Tables A1–A3 and Figures A13–A14. There is some evidence that those who drop out of the study over time (Table A3) have lower mean cognitive scores than those who do not. The missing data in Chapter 6 is addressed in Appendix A, Tables A4–A8, which does not suggest that there is any reason to assume the incomplete data will adversely affect the estimates derived from the model.

For Chapter 7, Table A9 in Appendix A provides details of the frequency of missing cases by ethnicity and social class, with respect to valid and missing information on the A-level transition and GCSE points score.³⁰ For all independent variables, there is a relationship between those with missing data and lower transition rates. Note that the numbers of missing cases are small. In addition, a single-level binary logistic regression model was run in Stata, using valid response (=0) versus missing (=1) as the outcome variable. All independent variables were given a category for their own missing information and these were added one by one.³¹ See Appendix A, Table A10. Those who are from lower social class backgrounds are slightly more likely than those from salariat backgrounds to be missing information on the transition and those with missing information on social class are much more likely (5.59 times). There are no significant differences

³⁰ No information is given with regard to gender, because those missing information on gender are also missing information on the outcome.

³¹ The continuous variable for GCSE score was transformed into a categorical variable indicating achievement quartiles and a missing category, and the continuous school-level variable for proportion of pupils in receipt of FSM was transformed in the same way.

by ethnicity or gender. Those with lower GCSE scores are more likely to be missing information on the transition, and those who are missing information on GCSE scores are substantially more likely than those in the top scoring quartile (18.74 times). There is evidence, therefore, that the probability of missingness on the outcome variable is related to the other independent variables considered. Under the missing at random (MAR) assumption, however, this should not introduce bias into the estimates because these variables are included in the model.

Multilevel modelling is fully efficient under the MAR assumption, and there is no evidence here to suggest that this assumption is not reasonable for these data. Data can be considered MAR if the probability of missingness is the same after conditioning on the observed data (Little and Rubin 2002; Allison 2002). One of the main advantages of using multilevel models with repeated measures data is that it is able to deal with unbalanced or incomplete information (Snijders and Bosker 2012:247), provided cases are MAR (Reise and Duan 2003:119). For growth curve models, drop-out can be associated with differences in scores between those who remain in the study and those who do not, providing it is not associated with change between any two occasions. Further, controlling for prior attainment (which is done in all models in this thesis) makes the MAR assumption more plausible, since this is likely to capture a substantial amount of unobserved heterogeneity.

3.3.4 Weighting

All exploratory analyses were carried out using Stata software. All descriptive statistics presented in this thesis therefore use weighted data (applying Stata's 'svyset' command) to account for the complex survey designs (which differed for the MCS and LSYPE, as described above, though both used multi-stage stratified sampling procedures), non response and attrition. Under circumstances in which

Stata prohibited the use of the 'svy' command, a probability weight was instead applied. Sample and subsample counts, however, are unweighted unless otherwise specified; related proportions given in tables, therefore, are unlikely to correspond with the frequencies.

For modelling, the data were imported into MLwiN software, which is specifically designed for building multilevel models.

3.4 Summary

This chapter has explained how multilevel regression modelling with longitudinal data is an appropriate method for examining social-class variations in cognitive and educational outcomes, which is the focus of this thesis. This is an advanced statistical technique, and the inferences that can be derived from these kinds of models and data are complex and detailed. As such, this thesis makes methodological advancements upon previous attempts to examine cultural capital for the operation of primary effects. Similarly, these data and this method facilitate an analysis of secondary effects in a contemporary UK context which goes beyond the current literature.

Chapter 4 will discuss the selection of indicator variables which act as proxies for cultural capital and habitus in the models presented in empirical Chapters 5 and 6.

Chapter 4

Operationalising Bourdieu

4.1 Introduction

Bourdieu predominantly subscribed to an epistemology of qualitative reflexivity (Maton 2003), believing theoretical concepts should be ‘polymorphic, supple and adaptive, rather than defined, calibrated and used rigidly’ (Bourdieu and Wacquant 1992:23). He believed that he provided ‘open concepts designed to guide empirical work’ (Bourdieu 1990b:107) and sought to provide evidence for his assertions using survey data, but did so with limited commentary regarding his choices for the selection of proxy variables. The nature of his position might explain why he has generated a degree of frustration and a lack of continuity among researchers intending to employ his concepts, who often argue such things as his ‘theoretical arguments are simply not articulated in empirical terms’ (Aschaffenburg and Maas 1997:584).

It is unsurprising that, resulting from his lack of direction and from constraints with regard to data availability, researchers seeking to test Bourdieu have employed largely varying methods of operationalisation. This chapter will describe some of the approaches taken by previous quantitative studies, and will outline the approach taken here in light of what are seen as their merits and limitations, as well as what is and is not possible with MCS and LSYPE data. The main aims of the operationalisation strategy employed in this thesis are: (i) to use proxies for cultural capital and habitus simultaneously, in an attempt to account for the multiple mechanisms that behave independently but must be understood net of each other to adhere, as closely as possible, to the application of ‘Bourdieu wild’ (Goldthorpe 2007a); (ii) to use proxies to represent different components of

cultural capital in an attempt to decompose the effects and determine which, if any, are of most influence in a contemporary context; (iii) to employ indicators of cultural capital that are as close as possible to those which have been used in previous studies (i.e. the 'classical operationalisation' of cultural capital and that which was used by Bourdieu himself), so as to generate conclusions which are comparable; (iv) to employ a novel strategy for measuring the impact of habitus as previous studies have, by their own admission, only been able to provide 'partial' measures; and (v) to provide measures of both parents' and children's cultural capital and habitus (with one or the other emphasised dependent upon the age group of interest).

Cultural capital is understood as a set of resources, which are either possessed, not possessed, or possessed to some varying degree. These resources are, therefore, not considered to be class characteristics in themselves, but their possession is assumed to differ between members of each social class. Using a regression approach, the degree of variability in the possession of cultural capital between classes can be modelled, and the extent to which this variability is the driving force behind the association between social origin and educational attainment can be determined. Habitus, on the other hand, is understood as a set of internalised dispositions, the nature of which is defined by class. The hypothesis is thus that there is a working-class habitus which characterises the practices of working-class people, and a middle-class habitus which characterises the practices of middle-class people. Regression models allow us to determine whether this is indeed the case, as proxies for habitus should also account for a proportion of class differences in outcomes. In other words, cultural capital is a resource which differs by class only in terms of the degree of its possession, whereas every person is assumed to have a habitus, which is either working-class or middle-class in nature.

The discussion in this chapter relates to considerations for Chapters 5 and 6, which are the sections of the thesis which involve an application/test of Bourdieu's theory. The rationale for the selection of indicators is outlined here, though the construction of each variable will be described in more detail in the chapters to which they are applicable.

4.2 Cultural Capital

The first prominent quantitative study of cultural capital which attempted to explicitly define and justify the choices made with regard to the selection of cultural proxies was undertaken by DiMaggio (1982). He employed students' self-reported involvement in arts, music and literature to signify the possession – or lack – of cultural capital. Bourdieu had previously referred to knowledge of, and a taste for, the arts and classical music as indicators of cultural familiarity. On the basis of his previous research into the composition of arts audiences in the US (DiMaggio and Useem 1978), DiMaggio claimed that these measures represent the most popular prestigious art forms, and that attendance at highbrow events such as the theatre and classical music concerts is concentrated in the middle and upper classes. Further, he and later others (e.g. Aschaffenburg 1995) found that teachers, who are by Bourdieu's definition expected to have high levels of cultural capital, are overrepresented in arts audiences. He referred back to Bourdieu's insistence that cultural capital is a familiarity with such things that schools do not teach but that are valued by the societal elite (1982:191), and suggested that these measures of participation in high culture are appropriate representations of competences acquired outside of formal education.

DiMaggio legitimated the use of various indicators that would later be termed by De Graaf et al (2000) as the 'classical operationalisation' of the concept. These were later employed in a large number of other studies (e.g. DiMaggio and Mohr 1985; Ganzeboom et al 1990; DeGraaf and Robert 1990; Kastillis and Rubinson 1990;

Kalmijn and Kraaykamp 1996; Roscigno and Ainsworth-Darnell 1999; Sullivan 2001; Gaddis 2013). Expression of status via participating in high culture, gaining an appreciation of cultured styles and values from cultural trips, is consistent with Bourdieu's notion that the process through which educational privilege is realised is that the schools reward pupils who demonstrate cultural proficiency.

Other studies have demonstrated the usefulness of including measures of reading habits or home literary climate as well as beaux-arts participation, because the former is shown to have a strong direct impact on educational outcomes which surpasses that of cultural participation (e.g. P. M. De Graaf 1986; 1988; De Graaf et al 2000; Crook 1997). Both public displays of status, such as theatre attendance, and the mostly solitary activity of reading can generate cultural knowledge, and these can be conveyed to teachers in the classroom. In addition, reading generates more general cognitive and linguistic skills, and children inevitably directly further their knowledge of a given subject from the material.

Aschaffenburg and Maas' (1997), Sullivan (2001) and Dumais' (2002) studies included measures of both parental and children's cultural capital, which is the strongest approach conceptually; most studies were unable to do this as few surveys offer information on both. The MCS and LSYPE offer researchers the opportunity to analyse different forms of cultural capital (i.e. embodied, institutionalised and objectified). Moreover, this can be done for both parents and children.

The two empirical chapters which test Bourdieu involve processes that occur prior to the children achieving any of their own formal educational credentials, and so parental education is taken to represent the institutionalised cultural capital in the home. The proxy of parental education has often been used in place of parental cultural capital (e.g. Halsey et al 1980; Robinson and Garnier 1985; Jonsson 1987; Egerton 1997) and this is also the approach Bourdieu took for his own empirical

analyses. Parents with a high level of education demonstrably possess cultural competence, according to Bourdieu, and which has been explicitly recognised as such by a formal institution.

Cultural capital in the objectified form is not included in this study. Neither the MCS nor the LSYPE offer measures of culturally appropriated goods in the home such as the number of classic novels or the possession of artwork. The indicators which are available include educative resources, such as the ownership of a computer, though due to mass production and thus mass availability in today's society, such resources are a weak representation of cultural possession or familiarity (Winkle-Wagner 2010). Further, Kingston (2001) stressed the crucial point that, in adhering to Bourdieu, cultural capital must consist of cultural signals that are used by the middle- and upper-classes for the purposes of excluding those without access to such resources, and measuring computers in the home as some authors have done (e.g. Graetz 1988), for example, is therefore inconsistent with this important aspect. Others have argued that the objectified form of cultural capital is hardly relevant in a contemporary context, as modern class factions are divided according to leisure activities and consumption practices, not consumption objects, and have suggested that future research employing Bourdieu's concepts should recognise this shift (Holt 1998).

The measures of embodied cultural capital used in this study relate to the child, and seek to reflect the typical approach to operationalisation. In both chapters, measures of participation in high-culture are employed, as are measures of reading. The measures of cultural participation include, for the first and second empirical chapters respectively, attendance at art galleries, museums and sites of historic interest, and attendance at the cinema, theatre or concerts. This latter measure has notable shortcomings – while theatre-going can certainly be considered a high-cultural pursuit, attendance at concerts is slightly more dubious (it is not stated whether these are classical music concerts or pop music, for

example), and cinema attendance is an option widely available to a broad audience, both because of the considerably lower expenditure typically associated with the activity and the varied nature of film which can appeal to mass audiences. Previous research which has looked at participation in the arts as reported in the Taking Part Survey, however, has classed cinema attendance as a cultural activity, alongside theatre attendance, attendance at art galleries and museums and attendance at concerts including rock and pop concerts (Chan et al 2008).

Thus generally, these measures are taken to indicate interest and participation in the arts. The measure of reading, for young children, is represented by the frequency with which parents read to the child, and for the older children, the frequency with which they themselves read for enjoyment. Bourdieu asserts that the acquisition of embodied cultural competence requires the devotion of 'labour' and 'time' (1997: 48), both of which are represented with the measures employed here.

Other indicators of cultural capital were also considered. The MCS offers reasonably detailed information about the ways in which parents can create an informal learning environment for their children in the home: helping their child with reading, writing and numbers, for example. These measures have previously been deemed a representation of the 'home learning environment' (Goodman and Gregg 2010). Such variables have been shown, in wider education research, to have a significantly positive impact on children's cognitive development (e.g. Plewis et al 1990). Approaches to combining these measures were attempted and analysed against social class, parental education and cognitive test outcomes, though descriptive statistics failed to reveal associations which would suggest these variables might be useful. Sullivan et al (2013) used trips to the library as an indicator of cultural activity, but with vast increases in the availability of online reading material, the variable was deemed outdated for the purposes of this study.

Another important component of embodied cultural capital which is explicitly stressed by Bourdieu but is overlooked by many researchers is linguistic capital (Bourdieu 1977:494). Sullivan (e.g. 2001; 2002) has pioneered attempts to examine linguistic competence – being ‘the ability to understand and use “educated language”’ (2002:145) – and has documented the significant positive impact that this skill generates for children in a formal educational environment (e.g. the ability to use elaborate, articulate language in writing or in interaction with teachers who then develop high expectations of these children accordingly). Sullivan (2001), who administered her own questionnaires specifically for the purpose of examining cultural capital, was able to survey pupils on their vocabulary skills. She tested both pupils’ ability to complete sentences with appropriate terminology and their knowledge of synonyms which determined the breadth of their linguistic knowledge.

The MCS asked parents the extent to which they agreed with the statement, ‘talking, even to a young baby, is important’. The interest in this measure arose from the findings of Hart and Risley (1995), that parents from higher socioeconomic backgrounds spoke far more to their young infants at home, and that this was strongly related to later vocabulary size and other measures of verbal sophistication. They determined that cultural factors contributed to the increased verbal interaction they shared with their children. Less than 1% of parents disagreed with the statement, meaning there was not enough variability to use the indicator. Unfortunately both the MCS and LSYPE suffer from the same shortfall as most other large-scale national surveys in the UK (or at least, those which also provide other indicators crucial to this research) in that they do not provide any meaningful indicators of linguistic capital.

In sum, measures of parents’ institutionalised cultural capital and children’s embodied cultural capital are included in both the empirical chapters which involve a test of Bourdieu. These are summarised in Table 4.1 below:

Table 4.1: Cultural Capital Indicators used in Empirical Chapters 5 and 6

Measure	Proxy for	Chapter 5	Chapter 6
Parents' educational qualifications	Parents' institutionalised cultural capital	X	X
Attendance at art galleries, museums, sites of historic interest	Pupils' embodied cultural capital: Cultural participation	X	
Attendance at the cinema, theatre or concerts	Pupils' embodied cultural capital: Cultural participation		X
Frequency of parents reading to the child	Pupils' embodied cultural capital: Home reading climate	X	
Frequency of child reading for enjoyment	Pupils' embodied cultural capital: Reading habits		X

4.3 Habitus

Most studies neglect to build models which incorporate both the concepts of cultural capital and habitus at the same time. This 'domesticated' application of Bourdieu (Goldthorpe 2007a) is potentially misleading because it fails to examine his concepts simultaneously, as they operate within the theory of cultural reproduction. Bourdieu defines cultural capital and habitus to be two related, but distinct concepts, though, in keeping with the general obscurity of his prose and definitions (2007a), he has made it difficult to distinguish between the two: 'embodied capital, external wealth converted into an integral part of the person, into a habitus' (Bourdieu 1997:48). Most authors have ignored this distinction and focused solely on cultural capital (e.g. DiMaggio 1982; De Graaf 1986; De Graaf et al 2000; Katsillis and Rubinson 1990), or have argued that the concept of habitus is essentially 'theoretically incoherent' and of 'little use to researchers' (Sullivan 2002:144), or have posited that it is so closely related to cultural capital in its embodied sense that there is little need to independently operationalise habitus (Drummey 2008; Dovey 2005:286).

Other researchers have recognised the distinction between the two concepts (e.g. Swartz 2002; Dumais 2002; 2006; Gaddis 2013): 'studying cultural capital while

ignoring habitus leaves Bourdieu's theoretical framework incomplete in its practical application. It is necessary to consider both one's resources (capital) and the orientation one has toward using these resources (habitus) to implement the model of practice in the educational field in the way that Bourdieu intended' (Dumais 2002:45). Indeed, Bourdieu's formula for social practice quite clearly shows the relationship between capital and habitus while illustrating that they are distinct concepts, each functioning to determine outcomes: $(\text{Capital} \times \text{Habitus}) + \text{Field} = \text{Practice}$ (Bourdieu 1984). Theoretically, a significant effect for cultural capital and habitus should be found once both have been accounted for (Bourdieu 1973; Dumais 2002:50).

Habitus has frequently been equated with aspirations and expectations of parents and children, and has been employed in both quantitative and qualitative studies under such a definition (e.g. Dumais 2002; McClelland 1990; Reay 1995). Notions of aspirations, expectations, beliefs and attitudes are potentially difficult to operationalise and analyse, and there is certainly much crossover between them. There is a degree of consensus among sociologists, and educational researchers more broadly, that parents with positive attitudes towards the education system and who hold high educational aspirations for, and expectations of, their children have a positive impact on their child's achievements (e.g. JRF 2010; Field 2010:47; JRF 2012; Gorman 1998). Whether or not these values are socioeconomically determined, as Bourdieu would claim, is contentious (e.g. JRF 2010; Lupton and Kintrea 2011; Devine 2044).

This research considered four measures available in the MCS related to such notions. To address parental aspirations, I considered whether mothers and fathers wanted their child to (i) stay in education after the school leaving age, and (ii) go to university. Previous research has considered 'aspirations' to be an individual's hopes for something to happen in the future (JRF 2012). Less than 2% of parents said they did not want their child to stay at school post 16 years old,

and less than 3% of parents did not hope for their child to attend university. No significant differences emerged when comparing the proportions by social class. This lack of variability prevented the possibility of using these variables.

Following previous attempts to operationalise 'educational attitudes', I used an indicator of how much the child likes school (JRF 2012). More than 80% of the sample, asked at MCS4 when the child was old enough to take part in a self-completion interview, said that they liked school, though no variation was found by social class. To address parents' attitudes towards education, an indicator measuring the extent to which parents agreed with the statement 'education helps you to be a better parent' was used; 59% of the sample agreed, though again no patterns emerged when the indicator was examined by social class.

Using these variables, in accordance with traditional strategies for operationalising habitus, no real differences in aspirations or attitudes are found among parents of different social class groups, at least for children younger than seven years old. The conclusion drawn by Sullivan et al (2013), using MCS data, was to exclude parental aspiration indicators because, though they may be universally influential, without variability between social groups such variables cannot be predictive (2013:1189). This is reinforced and is followed here.

Using the LSYPE, which is used for the test of Bourdieu for the older age group, it is possible to include measures for both pupils' and parents' habitus, though the approach taken here aims to measure parents' educational values and children's self beliefs, rather than aspirations and expectations. Bourdieu describes a major component of habitus as '...the system of dispositions towards the school, understood as a propensity to consent to the investments in time, effort and money necessary to conserve and to increase cultural capital' (Bourdieu 1977:495 cited in Sullivan 2002:149). He cites parents' decisions to invest in private tuition for their children as an example which, though of course constrained by financial capabilities, is also representative of other, more attitudinal, characteristics

(Bourdieu 1997:48). Previous studies have deemed this a strategy of ‘investment’ in education (Schereger and Savage 2009) that more and more parents are now taking up (Independent 2013). Chapter 6 thus employs a measure of such extra-curricular classes taken to supplement subjects taught in school as a component of a pro-education parental habitus which implies a willingness to dedicate financial resources to the process of converting parents’ economic capital to children’s cultural capital. The MCS also offers information on whether parents had paid for private tuition for their child, though for this young age group less than 4% had done so, again leaving too little variation in the indicator for it to be used in modelling. Such tuition is an important form of material and cultural advantage that is unsurprisingly more relevant for the analysis of older children.³²

One of the most interesting ways in which this study advances upon previous research is the measure employed for students’ habitus in Chapter 6. Students are asked whether they agree or disagree with the statement ‘people like me don’t have much of a chance in life’. The indicator employed here is a proxy for Bourdieu’s explicit statement that members common to a class are likely to share a worldview (Bourdieu 1990a:60). Gaddis (2013) used similar attitudinal measures, determining respondents’ belief that they can succeed in school, as well as the extent to which they see education as valuable to success later in life. Pupils’ own habitus is arguably more important to measure when they are teenagers than when they are young children. Contingent upon class-based experience, students will at this stage have a ‘well developed’ (Reay 2004) idea of their resultant relational place in the social structure; i.e. ‘one’s view of the world and one’s place in it’ (Dumais 2002:46).

³² Arguably, parents’ decisions to enrol their children in fee-paying schools are a measure of habitus in a similar sense. However, this involves a far greater financial expenditure and long-term commitment, which is an option for only a very small proportion of the English population (≈6% in both the MCS and LSYPE, with weighted data). There are measures of private school attendance in both datasets but these are used as control, rather than substantive, variables.

For Bourdieu, one's habitus is analogous to a 'machine that leads us to "reproduce" the social conditions of our own production' (Bourdieu 1990c:87). This measure incorporates the self-fulfilling aspect of habitus which, for the working classes, is assumed to be of a self-defeatist nature and, for the middle classes, self-enhancing. Habitus 'generates practices by ensuring the presence of the past in experience' (Stam 2009:707). Those from the same social class will have faced similar resource (i.e. capital) constraints during childhood. Beliefs, derived from this, about life chances result in students' realisation of these dissimilar ends. For Bourdieu, this aspect of habitus is described as a 'system of circular relations that unite structures and practices; objective structures tend to produce structured subjective dispositions that produce structured actions which, in turn, tend to reproduce objective structure' (Bourdieu and Passeron 1977:203). Thus this variable, according to Bourdieu's theory, represents the middle-class habitus on the one hand (those who disagree with the statement) and the working-class habitus on the other (those who agree with the statement).

4.3.1 Habitus–Field

Bourdieu used the notion of 'fields' to explain how cultural capital and habitus acquire their value in a given context. Krarup and Munk (2014) have argued that studies of Bourdieu do not incorporate the notion of field enough, and that his concepts should not be applied in an 'isolationist' manner. One's habitus comes active in relation to a field (Bourdieu 1990b:116), and success in a given field depends on the degree of alignment between the two: 'Social reality exists, so to speak, twice, in things and in minds, in field and in habitus, outside and inside social agents. And when habitus encounters a social world of which it is the product, it is like a "fish in water": it does not feel the weight of the water and it takes the world about itself for granted' (Bourdieu and Wacquant 1992:127). In contrast, when one's habitus is not reflective of the milieu of the field in question, the disjuncture results in unease, a struggle which emulates relative disadvantage.

This process is distinct from the way in which the possession of cultural capital is beneficial: 'Fields offer constraints and opportunities independent of the resources brought by actors to situations. The driving force of habitus is mediated by fields, and the constraints or opportunities imposed by fields are mediated through the dispositions of habitus' (Swartz 2002:66S).

McNay pointed out that in Bourdieu's later work he placed an 'increasing emphasis...on moments of disalignment and tension between habitus and field' (McNay 2001:46, cited in Reay 2004). According to cultural reproduction theory, working-class parents would have had negative experiences with the school field themselves, where their lack of capital and the incongruity between their habitus and that of the field would have resulted in their underachievement. The theory of cultural reproduction would assume, therefore, that the struggle working-class parents previously experienced in relation to education reasserts itself when they are required to engage in interactions with the school on behalf of their child, and Bourdieu's logic of practice would deem it likely these parents will avoid such situations: 'the habitus tends to favour experiences likely to reinforce it ([for example,] the empirically confirmed fact that people tend to talk about politics with those who have the same opinions). Through the systematic "choices" it makes among the places, events and people that it might be frequented, the habitus tends to protect itself from crises and critical challenges by providing itself with a milieu to which it is as pre-adapted as possible' (Bourdieu 1990a:61).

Research has augmented these assertions: Lareau found that working-class parents less often attended formal school events, with 100% of her middle-class sample going to parents' evenings compared with 60% of her working-class sample (1997). Also, the interactions between working-class parents and teachers were 'stiff and awkward...parents often showed signs of discomfort, nervous shifting, blushing, stuttering, sweating and generally looking ill at ease' (1997:708); she reasoned that, as much as the *quantity* of parent-teacher interactions, it is the

quality of these interactions that determines the benefit to be gained. Reay found that many of the working-class parents she observed talked of ‘plucking up the courage’ to go in to their child’s school and speak to teachers (1998:103).

The impact of a complementary habitus–field relationship, as opposed to one which is inimical and unparalleled, has, to date, not been explicitly treated. The approach taken here is to employ measures of parent–school interaction and parents’ comfort in the school field, to represent what will hereafter be referred to as *habitus–field alignment*. The assumption is that the positive habitus–field alignment (i.e. the alignment of a middle-class person’s habitus with the middle-class school habitus) which results in the ‘fish in water’ effect to which Bourdieu refers (1990:108) will increase the amount of contact parents have with the school and, in addition, parent–school interactions will be experienced with ease and comfort.

Ample research has proven that parents’ involvement in children’s education, including from an early age, has a significantly positive impact on educational outcomes (e.g. DCSF 2008); the interest lies in testing whether Bourdieu’s theory is able to identify an important mechanism which leads to different degrees of parental involvement by social class.

In Chapter 5, parental habitus–field alignment is measured according to parents’ evening attendance and voluntary parental involvement with the school and school events. For the older children (Chapter 6), while both indicators are also available in the LSYPE, the latter is dropped because it is less applicable to students in secondary school (opportunities to volunteer in classrooms, for example, are not available to parents since the educational level is considerably more advanced by Key Stage 4). This variable is replaced with a direct measure of parental comfort: whether parents agree with the statement ‘I find it easy to deal

with people at [my child's] school'. Table 4.2 summarises the indicators of habitus and habitus–field alignment employed in this thesis.

Table 4.2: Habitus and Habitus–Field Indicators used in Empirical Chapters 5 and

6

Measure	Proxy for	Chapter 5	Chapter 6
Parents' evening attendance	Parental habitus–field alignment	X	X
Voluntary involvement with the school	Parental habitus–field alignment	X	
Parents' agreement with the statement: 'I find it easy to deal with people at [my child's] school'	Parental habitus–field alignment		X
Home tuition	Parental habitus		X
Child's agreement with the statement: 'people like me don't have much of a chance in life'	Pupil's habitus		X

4.4 Summary

The main aims of the operationalisation strategy set out in Section 4.1 are met with the proxies available in the MCS and LSYPE, though these are not without limitations and these could be improved upon. It is possible to replicate the 'classical operationalisation' strategy by including measures of reading and cultural participation. The cultural participation variable employed in Chapter 6, however, does not allow for a distinction between the typically highbrow activity of theatre-going and the far more lowbrow activities of cinema and concert attendance. The main limitation as regards the operationalisation of children's embodied cultural capital is a lack of available proxies for linguistic capital. Bourdieu stresses the importance of linguistic competence as a means of conveying status symbolically, a point also made by other well known theorists (e.g. Bernstein 1971). Further, research on cultural capital (e.g. Sullivan 2001) as well as wider education research (e.g. Roulstone et al 2011) has shown how language ability directly and substantially impacts upon educational outcomes

and also how the use of language varies between social classes (e.g. Hart and Risley 1995).

This study proposes a novel way of examining parental habitus by attempting to measure the extent to which it aligns with the middle-class milieu of the school. With the indicators used in Chapter 5, habitus–field alignment is essentially latent and presumed to be manifest in differing degrees of parent–school contact. An improvement on the parents’ evening and voluntary school involvement measures would be indicators that directly ask whether parents have ever avoided contact with their child’s school because they feel uncomfortable speaking to teachers, for example. The measure used in Chapter 6 overcomes this, providing a direct indication of whether parents feel at ease in interacting with school staff.

The proxies for cultural capital, habitus and habitus–field used in this study, therefore, facilitate a suitable test of Bourdieu, allowing for an analysis of the theory which, as far as is possible with these data, authentically reflects the process of cultural reproduction.

Chapter 5

Young Children: Testing Bourdieu

5.1 Introduction

This chapter seeks to examine social-class influences on young children's cognitive development and to determine whether Bourdieu's concepts can help to explain the processes of inequality that manifest themselves in differential cognitive performance and trajectory by socioeconomic group. Bourdieu did not discuss the influence of cultural capital or habitus on outcomes in cognitive tests; his focus was on the grades achieved by children in formal schooling. However, education research and research in the broader domain of psychology have highlighted substantial cognitive differences among children which emerge at a very young age and have demonstrated the decisive relationship these initial differences have on formal educational outcomes later in life (Feinstein 2003; Blanden and Machin 2010; Sullivan et al 2013; Jerrim 2012; Jerrim and Vignoles 2013). Findings which suggest arguably irreversible imbalances in cognitive development by socioeconomic group apparent in this early stage of life highlight the necessity of looking at the experiences of young children.

This chapter uses data from the Millennium Cohort Study (MCS). Research questions are formed on the basis of Bourdieu's theoretical framework, with the evidence that follows seeking to provide a basis to validate or refute his claim that it is through cultural capital and habitus, for the most part, that children of advantageous social backgrounds secure educational privilege. The concerns of this chapter are also driven by the findings of previous authors, as well as apparent gaps in the literature consequent upon a neglect of the application of Bourdieu's theory to particular subgroups and using particular methodologies.

Indicators have been selected to represent essential components of social reproduction theory. The aim is to determine the influence (if any) of these on the social-class gradient in cognitive abilities and cognitive trajectories, alongside their interaction with important person-level characteristics: social class, gender and ethnicity.

5.1.1 Core Findings

This chapter will show, in the context of modern British society, that serious cognitive inequalities still exist between children of different socioeconomic backgrounds, and that these inequalities, apparent as early as three years old, are exacerbated as children progress through their first few years of compulsory formal education. The chapter will further develop previous attempts to examine the influence of cultural reproduction theory in the UK, most pertinently by observing the effects not only on cognitive performance level, but also on cognitive *progress*. Using descriptive exploratory analysis and advanced statistical modelling techniques that have been largely underutilised in previous research, the findings will demonstrate that the concepts of cultural capital and habitus–field are useful for explaining some of the disparity in cognitive abilities, but are of little use for explaining why socioeconomic inequalities widen with age. By distinguishing between different forms of cultural capital, the results suggest that the impact on cognitive performance is largely attributable to parental education, and that cultural participation is of least influence. The findings will also show that participation in high culture is more beneficial for young boys than it is for young girls. Consequently, this research provides empirical evidence to support Bourdieu’s underlying assumptions but not in strong support of his main theoretical assertions. As an aside, the chapter demonstrates how and why future studies of this kind must be cautious with regard to the choice of underlying metric used for the outcome variable in growth curve models.

5.1.2 Chapter Structure

The remainder of this section outlines the research questions of interest to this age group. Section 2 gives a discussion of the choice and construction of the outcome variable and explanatory variables. Section 3 addresses a number of the fundamental concerns of Bourdieu's theory (which are largely considered prerequisites for the justification of the study) with descriptive analyses. Section 4 describes the model specification. Section 5 presents the findings of the statistical modelling. Finally, Section 6 highlights the main findings of the chapter.

5.1.3 Research Questions

A number of essential 'prerequisites' must be demonstrated before applying a test of Bourdieu; that: (a) children from higher social-class backgrounds score higher on cognitive tests; and (b) this holds across the age range considered; (c) the possession of cultural capital and parental habitus-field alignment are disproportionately associated with higher-class homes; and (d) that children of families in possession of cultural capital and habitus-field alignment score higher on cognitive tests. Once these initial assumptions are verified, we turn to an examination of the direct impact of the unequal intergenerational transmission of cultural resources for cognitive outcomes, and a test of whether Bourdieu's concepts behave, as he asserts, as mediating mechanisms for the social-class gradient.

1. How useful are the concepts of cultural capital and habitus-field for explaining differences in cognitive test scores?
 - Can cultural capital and parental habitus-field explain 50% of the variation in cognitive test scores between young children from different socioeconomic backgrounds?

Descriptive statistics address the prerequisites listed above. Multilevel growth curve modelling is then employed to firstly determine the strength of the social-class gradient in scores, secondly to quantify the impact of cultural capital and parental habitus–field, and lastly to examine the extent to which these variables are able to account for the difference in parameter estimates between the highest and the lowest social-class categories. The approach taken by most research in this area is simply to state the aim to find a ‘*substantial*’ reduction in the social-class gradient for Bourdieu’s theories to be adequately proven. This research employs a stricter definition, setting as a benchmark requirement a 50% reduction to be considered *substantial*. The 50% benchmark is arbitrary, but provides a solid basis for discussion and for comparison between this and other related works.

Evidence suggests that social-class inequalities in cognitive, and other academic, scores grow as children get older: middle-class children not only start off with higher test scores than their working-class counterparts, they also progress at a faster rate thereafter. This will be modelled in this chapter.

2. How useful are the concepts of cultural capital and habitus–field for explaining different rates of cognitive *progression* between young children from different socioeconomic backgrounds?

One of the main advantages of the data and methods chosen for this chapter is the ability to unearth whether cultural capital and habitus–field affect children’s *progress* as well as their aggregate performance level. Longitudinal growth curve models facilitate the separation of analyses into *random intercepts* models, useful for research question 1, and more sophisticated *random slopes* models, which can demonstrate how children from different social-class groups have different rates of cognitive ‘growth’. This chapter will demonstrate that there are differences in cognitive growth between children and seeks to determine whether Bourdieu’s concepts are associated with, and can explain, these divergent trajectories.

3. Do the returns to cultural capital and habitus–field differ according to (i) social class, (ii) gender, (iii) ethnicity?
 - How do these person-level characteristics interact with cultural capital and habitus–field to bring about differences in cognitive scores?

The data facilitate a critical examination of Bourdieu’s theoretical concepts, as well as an analysis of whether his ideas can be extended to all children, regardless of their socio-demographic characteristics. The modelling will include person-level interactions to investigate the universality of Bourdieu’s assertions.

5.2 Measures

Cognitive development. The longitudinal outcome variable used is children’s overall cognitive development, where scores from a number of tests measuring various skills are combined. Cognitive development refers to ‘intellectual, academic and mental functioning and skills’, which is considered to be a continuously accumulating and irreversible process (Plewis 1996:25,26). The indicators of cognitive development available in the MCS are a combination of the British Ability Scales (BAS), the Bracken Basic Concept Scales and the National Foundation for Educational Research (NFER) Progress in Maths test.

The Bracken tests are used to assess basic concept development in children, with scores reflective of the degree to which a child is prepared for formal education; the readiness concepts assessed in the subtests are intended to be directly related to early childhood education (MCS 2012). A derived variable is provided with MCS data – the Bracken School Readiness Composite – where scores from six subtests are summed. The tests are administered only at MCS2.

The BAS is a standardised battery of tests of cognitive abilities and educational achievements for assessing children’s intellectual functioning (GL-assessment

2013a). The tests were administered by interviewers during data collection. At MCS3, when the majority of children are aged five, the BAS tests administered covered Naming Vocabulary, Picture Similarity and Pattern Construction. Naming Vocabulary assesses the spoken vocabulary of young children, Picture Similarity is intended to measure problem-solving skills, and Pattern Construction is intended to measure spatial skills. At MCS4, the BAS Pattern Construction test was administered, as well as the BAS Word Reading test, where the child is asked to read aloud a series of words presented on a card.

Number skills are measured at MCS4 with an adaptation to the NFER Progress in Maths test. The NFER tests are a series of standardised assessments for monitoring and identifying individuals' specific strengths and weaknesses in mathematical skills and concepts (GL-assessments 2013b).

Outcome variables, therefore, span waves 2–4, though measures are not consistent across waves. Standardising the alternative measures overcomes the problem of differing scales and combining scores measuring different components of development facilitates the possibility of creating a 'general' measurement for cognitive ability over time.

Table 5.1: Construction of Longitudinal Cognitive Ability Outcome Variable

Measure	Wave availability and mean age		
	MCS2 Aged three	MCS3 Aged five	MCS4 Aged seven
Bracken: School Readiness Composite	✓		
BAS: Naming Vocabulary		✓	
BAS: Picture Similarity		✓	
BAS: Pattern Construction		✓	✓
BAS: Word Reading			✓
NFER: Progress in Maths			✓

Before the data were transformed for longitudinal analysis, all development measures were summed within-wave, then standardised for use across waves. In addition, variables were transformed so that the mean is zero, but variance

increases by 0.4 over time (see Syntax B1 in Appendix B). There are methodological reasons for approaching the cognitive growth measure in this way. While 'it is not widely recognised that inferences about growth can depend on the assumptions made about the underlying metric', arbitrary and inconsistent measurement scales have been identified as a problem for research such as this (Plewis 1996:39), making plausible assumptions regarding the way in which cognitive ability changes during childhood a necessary exercise. Logically, we know that the mean of the longitudinal variable should be a non-decreasing function of age. Plewis, in this context, has also strongly advised against using a measurement scale which has a constant variance over time; a more realistic assumption is that person-level variance is also a function of age, and, with a considerable degree of certainty for children between three and seven, this variance will be increasing (1996).³³

The Bracken School Readiness Composite measures a range of skills and is the only measure of cognitive development taken at MCS2. Scores are available for 8,128 cases. The mean is approximately zero, with variance set to be 0.60. At MCS3 the raw scores across relevant variables were summed. These three measures are correlated between $r=0.35$ and $r=0.37$ ($p<0.05$ for all pairs). Scores are available for 8,873 cases. The mean is approximately zero, with variance set equal to 1. At MCS4 the raw scores across relevant variables were summed. The correlations are: BAS Pattern Construction and BAS Word Reading $r=0.31$ $p<0.05$; BAS Pattern Construction and NFER Progress in Maths $r=0.45$ $p<0.05$; BAS Word Reading and NFER Progress in Maths $r=0.52$ $p<0.05$. Scores are available for 8,053 cases. The mean is approximately zero, with variance 1.4. The standardised outcome variables are moderately correlated between waves (MCS2–MCS3 0.43; MCS2–MCS4 0.47; MCS3–MCS4 0.56 [$p<0.05$ for all pairs]).

³³ This approach is examined by testing the robustness of estimates produced by the growth curve models presented here. The important implications of decisions regarding the underlying metric used in cognitive studies are discussed, in light of the findings from these robustness tests.

Prior ability. There are no formal measures of cognitive development at MCS1, where children are only nine months old. There are measures of general development, however, which are combined into a single variable by summing scores. This is taken to represent prior ability, and is controlled for in modelling. The measures capture children's competence with regards to the following attributes of development: smiles; sits up; stands holding on; hands together; grabs objects; holds small objects; passes a toy; walks a few steps; gives toy; waves bye-bye; extends arms; nods for yes.

Social class. This chapter employs the full (eight-category) version of the NS-SEC, which is taken from parents at wave 4, based on conceptions of 'occupational maturity'³⁴ (Goldthorpe 1987:52; Lareau and Conley 2008:114; Bukodi and Goldthorpe 2009; Bukodi and Goldthorpe 2011). If values for NS-SEC are missing at MCS4 they are replaced with those from MCS3, and so on. At MCS1 and MCS2 mothers were allocated to a class from their most recent employment if they were listed as unemployed or economically inactive. This is because there are large numbers of women who leave work when they have children and do not return to work immediately. The 'dominance approach' was then adopted, creating an NS-SEC variable applicable to the family based on the highest class among the mother and father (Erikson 1984).³⁵

Those in the unemployed category are those who have never worked or are long-term unemployed. For the analyses here, I refer to this category as a class, though it is not an occupational class as allocated within the NS-SEC framework.

Bourdieu considers individuals to be located in 'social space' based on their possession of a combination of economic and cultural capital – both of which this

³⁴ This is the idea that adults are likely to have reached a stage in their careers which is unlikely to change substantially by their mid-thirties (i.e. even if change does occur, this is unlikely to result in either upward or downward social mobility into another class category).

³⁵ The advantages of this approach are twofold: first, the recent growth of the salariat class in Britain (Halpin 1999; Goldthorpe and Mills 2008) may have led to a situation in which increasing numbers of women hold higher occupational positions than men – it is therefore a realistic portrayal of a changing modern society; and second, this approach reduces the amount of missing data on the social class variable (Li and Devine 2011).

group presumably lacks – and is therefore considered to be the lowest class by theoretical definition and for purposes of comparison.

Table 5.2 depicts the distribution of this variable with abbreviated labels for categories which will be used throughout the thesis.

Table 5.2: Frequency Table: Social Class in the MCS

	N	Percent (%)	Category label
Higher managerial, administrative and professional	1,432	18	Hi salariat
Lower managerial, administrative and professional	2,556	29	Lo salariat
Intermediate occupations	1,319	14	Intermediate
Small employers and own account workers	907	9	Small empl
Lower supervisory and technical occupations	629	6	Lo supervisory
Semi routine occupations	1,502	13	Semi routine
Routine occupations	895	7	Routine
Never worked and long-term unemployed	740	4	Unemployed
TOTAL	9,980	100	

Social demographics. The large majority of children are aged nine months at MCS1, three years at MCS2, five at MCS3 and seven at MCS4. There is variability around these mean ages due to the lengthy fieldwork period, which increases at later waves. In modelling, age is the only independent variable which is considered time-varying, for the purposes of creating growth curves. Age is measured in months and is grand mean centred at 62 months (~age five). 51% of children are male (N=5,053) and 49% are female (N=4,927).

86% of the children are white, though while many of the other ethnic groups considered are small in comparison, the MCS sampling procedure ensures that the subsample sizes of all groups considered are sufficiently large for robust analysis. The ethnicity variable employed in these analyses consists of eight categories – see Table 5.3 below. Information on ethnicity was missing from 29 cases.

Table 5.3: Frequency Table: Ethnicity in the MCS

	N	Percent (%)	Category label
White	7,442	86	White
Mixed heritage	405	4	Mixed
Indian	390	2	Indian
Pakistani	730	3	Pakistani
Bangladeshi	285	1	Bangladeshi
Black Caribbean	189	1	B Caribbean
Black African	300	2	B African
Other	210	1	Other
Missing	29	N/A	
TOTAL	9,980	100	

The categories, with the exception of Chinese students, have been selected to reflect the ethnic groups known to be of particular interest in education research and to reflect the changing demographics of modern society. There is now a growing population of children of ‘mixed’ ethnic classification, for example (Plewis 2011:419; Haynes et al 2006:569). The decision was made to differentiate the South Asian group, due to the well-documented relatively high attainment of Indian pupils, and the recently emergent attainment differences between Pakistani and Bangladeshi pupils, where the latter are now performing substantially better (Divya and Layli 2007; Department for Education and Skills 2006). These two populations, while sharing similar histories (and arguably, cultures, religions and customs), have distinct characteristics which are often overlooked by studies focusing on ethnicity: Bangladeshi communities have tended to suffer from greater levels of poverty,³⁶ and have been found to face greater segregation and language barriers than Pakistani communities (Divya and Layli 2007:1). Of the 9,980 children in the study, only 19 are Chinese, unfortunately prohibiting the use of separate statistical tests for this high-achieving group.³⁷

³⁶ However, the most recent findings by Heath and Li (2015) suggest Pakistanis are now more likely to be in poverty than Bangladeshis.

³⁷ The mean standardised cognitive development scores of the Chinese children taking part in the MCS, while only slightly higher than the overall mean at age three (0.06), are higher than any other group at age five (0.51), and even more so by age seven (0.72).

Cultural participation. The indicator of cultural capital measures the frequency with which children have been taken to an art gallery, museum or site of historic interest. The MCS asks whether they had done so in the last 12 months at ages five and seven. Information from both waves was combined to provide a dichotomous measure of whether the child has never been (0), or has been at least once between the ages of five and seven (1).

Overall, 73% of children have visited an art gallery, museum or site of historic interest by the age of seven, which is unexpectedly high for this age group, and prompts the question of whether these trips have been organised by parents or by the school, which is not specified.³⁸

Reading climate. At MCS2, MCS3 and MCS4 both parents were asked how often they read to their child.³⁹ Answers were combined to reduce the amount of missing data and provide a more realistic measure of the child's reading climate. The variables at the three waves (collapsed so that they represented: (i) every day, (ii) at least once a week, (iii) once a month, less often or never) were summed to create a continuous frequency measure over time. The final derived variable ranged from 1 (representing a child who was read to once a month or less – including never – over the ages of three to seven) to 9 (representing a child who was read to every day over the ages of three to seven). This approach meant it was not necessary to drop any relevant information, and facilitates a degree of flexibility in interpretation, particularly in modelling. The mean frequency of reading score for all children is 6.73 with standard deviation 2.01.

³⁸ At wave 3, when children have only been in school for approximately one year and are very unlikely to have been on such school trips, a substantially lower proportion of 45% have attended this kind of cultural event.

³⁹ Other indicators of reading included: how often someone at home helps their child with reading (asked at MCS3 and MCS4) and how often the child reads for enjoyment (asked at MCS4 only). The first of these is closely related to the indicator selected for use in this study, though there is evidence the subtleties have a slightly different effect on outcomes (e.g. Tizard et al 1982). The indicator selected provides more information across multiple waves.

Parental education. Parental education is measured according to NVQ equivalents, which are provided for both parents at each wave of the MCS. The highest qualification across all waves is used. As with NS-SEC, the ‘dominance approach’ is used to derive the highest qualification level in the family.⁴⁰ The variable represents seven categories of educational competence: (i) no qualifications, (ii) overseas qualifications only, (iii) NVQ level 1, (iv) NVQ level 2, (v) NVQ level 3, (vi) NVQ level 4, (vii) NVQ level 5. Educational equivalents are given by the Office of Qualifications and Examinations Regulation (see Ofqual 2013). 5% of parents have no qualifications between them, 52% have been educated at university level,⁴¹ and cumulatively, 89% have A–C grade GCSEs qualifications or above (NVQ Level 2 or higher).

Table 5.4: Frequency Table: Parental Education in the MCS

	N	Percent (%)	Category label
NVQ Level 5	1,134	13	NVQ 5
NVQ Level 4	3,445	39	NVQ 4
NVQ Level 3	1,539	15	NVQ 3
NVQ Level 2	2,295	22	NVQ 2
NVQ Level 1	529	4	NVQ 1
Overseas qualifications only	279	2	Overseas
No qualifications	756	5	None
Missing	3	N/A	
TOTAL	9,980	100	

Parents’ evening attendance. The parents’ evening variable was available at both MCS3 and MCS4, offering information on whether anyone in the household attended. The data for both waves were merged to create one binary variable which considered only parents’ attendance (excluding siblings, grandparents and so on) and indicated whether at least one parent attended at both waves or not.

⁴⁰ Mother’s education and father’s education were also examined separately to address whether maternal education is more influential because mothers typically spend more time with the child in the very early years (a notion which is confirmed with these data: at MCS1, 70% of mothers say they spend ‘plenty of time’ with their child compared to 22% of fathers). During modelling, however, no distinct or significant differences were found, and for the purposes of model parsimony and minimising missing data, the household variable was used.

⁴¹ The MCS defines NVQ level 5 as higher degrees and NVQ level 4 as first degrees.

For 92% of children, at least one parent attended their parents' evening at both age five and age seven.

Voluntary parental involvement with the school. This focuses on a less 'obligatory' form of contact with the school, which parents themselves are most likely to have initiated. At MCS4 parents were asked whether they get involved with any of the following: help out in class; help out elsewhere, e.g. library, school trips, dinner duties; help with fund-raising activities/special events, e.g. fêtes, sports days; help out outside class with special-interest groups like drama/sports; part of parents' association/committee/group; part of management board/governing body; some other activity. A binary variable was created capturing information from both parents. For 64% of children, either their mother or father had been involved with their school in one or more of the ways specified.

Other variables. A number of other measures were included in modelling which primarily act as control variables. It is important to establish the impact of the variables of interest net not only of each other, but also of other pupil-level characteristics we know to be influential on educational outcomes. Learning determinants were controlled for (whether the child has ever been identified as having special education needs (SEN);⁴² whether the child ever attended a private school; whether English is the main language in the household), as were other household-level influences (whether the child has ever lived in a lone-parent household) and a measure of financial capital/stability (housing tenure). For the latter option, a measure of household income was considered but not used because of an unacceptably high amount of missing data and concerns regarding the quality of income data – a problem previously identified with MCS data in particular (Hawkes and Plewis 2008; Hansen and Kneale 2011; Ketende 2010).

⁴² Special Educational Needs (SEN) are needs or disabilities that affect a child's ability to learn. Examples include behavioural or social difficulties, reading and writing difficulties, concentration difficulties, or physical impairments.

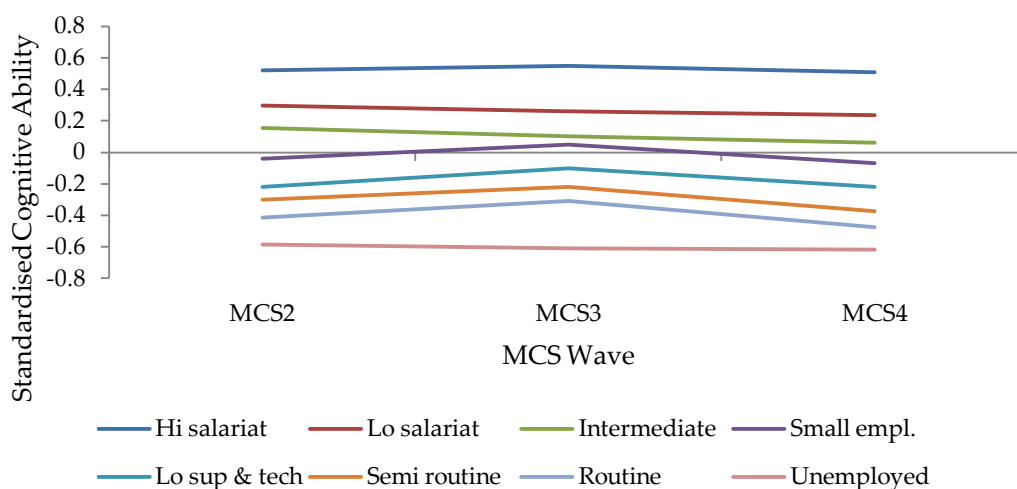
5.3 Descriptive Statistics⁴³

This part of the chapter will address the underlying assumptions Bourdieu makes (described as his theoretical prerequisites and set out in Section 5.1.3).

5.3.1 Mean Scores by Social Class, Gender and Ethnicity

Children from higher-class backgrounds score higher in cognitive tests. This difference is apparent for children as young as three years old, and the trend does not diminish with time. Children in England begin formal education at age four, indicating that background factors which manifest in inequality among children are not challenged in the first few years of school.

Figure 5.1: Standardised Mean Cognitive Ability Scores at Each MCS Wave by Social Class

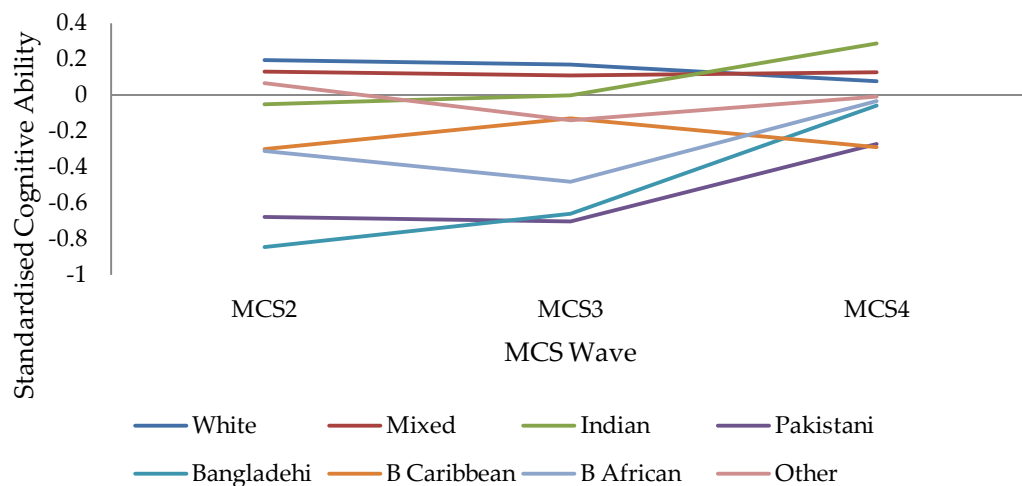


Girls outperform boys in cognitive ability by approximately 0.20 standard deviation units at age three, 0.15 standard deviation units at age five and 0.12 standard deviation units at age seven. The gender gap, so frequently cited in education research is therefore evident even before the commencement of formal

⁴³ For all analyses where mean scores for subgroups are compared over time, the estimate at each wave has been transformed back into standard deviation units in order to account for the increasing variance that has been set over time (see Section 2.3). This ensures that interpretation of comparisons across waves is consistent. The calculation involves dividing the estimates at wave two by 0.77, at wave three by 1, and at wave four by 1.18 (so that mean=0 and SD=1 at each wave).

schooling, though it does reduce by a substantial amount over the ages considered here. See Appendix B, Table B1.

Figure 5.2: Standardised Mean Cognitive Ability Scores at Each MCS Wave by Ethnicity



There is considerable variability in the cognitive trajectories of different ethnic groups over time. Most notably: white children and children from the mixed ethnic group demonstrate relatively stable development over time but are closer to the overall mean by age seven; the three lowest-scoring groups at age three and five – Bangladeshi, Pakistani and black African – show rapid relative rates of improvement by age seven, which reduces the attainment gap between them and children from other ethnic groups considerably; Indian children, whose scores are very close to the overall mean at ages three and five, overtake children from all other groups by age seven.

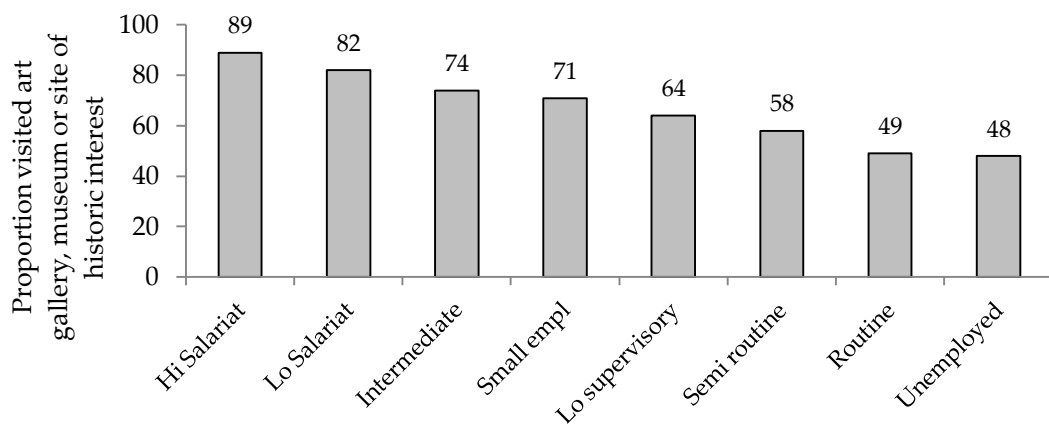
It is notable that the three highest-scoring groups, on aggregate, are overrepresented in the highest social-class category (22% of Indians, 18% of whites and 16% of children from the mixed ethnic group have parents in higher managerial professions), and the three lowest-scoring groups are overrepresented in the lowest social-class category (30% of Bangladeshi, 21% of Pakistani and 21% of black African children have parents who have never worked or are long-term

unemployed). Differences in cognitive development by ethnic group are likely to be mediated a considerable amount by socioeconomic position. Children in England start school at four years old; the rapid improvement made by black African, Indian, Pakistani and Bangladeshi children made between the ages of five and seven implies that their early experiences of formal education are particularly beneficial, while the decline made by black Caribbean pupils suggest that for them the effect is largely reversed.

5.3.2 Cultural Participation

The proportions of children who have visited an art gallery, museum or site of historic interest by the age of seven by social class are displayed in Figure 5.3.

Figure 5.3: Cultural Participation by Social Class (%)



A clear association is found between cultural participation and social class, even for this young age group.⁴⁴ Admission to national museums has been free since 2001, and many English heritage sites, including those controlled by the National

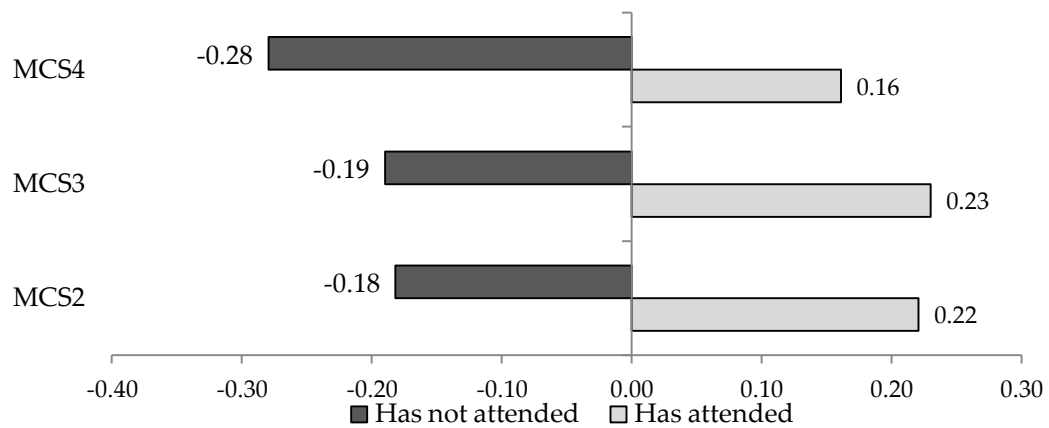
⁴⁴ There is the possibility that some of these cultural trips have been taken with the school, rather than having been organised by parents, and therefore the possibility that cultural competences are being generated both by the school and in the home. For Bourdieu, cultural capital is only generated within the family, but other authors have asserted that it is unrealistic and unreasonable to assume that, in modern societies, schools do not have a significant part to play in 're-socialising' and cultivating children (e.g. Goldthorpe 2007a:9; Bugyi 2008:7). Unfortunately these data are unable to provide information regarding who organised these trips.

Trust, have allowed free access for a number of years. These free-access policies make it easier for families with lower incomes to partake in this kind of formal culture. Though various financial constraints still remain (in relation to travel costs, for example, particularly for historic sites, many of which are located outside inner-city areas that are accessible only by car), these differences are presumably representative of cultural as well as economic capital. This is reinforced when looking at the distribution of cultural attendance by parental education, where the gradient found is similar. See Appendix B, Table B2.

A significant amount of literature has been generated regarding the ethnic, as well as the socioeconomic, characteristics of museum and wider arts audiences. In general, findings have suggested that non-white, but especially black, respondents are significantly less likely to attend the theatre or museums or engage in other arts activities (e.g. Chan et al 2008; JBHE 2008). These data do not serve to reinforce the findings of others in this respect, with proportions of attendance found to be largely similar among whites, children of mixed ethnicity and black Caribbean children (white=75%; mixed=73%; black Caribbean=74%). See Appendix B, Table B3 for the full table. Similarly small differences are found in the participation rates of male and female respondents (boys=75%; girls=72%, $p<0.05$).

There are substantial and significant differences in the mean attainment scores of those who have attended an art gallery, museum or historical site and those who have not, and this difference grows (though very slightly) as children get older. This general relationship is found to exist within each social-class group.

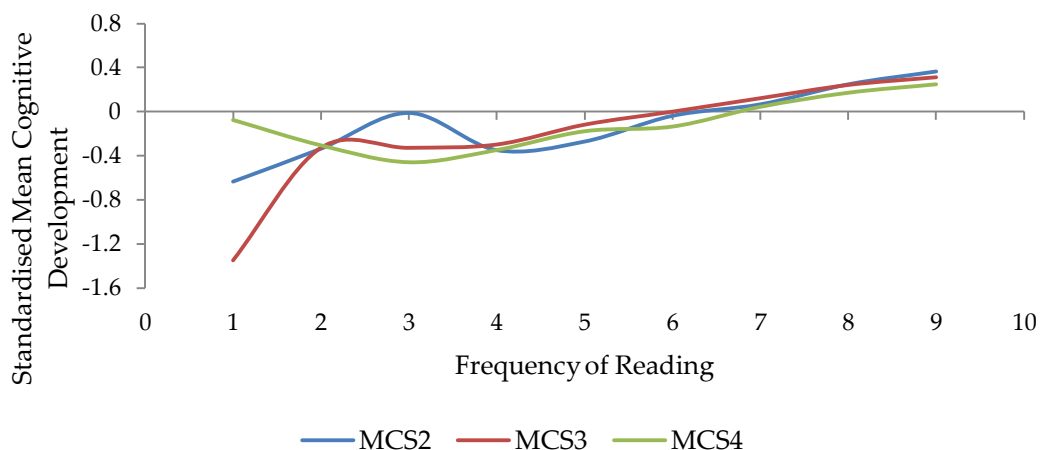
Figure 5.4: Standardised Mean Cognitive Development by Cultural Participation



5.3.3 Home Reading Climate

The mean frequency of reading score for all children is 6.73. Broken down by class, this decreases among lower categories (all of which are statistically significant at $p < 0.05$ and all of which are significantly different from the means of their neighbouring categories). See Appendix B, Table B4. Figure 5.5 represents the relationship between reading and mean cognitive development at each wave, which is weak, though it is clearly positive and is statistically significant. Correlations are given in Appendix B, Table B7. Reading behaviour varies only a negligible amount by ethnicity or gender.

Figure 5.5: Standardised Mean Cognitive Ability Scores at Each MCS Wave by Reading Climate



5.3.4 Parental Education

Parental education is strongly associated with social class – see Table 5.5 – and with both measures of cultural capital (cultural participation and reading behaviour – see Appendix B, Tables B2 and B6).⁴⁵

Table 5.5: Parental Education by Social Class (%)

	Hi salariat	Lo salariat	Inter-mediate	Small empl.	Lo supervisory	Semi routine	Routine	Unemployed
NVQ 5	35	17	4	4	3	2	0	2
NVQ 4	53	55	37	35	26	21	12	10
NVQ 3	7	14	23	21	24	18	14	7
NVQ 2	4	13	31	31	36	37	39	24
NVQ 1	0	0	3	4	5	10	15	12
Overseas	1	0	1	2	2	3	4	9
None	0	1	1	3	4	9	16	36
	100	100	100	100	100	100	100	100

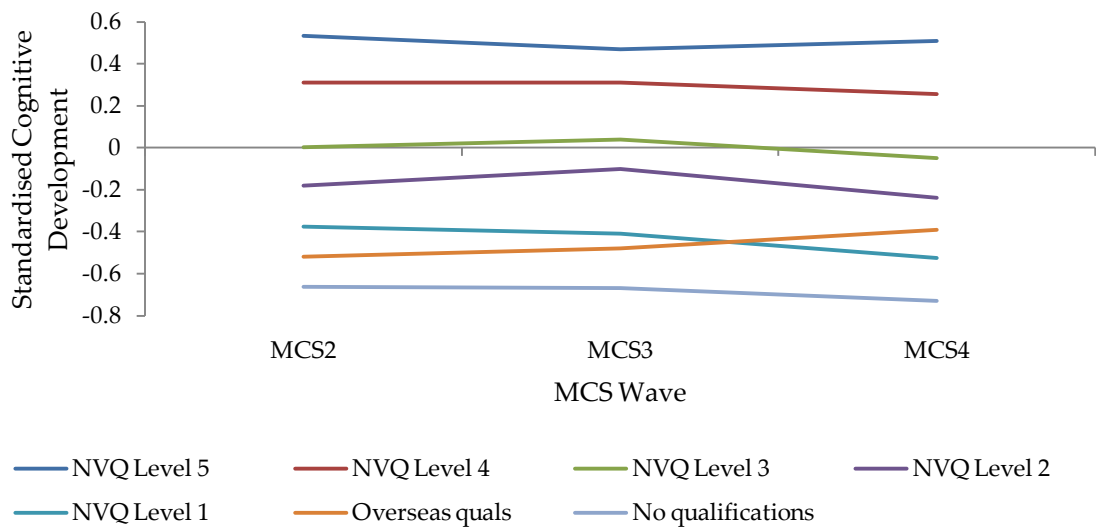
Notes: N=9980

88% of higher salariat households and 72% of lower salariat households have a university-level education (NVQ levels 5 + 4), compared to just 12% of those from both routine occupation and unemployed households. Similarly, substantial numbers of those from the lowest two class categories left school with no good GCSEs⁴⁶ or with no qualifications at all (NVQ level 1 + none) – 31% of routine households and 48% of unemployed households – compared with less than 2% of those from the highest two categories. Figure 5.6 shows the association between parental education and children’s cognitive outcomes.

⁴⁵ Sullivan (2001) stressed the need for research claiming to test Bourdieu’s theories to show, almost as a prerequisite, that parental cultural capital is in fact inherited by children – a factor assumed, but not empirically verified by Bourdieu himself (2001:895). Here, the strength of the associations found between parental education and children’s cultural participation suggests that this process of transmission is taking place.

⁴⁶ ‘Good GCSEs’ are considered those graded A*–C.

Figure 5.6: Standardised Mean Cognitive Ability at Each MCS Wave by Parental Education

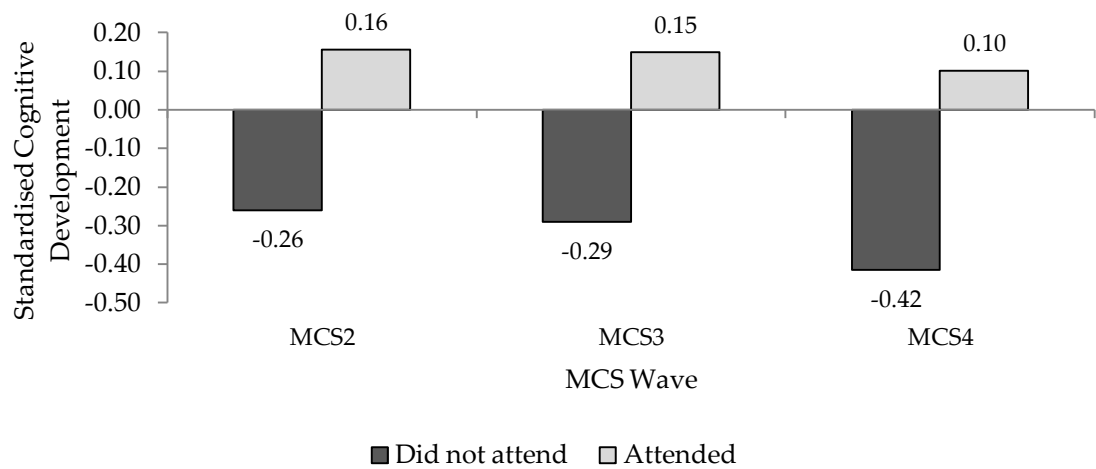


Examining parental education by ethnicity, strong patterns of disadvantage are found for Pakistani and Bangladeshi children: these groups have the highest proportions of parents with no qualifications, and the lowest proportions of parents with a university degree. Indian and black African children have the largest proportion of parents who are educated to university level (61% and 60% respectively).

5.3.5 Parents' Evening Attendance and Voluntary Parent-School Involvement

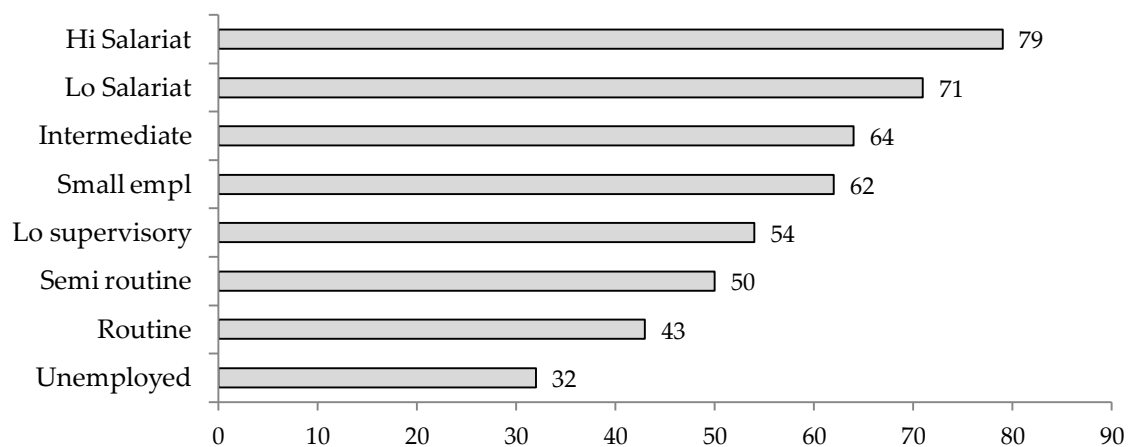
The data indicate that attendance at parents' evenings is indeed positively associated with cognitive ability. See Figure 5.7. For 92% of children, at least one parent had attended parents' evening when they were five and seven, though this proportion exhibited a strong, statistically significant social-class gradient (see Appendix B, Table B8).

Figure 5.7: Standardised Mean Cognitive Ability at Each MCS Wave by Parents' Evening Attendance



Voluntary parental involvement with the school also has a strong relationship with increased cognitive scores at ages three, five and seven ($p < 0.05$ for all waves) (see Appendix B, Table B9) and higher levels of parental involvement are more common among members of higher social-class categories:

Figure 5.8: Voluntary Parent-School Involvement by Social Class (%)



The data reinforce the existing evidence that parental involvement with their child's school has a positive impact on cognitive outcomes, and also imply that parents from higher social-class categories more often engage with their child's school.

5.3.6 Summary

Bourdieu's underlying assumptions have been verified. Young children from higher social-class backgrounds participate substantially more in formal culture, experience a richer reading climate in the home, and have parents educated to substantially higher levels. The parents of these advantaged children more often maintain a close family-school relationship, demonstrated both through higher rates of attendance at quasi-compulsory events (parents' evenings) and through voluntary forms of involvement which are not mandatory or obligatory, such as classroom volunteering. As such, these parents display a degree of comfort and ease in interaction with the school. Each measure of cultural capital and parental habitus-field exhibits a significant positive association with higher cognitive test scores.

Other findings show that girls outperform boys consistently over the ages of three to seven, and that cognitive scores also vary by ethnicity: white children and children of mixed ethnicity are the highest performers at ages three and five, but are overtaken by Indian children at age seven, and Pakistani and Bangladeshi children have the lowest scores at ages three and five, but both improve by age seven, while black Caribbean children decline relative to other groups.

Participation in high culture also varies by ethnicity. White, mixed and black Caribbean children have the highest rates of attendance at high-cultural events, though differences in other forms of cultural capital – namely, reading climate – are negligible across ethnic groups. Indian and black African children have the highest proportions of parents educated to university level, and Pakistani and Bangladeshi pupils have the highest proportions of parents with no qualifications. There is therefore considerable variation in the distribution of different forms of cultural capital by ethnic group.

5.4 Model Specification

Multilevel growth curve modelling is employed to answer the main research questions. The first stage of modelling sought to determine how many levels should be considered for the best fitting model. A likelihood ratio test determined that a three-level model (occasion–individual– ward) was the best fit to the data, though soon after adding a number of individual-level covariates the ward level became insignificant.⁴⁷ There are no substantive hypotheses this research seeks to test at the ward level, and the amount of variance attributable to geographic ward was also small (<7%). For these reasons, the ward level was removed and the modelling employs a two-level structure – occasion at level 1 and person at level 2.

Statistical significance is set at the 95% confidence level throughout all analyses. Model fit is determined using likelihood ratio tests where possible; however, when observations differ (i.e. where there is missing data), the Bayesian Information Criterion (BIC) statistic is employed. A reduction in the BIC statistic indicates a better-fitting model. The final sample size (based on the number of observations used in the final model) is 22,136. This figure was used for all BIC calculations to judge the fit of the model as subsequent indicators were added which, therefore, is a strict criterion for improvements in model fit. Alongside the BIC statistic, Wald tests and joint Wald tests were conducted for each parameter, or set of dummy variables, as appropriate. In all instances, when Wald tests determined parameters to be significant, the BIC also showed a statistically significant improvement in the overall fit of the model.

Once the two-level variance components model was established, the variable measuring age in months was added to the model, creating a linear growth curve model. Essentially, this is a random intercepts model with age as the only covariate. This age term was then declared random at the person level, allowing

⁴⁷ Sullivan et al (2013), using MCS data, also found no significant effect for the ward level once other individual-level covariates were accounted for.

for the idea that this linear growth rate might vary from person to person around its mean value. This random effect, otherwise termed a random slopes model, was found to be statistically significant, implying that there is considerable variation between children in their rates of cognitive growth, over the ages of three to seven.

The covariate for age was then set at random at level 1. The values for the estimates at this level are not of substantive interest to this thesis and will not be discussed further except to note that this was done in order to release the model from the assumption that between-occasion, within-individual variability is constant.⁴⁸ The inclusion of this extra term leads to an improved model with regard to both the level 2 intercept–slope correlation and the overall model fit. The next stage of modelling was to consider the possibility that cognitive growth may not be linear for all children. Introducing a quadratic term for age did not significantly improve the fit of the model.

Tables B10–B13 in Appendix B give parameter estimates and model statistics for each stage of the model-building process, which was carried out in blocks. Where covariates were found to be insignificant (or later rendered insignificant with the inclusion of subsequent variables) these are not shown. First, all fixed main effects were added to the model. The first block includes only social class, and the second adds gender and ethnicity. Next, all control variables were included. Those found to be significant, having accounted for social class, gender and ethnicity, were: whether the child has ever been identified as having special educational needs, the child's prior development score taken from MCS1, and whether the child attended a private school, at either age five or seven.⁴⁹ Next, indicators of cultural capital

⁴⁸ This is done to take account of heteroscedasticity at level 1 (otherwise known as complex level-1 variation) which implies that the residual variance at this level depends on one of the predictor variables (Snijders and Bosker 2012:119).

⁴⁹ Living in a lone-parent household has been shown to be detrimental to children's outcomes (e.g. Krein and Beller 1988; Barajas 2011; National Research Council 2002:169), but in accordance with the findings of other studies (e.g. Sullivan 2013; Institute of Education 2013), its impact on cognitive ability is rendered insignificant once other factors are controlled for. Similarly household language was found to be insignificant after accounting for the other variables in the model.

and habitus–field were added to the model. It is from the model which includes all controls that the direct influence of the social reproduction proxies on cognitive ability is determined (research question 1, part 1).

After all main effects had been added to the model, person-level interaction effects were explored in order to answer research question 3. Essentially, this involved including interactions of all social demographic variables with all measures of cultural capital and parental involvement. Finally, cross-level interactions were explored in an attempt to explain the significant random slope effect found for age, and therefore to address research question 2.⁵⁰

Note that in addressing the influence of cultural capital and habitus–field proxies on the social-class gradient in ability (research question 1, part 2), parameter estimates for each class category are compared between subsequent models (and presented in the main text below) which do not correspond with those given in the appendix. This is in order to determine the influence of these variables on the gradient before accounting for other measures. Essentially, addressing this part of the research question involves comparing a model which includes only social class (and age) with subsequent models that include only social class and social reproduction proxies. This is clearly set out in the findings section.

5.4.1 Robustness Tests

Plewis suggested that ‘if researchers are to adopt a growth curve perspective with [cognitive] test data over more than a narrow age range, regardless of whether or not they do so within a multilevel framework, ... they must try different assumptions about their underlying scale and rely only on those findings which appear robust to changes in those assumptions’ (1996:40). See Section 5.2

⁵⁰ Note that a number of interactions were attempted and found to be insignificant. This includes an interaction between private school attendance and age, in order to explore the main effect which was larger than expected. A number of three-way interactions were also attempted but were also found to be insignificant, including gender-by-class-by-ethnicity.

regarding the decision to use a continuous longitudinal outcome measure with mean set to zero at each wave, but with increasing variance over time.

Researchers examining cognitive growth often employ a z-scale to observe changes over time – that is, a variable which is standardised with a mean of zero and a constant standard deviation of 1. Plewis (1996) finds that model estimates with an outcome measured on a z-scale can differ considerably from those measured with alternative scales, and that the z-scale should only be used with great caution. ‘The assumption of a constant mean is innocuous but it is implausible to assume that variance is constant over age. Nevertheless, this scale is commonly used ... and so it is important to find out how its performance compares with [other] scales’ (Plewis 1996:35). The results of analysis can be considered robust if they are little affected by changes in scale. To address these concerns, the final model was re-run using an alternative specification which uses an outcome variable transformed to the z-scale and is presented in Appendix B, Table B14. The results of this robustness check are discussed along with the main findings.

Other robustness checks included making adjustments to the model specification in order to pre-empt criticisms that may be levelled at some of the decisions taken in this chapter. First, this study considers the unemployed category as the lowest social-class group, though it may be argued that this is inappropriate since Bourdieu focused primarily on comparing the working classes to the more advantaged classes, and also because this is not considered an occupational category in the NS-SEC. In addressing the magnitude of the reduction in the social-class gradient in both cognitive ability and cognitive progress, therefore, the results from the main analysis (which compares the higher salariat group to the unemployed) are contrasted against additional analyses which compare the higher salariat group to the routine class. In so doing, the conclusions drawn are largely unchanged.

Second, this study acknowledges that Bourdieu's theoretical assertions rest on an assumption that the achievement differential is driven by cultural processes that occur in school, and therefore is reflected in unequal grades achieved in formal educational settings. Arguably, cognitive ability scores at age seven more closely represent a measure of educational attainment than do those at age three and five, and it might be hypothesised that the effects of cultural capital and parental habitus-field will be found to be more salient once children are well into their school careers. A single-level multiple regression model was run using the cognitive outcome at age 7 only. This determined whether, in a cross-sectional sense, the indicators of cultural capital and habitus-field are of more influence on the social-class gradient at this stage. In sum, the habitus-field variables are shown to be of marginally more influence when considering this older group, though overall the results of this additional analysis give little reason to alter the conclusions drawn in this chapter.

5.5 Modelling Findings

The total variation in cognitive ability is partitioned between the person level and the occasion level. The variance components model (model VC in Appendix B, Tables B10 and B11) indicates that approximately half of this variation is attributable to differences between children, and approximately half is attributable to changes that an individual experiences over time. The positive intercept variance ($\sigma^2_{u0}=0.51$, $p<.05$) and intercept-slope covariance ($\sigma_{u01}= 0.01$, $p<.05$) found in model M1 (Appendix B, Table B11) suggests that children with a high score at mean age (62 months) often have faster rates of improvement than children with a low test score, indicating not only that early cognitive ability is predictive of later cognitive ability, but also that the disparities between 'successful' and 'non-successful' children, in this respect, widen with age. Appendix A, Figure A4 plots these positively correlated person-level residuals.

Model M3 (Appendix B, Table B10) illustrates that, having accounted only for age, a strong social-class gradient exists for cognitive development for these young children. This inequality is largely unchanged when we account for gender, though it is slightly mediated by the impact of ethnicity – see model M4.

No statistically significant difference is found between white children and children of mixed ethnicity. The model indicates that, compared with white pupils, children from all other ethnic groups fare worse in their average cognitive development, though there is nothing new in this finding for this age range. Having accounted only for gender and social class, the worst-performing ethnic groups are Pakistani and Bangladeshi. The model also indicates a positive effect of being female, which again largely corresponds with previous research findings.

Research question 1 is concerned with the impact of cultural capital and parental habitus–field on children’s cognitive ability, and whether these concepts mediate the social-class gradient. The influence of these measures is considered in the context of a full model; that is, a model which accounts for the influences of all other variables of substantive interest, controls and interactions. Table 5.6 below reproduces the parameter estimates for the main effects of cultural capital and habitus–field from the final model.

Table 5.6: Multilevel Growth Curve Model Predicting Cognitive Development over the Ages 3–7: Beta Coefficients for Cultural Capital and Parental Habitus–Field

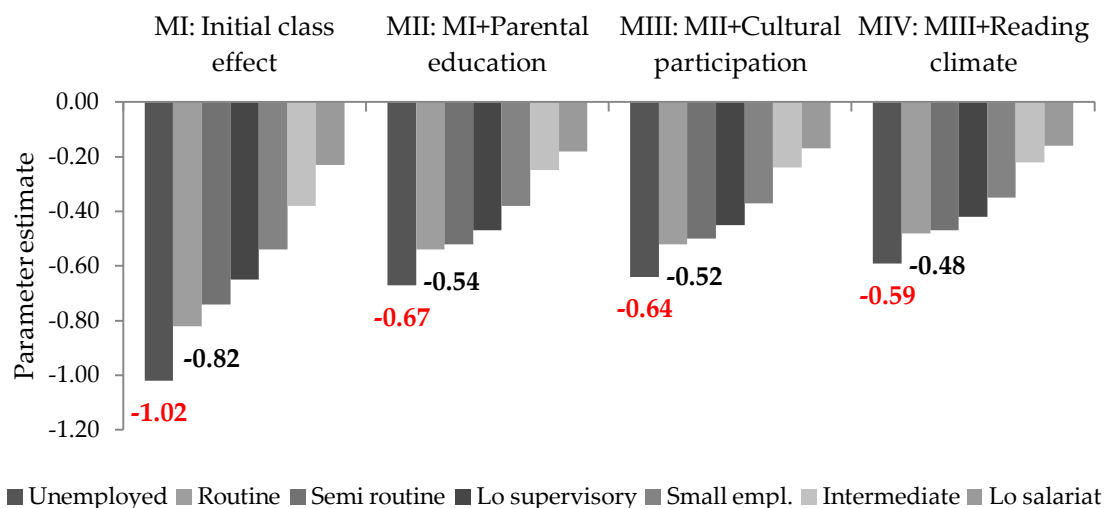
	Estimate (SE)
Cultural capital	
Parental education	
NVQ Level 5	
NVQ Level 4	-0.08 (0.02)
NVQ Level 3	-0.19 (0.03)
NVQ Level 2	-0.26 (0.03)
NVQ Level 1	-0.35 (0.04)
Overseas qualifications only	-0.28 (0.05)
No qualifications	-0.46 (0.04)
Cultural participation	
None	
Visited art gallery, museum or site of historic interest before age seven	0.19 (0.03)
Reading climate	
(Estimate*9)	0.36 (0.09)
Parental habitus–field	
Parents’ evening	
Attended once or never	
Attended parents’ evening at age five and age seven	0.18 (0.03)
Voluntary parent–school involvement	
None	
Parents involved in one or more ways with the school	0.06 (0.02)
Notes: All estimates are significant at the 0.05 level	
Measures of reading climate range from 1 (representing a child read to once a month or less over the ages of three to seven) to 9 (representing a child who was read to every day over this age range); the estimate and its standard error are therefore multiplied by 9.	
Data source: Millennium Cohort Study Waves 1–4	
This table presents the estimates from the full and final model (Final M8) shown in Appendix B, Tables B12–B13	
These estimates represent the direct effects on cognitive development net of the influence of the following variables: age, social class, gender, ethnicity, special educational needs, development score at age nine months, private school attendance, gender-by-cultural participation interaction effect, social class-by-age interaction effect, ethnicity-by-age interaction effect, cultural participation-by-age interaction effect and parents’ evening-by-age interaction effect.	
Observations N=22, 136; BIC=53797	

With all other influences held constant, home reading climate and parental education have the largest impact on children’s cognitive scores. The most substantial difference is between children whose parents are educated to the highest qualification level and those whose parents have no formal qualifications at all (a 0.46 standard deviation unit difference in cognitive ability). Those who

experience a rich reading environment at home are, on average, advantaged with a 0.36 standard deviation increase in their cognitive scores compared with children who are not read to at home. All indicators are significant, demonstrating that both cultural capital and habitus–field are important even after accounting for the effects of each other and the effects of social class. Overall, the effects of the indicators of cultural capital are more influential on children’s cognitive outcomes than are habitus–field variables.

Figure 5.9 demonstrates the influence of accounting for cultural capital on the social-class gradient. MI in this graph is equivalent to model M3 as shown in Appendix B (i.e. a random slopes model accounting only for age and social class). MII represents the addition of parental education to this model, MIII represents the addition of cultural participation to this model, and MIV represents the addition of reading climate to this model.⁵¹

Figure 5.9: Reduction in Social-Class Parameter Estimates with the Addition of Cultural Capital Variables



⁵¹ Note MII, MIII and MIV do not correspond to the ordering of the addition of variables in the appendix.

Accounting for cultural capital in these models clearly reduces the social-class impact on educational attainment. Similar to previous studies, however, we find that cultural capital does not account for all of the variation by social class.

The social-class gradient – quantified by looking at the difference between the highest social-class category (higher salariat = 0) and the lowest category (long-term unemployed) – is reduced by 42% between MI and MIV.⁵² The relevant parameter estimates are given in red in Figure 5.9 above. Adding the parental habitus–field variables into the model leaves this 42% reduction unchanged, and so the results are not reproduced here. This is lower than the 50% benchmark requirement to be considered a *substantial* reduction.

Table 5.7 below displays the above changing parameter estimates in terms of percentage reduction in each social-class category as these cultural capital variables are added. Note that all parameters are statistically significant in all models ($p < 0.05$).

Table 5.7: Percentage Reduction in Social-Class Parameter Estimates with the Addition of Cultural Capital Variables (%)

	MII: MI + parental education	MIII: MII +cultural participation	MIV: MIII + reading climate	Total reduction*
Hi salariat				
Lo salariat	22	7	6	30
Intermediate	34	4	8	42
Small empl.	30	3	5	35
Lo supervisory	28	4	7	35
Semi routine	30	4	6	36
Routine	34	4	8	41
Unemployed	34	4	8	42

*The total reduction is the difference in parameter estimates between model MI and model MIV; it is not, therefore, a summation of the reduction caused by each model

⁵² This is calculated by $100 - (-0.59 / -1.02)$.

Parental education is by far the most influential mediating predictor, for any class category. Participation in formal culture exerts less of an impact than does reading climate, except for those from lower salariat households.⁵³ The total reduction column on the far right shows that cultural capital is least useful for explaining the difference between children from higher and lower salariat backgrounds.⁵⁴

The reduction in the social-class gradient can also be considered omitting the unemployed category, and instead considering the difference between routine households with the higher salariat. This is arguably more relevant as a test of Bourdieu, as he principally focused on comparisons between those from working-class backgrounds and those from the higher classes (see Section 5.4.1). Doing so, 41% of the gradient is explained using the cultural capital proxies ($100 - (-0.48 / -0.82)$). The relevant parameter estimates are given in black in Figure 5.9 above.

An additional analysis involved running a single-level multiple regression model using only cognitive ability at age 7 as the outcome variable, in order to determine whether cultural capital and habitus–field exert more of an influence on the social-class gradient when children are well into their school careers (see Section 5.4.1). The inclusion of all cultural capital variables resulted in a 40% reduction in the class gradient, and then further including habitus–field variables resulted in an overall reduction of 46%. This is a small increase as compared to the growth curve model, though since the habitus–field variables included in this study are only relevant for the school years these results can be expected. Overall, the reduction observed is still less than the 50% substantial reduction benchmark.

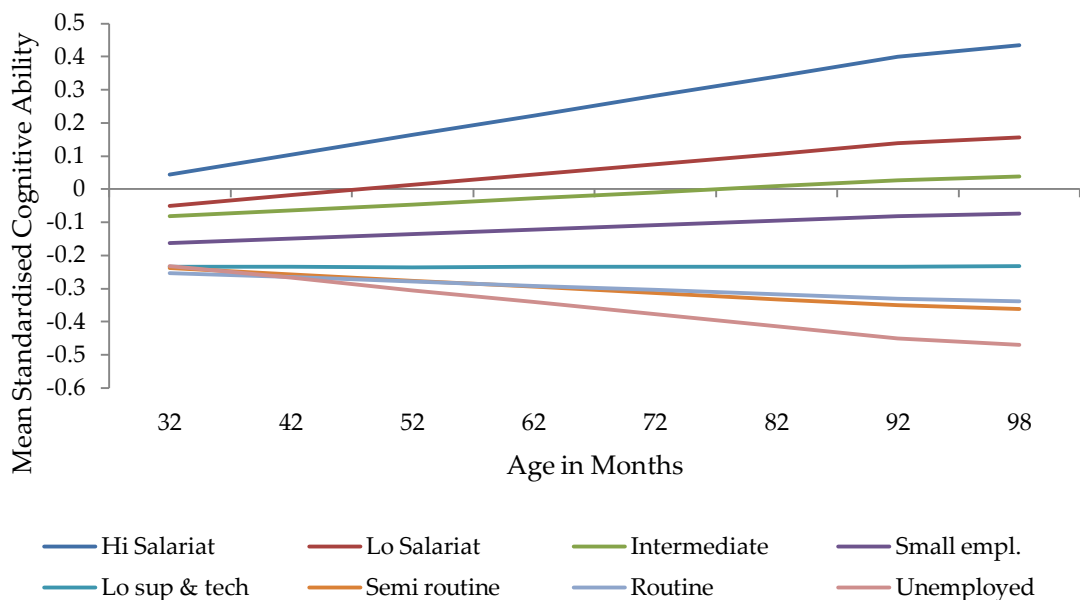
⁵³ Note that various combinations were attempted, where the proxies were introduced to the model in different orders. Doing so leaves the proportionate contribution of each indicator to the gradient reduction largely unchanged.

⁵⁴ Rose and Pevalin (2005) point out what differentiates the lower salariat from the higher salariat is mostly the nature of their occupation being often a ‘junior’ version of a more professional alternative; a teacher as compared with a lecturer or a training lawyer as compared with one who is fully qualified and therefore has fuller access to the advantageous ‘perks’ that come with the job, for example (2005:30). The differences between the two groups are therefore arguably more subtle than others might be.

There have been no attempts to look at the impact of cultural capital on the widening class gradient over time in the UK; that is, to examine whether cultural capital is capable of explaining the differences in rates of progression by socioeconomic status. Research question 2 is concerned with addressing this gap. Kloosterman et al (2011) examined the effects of parental reading behaviour and school involvement on children’s academic performance in the Netherlands. Cheadle (2008) looked at the impact of ‘concerted cultivation’ on the class gradient in scores in the US. Both studies employed growth curve models, and determined that the measures employed for parent–school involvement, reading habits and cultural socialisation all had an impact on achievement, though neither study found evidence to suggest that these determinants could explain social inequality in academic progress.

The cross-level interaction between age and class is illustrated in Figure 5.10.

Figure 5.10: Predicted Cognitive Development Trajectories from Multilevel Growth Curve Model: Cross-Level Interaction between Age and Social Class



In general, those from higher social-class backgrounds not only have higher levels of cognitive ability, they also progress faster than their peers in lower categories.

The above graph plots the predicted values for cognitive ability at different ages, using predictions from model M7 in Appendix B, Table B12. To investigate the effect of cultural capital and parental habitus–field on children’s rate of progress, cross-level interaction effects are included between these indicators and age. The interactions for parental education, home reading climate and voluntary parental involvement were found to be insignificant, and therefore the advantages derived by children in possession of these components of cultural reproduction theory remain largely static throughout the ages of three to seven.

The positive impacts of cultural participation and attendance at parents’ evenings, however, are found to increase significantly over time (though the size of the increase is small), and the inclusion of these interaction effects improves the overall fit of the model. See the parameter estimates from model M8 in Appendix B, Table B12. Over the age range considered, the positive effect of cultural participation on children’s cognitive performance increases from 0.14 when children are three years old (36 months) to 0.19 when children are five years old (60 months) and to 0.23 when children are seven years old (84 months).⁵⁵ The initial advantage of children socialised into high-cultural forms over those who are not therefore grows as children get older. The positive effect of attendance at parents’ evenings on children’s cognitive performance increases from 0.17 ($\beta=0.18+((60-62)* \beta=0.003)$) when children are five years old to 0.25 ($\beta=0.18+((84-62)* \beta=0.003)$) when children are seven years old.⁵⁶

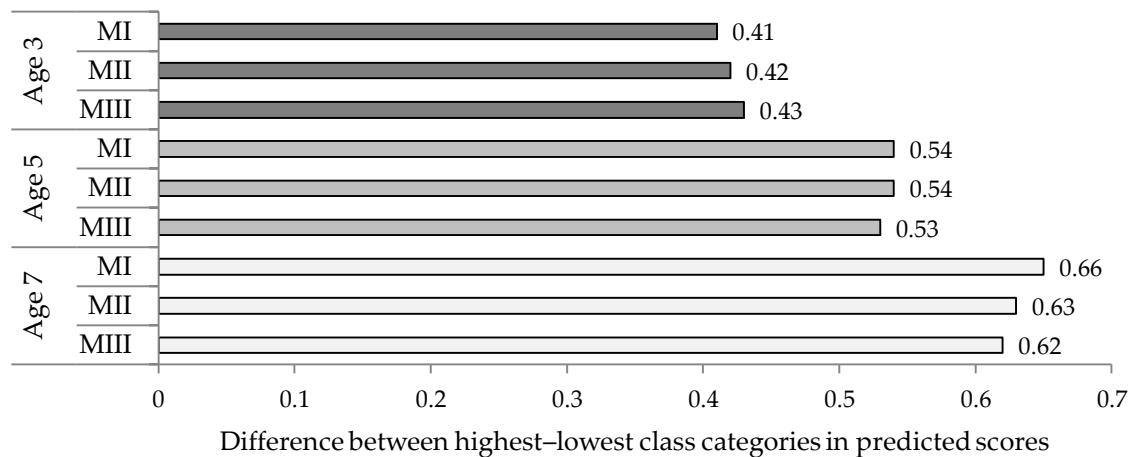
The social-class gradient in the rate of cognitive progress is then examined in order to discern whether cultural capital and parental habitus–field help to explain differences in trajectory by social-class group. Predicted grades are computed from the model at ages three, five and seven for all class groups, then the

⁵⁵ Age is grand mean centred at 62 months. The resulting calculations for each age are therefore as follows. Three years old: $\beta=0.19+((36-62)* \beta=0.002)$; five years old: $\beta=0.19+((60-62)* \beta=0.002)$; seven years old: $\beta=0.19+((84-62)* \beta=0.002)$.

⁵⁶ The effect of parents’ evening attendance for three year olds is not relevant in this context.

difference is calculated between the highest and lowest class categories at each age.⁵⁷ Figure 5.11 below graphs the changes in this highest-lowest difference for model MI (which is equivalent to model M7 in Appendix B, Table B12), model MII (which represents the further addition of the age-by-cultural participation interaction) and model MIII (which represents the addition of the age-by-parents' evening interaction; i.e. equivalent to model M8 in Appendix B, Table B12).

Figure 5.11: Predicted Cognitive Ability Score Differences between Highest and Lowest Social-Class Categories in Multilevel Growth Curve Models: Including Cross-Level Interactions



Overall there is a reduction at ages five and seven in the widening social-class gradient when cultural capital and habitus-field variables are taken into account, but only by a very marginal amount. The extent to which these indicators affect the pace of children's development is negligible. These indicators are only able to explain 2% of the widening gradient at age five ($1-(0.53/0.54)$) and only 6% of the widening gradient at age seven ($1-(0.62/0.66)$). Note that the predicted values were also generated from the models for the routine class, and the difference between the predictions for the routine class and the higher salariat were calculated. With

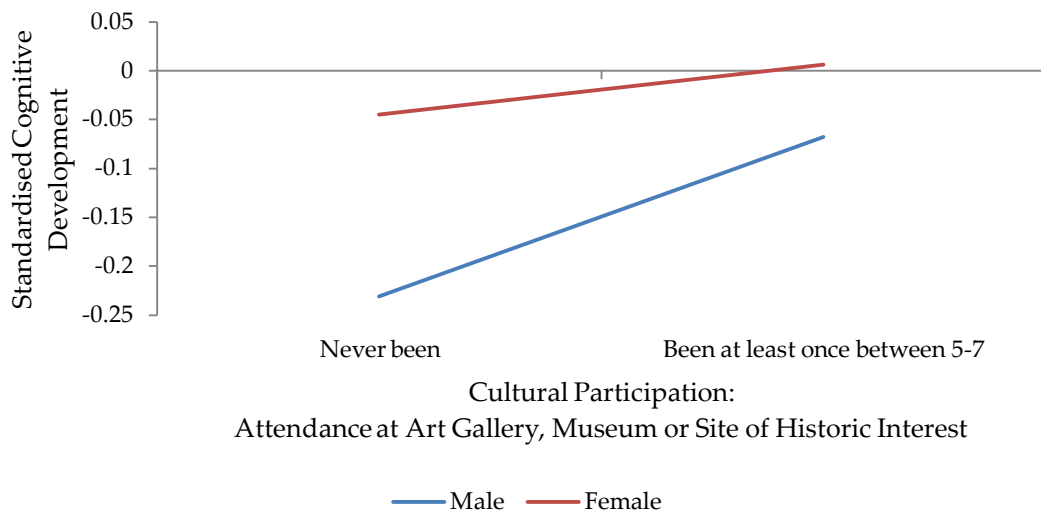
⁵⁷ The difference at age three is divided by 0.77, at age five is divided by 1 and at age seven is divided by 1.18. These are the standard deviations of the outcome variable which is constructed to increase with age (see Section 5.2). This allows for the fact that social-class differences at each age are on different scales for the outcome.

the social-class gradient defined in this way, the proxies were able to account for 2% of the widening inequality in scores at age five ($1-(0.49/0.50)$) and 4% at age seven ($1-(0.54/0.57)$).

The third research question challenges Bourdieu's theory by examining whether cultural capital is equally as important for children of different socio-demographic characteristics. DiMaggio (1982), in contrast to Bourdieu, posits that cultural capital is most useful for children from lower social-class backgrounds, being used as a tool for upward mobility. In order to test whether DiMaggio's theory is a better representation of how cultural capital operates, it is necessary to find a statistically significant interaction effect between cultural capital and social class which exhibits a stronger positive influence for those from lower class categories. All interaction terms between social class, on the one hand, and cultural capital and habitus-field variables on the other, were found to be insignificant. These components of social reproduction theory are therefore just as beneficial to children from all social-class backgrounds.

Following DiMaggio (1982), who found a gender differential in the returns to cultural capital, and Dumais (2002), who suggests there may be such thing as a 'gendered habitus', interactions were attempted between gender and all indicators of cultural capital and parental habitus-field. The interaction between cultural participation and gender was found to be significant (see model M6 in Appendix B). Figure 5.12 illustrates the effect of this interaction:

Figure 5.12: Predicted Cognitive Ability Scores from Multilevel Growth Curve Model: Interaction between Cultural Capital and Gender



Cultural capital is found to be beneficial for both young boys and girls. The interaction also suggests, contrary to previous research, that this form of cultural capital is more useful for boys than it is for girls. The gender differential, however, exists net of the influence of cultural capital, suggesting that cultural participation is not enough for boys to catch up with their female peers of the same age. The predicted scores, in fact, are almost identical for boys who participate in cultural activities and for girls who do not.

Bourdieu neglected to address whether cultural capital and habitus exert different effects for children of different ethnic backgrounds. As discussed above, and tabulated in Appendix B, Table B3, a high proportion of white children (75%) had attended an art gallery, museum or site of historic interest before the age of seven, closely followed by black Caribbean children (74%) and children of mixed ethnicity (73%). The categories with the lowest proportions were Bangladeshi (52%), Pakistani (57%) and black African (58%).⁵⁸

⁵⁸ The large difference in attendance between black African children and black Caribbean children underscores the problems inherent in treating 'black' as a homogeneous category.

Two simple regression models were run in order to examine differences in cultural capital by ethnic group. ‘White’ is used as the reference category for both models. For the first model – a binary logistic regression – cultural participation was employed as the outcome variable and ethnicity was added as an explanatory variable, with a control for social class. The results for the ethnicity parameters, in odds ratios, are displayed in the first column of Table 5.8 below. Significant parameters are indicated in bold. White children are twice as likely to have taken part in this type of cultural activity before the age of seven as black African children (who are the least likely of all ethnic categories, controlling for social class). White children are approximately 1.6 times more likely than Bangladeshi children, 1.45 times more likely than Pakistani children and 1.43 times more likely than Indian children to have taken part in this kind of cultural activity. The results here suggest that black African, Pakistani and Bangladeshi children in particular are not exploiting the equalising potential that this type of activity might afford them.

Table 5.8: Binary Logistic and Ordinary Least Squares Regression Models on Cultural Participation and Frequency of Reading by Ethnic Group (Given as Odds Ratios and Beta Coefficients)

	Cultural participation (odds ratio (SE))	Frequency of reading (parameter estimate (SE))
Mixed	1.00 (0.15)	-0.43 (0.09)
Indian	0.70 (0.11)	-0.64 (0.11)
Pakistani	0.69 (0.11)	-0.71 (0.11)
Bangladeshi	0.62 (0.15)	-0.74 (0.15)
Black Caribbean	1.07 (0.25)	-1.04 (0.22)
Black African	0.53 (0.11)	-1.13 (0.13)
Other	0.89 (0.21)	-0.51 (0.15)

Notes: Each model controls for social class; significant parameter estimates are highlighted in bold (p<0.05)

For the second model, an ordinary least squares (OLS) regression, the continuous frequency of reading measure is used as the outcome, and the parameter estimates for each ethnic group are displayed in the second column of Table 5.8 above. All categories are statistically significant, and children from all ethnic groups have a

lower score for home reading climate than white children. Black African children have a low score and, in contrast to the findings from the cultural participation model, black Caribbean children also have a low score on this kind of cultural capital.

Parents' evening attendance and voluntary parental involvement with the school were also assessed by ethnicity. There were only very marginal differences in the proportions of parents who attended parents' evening by ethnic group, so the results are not reproduced here, though the lowest proportion was among black African children (84%). The proportions of parents involved in voluntary activities with the school varied more; these are not reproduced here but, in summary, proportions were highest among white children and children of mixed ethnicity (66% for both), and lowest among Bangladeshi and Pakistani children (28% and 39% respectively). So, while the trends are not as strong and are not directly reflective of those found for cultural capital, it remains predominantly the same groups that face potential disadvantage – black African, Pakistani and Bangladeshi.

In order to assess whether the returns to cultural capital and habitus were the same for each ethnic group, an interaction was fitted between ethnicity and all indicators of cultural capital and habitus. No significant differences were found, suggesting that the returns are largely the same for children from all ethnic backgrounds, supporting Kalmijn and Kraaykamp's (1996) research. However, this is not to suggest that ethnicity is not important as regards cultural capital: we have observed differences in the distribution of cultural capital, which suggests that, even if it is just as beneficial for all children, some ethnic groups are exploiting these potential returns while others are not; most notably, white children are the major beneficiaries.

An interaction effect was included in the final model between ethnicity and age which was found to be significant. This is not of substantive interest but was essentially left in the model, as differences in the rates of progression by ethnic group are relevant to control for. The findings are not discussed here, but a plot of each group's trajectories over time is given in Appendix B, Figure B1.

Finally, I refer back to the robustness test described in Section 5.4.1, which involved replacing the outcome variable used here with one transformed to the z-scale (the approach taken by most researchers when using growth curve models). See Appendix B, Table B14, which compares estimates from the final model used in this chapter and the alternative test model. The estimates for social class, gender and ethnicity are largely unchanged in relation to other categories in their group. On average, however, the test model reports slightly decreased negative estimates for the (main effect) impact of being in any social-class group compared with being in the higher salariat group, and slightly increased negative estimates of the (main effect) impact of belonging to any ethnic group other than white. Overall, estimates are similar across the two models, and patterns of the magnitude of estimates within each category exhibit largely the same trends. The only cause for concern relates to the interaction between age and social class, which is found, using a joint Wald test, to be insignificant in the test model ($\text{Chi}^2 (7 \text{ df}) = 3.32$ [$p > 0.05$]).

It could be argued that the social-class-by-age interaction is scale dependent and is therefore unreliable (and then so too are the cultural-participation-by-age and parents'-evening-by-age interactions); however, it is perhaps more plausible to infer, based on the discussion in Section 5.2 that the original scale used is most appropriate for studies of this kind, that this should be taken as a warning to other researchers that the z-scale is potentially inappropriate, and careful thought should be given to the choice of underlying metric before building models with standardised outcomes. Had this work been carried out with the longitudinal

outcome variable measured using mean zero and constant variance of unity, it would have been (arguably wrongly) concluded that there are no significant differences in the trajectories of different social-class groups over time for this age range.

5.6 Conclusions

Cultural capital and parents who possess a habitus aligned with the school field have a positive impact on young children's cognitive outcomes. Although the interactions between social class and cultural capital, and social class and habitus-field are found to be insignificant, those from higher socioeconomic groups are still found to be the main beneficiaries of these competences because they are the main possessors. The measures of cultural capital and habitus-field employed here are each useful for different reasons, and have their own independent contributions to children's scores, net of each other.

Parental education and home reading climate are found to be the most influential predictors of outcomes. This is in agreement with the work of some authors (e.g. De Graaf et al 2000; Crook 1997) who find that the influence of reading habits far outweighs the importance of participation in beaux arts, but contradicts the two most prominent studies on the impact of habitus (Dumais 2002; Gaddis 2013), which suggest that it is more important for outcomes than measures of cultural capital. As discussed, the indicators employed here intend to measure a very different aspect of habitus than that of the previously mentioned authors – with their operationalisations largely being based around the component of habitus that is assumed to impact upon aspirations and expectations (Dumais) or attitudes (Gaddis 2013), and being a measure of the child, rather than being based around the parents' relationship between habitus and field, as employed here.

Having determined that measures of cultural capital and parental habitus-field are indeed important for children's outcomes, the more direct test of Bourdieu

then involved an examination of the extent to which these variables are able to account for the social-class gradient. For Bourdieu's assertions to be validated, a benchmark criterion of a 50% reduction in the parameter values between the highest and lowest social-class categories was set. Table 5.7 showed that the overall reduction including only cultural capital indicators was 42%, which is unchanged with the inclusion of habitus-field variables, and therefore does not provide strong support for Bourdieu. Furthermore, for all social-class categories, over 70% of the total percentage reduction in parameter values is accounted for by parental education. Parents' institutionalised cultural capital, therefore, contributes far more to explaining why children from higher social-class backgrounds score higher in cognitive tests than children's beaux arts participation or the reading climate they experience at home.

So, cultural capital and habitus-field have an impact on cognitive outcomes, and behave to mediate the social-class gradient, but not *substantially*. A social-class gradient is also observed in a more dynamic sense – that is, those from higher social-class backgrounds not only do better in cognitive tests, they also progress at a rate faster than their peers from lower social-class backgrounds. Two measures of social reproduction theory are found, also, to vary over time in their impact: cultural participation becomes more important for cognitive outcomes as children get older, and attendance at parents' evenings, too, becomes more important. The ability of these indicators to explain the social-class gradient in cognitive progression, however, is extremely limited; Figure 5.11 demonstrates that there is a reduction in the social-class progression gradient by only 2% at age five and only 6% at age seven. The other measures of cultural capital and habitus-field had no statistically significant impact upon this gradient.

Finally, research question 3 sought to determine whether the benefits of cultural capital and parental habitus-field affinity are equal for children from different (i) social-class backgrounds, (ii) of each gender, and (iii) from different ethnic groups.

No significant differences were found in addressing the first of these. Some authors have interpreted the finding of no differing effects of cultural capital by socioeconomic group as support for DiMaggio (1982); however, I suggest the contrary is true: as long as cultural capital is found, in most part, to be a possession of the higher social classes (which the descriptive analyses above have shown to be so), then the resulting effect of inequality is maintained. That working-class parents typically do not pursue this form of cultivation for their children is enough to ensure that Bourdieu's theory holds, in this respect. Therefore no evidence is found here in support of cultural mobility theory.

Does this suggest that initiatives designed to encourage parents from working-class backgrounds to take their child to the theatre and read more to them at home will reduce the socioeconomic inequalities evident in children's cognitive development? Perhaps it would go some way to addressing this. This possession of cultural capital may be advantageous because, as Bourdieu suggests, it allows children to convey a degree of cultivation to their teachers – to display 'markers' of high culture (Kaufman and Gabler 2004) – however this chapter suggests it is also useful for enhancing cognitive skills and knowledge in a more direct way.

Bellamy et al suggest that museum-based learning is the best way to fulfil children's cultural entitlement (2009:13–14). They propose a number of strategies to encourage schools to visit museums on school trips, which they see as beneficial for all children and as providing 'an awareness of the wider world in ways in which neither parents nor teachers can provide and that might otherwise remain untapped' (2009:10). Kracman (1996) found that schools' provision of exposure to the arts, such as trips to art galleries and museums, has an effect on students' long-term cultural orientation, independent of measures of family influence (also backed up by other evidence, e.g. Oskala et al 2009). This notion represents a

departure from Bourdieu, suggesting that children can gain cultural capital from the school as well as the home.⁵⁹

The findings presented suggest that boys benefit more than girls from cultural participation, but the returns to all other measures are largely equal. First, it is relevant to point out that the patterns of attendance between boys and girls have changed in relation to beaux arts. Previous research has found that girls more often participate in high-cultural activities (e.g. Dumais 2002; DiMaggio 1982), whereas the findings here suggest that attendance is largely equalised for both sexes, with boys in fact participating at a slightly higher rate than girls. It may be that these data, taken from a more recent sample than those used previously, represent a change in attitudes. Previously, an explanation given for lower levels of engagement by boys is that these kinds of activities are largely seen as 'effeminate' (e.g. Dumais 2002). Perhaps due to a general decline in gendered stereotypes, or perhaps due to the recognition that girls are now capable competitors in the educational field and therefore boys need to take additional measures to compete, parents are encouraging this kind of cultural activity among their sons.

Why boys are then more successful at transforming this cultural capital into cognitive success, however, is not immediately clear. Bourdieu asserted that mothers are the main transmitters of cultural capital (1997:54), which is consistent with other research which finds that mothers are far more involved in their child's intellectual and school-related development than fathers (Eccles and Harold 2009). Fathers have been found to spend more time with their sons than they do with their daughters (Wright 2000:189), and this is often spent playing more physically active games (Devor 1989:34). While these are highly simplistic portrayals of mother-daughter and father-son relationships, if the findings of these authors are

⁵⁹ Bourdieu demands that '[T]he educational system demands of everyone alike that they have what it does not give ... [and] can only be produced by family upbringing when it transmits the dominant culture' (Bourdieu 1977:494).

consistent with today's society they may go some way to forming a tentative explanation for the significant gender-cultural capital interaction. Girls' socialisation may be characterised by a range of cultivating activities in ways that boys' typically are not, such as arts and crafts classes, horse riding or more time conversing. When young boys are then exposed to high-cultural forms via trips to art galleries, museums and sites of historic interest they may benefit more relative to girls, who are already somewhat culturally familiar; not enough, however, to supersede their overall disadvantage and equalise their cognitive abilities. It is not possible to confirm whether these assumptions are true with these data.

The findings here suggest that patterns of attendance in beaux-arts by ethnicity are changing (with black Caribbean children visiting art galleries, museums or sites of historic interest at largely the same rate as white children and children of mixed ethnicity), but also, consistent with the findings of Kalmijn and Kraaykamp (1996), cultural capital and habitus-field are just as important for all children.

Importantly, however, there are parents of children in particular ethnic groups who chose not to involve their children in the forms of cultural participation discussed here, read to their children less frequently, have lower levels of educational qualifications and have less frequent contact with the school and teachers at parents' evenings or through other voluntary activities; that is to say, the possession of cultural capital and parental habitus-field affinity is not equally distributed across ethnic groups, and these parents may be neglecting to capitalise on benefits that can advance their children's cognitive abilities. Among the ethnic groups considered here, those with the lowest levels of cultural capital and the highest frequency of habitus-field disjuncture are Pakistani and Bangladeshi.

Chapter 6 will go on to examine many of the same concerns of this chapter, though with a focus on the experiences of young adults approaching the end of their compulsory educational careers.

Chapter 6

Attainment at GCSE: Testing Bourdieu

6.1 Introduction

Differences in attainment by social class, we have seen, begin when children are as young as three years old. We have also seen, in agreement with previous research, that these inequalities widen with age; the previous chapter demonstrated the considerable bearing this has for disadvantaged young children. In this chapter, attention is given to differences in the achievement of formal educational qualifications gained by adolescents in England during the final stages of secondary education. For Bourdieu's theory of cultural reproduction, the processes of inequality which occur during this stage are crucial; at this point, pupils compete for arguably fundamental credentials in what is one of the main institutional loci for reinforcing dominant class advantage: the school.

The majority of research seeking to empirically test Bourdieu's concept of cultural capital has focused on pupils of the age considered in this chapter. GCSE examinations (Key Stage 4) are the first formal examinations that children in the UK take which will determine their future prospects (setting aside the effects of Key Stage 2 and Key Stage 3 results, which are school-administered tests of ability and function, predominantly, to monitor students' ongoing progress and to 'stream' students into tiers of higher and lower ability level; i.e. these tests are mostly preparatory for GCSEs). Key Stage 4 begins when pupils are in year nine (13 and 14 years old), and ends in year 11 (16 years old). These examinations mark the end of compulsory education for children in England.⁶⁰

⁶⁰ The legal school-leaving age has since changed.

This chapter seeks to provide empirical evidence to either support or challenge Bourdieu's theoretical assertions; the findings will determine whether cultural capital and habitus are useful analytical constructs for explaining disparities in formal attainment between class groups at this age. Previous researchers have addressed similar aims using data from the UK, though none have used the advanced statistical modelling approach which is employed for this study. The approach taken here also improves upon other previous work by overcoming various other methodological weaknesses previously identified. This chapter is largely akin to Chapter 5 with respect to the overall research aim, though the methodology adopted, namely in relation to the modelling procedure, concept operationalisation and the research questions posed, is adjusted in light of the possibilities presented by the data.

This chapter uses data from the Longitudinal Study of Young People in England (LSYPE). It also uses data from the National Pupil Database (NPD) which contains a wealth of information on children's examination scores and attendance at educational institutions. The two data sources are linked for the purposes of this study.

6.1.1 Core Findings

This chapter will demonstrate that many of Bourdieu's theoretical assertions are supported in this context. The concepts of cultural capital and habitus can help explain the process of cultural reproduction that occurs in England by reducing the social-class gradient in GCSE scores by more than half. The returns to cultural resources are not found to differ according to social class, gender or ethnicity, indicating that these are beneficial to all pupils. Of prime importance, therefore, is the unequal distribution of cultural capital, which perpetuates differences between possessors and non-possessors. A number of important substantive and methodological concerns are raised which should help guide future research

seeking to test Bourdieu's theory. In breaking down cultural capital and habitus into its constituent parts, the results presented here largely reflect the findings of the previous chapter: pupils' reading habits have a large direct impact upon GCSE scores and cultural participation has the least direct impact, but with regards to explaining differences between social-class groups, it is institutionalised cultural capital in the form of parental education which is the most influential factor. Choice of measurement for outcome variables, the use of multilevel modelling to control for school-level effects and clustering, and appropriate controls for prior ability are shown to be crucial methodological concerns for studies in this field.

6.1.2 Chapter Structure

The chapter will begin by outlining the research questions, explaining these in the context of Bourdieu's theory. Section 2 will describe and justify the construction of variables. Section 3 gives descriptive statistics, describing a number of important associations identified in the data and crucial as a precursor to a study of Bourdieu. Section 4 details the model-building strategy and methods for checking the robustness of the findings produced. Section 5 presents the modelling findings. Section 6 concludes, summarising the main findings of the chapter.

6.1.3 Research Questions

Bourdieu's theory of social reproduction suggests that pupils' endowments of cultural resources, which are transmitted from parents to children predominantly within middle- and upper-class homes, are among the most important sources of advantage in the educational field. Such students outwardly demonstrate their cultural competence in the classroom, and teachers, who are by definition also middle class and interpret this cultivation as an expression of educational competence, reward pupils who do so (Lareau and Weininger 2003:574). The school is thus an important mechanism for cultural reproduction; it is a dominant

class arena, an institutionalised system for legitimating the superiority of elite norms, values and forms of knowledge.

Of course much of this process will have already taken place before pupils embark on this final stage of compulsory education, though the importance of examining this phase lies in the significance of GCSE qualifications for individuals' future occupational and financial prospects. Having GCSE qualifications is often a minimum condition for employment, even in routine manual jobs, and the number and quality of GCSEs gained is the main determinant of whether pupils can continue into further education and/or university in the UK.

Moreover, it is important to examine the impact of cultural capital and habitus for this age group because, in contrast to the discussion in Chapter 5, adolescents are far more autonomous than young children: parents face fewer requirements by the school to be involved in their children's education, and the onus, therefore, is placed far more on pupils to achieve their own success; in relation to generating cultural capital, pupils of this age are often given the freedom to decide how to spend their own leisure time; and in relation to habitus, pupils of this more mature age are more likely to have a self-awareness with regards to their position as an individual, relative to others, in wider society.

Replicating the approach taken in Chapter 5, it is first necessary to determine whether Bourdieu's theoretical prerequisites are met. See Chapter 5, Section 5.1.3. The chapter will then proceed to address the following research questions.

1. How useful are the concepts of cultural capital, habitus and habitus–field for explaining differences in GCSE attainment?
 - Can these concepts explain 50% of the social-class gradient in GCSE scores?

Multilevel modelling is employed in this chapter, though the structures of the models differ from those presented in Chapter 5. Here, the outcome of educational attainment is taken at a fixed time point, which prohibits the use of growth curve analysis and does not allow for the possibility of examining trajectories over time. Instead, the models given in this chapter feature the pupil at level 1, and the school as the contextual level, level 2. The models are first used to determine the strength of the social-class gradient in GCSE scores, controlling for prior ability at age 11. The effects of cultural capital, habitus and habitus–field subsequently added to the model, therefore, are predicted as they occur during the years spent in secondary education. The combined effect of these components of social reproduction theory will be tested to see whether they are able to explain half of the existing social class gradient.

2. Do the returns to cultural capital and habitus differ according to (i) social class, (ii) gender, or (iii) ethnicity?

Mirroring the approach taken in Chapter 5, this chapter will test DiMaggio's (1982) cultural mobility theory. Bourdieu focused on gender in some aspects of his writing (e.g. Bourdieu 2001; 1990a), but did not explain clearly how it could be linked to cultural resources; this chapter will examine the possibility of differential returns by gender, and will also address other authors' suggestions that the concepts of gender and habitus can be married in ways beneficial to sociological research (e.g. Dumais 2002; Kraus and Williams 2000). Finally, the chapter will address previous studies' assertions that cultural capital operates differently (Roscigno and Ainsworth-Darnell 1999), if it is applicable at all (Modood 2004), for ethnic minority groups. Specifying a combination of interaction effects between social class, gender and ethnicity on the one hand, and cultural capital and habitus on the other, this chapter will examine if Bourdieu's concepts can be extended to all subgroups alike.

6.2 Measures

This chapter uses data from the Longitudinal Study of Young People in England (LSYPE) which is linked to the National Pupil Database (NPD) for the purposes of this study.

GCSE attainment. GCSEs are formal examinations sat by pupils at school when they reach the end of Key Stage 4. With these data, weighted to account for the sampling design, the average number of GCSEs taken per pupil is approximately eight.⁶¹ Many schools also offer students the option of sitting short course GCSEs, which contain roughly half the learning material and count as only half a GCSE. In addition, double GCSEs exist, which typically are offered in Science (Chemistry and Biology) and English (English Literature and English Language), and count as two GCSEs. 471 of the 15,403 students in the LSYPE achieved no GCSEs at all (3% with weighted data).

Not only is the number of GCSEs important as an indicator of achievement, but also the quality of the grade; possible grades range from A* as the highest, to F (fail) and U (unclassified), which is attributed if students do not attend the exam they are registered for, for example. Official reports of GCSE grades, including those cited by government, tend to consider the achievement of five or more A*–C grade GCSEs as the standard benchmark of achievement. Many sixth form colleges and other further educational institutions⁶² employ this benchmark as an entry requirement. Further, the National Qualifications Framework (NQF) classifies GCSEs graded D–G as a level 1 qualification and GCSEs graded A*–C as a level 2 qualification, highlighting the difference in value.

⁶¹ This per pupil figure largely corresponds with those cited by the ONS in a 2010 publication; the average number of GCSEs taken per pupil has remained mostly constant since 1997/1998 (see ONS 2012).

⁶² 'Further education' (FE) is distinguished from 'higher education' (HE), the former typically referring to education beyond the point of compulsory schooling (i.e. after GCSEs) and the latter typically referring to the education received in universities.

This chapter employs a continuous measure of GCSE attainment which takes account of both the number of GCSEs and the grades achieved, in order to reflect the above. The construction of the outcome variable involved creating a points system, where the following scores were attributed to the achievement of each of the below GCSEs.

Table 6.1: Construction of Continuous GCSE Score Outcome Variable

Full GCSEs							
A* = 8	A = 7	B = 6	C = 5	D = 4	E = 3	F = 2	G = 1
Half GCSEs							
A* = 4	A = 3.5	B = 3	C = 2.5	D = 2	E = 1.5	F = 1	G = 0.5

The scores for each student were then summed to create the continuous measure. See Appendix A, Figure A9 which illustrates the distribution of this variable in the form of a histogram. The scores range from 0 to 111; with weighted data, the mean score for the sample is 39.66 with standard deviation 20.63.

Social class. For NS-SEC, the dominance approach (Erikson 1984) is adopted to determine the highest occupation in the family. The value is taken at wave 4, though is replaced by the value at wave 3 if the information in wave 4 is missing, and so on. For the unemployed category, the value is replaced with any other NS-SEC value (if different) at a previous wave – this is done in an attempt to most appropriately allocate individuals to a social class.⁶³ 320 cases did not have information for mother or father’s NS-SEC category for any of the LSYPE waves. The proportions in each class are not dissimilar to those given using the MCS data in Chapter 5.

⁶³ The majority of cases listed as unemployed in one wave were also listed as unemployed in other waves, or were in the routine or semi-routine classes.

Table 6.2: Frequency Table: Social Class in the LSYPE – Waves 1–4

	N	Percent	Category label
Higher managerial, administrative and professional	1,697	13	Hi salariat
Lower managerial, administrative and professional	4,568	33	Lo salariat
Intermediate occupations	1,430	9	Intermediate
Small employers and own account workers	1,594	10	Small empl.
Lower supervisory and technical occupations	1,388	9	Lo supervisory
Semi routine occupations	2,056	13	Semi routine
Routine occupations	1,387	8	Routine
Never worked and long-term unemployed	963	3	Unemployed
Missing	320	-	
TOTAL	15,403	100	

Social demographics. 51% of pupils are male (N=7,832) and 49% are female (N=7,571).⁶⁴ 86% of students are white, but subsample sizes of all groups considered are still sufficiently large for robust significance tests. Information on ethnicity was missing from 24 cases.

Table 6.3: Frequency Table: Ethnicity in the LSYPE – Waves 1–4

	N	Percent (%)	Category label
White	10,328	86	White
Mixed heritage	786	3	Mixed
Indian	1,009	2	Indian
Pakistani	945	2	Pakistani
Bangladeshi	728	1	Bangladeshi
Black Caribbean	573	1	B Caribbean
Black African	595	2	B African
Other	415	2	Other
Missing	24	-	
TOTAL	15,403	100	

Cultural participation. The first measure of cultural capital employed here is an indicator of cultural participation, attempting to replicate the ‘classical operationalisation’ strategy (De Graaf et al 2000). The LSYPE asks whether pupils have visited the cinema, theatre or concert in the last four weeks. Despite the limitation associated with this measure – acknowledged in Chapter 4 – the

⁶⁴ In some cases the value for gender was found to be inconsistent across waves; the gender variable available in the NPD was, in these instances, used to verify the sex of the individual.

variable is the best proxy available in the LSYPE, and attendance is correlated with social class and parental education. The question is asked of participants at waves 1, 2 and 4; a fixed variable was constructed to distinguish between those who have never been (16%; N=3,466) and those who have been at least once (84%; N=11,777). This information was missing from 160 cases.

Reading habits. A continuous measure was created to indicate how much time children spend reading for pleasure. At waves 1, 2 and 4 participants were asked to indicate how often they read on a six-category Likert scale ranging from 'never' to 'most days'. Where there was missing data at any wave, these were replaced with valid values from the closest alternative wave⁶⁵. The values were then summed to create a continuous frequency variable ranging from 1 (never) to 16 (every day) over the period of study for Key Stage 4 (ages 13–16; waves 1–4). The mean value for this variable is 11.21 with standard deviation 3.99. This information was missing from 162 cases.

Parental education. Parental education is measured with a seven-category variable, similar to that used in Chapter 5.⁶⁶ The dominance approach is adopted to derive the highest qualification held within the family and the variable, originally measured at waves 1, 2 and 4, is fixed by assigning the highest value across all waves. 19% of children are from families in which at least one parent holds a degree, and cumulatively, 80% of children are from families who have achieved, at least, GCSEs graded A*–C.

⁶⁵ This was done in order to avoid those who dropped out at later waves being allocated a lower overall score.

⁶⁶ The main difference between the parental education variables is that for the MCS, NQV level 5 represents a higher degree, and NVQ level 4 includes first degrees, higher-education diplomas, professional qualifications at degree level and nursing or other medical qualifications. As such, Chapter 5 gives a substantially higher proportion of households with NVQ Level 5 equivalent qualifications.

Table 6.4: Frequency Table: Parental Education in the LSYPE – Waves 1–4

	N	Percent (%)	Category label
Degree or equivalent	2,491	19	NVQ 5
Higher education below degree level	2,249	16	NVQ 4
GCE A level or equivalent	2,527	18	NVQ 3
GCSE grades A*–C or equivalent	3,754	27	NVQ 2
Qualifications at level 1 and below	932	6	NVQ 1
Other qualifications	353	2	Overseas
No qualifications	2,762	12	None
Missing	335	-	
TOTAL	15,403	100	

Parents’ evening attendance. The parents’ evening attendance variable was measured at waves 1, 2 and 3. Only 5% of parents had never attended so, in order to increase overall variability, the fixed variable created was dichotomous, distinguishing between children whose parents either never attend or irregularly attend (N=3,909; 28%) and those whose parents always attend parents’ evenings (N=11,396; 72%). This information was missing for 98 cases.

Parents’ ease in dealing with school. A further measure for parental habitus–field was employed which indicates whether parents agree or disagree with the statement ‘I find it easy to deal with people at [my child’s] school’. This question was asked only at wave 1, where 90% of parents said they find it easy to deal with people at their child’s school (N=13,339), and 10% of parents did not (N=1,469). Information was missing from 595 cases.

Private home tuition. Whether the student has private tuition at home in subjects taken at school to supplement their studies is asked at all waves and a binary measure is created to indicate whether or not they have ever had this. 25% of students have had private tuition at some point over the Key Stage 4 period (N=3,625) and 75% have not (N=11,686). Information is missing from 92 cases. In modelling, a control for economic capital/financial stability (in the form of housing tenure) was included in an attempt to measure parents’ expenditure of money to

‘conserve and increase cultural capital’ (Bourdieu 1977:495) net of their financial capabilities to do so.⁶⁷

Students’ habitus. Respondents are asked whether they agree or disagree with the statement ‘people like me don’t have much of a chance in life’. Overall 10% agree with the statement (N=1,189) and 90% disagree (N=10,783). Information is missing from 3,431 cases – a high amount; 1,027 of these missing cases refused to answer the question or answered ‘don’t know’, and most of the remaining cases are missing due to sample attrition. Despite the large number of missing cases the variable is considered an excellent proxy for habitus, and an improvement upon those used in many previous studies.

Other variables. In modelling, other covariates are controlled for, so that the effects of cultural capital and habitus can be observed net of other, potentially distorting, influences. As in Chapter 5, whether the student has ever been identified as having special educational needs (SEN) is controlled for (24% have; N=3,098), as is previous attainment (an average points score (APS) from their Key Stage 2 results⁶⁸, which ranges from 2 as the minimum score to 969 as the maximum score, with mean 553 and standard deviation 217) and whether or not they ever lived in a lone parent household (29% have; N=4,747). Whether or not English is the first language in their household was included but found to be insignificant, as was housing tenure. These were subsequently removed. A number of contextual-level controls were also included: a continuous measure of the percentage of pupils attending the school that are eligible for free school meals (FSM) (ranging from 0–83%, with mean 18% and standard deviation 16), and

⁶⁷ The housing tenure measure was later found to be insignificant and was removed from the model. However, the effect of financial stability is thus mostly subsumed by other indicators (presumably predominantly by social class), so the net effect of private tuition is still considered a decision driven by cultural, rather than economic, capital.

⁶⁸ Key Stage 2 refers to the period of compulsory schooling when children are aged between 7 and 11 (primary school). Children take formal tests at the end of this period which are marked by their teachers as part of the national curriculum.

whether the school attended at the point of sampling is maintained (state-funded) or independent (fee-paying) (6% are independent; N=516).

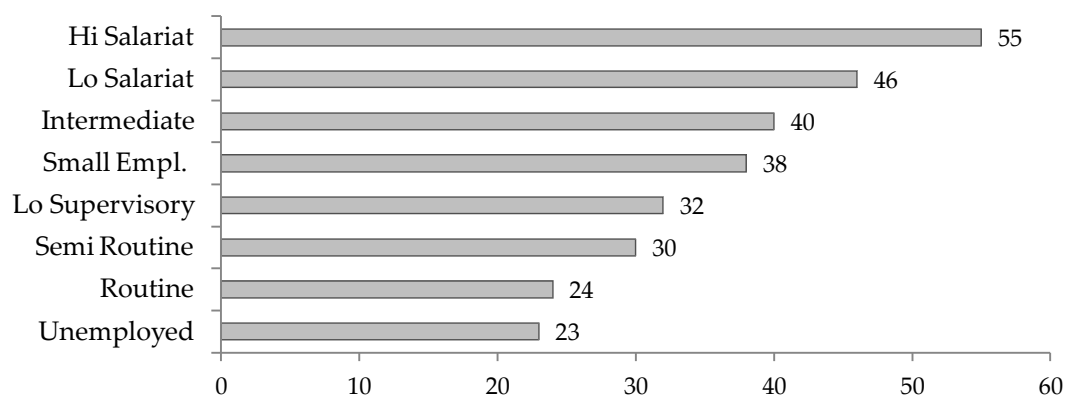
6.3 Descriptive Statistics

This section presents the results of bivariate analyses addressing a number of important relationships which underlie Bourdieu's theory, and will also demonstrate if there are differences in the distribution of cultural capital, habitus, or habitus-field by gender or ethnicity.

6.3.1 GCSE Attainment by Social Class, Gender, Ethnicity and Key Stage 2 Scores

Figure 6.1 illustrates the social-class gradient in GCSE attainment, confirming that inequalities in this regard are apparent for students of this age range. The mean scores for each class are significantly different from their neighbouring categories, apart from those in the routine class and those whose parents are long-term unemployed or have never worked.

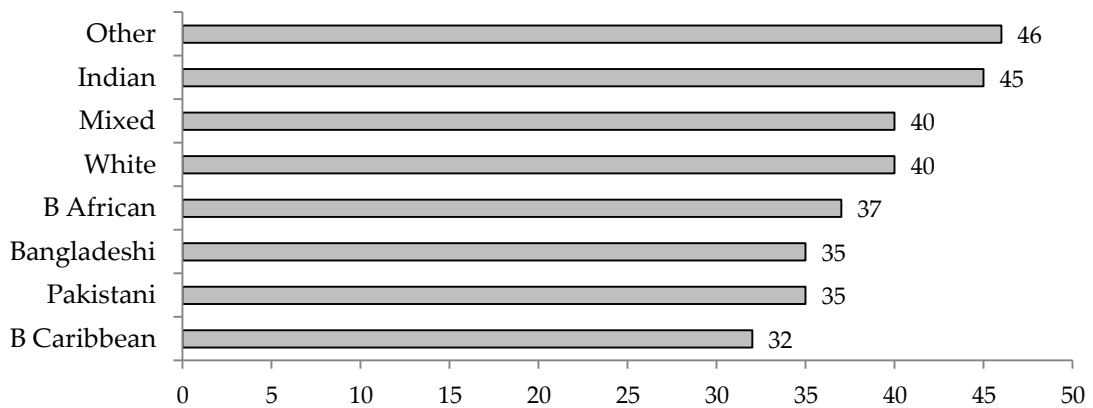
Figure 6.1: Mean GCSE Attainment by Social Class



Girls outperform boys at GCSE, which is well-documented by a vast amount of research. There is some evidence that the gender gap has, in fact, widened in recent years (DfE 2013). The average score for female students is 42.09 and for male students is 37.32; the difference between them is statistically significant ($F=47.45$; $p<0.05$).

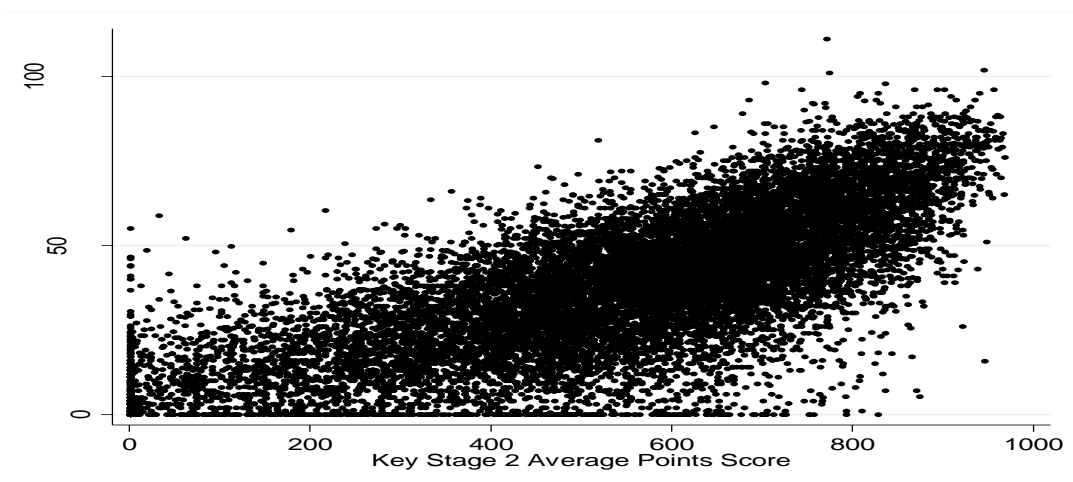
The 'other' ethnic group is the highest scoring, closely followed by Indian students. This category contains Chinese students who, in recent years, have consistently been found to be the highest attaining ethnic group (DfE 2013) and are likely to be one of the main reasons for this group's high achievement level.⁶⁹ The ethnic groups whose average scores fall short of the mean are black Caribbean, Bangladeshi, Pakistani and black African (with white and mixed groups only narrowly surpassing this).

Figure 6.2: Mean GCSE Attainment by Ethnic Group



There is a clear positive relationship between scores at age 11 and scores at age 16; see Figure 6.3. The pairwise correlation between the two variables is 0.75 ($p < 0.00$).

Figure 6.3: Key Stage 2 Average Points Score by GCSE Score



⁶⁹ Before categories were collapsed, mean scores were assessed by a more nuanced version of the ethnicity variable. Chinese students are found to be by far the highest scoring group with mean 57.52.

Attainment at Key Stage 2 also differs by student characteristics. See Appendix C, Table C1. A social class gradient exists in scores at this age, ranging from a mean score of 684.22 for those from higher salariat family backgrounds to a mean score of 400.66 for those from unemployed family backgrounds (with overall mean 553). Similarly, the gender gap is evident for children at this age. At age 11 white children have the highest mean score (573.77), followed by children of mixed ethnicity and Indian children. Pakistani children have the lowest mean score (449.55) followed by Bangladeshi children. These results largely reflect the well-known findings of education research for children at the end of their primary education (e.g. Sammons et al 2008).

6.3.2 Cultural Capital

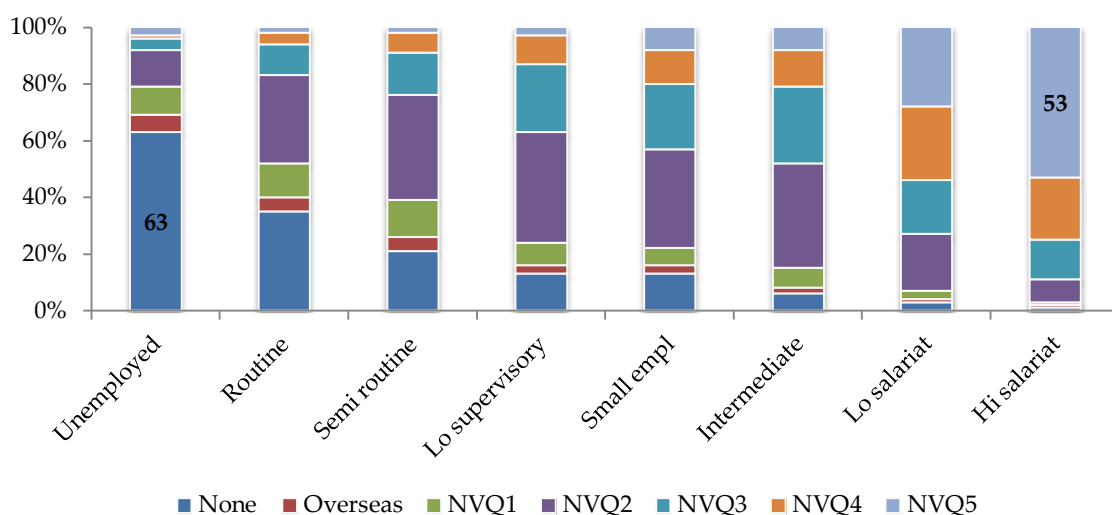
For cultural reproduction theory to operate in the way Bourdieu suggests it is necessary to find that cultural capital is largely a possession of those from higher social class origins. Table 6.5 illustrates the distribution of cultural capital across the social-class categories. Those from higher and lower salariat and intermediate backgrounds attend cinema, theatre or concerts more often than other groups and more often than the overall mean. Similarly, students from these groups have a higher mean frequency of reading score than the average. Overall, though, students from all class groups are shown to possess some embodied cultural capital. The distribution of institutionalised cultural capital – parental education – is more polarised. Children with parents in professional-managerial backgrounds have by far the highest proportion with a degree, and those whose parents are unemployed have a proportion far higher than any other category who have no qualifications. According to these distributions, a clear gradient exists with regard to the possession of cultural capital, though those from unemployed backgrounds tend to have slightly more cultural capital than their peers with parents in routine occupations. This may be because some of those who are officially long-term unemployed or have never worked are relatively wealthy so that they do not need

to earn a salary; these people, especially those in the ‘never worked’ category, would therefore be considered upper-class, though these are likely to make up a very small proportion of the people in this category.⁷⁰ See Appendix C, Table C2 for a more detailed breakdown of parental education by social class, and see Figure 6.4 below for a graphical representation.

Table 6.5: Distribution of Cultural Capital across Social-Class Categories

	Cultural participation	Reading habits	Parental education	
			Degree	None
Overall proportion/mean	84%	11.21	19%	12%
Hi salariat	92%	12.25	53%	1%
Lo salariat	88%	11.57	28%	3%
Intermediate	85%	11.27	8%	6%
Small empl.	83%	10.95	8%	13%
Lo supervisory	80%	10.68	3%	13%
Semi routine	76%	10.62	2%	21%
Routine	71%	10.16	2%	35%
Unemployed	73%	10.43	3%	63%

Figure 6.4: Parental Education by Social Class (%)



⁷⁰ It is difficult to confirm this with LSYPE data; there is information on household income however this is derived from questions regarding parents’ salaries and therefore would still be non-applicable to those out of work due to wealth.

The distribution of cultural capital is then explored in relation to students' ethnicity and gender. See Table 6.6. The results in Chapter 5 challenged existing research which has tended to document a lack of participation in the arts by certain groups – most notably low-income and non-white ethnic groups (particularly black); findings from the 'Arts Debate'⁷¹ have suggested this is due not only to tangible obstacles such as cost, but also attitudinal obstacles, where these groups feel 'out of their depth' and as if it is not the norm for people 'like them' to attend arts activities (Arts Council 2007:54; Chan 2008:7). Chapter 5 showed that while rates of cultural participation were highest among young white children (75%) they were also very high among black Caribbean children (74%) and those of mixed ethnicity (73%). The proportions engaged in highbrow cultural activities in this chapter, for this older age group, again provide contrasting evidence to previous findings, though are different to the patterns suggested in Chapter 5: apart from Pakistani and Bangladeshi children (who also have the lowest rates of participation as young children), white children are found here to have the lowest rates of attendance at the theatre, concerts or the cinema, and black African children have the highest rates of attendance.⁷²

Mean reading scores are lowest for those from Pakistani and Bangladeshi ethnic groups and highest for black African pupils. Bangladeshi pupils face the most disadvantage in terms of parental educational levels, with an extremely low number holding a degree in the household (3%) and a very high number with no qualifications at all (77%).⁷³ Black African children have the highest proportion of at least one parent having a degree, though a similarly high proportion also have

⁷¹ The 'Arts Debate' is a large-scale programme held by the Arts Council exploring how people in England value the arts.

⁷² Though these results are not as one would expect, thorough checks were carried out to ensure that the variables were all correctly coded and relationships between ethnicity and other variables did indeed reflect other common findings.

⁷³ This extremely high proportion, which is not found with other data such as the Taking Part Survey, was compared with the findings from Strand (2007); the patterns of parental educational qualifications by ethnicity largely reflect those found here, with only minor exceptions, which are probably because Strand used mothers' education instead of the dominance approach used here.

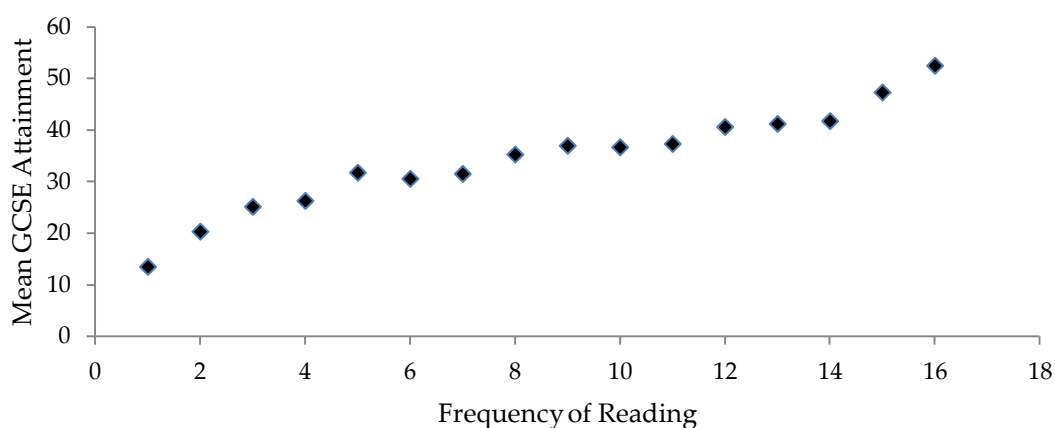
no qualifications.⁷⁴ Similar results were found in Chapter 5. See Appendix C, Table C3 for a more detailed breakdown of parental education by ethnic group.

Table 6.6: Distribution of Cultural Capital by Ethnicity and Gender

	Cultural participation	Reading habits	Parental education	
			Degree	None
Overall mean	84%	11.21	19%	12%
White	83%	11.16	19%	9%
Mixed	85%	11.39	25%	13%
Indian	87%	11.55	18%	26%
Pakistani	79%	10.88	11%	53%
Bangladeshi	74%	10.98	3%	77%
Black Caribbean	85%	11.86	15%	12%
Black African	90%	12.02	29%	25%
Other	88%	11.51	21%	35%
Male	81%	10.51	19%	12%
Female	86%	11.92	19%	12%

The possession of cultural capital has a clear relationship with increased scores at GCSE. The mean score of those who have attended the theatre, a concert or cinema at least once over the ages of 13–16 is 42.24 compared with the mean score of those who have not attended of 26.66 ($F=434.81$; $p<0.05$). Similarly, an increased frequency of reading is associated with increased GCSE scores. See Figure 6.5.

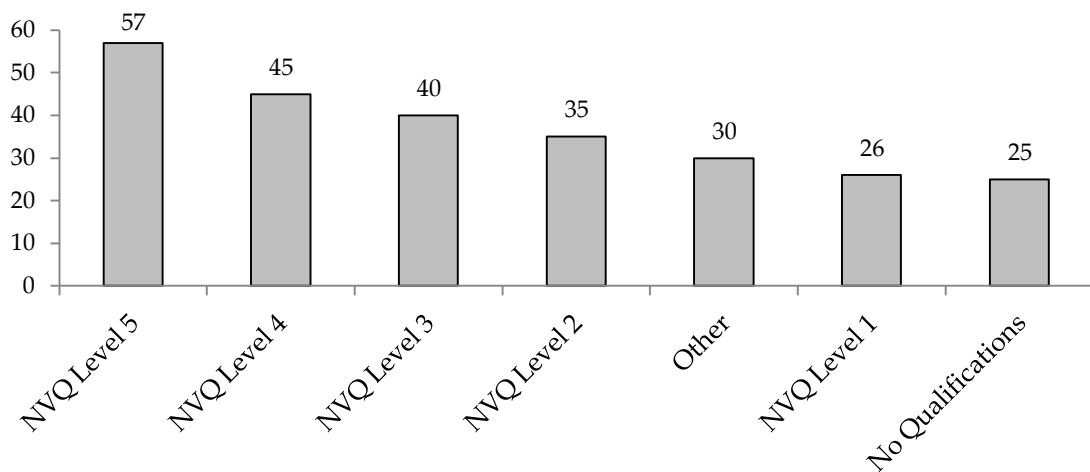
Figure 6.5: Mean GCSE Attainment by Frequency of Reading



⁷⁴ Strand (2007) also finds the highest proportion of parents (separated by mothers' and fathers' education) with a degree or equivalent to be among black African families.

There is also a clear relationship between increased levels of parental education and higher mean attainment scores. Those with 'other' qualifications typically have overseas qualifications only which cannot be categorised into the National Educational Framework for Britain; students with parents in this category have higher scores than those whose parents have as their highest qualification GCSEs graded D–G or no qualifications at all. Note that there is no statistically significant difference in the mean scores of those whose parents have qualifications at level 1 (GCSEs graded D–G) and those whose parents have no qualifications.

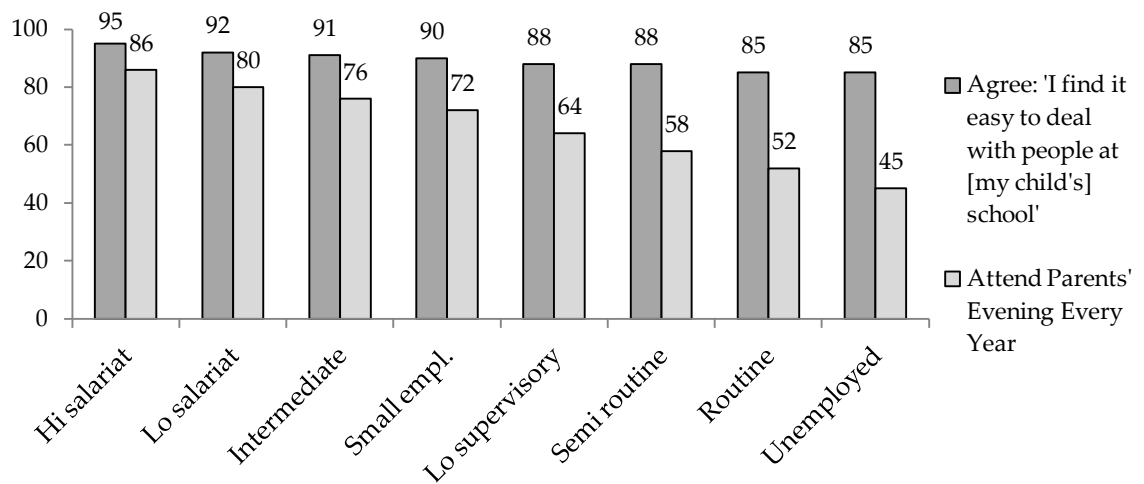
Figure 6.6: Mean GCSE Attainment by Parental Education



6.3.3 Parental Habitus–Field

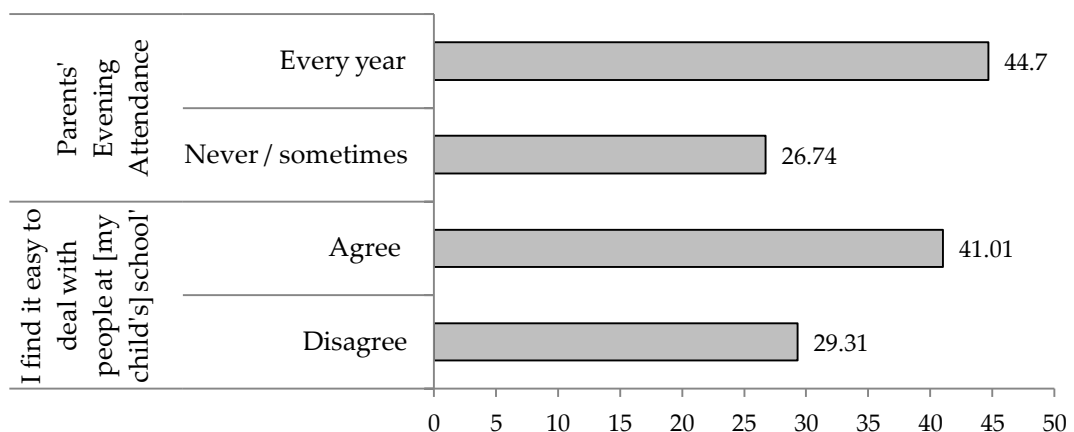
Based on Bourdieu's theory, we would expect to find that students whose parents have a degree of habitus–field affinity (comfort and familiarity with the school environment, expressed in terms of participation in it and interaction with it) are found in the higher social classes, and that these students have higher GCSE attainment. See Figure 6.7 which illustrates this association.

Figure 6.7: Parental Habitus–Field Alignment by Social Class



Parents from higher social classes both participate more in their child’s school life by consistently attending parents’ evenings and higher proportions of these parents find it easy to deal with staff at their child’s school, though there is far less variability in this second measure. These associations imply that the binary measures employed here do reasonably represent a ‘middle-class habitus’ on the one hand (those who agree with the statement and those who attend parents’ evenings consistently) and a ‘working-class habitus’ on the other (those who disagree with the statement and those who irregularly or never attend parents’ evenings), with the former being more complementary to the school milieu and requirements. Furthermore, Figure 6.8 below confirms that habitus–field affinity indeed does have an association with increased scores at GCSE.

Figure 6.8: Mean GCSE Scores by Parental Habitus–Field



Attendance at parents' evenings differs by ethnic group, with the highest proportion of consistent attendance being among parents of Indian children (80%). There is much previous evidence to suggest that Indian parents place a high value on education, and this result is not particularly surprising (Modood 2003); the same is said among black African parents (Demie 2012), reflecting the results found here (77%). The lowest proportion is found for Bangladeshi children, by a considerable amount (60%). See Appendix C, Table C4. The results here also show that Indian children have the highest proportion of parents who agree that they find it easy to deal with people at their child's school (93%). They are followed by black African and black Caribbean children. For all ethnic groups, those from higher social-class backgrounds have higher levels of participation in, and comfort with, their child's school.

Parents of Indian children arrange private tuition for their children more often than any other group, with 45% of these children having had tuition at some point during the KS4 period, followed by black African children, at 41%. The lowest proportion was found among Bangladeshi pupils (22%), followed by white pupils (24%). As Strand (2007) points out, 'this is notable given the gross household income for these groups are substantially lower than White British' (2007:39).⁷⁵ Strand's (2007) research also suggested that Indian and black African parents were very strongly involved with the school, and found they were significantly more involved than white British parents. Again reflecting the patterns found here, he also found that Pakistani and Bangladeshi parents were significantly less involved than all other ethnic groups. The findings, Strand suggests, do not necessarily signify a lack of interest among these parents in their children's education, but instead might reflect language barriers to involvement; nonetheless, however, he points out that is likely to be detrimental, as evidence suggests less parental involvement is a strong factor in relation to low attainment (Sylva et al 2004).

⁷⁵ Though this is unlikely to be true for the Indian ethnic group.

6.3.4 Habitus

Quite predictably, there are clear differences between the social-class categories in relation to the proportion of children who have had private home tuition to supplement subjects they do at school, ranging from 41% of those from higher salariat family backgrounds to 9% of those from routine backgrounds. See Appendix C, Table C5 for the full table. Unsurprisingly, children who have had home tuition perform better than their peers who have had no tuition, with mean scores of 49.78 and 36.27 respectively ($F=474.37$; $p<0.00$).

The measure of students' habitus used here indicates whether they agree or disagree with the statement 'people like me don't have much of a chance in life'. Overall 10% ($N=1,189$) of children agree, highlighting the lack of opportunity they believe to be available to them. The proportion of students that agree with this statement varies substantially by social class (Appendix C, Table C5), with a 19 percentage point difference between those from unemployed backgrounds and those from higher salariat backgrounds. The difference in the mean attainment of students who agree and disagree with this statement is also very large (22.57 and 43.05 respectively; $F=842.31$; $p<0.00$).

There are no significant differences in parental habitus–field or student habitus variables by gender, however, a significant but relatively small difference is found between the proportions of girls who have had private tuition (27%) and boys who have had private tuition (23%).

In terms of pupils' habitus – their 'worldview' and belief in what is available in life to 'people like them' – Indian children and children of mixed ethnic origin are least likely to agree that people like them don't have much of a chance in life (both at 8%). These groups are closely followed by white children and children whose ethnic origin is classified as 'other' (both at 9%). Bangladeshi children are most likely to agree with the statement (17%) followed by black African and black

Caribbean children (15% and 14% respectively). Indian pupils are most likely to have had private tuition, followed by black African pupils. See Appendix C, Table C6.

6.3.5 Summary

The results of the bivariate associations detailed above confirm that cultural capital is predominantly a possession of those in higher social-class categories. They also suggest, in line with Bourdieu's theory, that parents of children from middle- and upper-class backgrounds have a closer, more comfortable, relationship with the school and are more inclined to financially invest in their children's educational advancement in the form of home tutoring. In measuring pupils' own habitus, it has been found that children from higher social-class backgrounds have a heightened tendency to hold a more positive outlook about their chances of success in the world. All of these aspects of cultural reproduction theory are shown to have a positive relationship with educational attainment. These associations provide some preliminary support for Bourdieu, showing that their distribution is skewed in favour of those from more advantaged socioeconomic backgrounds; however, rates of cultural participation and reading habits are still high even among the lowest class groups, and parent habitus-field affinity is also shown to exist for lower class pupils, albeit to a lesser degree than their more advantaged counterparts. Most notably, it is institutionalised cultural capital in the form of parental education which is by and large a possession of those from the highest class backgrounds.

Bangladeshi children are lacking in cultural capital and a pro-learning family habitus more than any other ethnic group. This is coupled with their relative disadvantage in a number of different social contexts which are not directly discussed here, including high instances of extreme poverty and disproportionately poor health. In contrast, parents of Indian children appear to

place a high value on education, with consistent attendance at parents' evenings higher than any other group, a high degree of comfort in the school environment and the most frequent tendency to provide home tutoring for their children. Furthermore, Indian children are most likely to disagree that 'people like them' don't have much of a chance in life, implying that they believe the world presents them with a number of attainable possibilities.

6.4 Model Specification

The aim of the analyses in this chapter was to produce one final model, comprehensively accounting for all variables of interest.⁷⁶ Research question 1, part 1 is addressed by analysing parameter estimates from the final model. This is so the direct influence of cultural capital and habitus on educational attainment can be determined net of other influences. However, research question 1, part 2 is addressed by analysing changes in the social class estimates as other covariates are added to the model and, therefore, before the final model is built. The second research question is addressed using the estimates from the final model.

The first stage of modelling compared one- and two-level variance components models to determine which was the best fit to the data. A likelihood ratio test confirmed that employing a two-level model was more appropriate: pupils at level 1 and schools at level 2.

Statistical significance is set at 95% throughout modelling. Because item non-response exists for most of the variables in the model, the addition of each covariate resulted in nested models with differing observations (sample sizes), making likelihood ratio tests invalid. The deviance, therefore, is calculated for each model based on the final sample size (determined when all covariates are in the model), N=10,804. This, therefore, is a strict criterion for improvements in

⁷⁶ The random slope in this model is not of substantive interest and is included in the final model simply to provide the best possible fit to the data.

model fit. Alongside this, Wald tests and joint Wald tests were conducted for each indicator, or set of dummy variables, as appropriate.

Explanatory variables were added to the model individually, though in Appendix C, Tables C7–C12, which illustrates the model-building process, some of these are presented in blocks. Non-significant main effects and interactions are not shown. First, prior attainment at Key Stage 2 was included in the model. All parameter values found for other variables, therefore, were to be interpreted net of ability at age 11. This is a random intercepts model with prior ability as the only predictor variable; this essentially models the effect of ability at age 11 on GCSE scores at age 16, assuming that the effect of prior ability is the same for all schools. Chapter 3, equation (2) describes this type of model formally. From previous work, notably ‘school effectiveness’ research, we know this not to be true – some schools are far more ‘effective’ (pertaining to higher rates of academic progress among pupils) than others.⁷⁷ This is subsequently accounted for (see below).

Social class was the first substantive variable added to the model, followed by cultural capital and habitus variables in order to examine how these affect the social-class gradient (research question 1, part 2). Demographic variables were then included – gender and ethnicity – before all control variables (at both the person level and the school level) were added to the model. At this point, the effects of cultural capital and habitus on educational attainment could be observed, having accounted for other relevant influences (research question 1, part 1). Person-level interactions were attempted between all indicators of social reproduction theory and social class, gender and ethnicity (research question 2). Finally, the coefficient for pupils’ scores at Key Stage 2 (prior ability) was declared random at level 2, ensuring that the model was able to also account for the fact that some schools are more effective than others. This resulted in the final random slope model, which has been described formally in Chapter 3, equation (5).

⁷⁷ See Goldstein and Woodhouse (2000) and Strand (2010) for an overview of the research in this area.

The final model, with the significant random slope for prior ability, is shown in Appendix C, Tables C11 and C12, denoted Final Model. This random slope suggests that pupils' ability at age 11 (at the end of primary school) has a larger effect on GCSE outcomes in some schools than it does in others. The estimate for the level-2 intercept-slope covariance is negative ($\sigma_{u01}=-0.037$; $SE=0.008$) and the estimate for β_1 is positive ($\beta_1=0.054$; $SE=0.001$), which would typically suggest a pattern of predicted school lines which is 'fanning in' (i.e. schools with larger intercepts have shallower slopes and schools with smaller intercepts have steeper slopes); however, across the range of the data, a plot of predicted school lines suggests the lines are in fact exhibiting a pattern of fanning out (see Appendix C, Figure C1). Overall, schools with pupils who entered secondary education with a higher-than-average ability level tend to also gain high average GCSE scores and vice versa. In other words, secondary schools are not contributing to reversing the already established differences in ability between different pupils. As aforementioned, this is not substantively relevant regarding the research questions in this chapter, but is an important reality to control for, and final parameter estimates take this into account. The intercept-slope correlation is -0.69.

6.4.1 Robustness Tests

In order to elaborate on the results found and also in order to assess the robustness of the estimates from the final model, a number of alternative models were run for comparison. The first of these used a dichotomous outcome variable, indicating whether pupils were 'successful' or not, measured via whether students achieved a minimum of five A*-C grade GCSEs (including English and Mathematics). This is useful as a comparative outcome measure because it is the commonly employed benchmark for GCSE achievement cited in the media and league tables, used in government reports and policy decisions, and often set as a requirement by many further education sixth forms and colleges. The model was run using Bayesian Monte Carlo Markov Chain (MCMC) estimation. MCMC estimation was chosen

for the binary model over other quasilielihood procedures (e.g. IGLS/RIGLS methods which give MQL or PQL estimates) because the latter have been shown to produce downwardly biased variance estimates (Hox 2009:98).

The primary use of this alternative model was for comparing the significance and relative value of parameter estimates: where similar patterns for relative coefficient values were found with the main continuous model (and where these were also shown to be significant in both models) the alternative model would provide evidence to suggest that findings were robust and valid; however, where relative coefficient values were found to be substantially different, or the introduction of main effects or interaction effects were found to be insignificant, findings from the main continuous model were shown not to be robust to changes in the outcome variable and the validity of estimates were therefore challenged. The binary model was also used to examine whether the 50% reduction in the social-class gradient was found using this specification. All of the same variables were included in this alternative model. Appendix C, Tables C13 and C14 display the results of this model alongside the estimates from the original continuous model. Table C15 considers the impact on the social-class gradient. Note that this model is termed the 'original model' because it was the original final model before adjustments were made on the basis of the comparison with the binary model. These findings, along with their implications, are discussed alongside those from the main analysis in Section 5.

Two other models were constructed in order to elaborate upon the findings from the main model. The first of these included all of the same variables in the main final model, however removed the measure for prior ability. The second of these included all of the same variables in the main final model, however replaced the measure for prior ability taken at Key Stage 2 (age 11) with a measure for prior ability at Key Stage 3 (age 14). It would be reasonable to hypothesise that the largest effects for cultural capital and habitus would be found in the model that

includes no measure for prior attainment (the approach taken by a number of previous studies) and smallest in the model that includes the Key Stage 3 measure for prior ability. The estimates for all indicators of social reproduction theory from the main continuous model and the other two alternative models described are presented in Table C16, Appendix C. In addition, the impact of these alternative choices was examined in terms of the effect on the social-class gradient (Table C17). These are discussed in Section 5, alongside the findings from the main analyses.

6.5 Modelling Findings

The first stage of modelling sought to determine how much of the overall variation in GCSE attainment is attributable to person-level characteristics and how much is attributable to differences between schools. A variance components model was constructed with pupils at level 1 and schools at level 2; in this model, which does not include any predictor variables, 34% of the total variation in GCSE scores is assigned to differences between schools and 66% to differences between pupils. See Appendix C, Tables C7 and C8, model VC.

Model M1 in Appendix C, Tables C7 and C8 illustrates the impact of including previous attainment in the model. The parameter estimate, $\beta=0.06$, indicates that a one unit increase in pupils' average point scores at Key Stage 2 will lead to a 0.06 increase in GCSE attainment. This should be interpreted by looking at the extremes of the continuous measure to get a better understanding of what this means: the variable ranges from a minimum score of 2 to a maximum score of 969 (the difference between them being 967), so the impact of achieving the highest Key Stage 2 average points score compared with having the lowest score is a $(967*0.06=)$ 58.02 increase in GCSE attainment – i.e. roughly equivalent to the achievement of seven A* grade GCSEs. The addition of this variable alone results

in a reduction of the remaining pupil-level variance in GCSE scores by 52% (σ^2_{e0} reduces from 287.99 in the variance components model to 148.79 in model M1).

Model M2 introduces the family's NS-SEC group, with those from higher salariat family backgrounds as the reference category. Even having accounted for prior achievement, a social-class gradient exists, suggesting that differences between social-class categories when children are 11 years old persist, and in fact grow, throughout secondary education. In Chapter 5 we saw that the parameter estimates for each of the categories reduced monotonically, with those from unemployed family backgrounds being the most disadvantaged, and this is also found for older children in the descriptive statistics above; having controlled for prior attainment, however, there is some overlap between groups with, for example, the estimates of those from routine backgrounds being slightly less than those from unemployed family backgrounds. Such overlap, however, is relatively small, and the direction of disadvantage remains clear. In the descriptive statistics the mean GCSE scores of these two groups were not found to be significantly different from each other.

All cultural capital and habitus variables are then added to the model (see models M3–M9), before important demographics – gender and ethnicity (model M10) – and all control variables (model M11). Research question 1, part 1, is concerned with whether cultural capital and habitus significantly impact upon pupils' GCSE scores. The effects of these measures are considered in the context of a full model, in order to determine how influential these are once other potentially confounding student and school-level covariates have been controlled for. The results for these parameters are reproduced below.

Table 6.7: Multilevel Model Predicting GCSE Scores: Beta Coefficients for Cultural Capital and Habitus

	Estimate (SE)
Cultural capital	
Parental education	
NVQ Level 5	
NVQ Level 4	-2.95 (0.37)
NVQ Level 3	-3.45 (0.38)
NVQ Level 2	-4.19 (0.37)
NVQ Level 1	-5.18 (0.55)
Overseas qualifications only	-3.14 (0.77)
No qualifications	-4.54 (0.48)
Cultural participation	
None	
Visited theatre, cinema or concert	2.02 (0.29)
Reading habits	
(Estimate*16)	5.44 (0.48)
Habitus and parental habitus-field	
Parents' evening	
Attended once or never	
Always attend	4.82 (0.26)
Statement: 'I find it easy to deal with the people at [my child's] school'	
Disagree	
Agree	2.29 (0.37)
Private tuition	
None	
Had private tuition at least once during KS4	2.40 (0.26)
Statement: 'People like me don't have much of a chance in life'	
Agree	
Disagree	5.05 (0.37)
Note: All estimates are significant at the 0.05 level	
The frequency of reading variable ranges from 1 to 16; the effect of reading is therefore considered in terms of extremes, and the parameter estimate and its standard error are multiplied by 16.	
Data source: Longitudinal Study of Young People in England Waves 1–4	
This table presents the estimates from the full and final model (Final model) shown in Appendix C, Tables C11–C12	
These estimates represent the direct effects on GCSE scores net of the influence of the following variables: prior performance at Key Stage 2, social class, gender, ethnicity, special educational needs, household composition, private school attendance and proportion of pupils eligible for free school meals at the school level	
N=10,804; Deviance statistic=123	

All measures of cultural capital remain significant once habitus is controlled for and once all other control variables are included in the model. Dumais (2002) points this out to be one criterion for Bourdieu's theory of social reproduction to hold. Clearly cultural participation is of least importance for pupils' GCSE

outcomes, though the impact is still significant. Of all indicators of cultural reproduction theory, reading habits has the largest direct effect on outcomes, reflecting the findings presented for young children in Chapter 5 of this thesis. Of the indicators of parental education, this model shows that parents' holding GCSEs graded D–G have the most detrimental impact on their children's subsequent examination scores. It is perhaps strange that this is found to be more detrimental than having no qualifications at all, however these two parameters are not significantly different from each other and this should be interpreted, therefore, to mean the groups are of roughly the same detriment.

Of all habitus variables, pupils' worldview is the most important and beneficial for their GCSE outcomes. This is, however, closely followed by the positive effect of parents' consistent attendance at parents' evenings. Introducing parents' level of comfort in the school environment does little to reduce the parameter estimate for parents' evenings (see estimates from models M6 and M7), implying that, whilst parental comfort is useful on its own it does not mediate the usefulness of interactions between parents and teachers. Similarly, private home tuition to supplement school subjects is important, though not as important as parental involvement or students' self belief. This is largely in contrast with the cultural capital variables; among the different types of cultural capital, activities which directly enhance cognitive abilities (reading) are more important than indirect forms of learning such as cultural participation, but among the habitus variables, educational investments which presumably contribute in the most direct way to knowledge acquisition (private tuition equating to formal learning at home) are less important than indirect investments of parents' time (attendance at parents' evenings).

The MCMC model which used an alternative outcome distinguishing between 'successful' and 'non-successful' students is described in Section 6.4.1. In this model, all measures of cultural capital and habitus remain significant once other

covariates are controlled for and importantly, net of each other. The relative importance of each indicator differs somewhat, however. Pupil habitus is found to have the largest direct effect on outcomes, followed by the parameters for the lower parental education categories and reading behaviour. Whether parents find it easy to deal with people at their child's school is found to be least influential to outcomes. See Appendix C, Table C13 for these main effect estimates. Thus, the finding derived from the main analyses that each measure of social reproduction has an independent direct effect on scores is shown to be robust, though choices regarding the outcome variable are shown to be important because the relative influence of parameters is sensitive to such change. For the purposes of this study, the continuous measure is most appropriate, but studies testing social reproduction theory which have used an alternative outcome such as this may not be directly comparable.

Section 6.4.1 also describes an additional two alternative model specifications – one which includes no measure for prior ability and one which replaces the Key Stage 2 measure of prior ability with one from Key Stage 3. The estimates from these models are displayed in Appendix C, Table C16.

Clearly, the hypotheses given in Section 6.4.1 are found to be true: including no measure of prior ability leads to higher estimates of the impact of cultural capital and habitus, and including prior ability at age 14 leads to substantially lower estimates. This is found to be true for each of the parameters. The results above suggest that much of the benefit derived from these components of social reproduction theory is already reflected in test scores before reaching secondary school; however, even after the age of 14 additional advantages are derived, and furthermore, even though estimates are significantly lowered they are all still found to be statistically significant. There is some evidence here to suggest that the process of the accumulation of cultural capital is ongoing throughout the entire period of compulsory education, and that pupils from homes with a 'middle-class'

habitus will pull even further ahead than they already have by age 14. In other words, these components of social reproduction theory are beneficial at all stages of pupils' educational trajectories while in compulsory schooling.

Figures 6.9 and 6.10 address research question 1, part 2, by examining the mediating effect of cultural capital and habitus on the social-class gradient. MI is equivalent to model M2 in Appendix C, Table C8 (i.e. a two-level model controlling only for previous attainment) and the subsequent models correspond to those set out in the model building sequence in the appendix. In brief, MII introduces parental education, MIII introduces cultural participation, MIV introduces reading habits, MV introduces parents' evening attendance, MVI introduces parent-school contact (ease with which parents deal with people at their child's school), MVII introduces pupils' habitus and MVIII introduces private tuition. The bars labelled in red represent the coefficients for the unemployed group – that is, the estimate of the impact of coming from a household with long-term unemployed parents or parents who have never worked, compared to a household with parents in higher salariat occupations. The bars labelled in black represent the coefficients for the routine occupations group.

Figure 6.9: Reduction in Social-Class Parameter Estimates with the Addition of Cultural Capital Variables

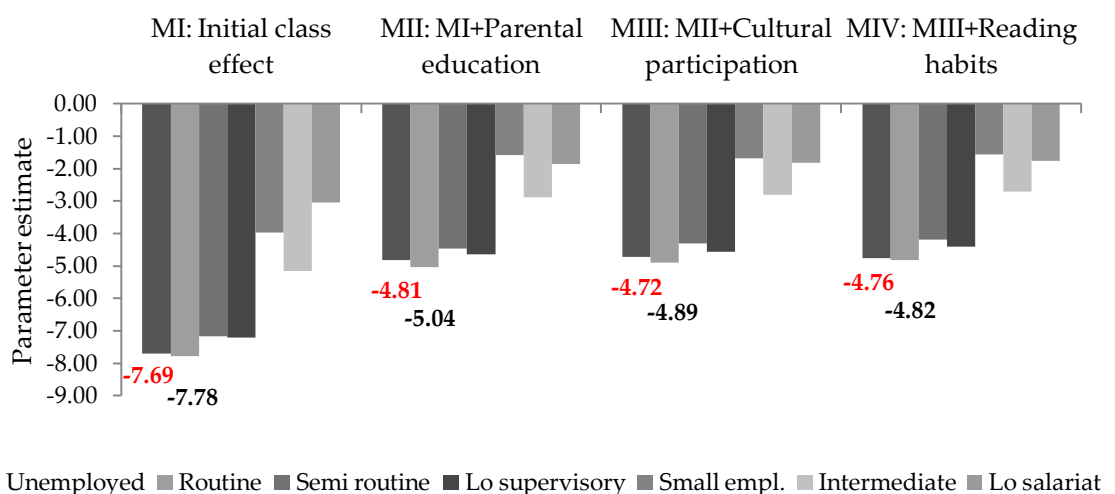
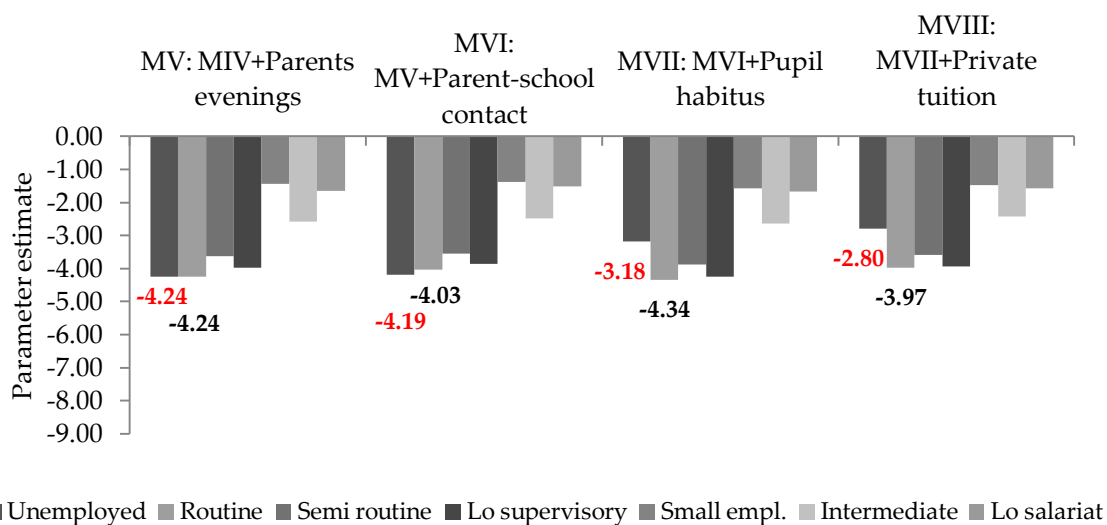


Figure 6.10: Reduction in Social-Class Parameter Estimates with the Addition of Habitus and Habitus–Field Variables



Immediately it is clear that the largest reduction in the social-class gradient occurs when parental education is added to the model, implying that, whilst reading habits have the most important direct impact on educational outcomes, it is parents' educational ability that determines much of why there are differences between social-class groups. The subsequent addition of other cultural capital variables has very little effect on the remaining gradient. The results here, therefore, mirror those in Chapter 5.⁷⁸ The inclusion of the parents' evening variable leads to a notable reduction though parents' comfort with teachers does little to further this. Controlling for pupils' own habitus has the interesting effect of *increasing* the differences between all social class categories and the higher salariat reference group, apart from for the unemployed, for whom there is a substantial reduction. Finally, the introduction of private tuition reduces the gradient further for all categories.

The social class gradient, quantified by looking at the difference between the highest social-class category (higher salariat = 0) and the lowest social-class

⁷⁸ Variations were attempted which involved introducing indicators into the model in different orders. This did very little to change the finding that parental education accounts for the largest portion of the reduction.

category (long-term unemployed) is reduced by 64%, exceeding the 50% benchmark requirement and therefore providing considerable support for Bourdieu. It is clear from the above graph, however, that the parameter reduction that occurs with the inclusion of cultural capital and habitus varies, quite substantially, between groups. Also notably, the effect of being from an unemployed household is not found to be as severe, having controlled for previous attainment as in MI and for all other variables in MVIII, as being from a routine household. It is, therefore, important to look at the percentage reduction in parameter estimates for each group individually as cultural capital and habitus variables are added to the model. This is displayed in Tables 6.8 and 6.9 below.

Table 6.8: Percentage Reduction in Social-Class Parameter Estimates with the Addition of Cultural Capital Variables (%)

	MII: MI+ parental education	MIII: MII+ cultural participation	MIV: MIII+ reading habits	Total reduction*
Hi salariat				
Lo salariat	39	2	4	42
Intermediate	44	3	3	48
Small empl.	60	-6	7	61
Lo supervisory	36	2	3	39
Semi routine	38	4	3	42
Routine	35	3	1	38
Unemployed	37	2	-1	38

*The total reduction is the difference in parameter estimates between model MI (model M2, Table C8 in Appendix C) and model MIV (where all cultural capital variables are included) – it is *not* therefore a summation of the reduction provided by each additional variable.

Clearly parental education is largely the most influential predictor of all cultural capital variables, for any social class category. Theatre attendance and reading exert much the same impact on the social-class gradient. Looking at the total reduction column it is clear that differences between children from higher salariat families and families of small employers and own account workers are reduced more than any other category. This is already apparent when looking at the difference parental education makes for this group, and also reading behaviour.

For these two groups it is largely cultural capital that contributes to differences in educational outcomes. Table 6.9 illustrates the same effect, again in terms of percentage reduction, when habitus variables are added.

Table 6.9: Percentage Reduction in Social-Class Parameter Estimates with the Addition of Habitus and Habitus–Field Variables (%)

	MV: MIV+ parents' evening	MVI: MV+ parent– school contact	MVII: MVI+ pupil habitus	MVIII: MVII+ private tuition	Total reduction*
Hi salariat					
Lo salariat	7	7	-9	5	48
Intermediate	5	3	-6	8	53
Small empl.	8	5	-16	6	63
Lo supervisory	10	3	-10	7	45
Semi routine	14	2	-9	8	50
Routine	12	5	-8	8	49
Unemployed	11	1	24	12	64

*The total reduction is the difference in parameter estimates between model MI (Model M2 in Table C8 Appendix C) and model MVIII (where all cultural capital and habitus variables are included) – it is *not* therefore a summation of the reduction provided by each additional variable.

The most interesting effect we observe in Table 6.9 above is that when pupils' habitus is added to the model the social-class gradient increases – that is, differences in pupils' worldview in fact behave to exemplify the negative impact of belonging to a social-class group that is not higher salariat. This is found to be true for all groups with the exception of those from unemployed households; for these children the opposite effect is found, and substantially so. The reasons for this are explored using interaction effects, described below. Overall, cultural capital and habitus behave to reduce differences between all social class categories and the reference group, higher salariat, though in particular this is the case for those from households in which parents are small employers or own account workers and for those from households in which parents are long-term unemployed.

For the majority of groups the 50% reduction in parameter magnitude compared with the higher salariat group is met. In accordance with Chapter 5, it is perhaps most important to examine whether the 50% reduction is still met when using the difference between the higher salariat and routine class as the basis for comparison. For this group, 49% of the social class gradient is explained by cultural capital and habitus, which falls just short of the benchmark but can still be deemed a considerable reduction.

Section 6.4.1 describes how the alternative MCMC binary model built was used to check the robustness of these estimates; see Appendix C, Table C15 which gives the social class parameter estimates in a model which includes only prior ability and family NS-SEC (i.e. analogous to model M2 in the continuous model), denoted model MI, and the same estimates from a model in which all indicators of social reproduction have been added, denoted MII. The final column gives the overall reduction in parameter estimates for each group resulting from the addition of these indicators, expressed as a percentage.

The overall 50% reduction in the social-class gradient is also met using the MCMC model, and this is true if the gradient is defined by looking at the unemployed group or the routine occupations category. The finding, therefore, that Bourdieu's concepts of cultural capital and habitus can explain at least half of the variation in GCSE scores by social class is considered robust to changes in measurement strategy for the outcome variable. Importantly, using the binary model, these variables are found to account for 100% of the variation in exam scores between those whose parents are in higher salariat occupations and those whose parents are classed as small employers or own account workers. Indeed, in the binary model, indicators of social reproduction theory explain more of the variation for all social class groups, except for those from routine backgrounds (which is largely unchanged) and those from unemployed households. This suggests that the

results presented from the continuous model are likely to be conservative estimates of the mediating effect of cultural reproduction theory.

The alternative model specifications which adjusted the approach taken to the prior ability measure were also examined in terms of the impact on the social-class gradient. In Table C17, Appendix C, MI denotes a model which only includes explanatory variables for social class (and prior ability if applicable) and MII denotes a model in which all indicators of social reproduction have been added.

Employing the most recent measure for prior attainment – Key Stage 3 – results in the largest reduction in the social-class gradient. Considering Tables C16 and C17 together, therefore, it could be suggested that studies which include a recent prior attainment measure may understate the direct impact of cultural capital and habitus on attainment while also overstating the mediating influence these indicators have on the link between social origin and educational outcomes. Perhaps the most notable finding from comparing these models is the substantial mediating effect for the unemployed group, across all alternative model specifications. This group is also most affected by choices regarding the prior attainment measure; the average difference between the highest and lowest percentages for all other class groups averages at 9 percentage points, whereas for this group there is a 26 percentage point difference between the most extreme gradient reduction estimates. It may, therefore, be considered more appropriate to also consider the social-class gradient reduction using the estimates derived from the models for the routine class.

Research question 3 is concerned with whether the effects of cultural capital differ according to social class and key demographics. In order to examine these potential differences, interaction effects were included in the model between social class, gender, ethnicity and all indicators of cultural capital and habitus.

No differences are found in relation to gender, implying, in contrast to the young children chapter, that social reproduction theory operates in the same way for male and female students. No differences were found in relation to ethnicity, reinforcing the findings of Kalmijn and Kraaykamp (1996) that cultural capital is useful for children from all ethnic groups.

The original continuous model found a significant interaction effect between social class and pupils' habitus (see Appendix C, Tables C13 and C14, Original Model). Those from higher salariat backgrounds who have a positive habitus – that is, those who reject the belief that people 'like them' don't have much of a chance in life – are the most advantaged. The significant interaction suggests that a positive habitus behaves to increase the chances of success at GCSE for all social classes, but that it is most influential for those from higher social-class groups. There is clearly some overlap in the estimates, though these mainly are between particular neighbouring categories. This is perhaps a good explanation for why the habitus variable behaved to increase the social-class gradient when it was added to the model as a main effect, as described above (see Table 6.9). Again, the exception here is for children from long-term unemployed households and households in which parents have never worked; for these children, having a positive outlook on their chances of success in the world is more beneficial than it is for those from the lowest three social-class categories. The MCMC binary model provided a means for assessing the robustness of this finding, and the interaction was found not to improve the fit of the model.⁷⁹ It was, therefore, removed from the final continuous model (depicted in Appendix C, Tables C11 and C12).

No other significant interaction effects were found between social class and any of the indicators of social reproduction, suggesting that, largely in line with Bourdieu's theory, cultural capital and habitus operate in the same way for all children, regardless of social-class background, gender or ethnicity.

⁷⁹ The inclusion of the interaction effect resulted in an increase in the DIC statistic from 7892 to 7893.

6.6 Conclusions

The findings presented above suggest that cultural capital is beneficial for educational outcomes, even controlling for prior ability at age 11 and after controlling for the effects of habitus. Suggestions for exactly why and how different types of cultural capital can be useful vary.

The estimate for cultural participation was the smallest of all indicators of social reproduction theory. As previously acknowledged, the variable has serious shortcomings and it is contentious whether it is possible to claim, with certainty, that it is representative of participation in 'high' culture – cinema attendance is certainly not typically considered a 'beaux-arts' activity (Bourdieu (1977), in fact, insists that widely available, non-exclusive activities are rejected by the dominant classes as being 'vulgar'), and although Bourdieu regards concert attendance to be a dominant-cultural pursuit in some of his writing (e.g. Bourdieu 1977), it is doubtful he refers to rock or pop concerts, for example. Nonetheless, this finding is consistent with the previous chapter which found parental education and reading habits to be substantially more important for educational outcomes and is also consistent with a number of other prominent studies. De Graaf et al (2000) and Crook (1997), for example, infer that the analytic and cognitive skills developed from reading are the prominent ways in which cultural capital translates to educational success. Sullivan (2002) stresses that, while the communication of status via participation in formal culture has been, in various ways, shown to have little impact on outcomes, this is not to suggest that the notion of the communication of status is not important – it may be that, as well as the cognitive and linguistic skills developed from reading being directly useful for writing in exams, they may be communicating status to teachers as well and result in a favourable bias (2002:160).

Reading is an activity which fosters a number of skills useful in the academic context, and it is not a new finding that it is associated with increased levels of educational attainment. Some of the ways in which research in psychology and broader education research have proven this link to exist have been discussed in the previous chapter; most notably, reading can enhance and broaden vocabulary, reading comprehension is an essential skill in all academic disciplines, and reading invariably results in some form of knowledge gain in relation to the subject. Of more relevance to this discussion, however, is the finding that parental education is useful for educational outcomes and, of even more importance, that it is the primary form of cultural capital which mediates differences in attainment between social-class groups.

Many studies of cultural capital have not included parental education in their strategies for operationalisation, despite Bourdieu having done so in his own work (Bourdieu 1977) and despite his clear assertion that cultural capital, in its institutionalised form, exists in this state (Bourdieu 1997). I have suggested that, following previous authors, it is important to distinguish between the different types of cultural capital in order to gain a full picture of the mechanisms through which it operates. Based on the writings of Bourdieu and given that he provides a number of activities as examples of cultural capital (including reading, theatre attendance, listening to classical music, museums, exhibitions and art gallery visits, and so on (Bourdieu 1977)), it is not enough to consider parental education on its own, but it has proven fruitful to operationalise institutionalised cultural capital in this way.

Parental education mediates the relationship between socioeconomic status and GCSE attainment; alone it is able to account for between 35–60% of the social-class gradient across all NS-SEC groups. These findings, along with others from similar studies, suggest a need to move away from such a tight focus on the classical operationalisation of cultural capital as beaux arts activities and reading habits.

While these are useful for educational outcomes, it is the mediating effect on social class that is of most interest for cultural capital research.

All indicators of habitus employed here are shown to be useful for educational outcomes. Attendance at parents' evenings, taken as an indication of parental involvement in the school and a representation of the continuity between the habitus of the family and the milieu of the school field, has the most influential reducing effect on the social-class gradient of the habitus variables, particularly for those from lower social-class backgrounds. Subsequently including a more direct measurement of parents' level of comfort and ease in interacting with the school (agree or disagree with the statement 'I find it easy to deal with people at my child's school') did little to account for the positive impact of consistent attendance at parents' evenings but did provide an independent positive contribution to outcomes. Consistent attendance at parents' evenings was not found across all groups – those from lower social classes and Pakistani and Bangladeshi parents were less likely to go. Controlling for parents' evening attendance, social class and ability at age 11, the Pakistani and Bangladeshi groups were found to have high parameter estimates, implying that these things may largely account for their lower GCSE scores.

Pupils' habitus – their opinion regarding whether people 'like them' have 'much of a chance in life' – is understood in this study to represent their worldview. This variable has a largest positive impact on GCSE attainment. As mentioned above, this is an excellent proxy for habitus in accordance with Bourdieu's descriptions of the concept (see Chapter 1). The relatively substantial impact this measure has on attainment provides some support for the small number of authors who seek to champion the usefulness of the concept of habitus over the concept of cultural capital (Dumais 2002; Gaddis 2013).

Interestingly, the inclusion of pupils' own habitus behaved, in most part, to increase the social-class gradient. The reasons for this may have been partly explained by the interaction effect between social class and habitus that was found to be significant in the original model and suggested that those from higher social-class backgrounds, in general, benefit more from a positive worldview, however these findings were not considered robust. Finally, parents willing to devote financial resources to their children's education by providing home tutoring positively impact upon their GCSE scores.

Research question three is concerned with whether Bourdieu's concepts are applicable to all children, regardless of social background or demographics. No significant, robust evidence was found to suggest that the returns to cultural capital or habitus differ by social class. This chapter therefore finds no support for cultural mobility theory (DiMaggio 1982). There are small differences in the rates of attendance at cinema, theatre or concert by gender, with 87% of girls having been at least once over Key Stage 4 compared with 81% of boys ($F=41.96$; $p<0.00$). A slight increase in participation in the arts by girls is a common finding for this age group (Taking Part 2012). There are also small differences in the proportions of pupils who have had private tuition by gender, with 27% of girls having had tuition at some point over the Key Stage 4 period compared with 23% of boys ($F=15.29$; $p<0.00$). The distribution of all other variables by gender, however, is insubstantial. Dumais (2002) argued that there may be such thing as a gendered habitus, which is plausible given that one's habitus is formed as a result of past experiences and people's perception of what is possible for people like them; pupils' habitus will then also include aspects of the 'gendered structure of opportunity that awaits her or him' later in life (Ballantine and Spade 2008:334). There are no significant gender differences found, however, relating to how important this is for GCSE outcomes.

Finally, research question three sought to examine whether there were differences in the returns of cultural capital or habitus by ethnicity. Research from the arts debate suggests that it is predominantly white, middle-class people who engage in the arts, and that the lowest rates of participation were among people of black ethnic groups (Arts Council 2007; 2014). The proportions of pupils who had visited the cinema, theatre or a concert found here did not reflect these common findings. This may be, in part, because the variable employed includes measures of cinema attendance which is much more widely available than other measures of beaux arts activities. The bivariate associations detailed above also showed that, in relation to parents' evening attendance and private tuition in particular, Indian and black African parents exhibited a pro-school, pro-education habitus more than other groups. In congruence with the findings of Kalmijn and Kraaykamp (1996), the findings of the modelling here suggest that cultural capital is just as important for children from all ethnic groups, and no differences emerge with respect to pupils' habitus or parental habitus–field either.

The robustness tests and alternative models built in this chapter highlighted a number of notable methodological considerations for future studies. First, decisions regarding the choice of outcome variable at this stage are likely to impact upon the findings, and future research should be careful to build alternative model specifications in order to test whether estimates produced are robust.

Second, this chapter elaborated upon the initial results found by comparing models with (i) no control for prior ability, (ii) a control for prior ability at Key Stage 2 (the final model), and (iii) a control for prior ability at Key Stage 3. In doing, it is shown that studies which have, in the past, neglected to control for prior ability would have overestimated the effect of cultural capital and therefore may have drawn misleading conclusions regarding the magnitude of its

influence.⁸⁰ This, coupled with the fact that the vast majority of previous studies have not employed multilevel modelling, and have as a result, either (i) been unable to control for the effects of differences between schools in terms of effectiveness at the aggregate level, or (ii) ignored the hierarchical structure of the data leading to a violation of the assumption of independence between cases and increasing the probability of type I errors (i.e. finding that a relationship exists when it does not – an incorrect rejection of the null hypothesis), will mean that the estimates they have found are as a result of erroneous errors (Snijders and Bosker 2012) or have been (potentially vastly) overstated.

⁸⁰ Gaddis and Payton (2011) have also suggested this.

Chapter 7

Secondary Effects and Post-Compulsory

Decision Making

7.1 Introduction

Research on class-based educational inequalities has, in recent decades, moved beyond a focus on attainment to examine how decision making can act as an additional mechanism that exacerbates differences between those from advantaged and disadvantaged home backgrounds. The British education system is comprised of a compulsory twelve years, culminating in GCSE examinations at age 16, and then a further unspecified number of non-compulsory years, in which participation is determined in part upon prior formal achievements and in part upon individuals' personal decisions to continue or withdraw, typically made between the student and their family.⁸¹

Administrative data consistently document that pupils from higher social-class backgrounds are more likely to pursue further education after the minimum school-leaving age than are their less advantaged peers. This is unsurprising given that levels of academic achievement during the compulsory years are substantially greater for children of higher class origins; but what is of notable concern is that several empirical studies suggest significant differences in continuation rates remain even once prior attainment is controlled for (e.g. Shavit and Blossfeld 1993; Erikson et al 2005; Micklewright 1989; Jackson et al 2007). Micklewright (1989), Erikson et al (2005) and later Jackson et al (2007), showed this to be true in Britain. These findings suggest that the educational choices made by pupils – which are

⁸¹ In September 2013 the British Government raised the minimum school-leaving age to 17, and in September 2015 it will again be raised to 18. The minimum school-leaving age of 16 was implemented by law from 1972 to 2013, and is relevant for the cohort examined in this chapter.

seemingly meritocratic, somewhat libertarian and relatively autonomous – are in reality bound by various economic, cultural and social constraints which operate to generate *further* (dis)advantage, even after students have demonstrated their individual ability.

Following Boudon's (1974) introduction of the theoretical distinction between the primary and secondary effects of stratification, many sociologists have attempted to examine these as separate domains. According to Boudon, primary effects are the effects of social origin on educational attainment (be these economic, cultural, social or genetic) and secondary effects are the effects of social origin on educational decision making, conditional upon previous attainment. It is important to note that primary and secondary effects are both manifestations of the same underlying causal chain; that is, class origin effects. The distinction between the two is important, and research differentiating these has contributed vastly to furthering our understanding of the variety of ways in which social class exerts its influence on educational achievement, though it should always be borne in mind that these operate as a joint, accumulating process of inequality. Boudon considered secondary effects to be most influential in explaining why inequality in social and educational opportunity persists in modern, industrialised societies (Jackson 2013a:8).

Boudon, and many of the authors who followed with similar works, approach the subject from a rational choice perspective. He developed a utility model, where students' decisions are shaped by a form of cost–benefit analysis in which the two are weighed against each other with the aim of maximising utility. Breen and Goldthorpe (1997) developed Boudon's model, explicating a number of assumptions that they argue underlie the decision rules made by actors in the process. The most important assumption, and that which I will reflect on in the light of the findings in this chapter, is that of relative risk aversion (RRA); i.e. that the main objective of pupils is to minimise their likelihood of downward mobility.

The proponents of rational choice theory who have conducted the majority of research in relation to educational choice differ from the perspective of Bourdieu, upon which this thesis has thus far focused, in that they argue it is the unequal distribution of *economic*, not cultural, resources which drives secondary effects.

With a few exceptions (Jackson et al 2012; Jackson 2012; Waters et al 2013), studies of the secondary effects of stratification have often neglected to consider how social-origin effects at educational branching points might differ along the lines of ethnicity; and indeed, no prior quantitative studies in England have examined variations in secondary effects by ethnicity and gender simultaneously. Reay et al (2001b), using qualitative interviews, have suggested that choice processes vary along the lines of class and ethnic differences and inequalities. This chapter focuses on class differences in decision making, and contributes to current debates surrounding secondary effects by determining if class-based patterns of educational choice are consistent across such key characteristics, which will have implications for the largely universal assumptions made by rational choice theorists. This research is particularly relevant taking account of the diversity in the ethnic composition of the British population, with the total proportion of non-white British inhabitants having more than doubled in size in the past two decades (CoDE 2012).

In a further attempt to build upon the knowledge in this area, this chapter examines whether class differences in transition propensities are influenced by school-level effects, which have not thus far been considered in relation to studies of this kind in the UK. Educational choices are clearly made at the level of the individual; however it is also worth accounting for the fact that some schools have higher rates of transition into A-level than others. Further, examining whether this varies by pupil performance (i.e. whether some schools are more likely to encourage students to pursue further academic study irrespective of their proven ability), whether such variation can be explained by the characteristics of the

school, and whether individual-level findings with respect to social origin effects remain once this is accounted for can provide an insightful extension to the existing literature.

The nature of educational inequality is examined as it exists with regard to an important decision pupils in the UK are faced with once they have taken their GCSE examinations – whether to continue in post-compulsory study to take A-levels. Data are used from the Longitudinal Study of Young People in England (LSYPE) to model the likelihood of making this decision. The main concerns of this chapter are: to examine the role of secondary effects in a contemporary UK context, reflecting upon recent literature which has implied an over-time change in the extent of their influence relative to primary effects; to advance upon previous empirical evidence by examining difference by sub-populations and by simultaneously examining school-level influences; and to consider the findings in terms of their implications for the sociological theory which currently dominates this field – rational action theory (RAT).

7.1.1 Core Findings

This chapter will demonstrate that differences in continuation rates by social class are pervasive. It will also show that the findings of recent studies suggesting secondary effects are no longer of particular importance for the A-level decision are reinforced; however, differentiating class effects by ethnicity reveals the crucial omission that this is true for ethnic minorities, but for the white majority of pupils secondary effects are in fact still relevant. Further examination of model estimates demonstrates that these secondary effects are most influential for pupils who have achieved mid-range levels of attainment at GCSE. Auxiliary analyses further reveal that parental education is more decisive than social class for generating inequalities between those from advantaged and disadvantaged home backgrounds, and this finding draws some parallels with the mechanisms of

inequality found to be involved in generating the primary effects outlined in Chapters 5 and 6. That secondary effects differ between ethnic groups casts doubt upon the universal assumption of relative risk aversion (RRA) made by rational choice theorists; questions are raised relating to whether the educational ambitions of ethnic minority pupils are driven by sub-cultural influences of the kind which are explicitly discounted by scholars who currently dominate this debate.

7.1.2 Chapter Structure

This chapter will outline the research questions, explaining how these go beyond previous attempts to examine secondary effects. Section 2 details the construction of variables and the measures to be used in the analyses. Section 3 uses descriptive statistics to examine the relationships between variables and to show that there are substantial differences between social classes, ethnicities and genders in continuation rates. Section 4 describes the model and also discusses the findings of preliminary analyses which impact upon the approach taken to measuring ethnicity in this study. Section 5 presents the findings of the modelling and Section 6 concludes.

7.1.3 Research Questions

At age 16, students must decide whether to undertake further academic study (A-levels), further vocational study⁸², or to leave education altogether and look for a job or work-based training. Middle- and upper-class students have typically been more likely to pursue academic qualifications in further education, while among working-class pupils who do stay on, participation rates have tended to be highest in vocational and skills-based courses which tend to reduce their chances of continuing further (Goldthorpe 1996:488). The latter option in further education has historically been an obstacle to subsequent attendance at university (particularly elite universities), in part because A-levels are often an entry

⁸² Most typically in the form of skill-based study, such as a HND, HNC, GNVQ etc.

requirement (Hatt et al 2008). This chapter will first document the extent to which there are class differences in the likelihood of making the transition, and will also establish whether transition propensities differ by ethnic group or gender.

1. Are secondary effects influential in creating social-class inequality in education at the transition to A-level?

Following Boudon, Breen and Goldthorpe (1997) provided an influential development in the discussion of the secondary effects of stratification.

Elaborating upon Boudon's utility model,⁸³ they include the assumption of RRA, whereby the main priority of individuals is not necessarily to attain the highest class position possible, but to avoid social demotion; pupils' aspirations are thus shaped by their desire to pursue educational qualifications only as far as they will enable access to an occupational position at least as good as the social class of their family.

Over at least the last five decades, secondary effects of social origin have been deemed influential in their contribution to educational inequality in the UK (Micklewright 1989; Erikson 2005; Jackson et al 2007). However, recent evidence from Jackson (2013b) suggests that over time secondary effects regarding the A-level transition have declined in importance relative to primary effects (Breen et al 2009; 2010). This is an important finding, which will have major implications regarding at which stage in young people's educational careers researchers and policy makers should focus their interventions. Research question 1 seeks to verify Jackson's (2013b) recent results.

2. Do secondary effects operate differently for those from different (i) ethnic groups and/or (ii) genders?

⁸³ The most basic utility model takes the general form $U=BP-C$, where U is the utility gained from the decision, B is the perceived benefits of the study option, P is the probability of success (defined by prior attainment), and C is the cost of the study option. The formula is elaborated so that the value of U will be determined by whether some cut off point is met (the decision rule). See Chapter 1 for a detailed presentation of the model proposed by Breen and Goldthorpe (1997).

This chapter aims to determine whether the influence of secondary effects for social-class groups is consistent across different sub-populations. Statistics document differences in post-compulsory education along the lines of not only class, but also gender, ethnicity, and subgroups composed of a combination of these. For example, girls are more likely to continue than boys, most minority ethnic groups are more likely to continue than whites, and working-class males of white and black Caribbean origin also have substantially lower rates of participation. Breen and Goldthorpe's model specifically seeks to 'dispense with...any assumption that...actors will also be subject to systematic influences of a (sub)cultural kind' (Breen and Goldthorpe 1997:278), which inherently assumes away any cultural differences in the motivation of actors to pursue educational qualifications, and this assumption is questioned with research question 2.

There is evidence that many first-generation ethnic minorities' class positions were suppressed, incommensurate with their educational levels, following migration to the UK (Heath and Ridge 1983; Platt 2007). Consequently, it might be hypothesised that the educational and occupational ambitions expressed by ethnic minority children in lower socioeconomic groups are reflective of their pre-migration class positions; i.e. the Breen–Goldthorpe model might be less applicable to the experiences of ethnic minorities.

3. Do average transition propensities differ according to the school attended?
 - a. Do some schools push students to continue in academic study more than others, irrespective of their prior demonstrated ability?
 - Insofar as such variations do exist, can these be explained by school-level characteristics?
 - b. Does accounting for these school-level effects have any impact upon the findings derived from research questions 1 or 2?

Recent research projects intending to determine whether secondary effects are still relevant for the A-level transition have not focused on school-level influences, and this chapter seeks to further expand upon the findings by doing so. Wider research has documented that post-16 decisions are influenced by the school attended, even after controlling for GCSE results and individual-level factors such as socioeconomic status and parental education (e.g. Cheng 1995; Paterson and Raffe 1995; Ferguson and Unwin 1996). A range of school characteristics, such as private versus state schools, high teacher turnover, proportion of pupils in receipt of free school meals (FSM) and more general notions of school ethos, climate or culture, have in various studies been cited as having an association with staying on rates (Cheng 1995; Rutter et al 1979), though the evidence is scarce and mostly outdated (Payne 2003). Another factor which is shown to influence decisions is whether or not the school attended has a sixth form attached to it (Payne 1998; Connor et al 1999). This study is limited to a small number of school-level variables, but nonetheless considers the importance of including these in examining class differences in the likelihood of post-16 educational participation.

7.2 Measures

This chapter uses data from the Longitudinal Study of Young People in England (LSYPE).⁸⁴ Most respondents reached the decision age (16) in 2007. The LSYPE is one of a number of available surveys which includes data on GCSE attainment (via linkage with the National Pupil Database (NPD)), social-demographic variables and information on the A-level transition. As mentioned above, Jackson (2013b) recently used data from the YCS for the same purposes. The LSYPE was, at the time of analysis, one of the most recently available datasets providing this information.

⁸⁴ Now renamed 'Next Steps'.

Though the LSYPE sample reached the transition age in 2007, fieldwork was undertaken for this wave (4) between mid-June and mid-October, meaning that some students may not have made a definite transition decision, and some may change their mind just before the start of the academic year (which is in September). Mainly for reasons of reliability, therefore, information on the transition is also taken from subsequent waves; data are employed up to and including wave 6.

A-level transition. This chapter defines the choice transition as dichotomous, distinguishing between those who (i) continue on in full-time education and take A-levels, and those who (ii) do any other alternative, including leaving education to get a job or training-based placement, or to undertake any form of vocational study. The decision is treated as dichotomous in this way because the aim is to identify those who take up the most academic, and therefore most ambitious, educational option. Students who take A-levels are far more likely to continue on to university-level study, which is required for the vast majority of professional-managerial (salaried) occupations. This is also the approach taken by the most previous studies in this area (i.e. Erikson et al 2005; Jackson et al 2007; Jackson 2013b), with which this chapter seeks some level of comparability.

Cases are considered to have made the decision to take A-levels if they are doing so at age 16 (wave 4) or age 17 (wave 5), for the reasons aforementioned, and also if they are doing so at age 18 (wave 6), to ensure that those who opted to take a planned gap year after the end of compulsory schooling are also included.⁸⁵ A total of 62% of students made the transition to AS or A-level.⁸⁶

⁸⁵ These pupils are small in number (n=76).

⁸⁶ Meschi et al (2011) find 79% of pupils remain in full-time education for the year 2006/07 using LSYPE data, though their figure also includes those doing other further education qualifications. Sullivan et al (2011) find 72% of pupils remain in full-time education for the year 2006 using YCS data, though again this also includes those doing other FE qualifications.

Social class. Many previous studies examining educational decision making have employed a collapsed, three-category version of the NS-SEC class schema. This chapter follows suit, primarily for the purposes of comparison with the results of previous analyses.⁸⁷ In this chapter, the salariat class represents those of higher and lower managerial and professional backgrounds (classes I and II of the original eight-category schema), the intermediate class represents those from families in intermediate occupations and who are small employers and own account workers (classes III and IV), and the working-class represents those whose parents are in lower-supervisory and technical, semi-routine and routine occupations, as well as those who have never worked or are long-term unemployed (classes V, VI, VII and VIII).⁸⁸ The LSYPE provides information on parents' social class for waves 1–5. The value is therefore taken at wave 5 (under the assumption that parents are most likely to be in a position of 'occupational maturity' at this older age (Goldthorpe 1987), but is replaced with values from the most recent previous wave if the information is missing or if cases are listed as unemployed. The dominance approach (Erikson 1984) is then employed, in which the family NS-SEC value is assigned based on the highest class reported among the mother and the father. Table 7.1 illustrates the distribution of the NS-SEC variable, which is similar to that given in Chapter 6.

Table 7.1: Frequency Table: Social Class in the LSYPE – Waves 1–5

Social class	N	Percent (%)	Category label
Salariat class	4,472	47	Salariat
Intermediate class	2,206	22	Intermediate
Working class	3,566	31	Working
Missing	111	--	
TOTAL	10,355	100	

⁸⁷ Note, however, that all the results of modelling described below were also conducted with the full eight-category version to check the validity of results, and largely the same patterns are observed in both instances.

⁸⁸ 3% are listed as unemployed. Ideally it would have been insightful to analyse this as a separate group, but the proportion is too small.

Prior attainment. Prior attainment is measured as a continuous GCSE points score, taking account of both the number of GCSEs achieved and the quality of the grades. Scores are attributed to each GCSE gained ranging from 8 for an A* to 1 for a G grade, and half GCSEs are assigned half points. See Chapter 6 for more detail regarding the construction of this variable. The sum of the scores was then rounded up to the nearest whole number⁸⁹ and a standardised variable was constructed with mean equal to zero and standard deviation equal to 1. Standardised scores for the sample range from a minimum of -1.80 to a maximum of 3.58. Of the 10,355 cases, 63 are missing on this variable.

Social demographics. 52% of the sample are female (N=5,254) and 48% are male (N=5,101), with no cases missing information on gender. A large majority of the sample are white (85%), and of the 10,355 cases, 17 were missing on the ethnicity variable. For modelling, a binary measure is created to denote (0) white and (1) non-white cases. The decision to treat the ethnicity variable in this way was taken in light of preliminary analyses which justified this approach and in order to increase the statistical power associated with the significance tests by maximising the sample size in the minority ethnic category (these preliminary analyses are discussed in Section 7.4.1 below).

Table 7.2: Frequency Table: Ethnicity in the LSYPE – Waves 1–7

Ethnic group	N	Percent (%)	Category label
White	6,780	85	White
Mixed	526	3	Mixed
Indian	742	3	Indian
Pakistani	612	2	Pakistani
Bangladeshi	488	1	Bangladeshi
Black Caribbean	438	2	B Caribbean
Black African	468	2	B African
Other	284	2	Other
Total non white	3,558	15	Non white
Missing	17	--	
TOTAL	10,355	100	

⁸⁹ This is only done to enable compatibility with logit modelling in Stata; the distribution of the variable remains generally unchanged.

School-level variables. Two school-level variables were available for this study, both of which were employed as control variables in Chapter 6. From the NPD dataset, information is available regarding the proportion of pupils eligible for free school meals (FSM) at each school. Across schools, the mean proportion of students eligible is 13%, with proportions ranging from 0–83%. Information on this variable is missing for 435 cases in the sample. From the LSYPE, information is available regarding whether respondents attended a state-funded or private school at the sampling stage. 8% of students were in attendance at a private school (N=401) and 323 cases are missing information on this school-level characteristic.

7.3 Descriptive Statistics

This section will use descriptive analysis to examine bivariate relationships between variables which will start to unearth some of the processes of inequality at play for pupils at this stage.

7.3.1 Transition Rates by Social Class, Gender and Ethnicity

It is immediately clear that there are substantial differences between social-class groups in the transition rate to A-level, with the proportion who continue from salariat backgrounds being 28 percentage points (nearly two-thirds) higher than the proportion from working-class backgrounds (73% and 45% respectively). This, too, is reflected in the odds of making the transition. Those from salariat backgrounds are 2.76 times more likely to study A-levels than to do any other alternative, whereas those from working-class backgrounds are less likely to study A-levels than to leave education or pursue a non-academic FE route. The odds ratios suggest that those from intermediate backgrounds are almost twice as likely as those from working-class backgrounds to proceed to A-level studies rather than opting for alternative routes, and those from salariat backgrounds are 3.41 times as

likely.⁹⁰ It can unequivocally be shown that there are still social-class differences in the rates of participation in A-level study, with those from more advantaged backgrounds pursuing further academic education far more frequently than those from less advantaged backgrounds. See Table 7.3.

Table 7.3: Transition to A-level by Social Class

	Transition rate (%)	N (weighted)		Odds of making transition
		No	Yes	
Salariat	73	1,058	2,915	2.76
Intermediate	61	723	1,130	1.56
Working	45	1,470	1,191	0.81
Total		8,488		
All	62			1.60
Odds ratios				
Salariat/Intermediate				1.77
Intermediate/Working				1.93
Salariat/Working				3.41

Note: The odds are calculated using the weighted N, so these are reported here in place of the unweighted N.

This transition decision has previously been found to be related to other personal characteristics, such as ethnicity and gender. Table 7.4 below documents the transition rates, odds and odds ratios of continuing to A-level for these subgroups. The non-white group is shown to have a higher transition rate than the white group, also reflected in this group's higher odds of making the transition. Further, they are 1.43 times more likely to continue to A-level than the white group. An identical table is provided in Appendix D, Table D1 which gives this information using the eight-category ethnicity variable. All minority ethnic groups are found to be more likely than white pupils to make the transition with the exception of the black Caribbean group (and white and mixed pupils are largely equal); in particular this is shown to be true for Indian children and children of 'other' ethnic background, which includes the high-achieving Chinese group.⁹¹

⁹⁰ Jackson (2013) finds a similar figure for the relative odds of continuing to A-level, comparing the salariat to the working-class using YCS data (the salariat being almost four times as likely) (2013:261).

⁹¹ The Chinese group was, unfortunately, too small to conduct any inferential analyses (N=44; though a further 16 of these are missing information on the transition), however it is worth noting that this group has the

Table 7.4: Transition to A-level by Ethnicity and Gender

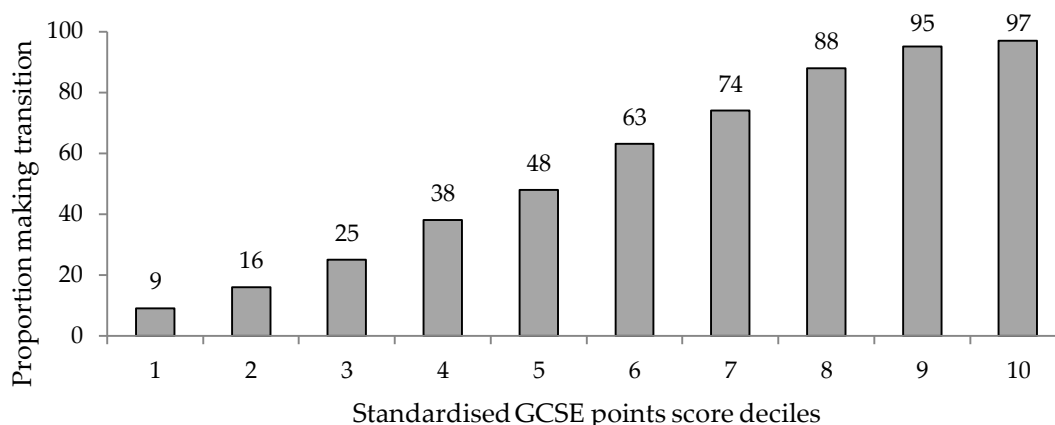
	Transition rate (%)	N (weighted)		Odds of making transition
		No	Yes	
White	60	2,868	4,345	1.52
Non-white	69	418	913	2.18
Total		8,544		
All	62			1.60
Male	58	1,744	2,400	1.38
Female	65	1,546	2,863	1.85
Total		8,553		
All	62			1.60
Odds ratios				
Non-white/White				1.43
Female/Male				1.34

Note: The odds are calculated using the weighted N, so these are reported here in place of the unweighted N.

7.3.2 Prior Attainment

As would be expected, transition rates to A-level also differ according to prior attainment scores, with high-scoring students at GCSE being more likely to continue along the academic track than their low-achieving peers. Figure 7.1 documents the proportion of pupils going on to A-level by GCSE score deciles.

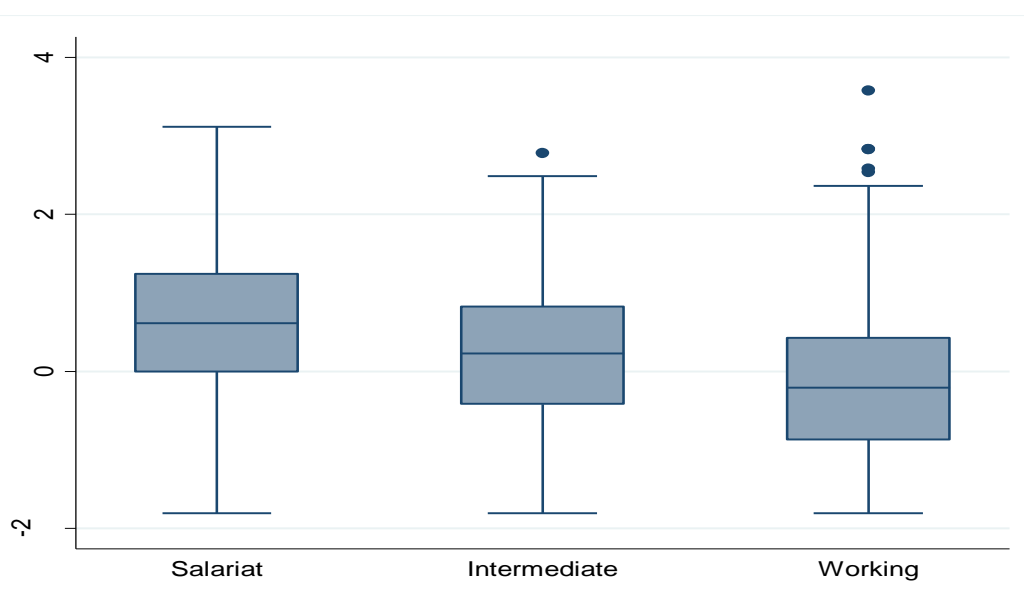
Figure 7.1: Proportion of Students Making Transition to A-level by GCSE Score Deciles



highest transition rate of all pupils (86%). Using weighted counts, the ratio of Chinese pupils who continue to A-level compared with those who do not is 5.8. These pupils are 3.82 times more likely to pursue A-levels than white pupils. Further, they have by far the highest mean standardised GCSE points score (0.87).

As shown in Chapter 6, it is also evident that these GCSE scores exhibit a strong social-class gradient, implying that socioeconomic background factors are likely to be largely accountable for these differences. For the salariat group the mean standardised GCSE score is 0.59, with standard deviation of 0.90; for the intermediate group the mean standardised GCSE score is 0.19, with standard deviation 0.87; and for the working-class group the mean standardised GCSE score is -0.30 with standard deviation 0.88. Figure 7.2 shows how the GCSE scores are distributed within each social class. All classes share the same lower bound, depicting students who failed to gain any GCSEs, and have a value of zero (before the variable was transformed) on the points score. Excluding the extremely high scoring outliers among the working-class group, the salariat group exhibits slightly more variability around the median score than do the other groups.⁹²

Figure 7.2: Distribution of GCSE Scores within Social-Class Group

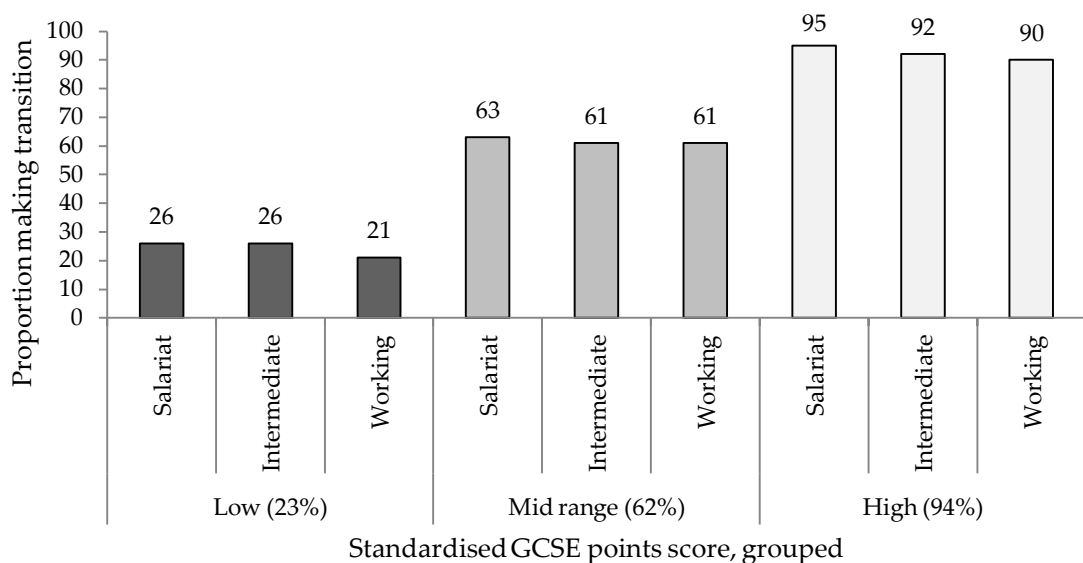


Girls' mean score at GCSE is 0.30 in contrast to boys' which is 0.13. Table D2, Appendix D provides the full list of scores by ethnicity and gender.

⁹² Note that Jackson (2013), using YCS data, finds less deviation around the mean scores for higher social-class groups, though her measure of prior performance is based only on scores in Maths and English (2013:263).

Figure 7.3 below illustrates the proportions of pupils continuing to A-level by social class, for categories of GCSE points score grouped into low, mid-range and high. The deciles computed and used in Figure 7.1 were collapsed so that those whose scores make up the first–fourth deciles are considered ‘low’ achievers, those whose scores make up the fifth–seventh deciles are considered ‘mid-range’ achievers, and those whose scores make up the eighth–tenth deciles are considered ‘high’ achievers. Higher proportions from the salariat class make the transition, at all levels of prior attainment, though percentage point differences between each class are relatively small, implying that how well students do in their GCSEs has a large impact on the likelihood of continuation regardless of social origin.

Figure 7.3: Proportion of Students Making Transition to A-level by Social Class and Standardised GCSE Points Score (Grouped)



There appear to be a large number of students continuing to A-level even among the ‘low’ achievers, who have not gained five A*-C grades at GCSE. This may be indicative of ‘school effects’, whereby some schools encourage students to pursue further academic study even if they do not achieve the standard benchmark. It may be that, with the increase in numbers of FE colleges throughout the UK, a

number of institutions are offering low-attaining students places on A-level courses. This will be explored in modelling.

Similar graphs are given for ethnicity and gender in Figures D1 and D2, Appendix D. Those from non-white ethnic groups have higher rates of continuation than white children, at all prior achievement levels, though there is little variability in the proportions continuing to A-level among high achievers. For those with scores in the mid range, there is a substantial – 20 percentage point – difference in continuation rates between white and non-white groups. Among high achievers, continuation rates are undifferentiated by gender. For low and mid-range achievers females have the highest rates of continuation, with the difference being most marked among those in the latter category (six percentage point difference).

7.3.3 Social Class and Parental Education by Ethnicity

Research question 2 will seek to determine how primary and secondary effects operate for different subgroups defined by ethnicity and gender. It is well documented that there are particular ethnic groups which are more likely to be from more financially (dis)advantaged backgrounds; it may be the case that for some pupils, social-class and ethnic background behave to compound relative advantage or disadvantage, or alternatively, that for some pupils these characteristics behave to explain some of the same variability in the likelihood of the transition. Figure 7.4 illustrates the proportions of each social class within the white group compared with the non-white group, and Appendix D, Figure D3 gives this information using the eight-category ethnicity variable. On average, non-white young people more often come from disadvantaged home backgrounds.

Figure 7.4: Social Class Proportions by Ethnic Group

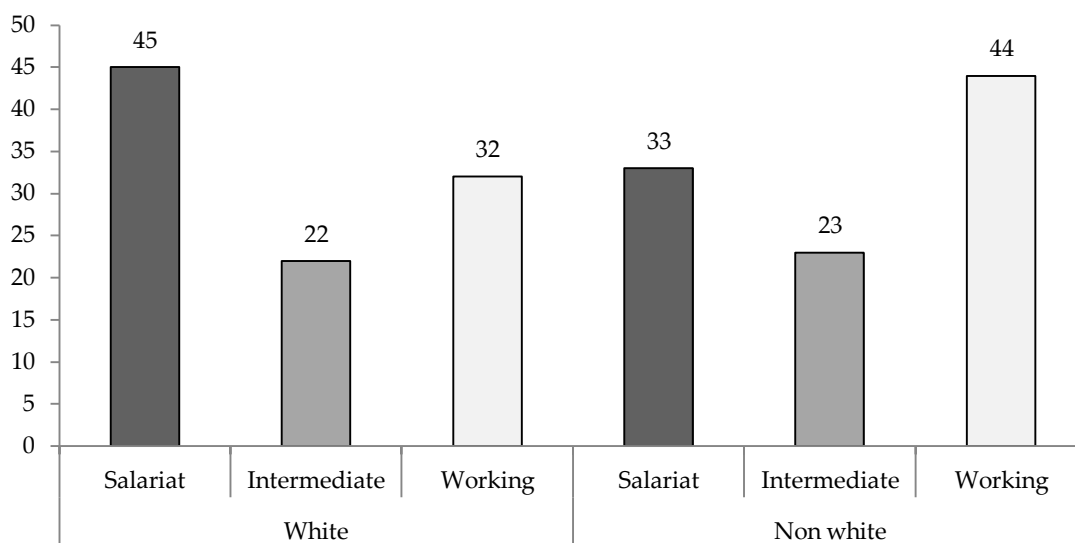


Table 7.5 below is presented to demonstrate that there is some evidence of a pattern of parental educational qualifications by social class that is different between ethnic groups. Among the parents of white pupils who have a degree or equivalent, 85% are in salariat occupations, whereas among the parents of non-white pupils with comparable levels of education, just 71% are in salariat occupations. Similarly, lower proportions of parents of white pupils with low levels or no education are found in the working class than are parents of non-white pupils. Most non-white pupils in the LSYPE are second-generation immigrants, and this therefore provides some evidence to show that ethnic minorities are likely to have experienced suppressed class effects upon entry to Britain, incommensurate with their educational levels.

Table 7.5: Parental Education by Social Class by Ethnicity

	Degree or equivalent		A-levels or equivalent		Lower or none	
	White	Non-white	White	Non-white	White	Non-white
Salarial	85	71	52	50	23	13
Intermediate	10	18	25	24	25	25
Working	5	11	23	26	52	62
	100	100	100	100	100	100

7.4 Model Specification

Multilevel logistic regression modelling is used to determine whether secondary effects remain to be important for the A-level decision, thereby addressing research question 1. A variance components model was first constructed (denoted M0:VC in Table 7.6) below, allowing for random intercepts between schools. The amount of variation in the likelihood of making the transition is thus assessed in terms of the way the variance is partitioned between the school and the pupil level (see Chapter 3, Section 3.3.1 for a description of the variance partition coefficient (VPC)). Social class is then added to the model followed by GCSE score, so that the net impact of class can be observed once primary effects are accounted for.

Predicted scores are derived from the model for each social-class category at various points on the prior attainment distribution. This adds to the analysis by attempting to validate Jackson et al's (2007) finding that the scope for secondary effects to operate is largest at intermediate levels of performance.

Ethnicity and gender are then added to the model, and interactions are fitted between both of these and social class, to assess their significance and address research question 2. The random intercept at the contextual level accounts for the fact that there are differences between schools in the likelihood of continuation to A-level for fixed values of the other predictor variables. Next, a random slope is introduced for the GCSE variable, addressing research question 3a by determining whether there are differences between schools in the relationship between GCSE score and the likelihood of continuation. Finally, school-level covariates are added to the model to examine whether these are able to explain the random intercept, and cross-level interactions are attempted to examine whether these are able to explain the random slope. The impact and significance of all other parameters was then assessed to determine whether the introduction of school-level effects had any bearing on the initial results found for research questions 1 and 2.

This is done using MLwiN software which is apt for multilevel modelling techniques. Markov Chain Monte Carlo (MCMC) estimation is used to generate estimates from the model. The Deviance Information Criterion (DIC) is a likelihood-based measure for comparing non-nested models. It is popularly employed for the comparison of models estimated using MCMC methods (Wakefield 2013:144) and is used here to judge improvements in model fit as new variables are added to the models. The DIC penalises the goodness of fit statistic with model complexity. Joint Wald tests are also conducted to determine the statistical significance of multiple parameters.

7.4.1 Preliminary Analyses

Prior to building the main model, a set of preliminary analyses were undertaken in order to explore the possibilities for modelling secondary effects by ethnicity. The main concern was the relatively small sample sizes for minority ethnic categories and the impact this was likely to have when analysing the likelihood of their transition by social class and gender simultaneously; i.e. while sample sizes are large enough to examine main effects, producing two- or three-way interactions with the initial eight-category version of the variable leads to far smaller subsample sizes, and this is likely to detract from the statistical power of significance tests. The preliminary analyses involved splitting the sample by ethnicity, and running a two-level logistic multilevel model using social class and prior attainment as explanatory variables, for each ethnic group.

The number of level 2 clusters (i.e. schools as PSUs) were not shown to pose a problem: the Bangladeshi group has the lowest number of level 2 units, at 142, which is still well above the recommended minimum of 30 units at each level of analysis (e.g. Hox 1998; Maas and Hox 2004; Maas and Hox 2005). Level 1 sample sizes are small for some groups, being as low as 275 for the 'other' ethnic category once missing cases were excluded, and as low as 63 for the intermediate category

within this group. Many level 2 clusters contained only one observation when the sample was split, but previous simulation studies examining the robustness of estimates in multilevel models have suggested this should not affect their reliability. Bell et al (2010) used Monte Carlo estimation procedures to examine the impact of a range of sample size conditions for multilevel models and concluded that the proportion of singletons had little impact on either point or interval estimates of model parameters in situations where large numbers of level 2 units were included in the models (each model run for these preliminary analyses contained a large number of level 2 units by their definition). However, Clarke and Wheaton (2007) examined different sample size conditions for multilevel models and determined that at least 10 observations per group for at least 100 groups were needed for estimates of the intercept variable to approach the true values.

The results found here for a number of the models reflected the concerns of Clarke and Wheaton: the trajectories plots and associated summary statistics implied that the intercept variance estimates for each of the minority ethnic models should be treated with caution, as chains were failing to converge, high autocorrelation was displayed, effective sample sizes were low and the Raftery-Lewis quantile and Brooks-Draper mean statistics suggested that an infeasible number of iterations would be required to produce reliable estimates.

The trajectories and diagnostics for the other parameter estimates, however, were shown to be reliable, and these revealed that for all ethnic minority groups the impact of social origin on the likelihood of making the transition was entirely mediated by prior attainment, while for the white group the parameter estimates for social class remained significant. These preliminary analyses suggested that differences in the operations of secondary effects are most likely to be found in comparing the white group with a collective non-white group, as opposed to using the nuanced version of the ethnicity variable as has been employed in

previous chapters, and further, collapsing the variable in this way facilitates more powerful significance tests for the interactions between ethnicity and other key variables of interest.

7.4.2 Robustness Tests

Various validity tests were undertaken, which mostly involved recoding variables or adding controls. An important test involved re-running models using variations of the family NS-SEC variable to see whether the patterns observed using the main models were robust to such changes. Attempts included: excluding those who have never worked or are long-term unemployed from the working-class category; using the full eight-category schema; and using a collapsed five-category version of the variable. Other checks involved controlling for one- and two-parent households, and by lone-child and sibling households, as these can impact upon the finances parents have at their disposal to devote to their child's continuing education. The prior attainment variable was also recoded into a categorical variable representing achievement quantiles, and used in otherwise identical models to examine whether this made a difference to results. In sum, all validity tests confirmed that the findings generated by the model were robust to such coding variations.

Another test involved the consideration of 'anticipatory decisions'. Jackson et al (2007) discuss that the assumption that the decision regarding whether or not to continue is taken after GCSE results have been gained is, in large part, correct; however it may also be the case that the decision is to an extent anticipated, in that students may decide at some earlier point that they will or will not make the transition, and the effort they put into their GCSE examinations will be reflective of that. Insofar that such anticipatory decisions do occur, secondary effects are likely to be underestimated in models such as the one employed here because this, which is in reality a choice effect, will be reflected in the primary effects measure

of attainment. Meschi et al (2011:27) test this by replacing the GCSE score variable with attainment at Key Stage 2, and find that it is a weaker predictor of the decision to continue, however the other coefficients in their model retain the same signs, significance, and approximately the same magnitude.⁹³

This study replicates Meschi et al's (2011) approach, by replacing the GCSE score variable with an average points score measure from Key Stage 3. Similarly, the results showed that Key Stage 3 score is indeed a weaker predictor, and all other coefficients in the model displayed the same relative magnitudes and significance, apart from the proportion of students eligible for FSM. In an additional attempt to measure anticipatory decisions, a measure was included from wave 1 (and therefore asked at the beginning of students' starting Key Stage 4) asking about students' plans for when they reach 16. This was entered into the final model. The variable was coded to represent those who wished to stay in full time education (85%) and those who wished to leave (15%). The results are displayed in Appendix D, Table D3 and are discussed in Section 5 along with the main findings.

Another robustness test involved replicating the approach taken by Jackson (2013b), in using an alternative measure of social background in place of the family's NS-SEC. The highest qualification over all waves for the mother and the father was calculated, and then the dominance approach was used to derive the highest qualification held in the household. The categories were collapsed into three: (1) degree or equivalent; (ii) A-level or equivalent below degree level, and (iii) lower qualifications (including GCSE and no qualifications). The model was then built, in stages identical to that produced for the main model, and variations in parameter estimates were observed. These models are given in Appendix D, Table D4, and the results are discussed in Section 5 along with the main findings.

⁹³ Note that this study sought to examine the impact of labour market conditions on the decision, rather than social class, as is the focus here.

7.5 Modelling Findings

The data were imported into MLwiN, and a two-level random intercepts variance components model was run, depicted as M0: VC in Table 7.6 below. This is essentially an empty (or 'null') model which acknowledges the hierarchical structure of the data and allows each school to have a different intercept. This null model is treated as the benchmark from which improvements in model fit will be judged. The model indicates that 16% of the overall variability in the likelihood of making the transition to A-level is attributable to school-level differences, and the remaining 84% is attributable to individual-level differences.

Research question 1 is concerned with determining whether class origin effects are relevant for the A-level transition after having accounted for prior ability, in the light of recent findings by Jackson (2013b) which suggest that secondary effects have declined in importance for this educational branching point. Model M1 introduces social class into the model. Having accounted for clustering at the school level and allowing intercepts to vary across schools, pupils from salariat backgrounds are shown to be 1.55 times more likely to continue to A-level than pupils from intermediate backgrounds and 2.56 times more likely than those from working-class backgrounds.⁹⁴ Significant parameter values are signified in bold.

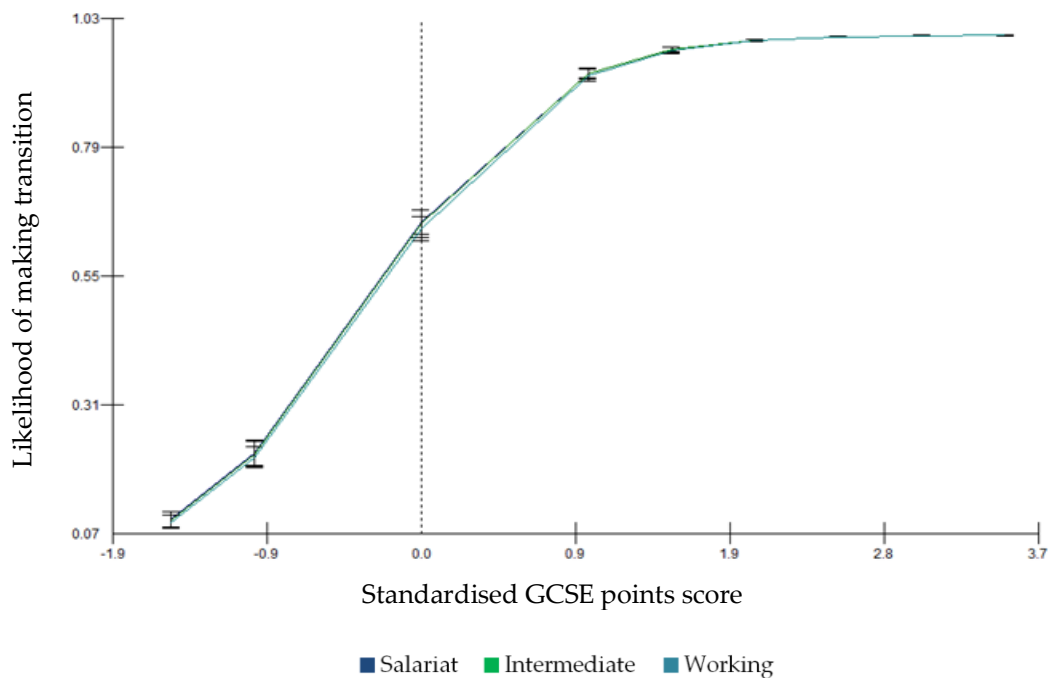
Model M2 introduces prior attainment at GCSE. Having accounted for social class, a one-unit increase in prior attainment is associated with an eight-fold ($=\exp(\beta=2.08)$) increase in the likelihood of continuing on to A-level study, confirming that how well students have done previously has a substantial and significant impact upon their educational decision making. Importantly, the net impact of social class is reduced to insignificance once this is accounted for, even between the highest and lowest groups. In other words, the social class effect on the A-level transition decision is entirely mediated by GCSE performance. The

⁹⁴ The odds are calculated by taking the exponential of the beta coefficient (e.g. $\exp(-0.94)=0.39$, and then the inverse of this is then taken to use the salariat as the baseline group ($1/0.39=2.56$).

results here suggest that, for this cohort, primary effects are the most important driver with regards to continuing on in academic education.

Predicted scores were taken from model M2 for each social class across a range of prior attainment scores. These are given in Table D5 in Appendix D, and are displayed in graphical form in Figure 7.5 below, with 95% error bars. At no point along the prior score distribution, are there significant differences between any of the social class categories.

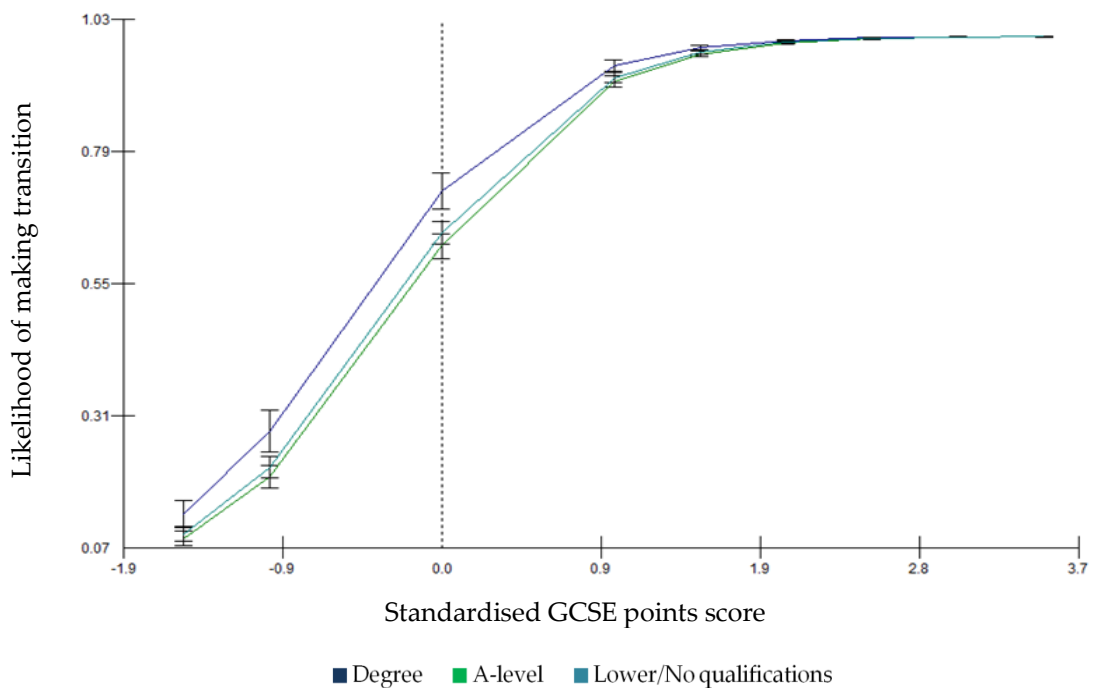
Figure 7.5: Likelihood of Continuing to A-level by Social Class and Standardised GCSE Points Score Distribution



As a supplementary analysis, an identical model was run, using parental education in place of social class. See Section 7.4.2. Using this alternative specification, both the A-level parameter and the lower/no qualifications parameter remain significant once GCSE attainment has been controlled for, indicating that parental education exerts a particularly strong influence over individuals' likelihood of continuation. These are in contrast to Jackson's (2013b) findings, which suggested that secondary effects had substantially declined in

importance regardless of the measure used to denote social origin. The results found here display some resemblance to the findings of Chapters 5 and 6 which highlighted the marked importance of parental education as a mechanism leading to inequalities in attainment. Figure 7.6 below plots the predicted scores from this alternative model (see Model M2 in Appendix D, Table D4), which shows that there is little difference between groups among particularly high attaining pupils, but for pupils with low and mid-range scores, those whose parents hold a university degree or equivalent are significantly more likely than those with parents who have lower levels of education to continue.

Figure 7.6: Likelihood of Continuing to A-Level by Parental Education and Standardised GCSE Points Score Distribution



Ethnicity and gender variables were then added to the main model. See models M3 and M4 in Table 7.6 below. Significant parameter estimates are indicated in bold. M3 suggests that those from minority ethnic groups are 2.72 (=exp($\beta=1.00$)) times more likely than those in the white group to make the transition to A-level, even after controlling for social class and prior attainment at GCSE. The inclusion

of this variable leads to a reduction in the DIC statistic of 166, implying a better fitting model. Similarly, after controlling for class, prior attainment and ethnicity, the inclusion of the gender variable leads to an improvement in overall model fit. Females are 1.19 ($=\exp(\beta=0.17)$) times more likely than males to continue on to A-level, after accounting for these influences. Interestingly, once the ethnicity variable is included in the model, the coefficient comparing the likelihood of continuation for the routine/unemployed group compared with the salariat group becomes significant again, suggesting immediately that there is some relationship between ethnicity and class which is worthy of exploration.

Table 7.6: Multilevel Logistic Regression Model Predicting the Likelihood of Continuation to A-level: Log Odds Coefficients

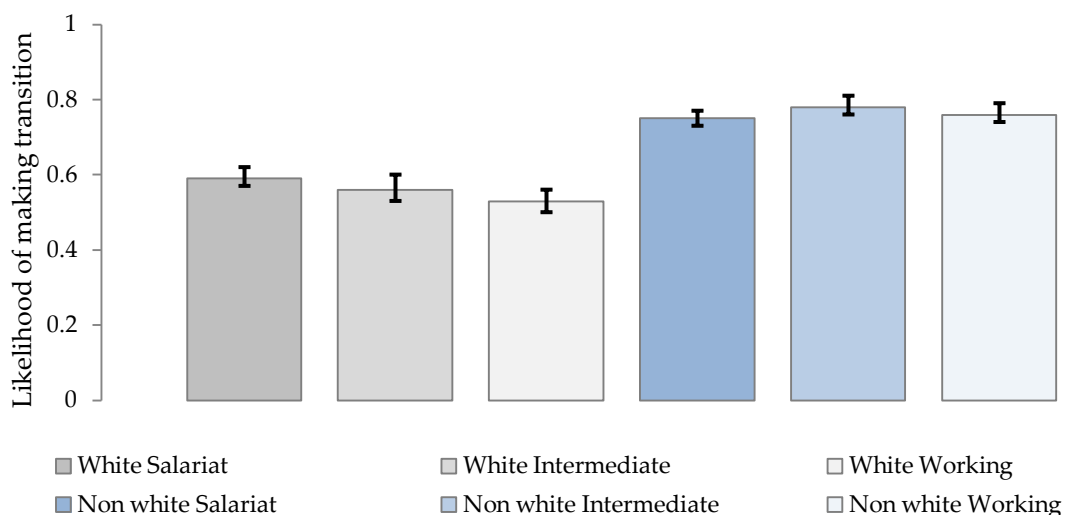
	M0: VC	M1	M2	M3	M4	M5	M6	M7	M8
FIXED EFFECTS									
Cons	0.69 (0.04)	1.14 (0.05)	0.65 (0.05)	0.36 (0.05)	0.29 (0.06)	0.34 (0.06)	0.30 (0.07)	0.27 (0.07)	0.17 (0.08)
Intermediate		-0.44 (0.06)	-0.01 (0.07)	-0.07 (0.07)	-0.07 (0.07)	-0.15 (0.08)	-0.15 (0.09)	-0.13 (0.09)	-0.12 (0.09)
Working		-0.94 (0.05)	-0.06 (0.07)	-0.16 (0.07)	-0.17 (0.07)	-0.28 (0.08)	-0.28 (0.08)	-0.26 (0.08)	-0.29 (0.09)
GCSE score			2.08 (0.05)	2.10 (0.05)	2.08 (0.05)	2.08 (0.05)	2.14 (0.06)	2.14 (0.06)	2.18 (0.06)
Non-white				1.00 (0.07)	1.00 (0.07)	0.77 (0.11)	0.77 (0.12)	0.87 (0.12)	0.79 (0.12)
Female					0.17 (0.06)	0.17 (0.06)	0.17 (0.06)	0.17 (0.06)	0.17 (0.06)
Non-white*Intermediate						0.33 (0.16)	0.34 (0.17)	0.28 (0.17)	0.24 (0.17)
Non-white*Working						0.37 (0.13)	0.37 (0.15)	0.26 (0.14)	0.23 (0.15)
Private school								0.69 (0.27)	0.90 (0.29)
% FSM									0.01 (0.00)
RANDOM EFFECTS									
School-level variance	0.64 (0.06)	0.53 (0.06)	0.50 (0.06)	0.35 (0.05)	0.34 (0.05)	0.34 (0.05)	0.31 (0.05)	0.31 (0.05)	0.32 (0.05)
Pupil-level variance	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29
Total variance	3.93	3.82	3.79	3.64	3.63	3.63	3.60	3.60	3.61
RANDOM SLOPES									
School-level							0.18 (0.08)	0.17 (0.06)	0.18 (0.07)
Covariance							-0.08 (0.04)	-0.08 (0.04)	-0.07 (0.04)
MODEL STATISTICS									
Variance partition:									
School	16%	14%	13%	10%	9%	9%	9%	9%	9%
Pupil	84%	86%	87%	90%	91%	91%	91%	91%	91%
N	10355	10244	10183	10166	10166	10166	10166	9881	9775
Df		2	1	1	1	2	2	1	1
DIC	12599	12189	8782	8616	8609	8606	8591	8290	8164

Notes: Data source: Longitudinal Study of Young People in England Waves 1-7; This table presents the log odds parameter estimates of the direct effects and interaction effects of each variable included in the model using a stepwise procedure with Markov Chain Monte Carlo estimation

An interaction term between ethnicity and social class is fit in model M5, which again leads to an improvement in model fit. Joint Wald tests confirm that: both interaction terms, taken together, are significant ($\text{Chi}^2(2\text{df})=7.95$); these, along with the main-effects class parameters, are significant ($\text{Chi}^2(4\text{df})=14.54$); the non-white routine class parameter is significantly different from the white routine class parameter ($\text{Chi}^2(1\text{df})=11.27$); and both the white and non-white routine class parameters are significantly different from their respective salariat reference categories ($p<0.05$). For the white group, those from salariat home backgrounds are 1.32 times more likely to continue to A-level than those from routine backgrounds ($=1/(\exp(\beta=-0.28))$), whereas for the non-white group, those from routine backgrounds are 1.45 times more likely to continue than those from the salariat group ($=\exp(\beta=0.37)$). The educational ambitions of those from lower class backgrounds, therefore, differ by ethnic group. This may be a consequence of the suppressed class effects of non-white second-generation pupils, as hypothesised.

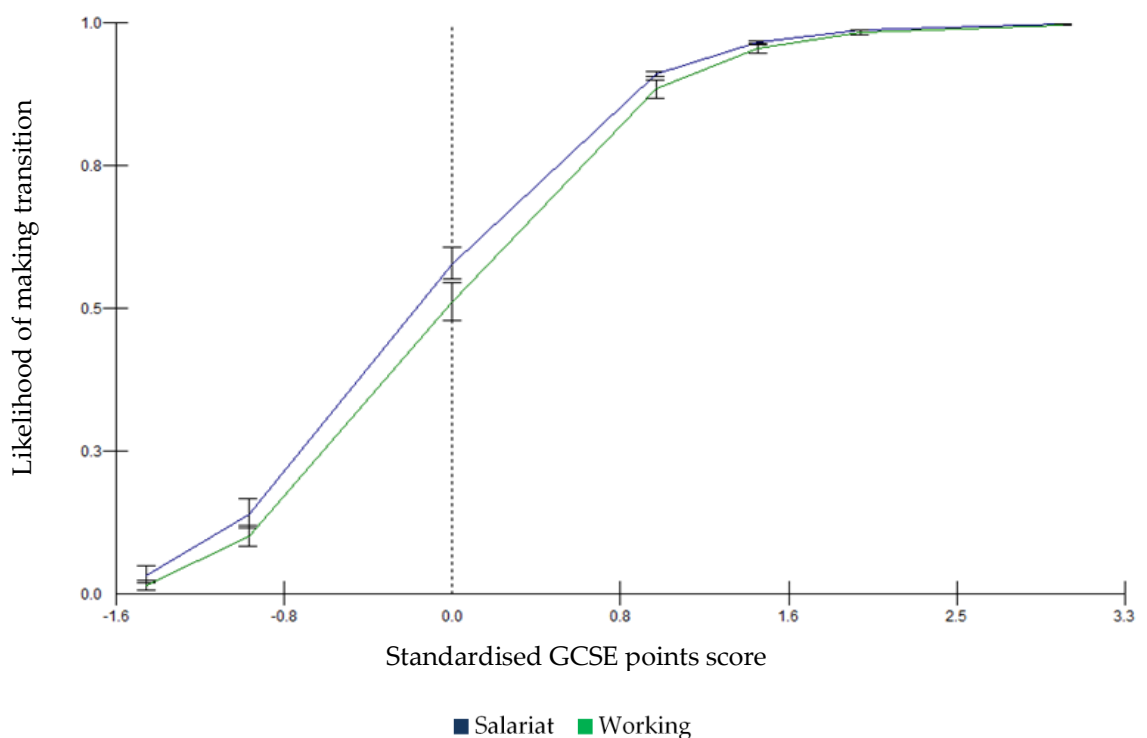
An interaction was fitted between class and gender, but this was found to be insignificant and was removed; consequently, there was little need to attempt to fit a three-way interaction between class, gender and ethnicity. Figure 7.7 illustrates the class-by-ethnicity interaction, using mean GCSE score.

Figure 7.7: Interaction between Social Class and Ethnicity on the Likelihood of Making the Transition to A-Level: Model Predictions



Predictions taken from the model for the white group suggest that significant differences between the social classes occur in the mid-range of the prior attainment distribution. Figure 7.8 plots the predictions from the model for the white salariat group and the white routine class group. For the intermediate group, there are no significant differences from either the salariat or the routine class, for any prior attainment score, suggesting that secondary effects are indeed relevant for white pupils, but mostly to differentiate those from the extremes of the social spectrum. For non-white pupils, the predictions for the salariat group and the routine class group are not found to be different from each other at the 95% confidence level at any point on the prior attainment distribution, despite the significant parameter estimate for the routine class in the interaction. Thus, secondary effects are not considered to significantly impact upon the transition to A-level for minority ethnic groups.

Figure 7.8: Likelihood of Continuing to A-Level by Social Class and Standardised GCSE Points Score Distribution for White Pupils

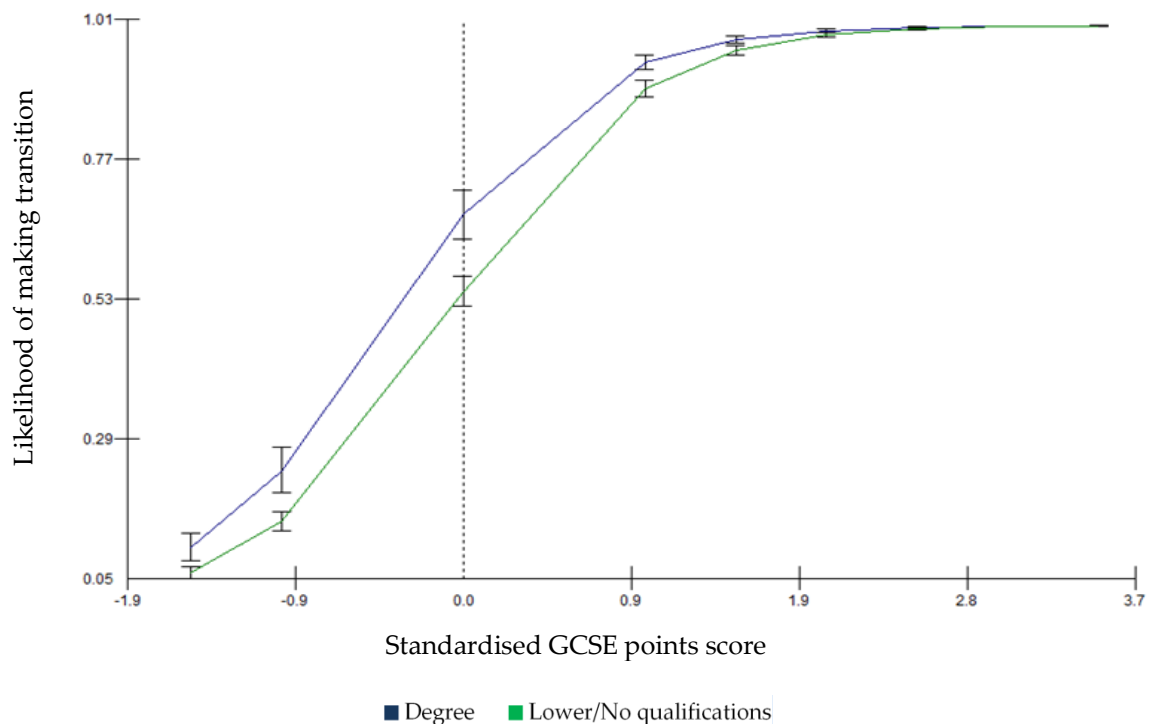


In model M5, the coefficient for prior attainment is relatively substantial and is significant across all groups, indicating that primary effects are of prime importance regardless of ethnic origin.

The alternative model, using parental education in place of social class, was examined to determine whether this differential effect of ethnicity was found. See Appendix D, Table D4. Introducing the ethnicity and gender variables improved the overall fit of the model, and the magnitude of the main effects of these characteristics was found to be almost identical to those found in the main model. See models M3 and M4. The significance of other parameters in the model was unchanged with the introduction of these variables, so that both parents holding A-level or equivalent qualifications and parents holding lower or no qualifications are both shown to lead to a lesser likelihood of continuation even after controlling for these influences. Model M5 introduces the interaction effect between ethnicity and social class, which was found to further improve the fit of the model, and the coefficient for the lowest qualifications-by-ethnicity group was shown to be significant. Note that, parallel to the findings of the main model, the gender-by-class interaction was found to be non significant.

Predictions were taken from this alternative model to assess the interaction. For the non-white group, at no point along the prior attainment distribution were significant differences found between any of the categories distinguishing levels of parental education. For the white group, however, considerable and significant differences were found in the likelihood of making the transition between those whose parents hold educational qualifications at degree or equivalent level and those whose parents hold educational qualifications below A-level or who have no qualifications at all. See Figure 7.9 which plots these predictions.

Figure 7.9: Likelihood of Continuing to A-Level by Parental Education and Standardised GCSE Points Score Distribution for White Pupils



Thus, using parental education in place of social class confirms the finding that the influence of secondary effects is differentiated by ethnicity is robust. Furthermore, these alternative analyses suggest that parental education has a particularly pervasive influence over educational decision making which, for white pupils, introduces an additional, and substantial, mechanism of inequality in educational opportunity. Comparing Figures 7.8 and 7.9, it is shown that those who perform very well in their GCSEs are very highly likely to make the transition to A-level regardless of social origin, and this is found irrespective of the way in which social origin is measured; however, differences between the most and least advantaged are more pronounced when using parental education to denote social background, and these differences are significant for pupils who achieve zero, or very low, scores at GCSE right up until those with scores of 2.3 on the standardised points

score distribution (which ranges from -1.80 to 3.58). Cumulatively, this equates to the significance of secondary effects for approximately 99% of white pupils.⁹⁵

An additional analysis involved including a variable measuring pupils' intentions, as stated in Year 9, with regards to their post-16 plans for education. See Section 7.4.2. The inclusion of this variable improved the fit of the model and indicated that, after accounting for class and GCSE attainment, those who planned to stay on in full time education were 2.32 ($=\exp(\beta=0.84)$) times more likely than those who did not to make the transition. See Appendix D, Table D3. The main effects estimate for GCSE score only marginally decreased with the inclusion of this variable (changing from $\beta=2.18$ in the main model to $\beta=2.12$ in this alternative model). While anticipatory decisions have some impact, therefore, the extent to which any choice effects are subsumed in the prior attainment estimates is small.

The final research question posed by this chapter is concerned with whether school-level factors influence pupils' likelihood of continuation. This section aims to describe these differences and to determine whether they impact upon the results already obtained.

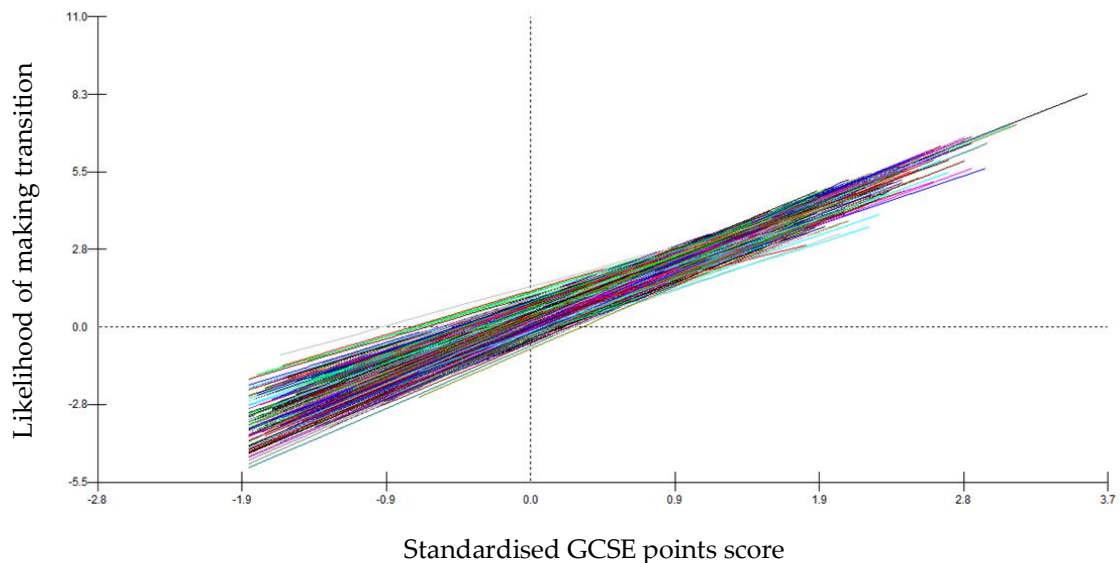
The model described thus far allows for the fact that each school has a different value on the intercept; that is, the likelihood of continuation based on the school attended is incorporated into the model. According to the VPC, model M5 suggests that 9% of the remaining unexplained variability in the likelihood of continuation is attributable to differences between schools. Model M6 introduces a random slope for GCSE score, seeking to determine whether the influence of prior attainment is more predictive of the likelihood of continuation for some schools than it is for others. This random slope led to an improvement in the overall fit of the model. Thus, in addition to the significant random intercept which suggests that some schools are more encouraging as regards students' continuation to A-

⁹⁵ i.e. Only 1% of pupils, using both weighted and unweighted counts, have scores higher than 2.3 on the standardised GCSE points score.

level than others, the significant random slope also indicates that each school has a different relationship between GCSE score and the likelihood of continuation.

Figure 7.10 below plots the average school lines.

Figure 7.10: Likelihood of Making Transition to A-Level for Each School: Random Slopes for Standardised GCSE Points Score



The positive value for the slope variance ($\sigma^2_{u3}=0.18$) and negative estimate for the intercept-slope covariance ($\sigma_{u03}=-0.08$) describes a pattern of school lines which are ‘fanning in’; as shown in Figure 7.10 above, the predicted school lines do, over the range of prior achievement scores, exhibit this general tendency. However, these parameter estimates are due in part to the fact they are derived from the mean GCSE points score (which is zero, since the variable is standardised). At values of approximately 1.5 and above on the prior score distribution, the school lines begin to fan out again. Therefore, there is more variability between schools in students’ likelihood of continuation among those whose GCSE achievement is low and those whose GCSE achievement is high; in the mid range, the likelihood of continuation varies less between schools.

Model M7 introduces a school-level variable into the model, indicating whether students, at the time of LSYPE sampling, attended a private or state-funded

school. The estimate suggests that, controlling for the other influences already in the model, students who attended a private school were twice as likely to make the transition to A-level than those who did not ($1.99 = \exp(\beta = 0.69)$). Model M8, the final model, introduces a school-level variable indicating the proportion of pupils eligible for FSM at that institution. The inclusion of this variable leads to an overall improvement in model fit, and the parameter estimate is significant at the 0.05 level, however the size of the influence is small. A one percentage point increase in the proportion of pupils in receipt of FSM at a given school results in a 0.01 unit increase in an individual's log likelihood of continuation. This continuous measure should be interpreted by examining the influence of this for schools at each end of the extreme, however. The variable has a range of 0–83%, and thus a pupil who attends a school which has no students eligible for FSM is 2.29 ($= \exp(\beta = 0.01 * 83)$) times more likely to continue to A-level than a pupil who attends a school with 83% of pupils in receipt of FSM.

The introduction of these school-level variables, however, does nothing to reduce the school-level intercept variance, and other unmeasured school characteristics are therefore likely to account for why some schools are more influential than others. In the final model, 9% of the remaining variability in the log odds of continuing to A-level is due to school-level differences. It is likely that other indicators, including whether a school has a sixth form attached to it, can explain more of this variability, which has been alluded to in other research (e.g. Payne 1998; Connor et al 1999). Note that, in examining the alternative model which uses parental education in place of social class, similar results are found. Cross-level interactions were also fitted in an attempt to explain the random slope, though none of these were found to be significant.

Finally, this chapter is concerned with whether the results obtained for research questions 1 or 2 are in any way altered after accounting for school-level influences. Introducing the random slope for GCSE score left the other parameters in the

model largely unchanged. Including the school-level variables rendered the parameter for the non-white routine class insignificant, however in deriving predicted values from the model it had already been shown that there were no significant differences between social-class categories for the minority ethnic group. Importantly, the main effect parameter for GCSE score remained the most influential predictor in the model, and the estimate comparing the white routine group to the white salariat group remained significant. Therefore, even after accounting for school-level characteristics, the main findings presented above are unaltered.

Using the alternative (parental education as social origins) model, depicted in Appendix D, Table D4, for white pupils significant differences in the likelihood of continuation are still apparent between those whose parents hold degree or equivalent level qualifications and those with qualifications equivalent to A-levels, as well as between those whose parents hold a degree and those with very low, or no, formal educational credentials. The overall magnitude in the difference between the most advantaged and least advantaged groups varies quite considerably between the model using social class and the model using parental education. For the class model, using estimates from M8, the most advantaged group are 1.34 times ($=1/\exp(\beta=-0.29)$) more likely to continue than the least advantaged group and for the parental education model, the most advantaged group are 1.84 times ($=1/\exp(\beta=-0.61)$) more likely to continue than the least advantaged group.

Section 6 will summarise the findings of this chapter, and begin to reflect on how these might impact upon the assumptions made by rational choice theorists regarding the secondary effects of social origin.

7.6 Conclusions

Breen and Goldthorpe's (1997) proposed model intended to explain the persisting and largely stable disproportionately low rates of staying on in education among disadvantaged pupils even under circumstances of decades of educational expansion. While it is clear that this class-driven differential still remains, evidence has more recently been provided to show that there has been a slight reduction in the relative odds of staying on for those from the highest and lowest socioeconomic groups (Jackson 2013b). Moreover, Jackson's (2013b) recent work has suggested that British society has encountered a substantial shift; she determines that for the salariat–working class comparison, secondary effects now only account for as little as 8% of the overall socioeconomic inequality in the particular educational branching point considered here.

The foregoing analyses have shown that social background remains an important predictor of post-compulsory educational participation decisions, with the proportions of pupils from disadvantaged homes choosing to take up A-level study at substantially lower rates than their peers. This is shown to be the case even in the context of continuing educational expansion, with increases in sixth forms and FE colleges throughout the country.

After demonstrating that class differentials in A-level participation rates continue to exist in a contemporary context, this chapter sought to determine whether the results found by Jackson (2013b) were reinforced with LSYPE data, examining children in a largely comparable cohort. Using a multilevel binary logistic regression model, the results above do indeed suggest that, without accounting for other individual-level characteristics as was the approach taken by Jackson (2013b), secondary effects are no longer of particular relevance for our discussions of social-class inequalities in further educational participation, and that primary effects – be they genetic, social or cultural in nature – are the most important

determinants. Put differently, most social origin advantage or disadvantage has already taken effect *before* pupils make the decision to stay on in education and is reflected in the social-class gradient in GCSE attainment.

However, in extending the research focus to include a simultaneous examination of how class differences operate for key subgroups, this chapter has unveiled an interesting and very important caveat: secondary effects *are* influential for white students but *are not* influential for ethnic minority pupils.

The descriptive statistics presented above showed that pupils from all ethnic minority groups (with the exception of black Caribbean) are more likely to make the transition to A-level, as measured using odds ratios, than white pupils.⁹⁶ Preliminary analyses also showed that, upon splitting the sample by all eight major ethnic groups, social class was found to influence the transition decision after accounting for GCSE performance for white pupils, whereas even the difference between the highest and lowest class categories was found to be insignificant, in this context, for all minority ethnic groups alike. In the light of these initial results, and in the aim of increasing the statistical power associated with the hypothesis tests intending to examine interactions between ethnicity and other key variables, the decision was taken to effectively treat all minority groups as if they behave in a similar way, and to thus distinguish only between white and non-white groups in modelling. It is recognised, and discussed in previous chapters, that there are of course a multitude of ways in which ethnic minority populations differ from each other, and this chapter does not seek to imply that the 'non-white' category is representative of a homogenous minority ethnic

⁹⁶ This finding is largely reflected in other research, though some studies (e.g. Leslie and Drinkwater 1999) have found all ethnic minorities have higher rates of continuation than white pupils, including the black Caribbean group; however this group is shown to have the lowest rates among all minority ethnic groups. Further, black Caribbean and black African pupils are most likely to continue in education to pursue vocational training (Connor et al 2004), which may be why this group is found to differ in the transition to A-level as examined here.

population; however with respect to the likelihood of continuing in education this decision is considered to be justified.

For all pupils, attainment at GCSE is the most influential factor determining participation in further study; home (dis)advantage has already factored into educational performance and for many, there is no further significant impact in this regard. Why, then, does social background continue to exert an influence only for white pupils? From a rational choice perspective, this group must differ in that the value they attach to A-level study is relatively less or in that the costs of this study are relatively more. Li et al (2008) document differences in the returns to educational qualifications by ethnicity, showing that many minority ethnic groups experience higher levels of unemployment and lower pay than similarly qualified white people. Reduced opportunities in the labour market – particularly the youth labour market – means that ethnic minority pupils face a lower opportunity cost of continuing in education (Connor et al 2004), and this might account for the lack of a significant difference between low- and high-socioeconomic groups among these pupils. Breen and Goldthorpe's (1997) model can adequately incorporate such explanations.

Alternatively, it may be that the rational choice perspective, which rejects ideas of sub-cultural variations, fails to reflect the reality of contrasting ambitions between groups perhaps driven by factors other than differences in cost, benefits, or relative positional origin. Girls who leave school with low levels of qualifications have been shown to face fewer employment prospects than boys with the same level of education (Rake 2000) and therefore, like ethnic minorities, they face a lower opportunity cost of continuing in education; however, no evidence has been found to suggest that gender moderates the effect of class and this prompts questions regarding whether there are cultural differences between white and non-white groups that might give rise to alternative explanations. Variations may exist between the white group and ethnic minorities in terms of pupils' and

parents' aspirations and the value placed on education. Perhaps ethnic minority groups strive for intergenerational social mobility, rather than social stability, and this would challenge the universal applicability of Breen and Goldthorpe's (1997) rational choice model, which implicitly includes the assumption of RRA, i.e. that pupils will pursue educational qualifications only to the point at which these will secure them access to a social class position equivalent to that of their parents.

For white pupils, secondary effects are most relevant for the A-level transition at intermediate levels of prior performance; a finding which reinforces those of Jackson et al (2007). Thus, among low-performing students there is very little, and among high-performing students there is much, impetus to continue in academic education, regardless of socioeconomic origin. In the mid range, higher-class students are significantly more likely to continue than their lower-class peers, and this may be representative of differences in economic resources (as would be supposed by rational choice theorists), or of differences that are more attitudinal (Erikson and Jonsson 1996:23).

By drawing upon an alternative model for comparison with the main findings, this chapter has shown, reflective in many respects of the findings in Chapter 5 and 6, that parental education exerts a particularly strong influence over educational achievements. The previous two empirical chapters showed that parental education, taken to represent institutionalised cultural capital, was largely the most important mediator of the association between social class and children's educational outcomes. Here, parental education has been shown to differentiate pupils (albeit, only white pupils, in accordance with the class measure of social background) in their likelihood of continuing in academic education in a way which is notably decisive. Sullivan et al (2014) looked at the secondary effects of stratification on the likelihood of gaining a degree from an elite university. They controlled for cognition throughout childhood as well as attainment at 16 and, despite this very thorough approach to the inclusion of primary effects, found that

a significant robust effect of parental education remained (whereas for class it did not). Thus they too concluded that parental educational status is the largest source of secondary effects (Sullivan et al 2014:758).

This chapter has aimed to go beyond previous attempts to examine secondary effects to also consider the role of schools in generating difference in the likelihood of continuation. The significant random intercept for the contextual level showed that there are average differences between schools in the transition likelihood, and the significant random slope showed that one form of difference rests on the notion that for some schools GCSE score is more predictive than it is for others. The school-level covariates that were available in the LSYPE and NPD were unable to account for why schools differ in this way. Finally, taking account of these school influences did little to affect the results obtained from the first two research questions; therefore, while it is arguably important to control for these school-level effects which we know to be of influence, neglecting to do so in previous studies is unlikely to have detracted from the plausibility of their findings for individual-level estimates.

In future research it will be important to focus on transitions in higher education, which has not been achieved in this thesis due to a lack of data availability. Jackson's (2013b) study has implied that secondary effects are still relevant for students in deciding whether, controlling for A-level, to continue on in education. This prompts two interesting questions: first, will the sharp increase in the cap on tuition fees to £9,000, introduced in 2012, result in an increase in the importance of secondary effects for the university transition and, potentially also, for the A-level decision (assuming anticipatory decisions are particularly pertinent in the face of higher costs); or second, under conditions of continuing educational expansion which has seen a vast growth in the number of universities available and accessible, and with participation rates increasing across the board, will the principle of maximally maintained inequality (MMI) be realised, and result in a

decrease in the importance of secondary effects at this stage? If the latter is found, the question may then shift again to one of a more qualitative nature (i.e. effectively maintained inequality (EMI) (Lucas 2001)), so that students are (even more than is currently the case) differentiated according to the prestige of the university attended, and the relevant transition in question may be then to compare Russell Group, or even Oxbridge, students to those who exit or attend post-1992 institutions. Boliver (2013), Sullivan et al (2014) and Zimdars et al (2009) have begun to unearth some interesting findings in this area.

Chapter 8 will attempt to reconcile the findings produced in this chapter with those presented for pupils in the compulsory stages of education, in Chapters 5 and 6. It will also reflect on how the significant interaction effect found between social class and ethnicity might have implications for rational choice theory.

Chapter 8

Discussion and Conclusions

8.1 Introduction

This thesis examines the nature of social-class inequalities in cognitive and educational outcomes for young people in England. Since the Butler Act of 1944 British governments have been concerned with attempting to reduce the effects of social origin on individuals' educational attainment, with the aim of realising a more egalitarian system. However, there is little evidence that educational reforms or expansion have resulted in any substantial or sustained decline in inequality (e.g. Heath and Clifford 1990; Boliver 2011; Breen et al 2009), and relative differences between social-class groups demonstrate considerable resistance to change. The nature of exactly which social processes give rise to this inequality has been the subject of considerable debate in Sociology and in education research more generally. This thesis is concerned with providing a contribution to the existing body of literature which focuses on cultural and economic factors.

The empirical analyses focus on two separate, but inherently interlinked, domains: the primary and secondary effects of stratification (Boudon 1974). Primary effects refer to social origin effects on actual educational attainment and secondary effects refer to social origin effects on educational decision making, conditional on prior attainment. Both of these contribute to explaining the processes that are manifest in the achievement of higher levels of ultimate educational qualifications among those from socioeconomically advantaged homes. Though these are part of the same causal chain, research into class-based inequalities has tended to focus on the primary and secondary effects of stratification as distinct stages of interest – an

approach that has proven useful in aiding our understanding of the ways in which (dis)advantage is realised.

One of the most influential accounts of the ways in which class differences in attainment are perpetuated is provided by Bourdieu's cultural reproduction theory (Bourdieu and Passeron 1977). Bourdieu argues that, due to the possession and outward display of cultural knowledge, competence and familiarity – termed cultural capital – children from higher-class backgrounds are perceived as intrinsically well suited to the requirements and values of the school; teachers interpret signs of cultivation as an indication of academic capability, and reward these pupils with high grades accordingly. Cultural capital is, according to Bourdieu, a resource which is unequally distributed across class factions; pupils from working-class backgrounds typically lack it and are therefore excluded from the returns it is expected to generate with respect to academic qualifications.

Cultural capital is just one component of Bourdieu's social reproduction theory. Another important concept Bourdieu suggests is linked to, and in many respects derived from, cultural capital is habitus. Habitus relates to individuals' internalised dispositions, which determine the way in which one views oneself in relation to wider society. In short, habitus shapes what people believe to be 'possible, impossible and probable' (Swartz 2002:64S) for people of their kind, given their awareness of the lived experiences of others in their social strata. In this sense it shapes one's aspirations, expectations, beliefs, and attitudes, but always in relation to a particular context; or, in Bourdieu's terminology, a field.

With regard to the primary effects of stratification, the first two empirical chapters presented in this thesis are primarily concerned with testing the applicability of Bourdieu's social reproduction theory at two crucial educational stages. The first empirical chapter aims to examine class-based inequality in cognitive tests for children aged three to seven. Bourdieu limited himself to explaining how cultural

competences and dispositions acquire their value in a formal educational setting for credentials which are awarded through institutions; however, class differences are observable before the commencement of formal schooling (and these early differences are highly predictive of later academic outcomes), so it is imperative that this stage is given due attention. The analysis uses data from one of the most up-to-date large-scale national surveys available at the time of writing – the Millennium Cohort Study – and employs advanced statistical modelling techniques which have not previously been used for a study of Bourdieu’s concepts for this age range in England.

The second empirical chapter aims to test the applicability of Bourdieu’s concepts for explaining class-based inequality in GCSE scores. Data are used from the Longitudinal Study of Young People in England, linked to the National Pupil Database, and advanced statistical modelling techniques are again employed which allowed for methodological improvements upon previous attempts to validate Bourdieu.

Studies examining the secondary effects of stratification have generally been dominated by proponents of rational action theory (RAT). Broadly speaking, these theorists are less concerned with describing class differences in attainment, but instead focus on describing class differences in educational decision making, which they see as being predominantly responsible for inequality in educational opportunity. Chapter 1 outlines the theoretical and basic mathematical basis of the most commonly cited rational choice model advanced for this purpose, which was proposed by Breen and Goldthorpe (1997). In short, they assert that at educational branching points students (typically in conjunction with their families) will make choices by weighing up the costs and benefits associated with the different options available to them and factoring in their subjective probability of success.

The increased proportions of more advantaged students taking up more ambitious academic choices, according to Breen and Goldthorpe (1997), can be explained by differences in the resources available to meet the costs of education, differences in the average success probabilities of each class (defined by their prior attainment) and differences in the benefits of each option which will be determined according to each class's desire to avoid social demotion; this last differential mechanism they term relative risk aversion (RRA), and they deem this to be the most important determinant of class-characterised differences in choice. Breen and Goldthorpe seek to avoid any implication that choices are driven by cultural or normative factors, and instead see actors' choices as determined by economic considerations.

The third empirical chapter seeks to examine an important decision pupils in England face upon completion of compulsory education – whether to continue on to further academic study. The intention is to determine whether social origin effects operate beyond differences in attainment to bring about class differentials in the likelihood of continuing to A-level; i.e. to determine whether secondary effects are important in creating class differentials in educational outcomes at this stage. Further, the chapter advances previous research by examining variations in the operation of secondary effects by gender and ethnicity, and by accounting for school-level influences.

8.2 Testing Bourdieu

Testing Bourdieu's theory involves examining the ways in which cultural capital and habitus operate, and determining whether these are the main mechanisms through which children from advantaged homes secure educational privileges.

Chapter 5 highlights the relevance of studying the experiences of young children in relation to cultural reproduction theory, and the importance of this young age group for educational research more generally. The findings suggest that social-

class inequalities are pervasive for young children, even before they commence formal education. These inequalities are largely maintained into the early years of schooling, and patterns of unequal development are exacerbated with age. Children's cognitive performance and, correspondingly, their chances of educational success are determined by their parents' socioeconomic position, and this is observable among children as young as three years old.

Achievement in formal education is, perhaps naively, still overwhelmingly seen as a democratic, legitimate process which distinguishes between individuals on the basis of merit, work ethic and innate ability. However, according to many more sceptical commentators, educational institutions are an important means through which 'ascriptive forces find ways of expressing themselves as "achievement"' (Halsey 1977: 184). Schools, according to Bourdieu, value and reward elite culture, so pupils able to display markers of formal cultural competence in the classroom and in examinations achieve the highest grades. Chapter 6 tests Bourdieu's theoretical assertions for children in the final stage of compulsory schooling in England, and considers the extent to which his concepts are relevant for our understanding of social-class inequality in GCSE outcomes.

8.2.1 Theoretical Prerequisites

Prior to any test of Bourdieu, a number of relevant associations must be shown to exist which, in essence, are his underlying assumptions. Both Chapters 5 and 6 confirm these theoretical prerequisites. First, children from higher social classes outperform less advantaged children on cognitive tests and in the achievement of formal qualifications; second, possession of cultural capital and parental habitus-field affinity are largely characteristic of the upper and middle classes; and third, cultural capital, habitus and parental habitus-field affinity are useful for generating cognitive and educational returns for both young children and those in the final years of compulsory schooling. In addition, higher levels of parental

cultural capital are associated with children's increased cultural participation and the presence of a rich home reading climate, which is taken to be indicative of evidence of the process of hereditary 'transmission'; in other words, cultural competences are passed down through generations within the family. Bourdieu's theoretical prerequisites are therefore verified in this thesis.

8.2.2 Returns to Cultural Capital and Habitus

This thesis measures parents' institutionalised cultural capital in the form of educational qualifications. In Chapter 5 children's embodied cultural capital is measured as the extent to which they experience a rich home reading climate and as cultural participation (attendance at art galleries, museums or sites of historic interest). In Chapter 6 pupils' embodied cultural capital is measured as the frequency with which they read for enjoyment and as cultural participation (attendance at theatre, cinema or concerts). Drawbacks in the last of these are acknowledged. For both young children and older children, reading behaviours are shown to be the most powerful predictor of cognitive and educational outcomes, generating the most substantial returns. Also, at both of these stages, cultural participation is shown to have the smallest direct impact on outcomes. Both of these findings are congruent with previous studies (e.g. De Graaf et al 2000; Crook 1997).

In Chapter 5 parents' habitus-field alignment is measured according to whether they consistently attend parents' evenings and whether they have any form of non-obligatory involvement with the school, such as volunteering in the classroom. For the older age group, parents' habitus-field alignment is expressed via attendance at parents' evenings, the ease with which parents 'deal with people' at their child's school and investment in private tuition. Pupils' habitus is operationalised in a largely novel way, encompassing their beliefs of the extent to which people 'like them' have 'much of a chance in life'. This proxy measure has a

substantial influence on GCSE score; pupils who see their chances as favourable, on average, have a GCSE points score which is 5.05 points higher than their peers – that is, by an increase of (at least) one C grade GCSE.

Importantly, all indicators of social reproduction theory are shown to generate significant returns, both in the cognitive performance of young children and in the educational performance of older pupils. These proxies all remain significant after accounting for a number of other highly influential predictor and control variables and also *net of each other*, which has been deemed a crucial requirement for the validation of Bourdieu's theoretical assertions (Dumais 2002). Because these cultural resources have a positive impact on children's scores in cognitive tests, in addition to those achieved in a formal educational setting, it appears that the benefits of providing a cultivated form of socialisation extend beyond enabling children to convey status, also directly enhancing cognitive skills and knowledge.

Lastly, this thesis considers whether the returns to cultural capital and habitus are consistent across different pupil characteristics, in the light of considerable evidence that differences in attainment differ according to ethnicity and gender, and also as a challenge to the notion that Bourdieu's theory is universally applicable. DiMaggio (1982) proposed an alternative to cultural reproduction theory, suggesting instead that cultural capital might be of more use to children from lower class backgrounds who could use it as a tool for upward mobility; he termed this 'cultural mobility theory'. The evidence presented here gives no credence to DiMaggio's theory, finding that the same benefits are derived for children from all class backgrounds alike. However, since cultural capital is unequally distributed in favour of middle-class children, ultimately the conditions of inequality in accordance with Bourdieu's theory are effectively sustained.

Among young children, boys are found to participate in formal culture slightly more than girls, and furthermore, a significant gender-by-cultural-participation

interaction suggests that they also benefit more from this kind of cultural capital than girls of their age. It may be that young girls are more routinely involved in other activities which are more or less arts based, so that when boys are exposed to such cultural forms they benefit relatively more. The disproportionate benefit that boys are found to enjoy is, nonetheless, not enough to counter the enduring gender gap for this age range; girls outperform boys regardless of cultural participation. Gender differences in the returns to cultural capital are not found to persist when children are in secondary school.

Returns to cultural participation and habitus are found to be consistent for children from different ethnic groups across both of the age ranges considered. Previous literature has highlighted the under-representation of particular ethnic groups – most notably, black Caribbean – in museum and wider arts audiences (Chan et al 2008; JBHE 2008), though these data contradict such reports, overall suggesting substantial levels of participation across minority ethnic groups. Parental institutionalised cultural capital is, however, found to exhibit strong patterns which add to the disadvantage faced by Pakistani and Bangladeshi children, who already experience disproportionate levels of poverty in England: these groups have the highest proportion of parents with no qualifications and the lowest proportion of parents educated at university level. Therefore, while the returns to cultural capital are largely similar across ethnic groups, distributional patterns of possession still exist.

There is some evidence that the returns to cultural capital and habitus change over the course of children's educational careers. Chapter 5 shows that, albeit marginally, young children benefit slightly more from cultural participation and their parents' attendance at parents' evenings as they get older. This may reflect natural changes that come with maturity – a heightened capacity to appreciate beaux arts and an increasing ability to understand and apply feedback from teachers. Alternatively, considering this finding from Bourdieu's perspective, it

can be expected that the effects of cultural capital and parental habitus would be found more once children are well into their school careers. The cognitive tests taken at age seven are arguably measuring educational attainment more than those at ages 3 and 5. Auxiliary analyses in Chapter 6 involve comparing alternative models with controls for prior attainment at different stages, and show that gains from cultural capital and habitus can be realised throughout the period of compulsory education.

8.2.3 Accounting for the Link between Social Class and Cognitive and Educational Outcomes

Testing Bourdieu involves not only determining whether his concepts generate returns, but more importantly whether they are the primary mechanisms through which advantaged children are able to realise educational success. Cultural reproduction theory asserts that cultural capital and habitus behave to mediate the link between class and attainment and, in order to prove that this is indeed the case, these variables should substantially reduce the effect of being from a lower socioeconomic household compared with being from a higher socioeconomic household. This thesis has quantified the definition of 'substantial', such that cultural capital and habitus should be able to account for a minimum 50% reduction in the social-class gradient. If these are as important as Bourdieu claims, it is plausible to assert they should be capable of explaining at least half of the social background effect.

For young children, accounting for Bourdieu's concepts results in a reduction of 42% of the gradient in cognitive performance, falling short of the benchmark. Chapter 5 also offers an advance on previous attempts to test Bourdieu by analysing the role of cultural capital and habitus not only on young children's ability, but also on their cognitive progression. In concordance with previous research, this study has shown that advantaged young children demonstrate a

steeper pace of progress over time; consequently class inequality widens as children get older. Cultural capital and habitus are shown to have a very limited capacity for accounting for these growing divergences: they explain only 2% of the widening difference at age five and only 5% at age seven. Thus for young children, Bourdieu's concepts are able to explain social-class differences to an extent, but not a *substantial* extent, and have little to no explanatory power for explaining the equally important fact that classes also exhibit unequal rates of progress.

Bourdieu's concepts have more explanatory power for the experiences of older children, mediating the initial association between class and GCSE attainment by 64%. In the formal educational field, therefore, the most important assertion of cultural reproduction theory is largely supported. From a Bourdieusian perspective, finding that the impact of these indicators is more pronounced in a formal educational environment is unsurprising, in accordance with the notion that an important function of schools is to preserve and reward the cultural heritage of the dominant classes in society.

The empirical chapters testing Bourdieu also examine precisely which elements of cultural capital and habitus have the most substantial mediating influence, and across both analyses the clear finding is that parental education is of *overriding importance*. Having well-educated parents is the most influential mechanism through which social-class inequality is perpetuated. For young children their parents' educational level is responsible for bringing about 81% of the overall class gradient reduction, and for older children it is accountable for 60%. Other measures of cultural capital and habitus – including reading, which is found to have a large direct effect on outcomes – play a relatively negligible part in accounting for the link between social origin and cognitive or educational performance.

8.2.4 Why are Cultural Capital and Habitus Beneficial for Cognitive and Educational Outcomes?

Cultural capital, a self-appreciating habitus and parental habitus–field affinity are useful for generating cognitive and educational returns. That these indicators are found to be influential, net of each other, suggests that they bring about advantages in distinct ways. Previous authors' critique of a narrow interpretation of cultural capital as consisting solely of participation in beaux arts (e.g. Crook 1997; De Graaf et al 2000; Lareau and Weininger 2003) or parental education (e.g. Sullivan 2001) have been augmented in this thesis.

Ganzeboom (1982) made the distinction between 'theories of information processing' and 'status-seeking theories' of cultural consumption. The former are concerned with how children gain knowledge by internalising and processing information – in this case, cultural stimuli – and the latter with how perceptions are indirectly formed regarding competence and intelligence (or status), through outward displays of cultural consumption. Bourdieu's assertions are aligned with status-seeking theory. His argument is that participation in high culture leads to individuals displaying markers of familiarity with the elite, and as such are understood and assumed to be well educated, intelligent, intellectual and able. In *Distinction* (1984) Bourdieu discusses the link between taste and status, discussing examples of public participation in beaux arts as a method for the communication of status in France. As Sullivan (2007) points out, however, the idea of 'being seen' at the theatre might once have been an effective way of displaying familiarity with dominant culture, but this seems somewhat outdated now.

Alternative information-processing theories place more emphasis on the link between cultural activities and the development of actual cognitive skills. The evidence provided in Chapter 5 – that cultural capital can generate returns for young children in the form of enhanced cognitive ability, as opposed to formal

qualifications awarded in the school – suggests these forms of cultivation operate in ways beyond the communication of high status to teachers. The main departure from status-seeking theories, such as that advocated by Bourdieu, is that it is not the public communication of status which is important, but what cognitive skills and knowledge are to be gained from the experience. Reading, for example, contributes directly to the development of linguistic competence and knowledge with regard to the subject. Novels may, in addition, contribute to cultural familiarity (awareness of the classics of modern fiction, for example); this cultural knowledge, like that gained from attendance at a play, for example, can be displayed in the school field and so, as Sullivan (2007) asserts, there is no real reason to consider status-seeking and information-processing to be mutually exclusive explanations.

Through visits to art galleries, children can develop ways of thinking and interpreting works, draw inspiration from others' ideas which taps into their creativity, and in a more general sense learn about the world around them. Interpretation, inference, critique and creativity are all characteristics useful in formal schooling and also in cognitive tests. Koster (2012) argues that the arts help to nurture children's creativity and discussions about art forms can help guide children's understanding and help them to grow cognitively. Lareau's (2002) notion of 'concerted cultivation' – the strategies employed by middle-class parents to make conscious and deliberate efforts to involve their children in cultured activities (and to discuss them) – describes how this develops children's intellectual maturity.

Art galleries, museums, the theatre and historic sites are arenas of learning which are distinct from the formal education a child receives in school and the informal education a child (might) receive at home. Bellamy et al (2009) suggest that museums offer a 'third' learning space which supplements their formal education. There is evidence that children, particularly at a young age, benefit considerably

from interactive forms of learning. Phuckett and Diffily (2004) draw on the theories of Renate Caine and Geoffrey Caine (1994; 1997) to suggest that children, instead of simply 'absorbing' information, learn through dynamic interaction. They have a capacity to memorise information conveyed to them through traditional forms of teaching, but there is also the requirement that memories and experiences be embedded in meaningful contexts to be most effective (Caine and Caine 1994; 1997; cited in Phuckett and Diffily 2004:107-108). The government has introduced schemes to encourage museums and art galleries to prioritise children and their learning, such as the Museums and Galleries Education Programme (RCMG 2002). By 2008, 77% of museums had dedicated educational facilities (Bellamy et al 2009).

Reading is known to be influential in ways that are perhaps more intuitive than going to an art gallery or museum. As well as enhancing the scope of one's vocabulary and enabling children to learn directly from a passage of text, reading comprehension is crucial in formal education: from a young age children are required to understand how to infer, or decode, meaning from a piece of writing (Snowling and Gobel 2011), and formal examinations always contain a written element. In the same vein, the indicator of reading used for the sample of young children in the MCS is useful because it determines how much parents read to their child, meaning they are also encouraging children to develop the skill of listening, which is a major component of learning. Reading to children can teach them to listen for important cues, and it helps them develop skills useful in future academic contexts such as inference, narrative and memory skills (Education.com 2006).

Sullivan (2007) has discussed the ways in which highly-educated parents can instil cultural knowledge in their children, of the kind that is rewarded by the education system. She discusses the active and passive forms of knowledge transmission that can occur within the home. In actively transmitting knowledge, well-educated

parents can act as informal educators of their children, reading to them when they are young (and thus, presumably, encouraging reading habits as they get older) and later supplementing their learning at school through helping with homework. Needless to say, parents who have no qualifications or who have not achieved GCSEs themselves are unlikely to be able to provide any assistance to their children at Key Stage 4. Parents with institutionalised cultural capital, being those who successfully navigated their own way through the education system, will have a better understanding of the process of schooling and a familiarity with what the school expects of parents. They may be more likely to read their child's school reports, monitor their child's progress, implement a stricter homework regime, be aware of the content of learning material and assist in other ways that will equip their children with the tools necessary to progress in the classroom.

Passive strategies of transmitting knowledge may be unconscious but can be just as effective. Bourdieu often stresses the importance of linguistic as well as cultural competence, which can of course be gained through reading but will also inevitably be gained by children as they pick up styles of speech and vocabulary through conversation with their parents (Sullivan 2007). Educated parents, it is suggested, are more likely to speak with elaborate prose (Burnstein 1971), using a wider range of vocabulary and in a highly articulate manner. Pupils who pick up on these verbal skills, so highly valued in academia, are at a clear advantage, both in conversation in class where their teachers may interpret their language ability as an indicator of fluency in other areas as well (and perhaps, a marker of status), and in exams, where the ability to effectively articulate an argument or point is essential (and perhaps implies improved understanding and comprehension). As well as styles of speech, children with educated parents will inevitably pick up forms of argument and ideas, and will be familiar with the notion of critical thinking.

Gouldner (1979) developed a 'theory of critical discourse' which describes how well-educated intellectuals have a tendency to critique existing knowledge and reinforce assertions made through persuasive speech and evidence. These, of course, are crucial skills in academia, valued and directly rewarded in examinations (marking schemes often allocate a proportion of marks to the extent of 'critical engagement' with the material, and pupils are taught to back up any points made in essays with reinforcing evidence and examples to persuade the reader). These are learned skills which well-educated parents possess as a result of their success in the education system – skills which, when passed down either consciously or unconsciously in the home, provide a clear head start for their children.

It is reasonable to assume that educated parents will value their accomplishments and will place emphasis, directly or indirectly, on the importance of a good education. This positive attitude towards learning can be passed down to their children. Parents with little or no educational qualifications may also recognise the value of education and are likely to want their children to achieve better than they did at school (indeed much qualitative research has suggested that there is certainly no lack of aspirations among parents for their children in this regard), but they will not be in a position to offer help that is quite as effective.

Middle-class parents have more direct contact with the school and are more willing (or able) to devote their financial resources to additional lessons to supplement their children's learning, both of which are beneficial to their children's educational outcomes. Bourdieu would claim that the reason for a closer family-school relationship among middle-class parents is that their habitus is aligned with the school field, and they feel at ease in interactions with teachers. He would also assert that the reason such parents are more likely to invest in private tuition for their child, net of their financial capabilities to do so, is due to their pro-school habitus. Education research has, for some time, stressed the

substantial causal benefits that are accrued from increased parental involvement in children's education (DCSF 2008; Gorard et al 2012; Fan and Chen 2001).

Parents who are highly involved with their child's school will be well aware of what is expected from them as informal contributors to their child's development. Without contact with teachers, parents are less likely to know if their child is falling behind, and what sort of things they might be required to do to help. Getting direct, personalised feedback from teachers allows parents to identify the academic strengths and weaknesses in their children, and to make efforts to address these.

It should be acknowledged that factors such as less parental 'interest' in their child's education among working-class families has previously been used as an indirect blame tactic, including by the government (Telegraph 2010), and such accounts have been scrutinised (e.g. Sullivan et al 2013). In measuring parental involvement here, the assumption is that it does not signify a lack of interest, but rather that working-class parents are likely to have less confidence as regards interaction with the school and tend to feel less comfortable in the school environment. These are plausible assumptions based on the lower levels of education among working-class parents and also previous research which has suggested this is the case (Lareau 1997). The parental habitus-field misalignment will make parents reluctant to get involved with the school, which is to the detriment of their children.

Finally, there is much in the sociological and psychological literature to suggest that how people view their circumstances has an association with the situations they experience in life (e.g. Sharma and Sharma 2015). According to social reproduction theory, one element of habitus is that people view themselves relationally, and develop self-expectations based on the lived experiences of others in their social class. Middle-class children will therefore see their life chances as

favourable and, through a self-fulfilling prophecy, will be more likely to realise their ends (Bourdieu 1988:99; Merton 1948).

8.3 Secondary Effects

Secondary effects are the effects of social origin on educational decision making, conditional upon prior attainment (Boudon 1974). Rational choice approaches have dominated sociological discussions of these secondary effects, driven principally by Breen and Goldthorpe's (1997) formal model, as outlined in Chapter 1. Unlike Bourdieu, these approaches are not concerned with explaining which processes result in differences in attainment. Also, instead of focusing on differences in cultures which drive inequalities, they focus on differences in economic resources.

Chapter 7 demonstrates that secondary effects can be examined in ways which go beyond the attempts of previous studies. Further, it shows that it is useful and even necessary to do so, to provide an adequate description of the ways in which variations in decision making can perpetuate social-class inequalities in education for some groups.

8.3.1 The Importance of Secondary Effects for All Children

Chapter 7 examines the role of secondary effects in the A-level transition for a recent cohort of pupils in England, in the light of evidence provided by Jackson (2013b) which suggested, contrary to trends that have persisted over at least the last four decades (Micklewright 1989; Erikson et al 2005; Jackson et al 2007), that social origin now has little relevance for the decision whether to continue on in academic study at age 16 after attainment at GCSE has been accounted for. The evidence presented here serves to reinforce Jackson's (2013b) findings, though with the crucial caveat that variations are found when the impact of class is considered by ethnicity. Further, additional analyses presented in this thesis show

that if, instead of class, parental education is used to distinguish between the most and least advantaged groups, the secondary effects of social origin are still pertinent. This finding reflects the conclusions drawn by Chapters 5 and 6, that parents' level of education is particularly decisive for generating differences in educational inequalities. First, this section will consider possible explanations for the general decline in the importance of secondary effects that accord with the rational choice perspective, and will then consider some alternative explanations.

Rational Choice Explanations

Policy influences relevant to this particular cohort may have led to a general decline in the relevance of secondary effects. Most notably, the then Labour government introduced the Education Maintenance Allowance (EMA) in 2004, which was a means-tested programme intended to increase further educational participation rates among children from disadvantaged backgrounds. The EMA involved a weekly payment of up to £30⁹⁷ for eligible students to incentivise their staying on in further education, with additional bonuses of up to £100 for good attendance and effort levels (BBC 2005). Evidence from the Institute for Fiscal Studies (IFS 2010) showed that, as a result of the scheme, staying on rates among eligible 16-year-old students rose by four percentage points and for 17-year-old students by seven percentage points.

While it is also worth noting that income inequality has been steadily increasing over time, which one might expect to widen the social-class gradient in staying on rates (and indeed evidence from the Institute for Fiscal Studies (IFS 2013) suggests that income inequality in the UK reached its peak in 2007-8, precisely when this cohort made the educational transition), Breen and Goldthorpe's model is responsive to changes in the costs of education, which are not uniform but

⁹⁷ Students from households with an annual salary of less than £20,817 were eligible for a weekly payment of £30; those with an annual salary of between £20,818 and £25,521 were eligible for a weekly payment of £20; and those with an annual salary of £25,522-£30,810 were eligible for a weekly payment of £10.

selectively subsidise those from lower-income homes (1997:295), and the objective of the EMA is precisely that. Even in the context of growing inequality between the classes in a broad sense, subsidising disadvantaged pupils directly for educational purposes is likely to have contributed to this shift by reducing their relative costs of education.⁹⁸

In the face of educational expansion and large increases in participation rates among all pupils, Raftery and Hout's (1993) theory of Maximally Maintained Inequality (MMI) may be considered; that is, as educational systems expand and participation rates among pupils from the most advantaged backgrounds reach the point of saturation, continuing expansion must be driven by pupils from lower class backgrounds. The authors suggest that, for MMI to be applicable, three factors are necessary: the first is that pupils from higher social origins have higher transition rates, which is shown with these data; the second is that overall participation rates are not decreasing, which Jackson et al (2007) and Jackson (2013a) have shown to be true in Britain over at least the last few decades; and the third is that occupational structural mobility favours higher-status occupations, which is the case in the UK, as observed with the growth of the salariat over the course of the twentieth century (Goldthorpe 2012).

Under these circumstances, they suggest it will follow that pupils from all social-class origins will be more likely to make the transition decision should their previous levels of performance deem it feasible. The authors then explain, from a rational choice perspective, how financial policy interventions which are applicable to all students will do little to move us towards greater equality (in their discussion they focus on state funding of tuition in Ireland in the 1960s) because they will merely act as a 'windfall' for many pupils who would have

⁹⁸ Goldthorpe (1996) has pointed out that, in spite of generally rising affluence in Western societies, there is little evidence that there has been any major reduction in class differentials in family income or, 'perhaps yet more relevantly, in the effects of class position – that is, of differing employment relations – on the stability of earnings or on the course that earnings typically follow in lifetime perspective' (1996: 492).

made the transition in any event. They suggest instead that effective policy would involve providing financial assistance specifically for low-income families, reducing the true cost of education for those whose decisions are marginal (Raftery and Hout 1993). It is also relevant to note, however, as Heath and Sullivan (2011) point out, this apparent equalisation – more working-class pupils taking up further educational opportunities – has begun to occur even though middle-class A-level participation rates have nowhere near reached the point of saturation.

Various studies have examined the effectiveness of the EMA payments in the UK. Dearden et al (2009), for example, found evidence that the impact of this conditional cash transfer on increasing participation rates among those eligible was ‘substantial’, and that not only did initial participation increase as a result of the EMA (by around 4.5 percentage points in the first year of the scheme’s implementation) but retention rates also climbed (by 6.7% among those receiving a full two years of education).⁹⁹ From an economic or rational choice perspective, there is evidence therefore that the EMA reduced the opportunity cost of additional schooling for children from low-income households. Despite evidence that the EMA payments had an equalising impact and that the cost of subsidising these pupils was completely offset (IFS 2010) by the increased participation rates (and further, evidence that a large proportion of the increase in participation derived from those who were otherwise not working; the policy was therefore ‘displacing individuals not from paid work but from financially unproductive activities, thus implying an overall lower financial cost of providing this incentive to education’ (Dearden et al 2009:837)), the Conservative–Liberal Democrat Coalition government which followed argued that the payments were too high and carried an unacceptable deadweight loss, based on suggestions that 88% of

⁹⁹ Note that these authors do not distinguish between those continuing in further education to pursue academic or vocational qualifications, so the participation and retention figures will be slightly reduced for A-levels.

eligible students would have taken the decision to continue regardless of receiving the allowance (IFS 2010).¹⁰⁰ The government scrapped the policy in 2011.¹⁰¹

If it is indeed the case that the direct financial incentive of the EMA resulted in increased participation then its abolition can be expected to have the opposite effect, and future research, examining cohorts who have not been subject to this policy, will determine whether secondary effects at the A-level transition may regain relevance. Meschi et al (2011:30) point out, however, that the removal of the EMA happened in a difficult economic climate – i.e. during the recession, which saw a soaring rate of youth unemployment – and further, preceded an increase in the minimum school leaving age to 17 in September 2013 (and this will again be increased to 18 in September 2015); it will, therefore, be more of a challenge for future studies to isolate the effect of its abolition from other shifts in policy and labour market conditions.

In addition to this, it is relevant to acknowledge the role of macroeconomic factors, which provide the broader context within which people's perceptions of the costs and benefits associated with educational transitions operate. Changes in the occupational structure which increase the demand for a highly educated labour force will result in an increase in the perceived benefits of continuing in the education system, which is arguably the case in the UK where there has been a growth in the number of white-collar occupations available. Other wider labour market features, such as the level of unemployment and the availability of jobs for

¹⁰⁰ Other research, however, has shown the deadweight loss associated with the EMA to be far lower. Middleton et al (2005) examined the Educational Maintenance Allowance Pilots and found that 62% of those that had been awarded EMA felt it was 'quite' or 'very' important in their decision to continue. This was particularly so among black and Pakistani/Bangladeshi young people (70% of each group). Estimates of the possible deadweight loss associated with the payment suggested it had made a difference for between 47-57% of young people in receipt of it, which is associated with a substantially lower deadweight loss prediction than that cited by the coalition government as a reason for abolishing the EMA.

¹⁰¹ The EMA was initially conceived of a replacement for the universal Child Benefit, which is paid to households with children over 16 in full-time education. The IFS (2010) have pointed out that, 'if the objective of this payment is to encourage 16-year-olds to stay in full-time education then it almost certainly has a greater deadweight than EMA (it is also paid to higher income households, whose children are even more likely to remain in education anyway). But in the Spending Review the Government decided to protect this benefit: one might argue that a consistent approach would mean removing this as well as EMA.'

those with only compulsory-level qualifications, 'would be expected to change the decision calculus by changing the costs and benefits associated with particular educational transitions' (Jackson 2013a:16).

These two points are relevant here. First, while the majority of this cohort made the transition decision at the end of 2007 – just prior to the onset of the Great Recession, which began in the second quarter of 2008 – there was much speculation that Britain was about to experience a major financial crisis which would involve a soar in rates of unemployment and thus make remaining in education a more desirable choice. Furthermore, the youth unemployment rate actually began to climb in 2004, a considerable time before the recession officially began (Trading Economics 2015; Wolf 2011:28), and there is evidence that those aged 16-24 were disproportionately affected by the most recent UK recession (ISER 2012), which may well have been anticipated by pupils and parents in this cohort. Second, there has been a notable reduction in employment opportunities for those leaving education with only GCSEs (Jackson 2013b). Such a shift in the labour market would disproportionately affect those from working-class backgrounds who would have been more likely to leave at this stage. These factors result in a reduction in the opportunity cost associated with remaining in education, i.e. increasing the benefits of staying on for working-class students. Indeed there is strong evidence in the economics literature that recessions and the weakening of youth labour markets result in increased enrolment rates (e.g. Clark 2011). Additionally, credential inflation creates increasing pressures, particularly for the working classes, to stay on in education (Heath and Sullivan 2011).

Jackson (2013b) was also able to examine the transition to higher education in order to obtain degree-level qualifications, and showed that the importance of secondary effects has remained largely constant in this context. This thesis was unable to examine the transition to university due to data availability. The cohort examined in this chapter, as with the most recent cohort examined in Jackson's

(2013b) paper, faced tuition fees of up to £3,000 per year for university attendance, which coupled with potential costs of accommodation and foregone earnings in the labour market if one were to choose to continue, can be expected to impose a far larger financial burden than staying on to take A-levels.

Note that the finding of the decreased importance of secondary effects for this transition does not necessarily imply a movement towards greater equality – much of the variation is captured by primary effects, meaning that the impact of class differentials is more densely concentrated during the compulsory years. What it does, potentially, suggest is that – in line with the expectations of rational choice theory – secondary effects are sensitive to policy intervention, and that subsidising non-compulsory educational options may have been effective in reducing the disproportionate financial burden faced by disadvantaged pupils, and in turn, reducing the unequal impact of social background *at this stage*. The real test of this, however, will follow with future research on later cohorts – namely, those who make this transition decision in the context of educational policy which has abolished the EMA. According to rational choice theory and Boudon's (1974) and Breen and Goldthorpe's (1997) formulations, this move by the Conservative–Liberal Democrat Coalition is likely to be damaging to the progress that has been made.

It is relevant to note that the rational choice perspective has been subject to criticism along numerous lines, not least that some of the implicit and explicit assumptions Breen and Goldthorpe (1997), among others, make regarding the motivations of actors can be challenged with empirical evidence (e.g. Sullivan 2006).^{102,103} The point of citing the basic rational choice framework in this chapter,

¹⁰² Indeed, evidence provided in this chapter and by other scholars (e.g. Jackson 2013b) suggests that the conditions upon which Breen and Goldthorpe's (1997) model was built to explain have changed so that, for this transition, secondary effects are found to be of little importance.

¹⁰³ Sullivan's (2006) criticisms centre around showing how the explicit assumptions made by Breen and Goldthorpe (1997), can be challenged and that there is some evidence to suggest Rational Choice theorists fall

however, is not to put the theory to empirical test, but to note that, as the most commonly employed theory for understanding secondary effects which can incorporate an explanation of how policy interventions intended specifically to subsidise disadvantaged pupils can result in reducing class inequalities at this stage, support is found for the idea that focusing on economic resources is, at least to an extent, fruitful.

Culturalist Explanations

Culturalist accounts can provide additional insights into why secondary effects are, in a contemporary context and for research which does not distinguish the effects by key subpopulations, less relevant for the A-level transition. Under conditions of educational expansion, it might well be that the increases in the absolute rates of participation among all social-class groups has led to a shift in norms affecting the class-conditioned habitus; previously, much of the working class would leave education after GCSE, so that pupils in this group would understand the choice of exit to be their 'cultural norm', but when these pupils see a rise in participation among others in their social strata – immediate family and peers – they might come to understand what is 'possible, impossible and probable for people of their kind' (Swartz 2002:64S) to include further educational participation. Put differently, increases in absolute numbers could have altered the group component aspect of habitus, behaving now to encourage, rather than discourage, working-class participation.

Educational expansion has included substantial growth in the number of FE colleges in the UK, which typically offer vocational courses as well as A-levels (and, in some cases, higher educational qualifications and degrees). It is reasonable to suggest that the 'institutional habitus' of these colleges differs from the typically middle-class milieu of sixth forms, perhaps offering a more inclusive and inviting

short of providing a full explanation of the beliefs, norms and attitudes that shape 'rational' behaviours, and that these may well vary by social class.

environment for working-class pupils. Here, we can return to Bourdieu's definition of educational institutions as 'fields' within which cultural resources and habitus acquire their value (see Chapter 1 for a detailed discussion of these concepts). Bourdieu considers educational and academic institutions as being middle-class arenas, within which children of advantaged backgrounds feel at ease and familiar, and these students encounter 'a social world of which it is a product, it is like a "fish in water": it does not feel the weight of the water and it takes the world about itself for granted' (Bourdieu and Wacquant 1992: 127). Working-class students, on the other hand, typically feel uneasy in this alien environment, and struggle to meet their full potential.

It may be that the growth of FE colleges – the growth in institutions whose purpose is to serve the needs of pupils with a vocational orientation as much those studying for academic qualifications – has served to provide a route to A-level study in a non-typical environment, so that those from working-class backgrounds are studying among increased numbers of peers from their social strata. Reay et al (2001a) developed the notion of 'institutional habitus' in attempts to understand the role of higher educational institutions in student attainment, understanding it as 'the impact of a cultural group or social class on an individual's behaviour as it is mediated through an organisation' (2001, para 1.3). It includes the culture of the institution, as well as relational issues and priorities which inform practice (Thomas 2002: 431). Thomas, examining retention rates in higher education institutions, argues that 'if an institutional habitus is inclusive and accepting of difference, and does not prioritize or valorize one set of characteristics, but rather celebrates and prizes diversity and difference, students from diverse backgrounds will find greater acceptance of and respect for their own practices and knowledge, and this in turn will promote higher levels of persistence in HE' (Thomas 2002:431). This notion can quite clearly be extended to the inclusive and diverse nature of FE colleges, and their potential for providing a welcoming environment

for working-class students, including those who wish to pursue academic qualifications. Hemsley-Brown (1999) has shown how individuals' choices of educational institution post-16 are influenced by the social class of other students in attendance.

8.3.2 Variations in the Importance of Secondary Effects by Ethnicity, and the Implications for Rational Choice Theory

While there has been an overall decline in the importance of secondary effects for all pupils, which was suggested by previous research and is reinforced in this thesis, Chapter 7 goes beyond this finding to show, importantly, that variations in the importance of secondary effects exist along the lines of ethnicity. For white pupils, social-class inequalities in the likelihood of continuing to A-level remain significant once prior attainment is controlled for, but for ethnic minorities secondary effects are no longer relevant. Why is it only white children whose decisions are influenced by their class of origin?

Modood et al (1997) some time ago acknowledged ethnic minorities' drive for qualifications in the UK; this thesis, and wider research (e.g. Li et al 2008; Connor et al 2004), suggests this drive is continuing. While it is clear that some ethnic groups – most notably Indians – have managed to secure access to better-paid managerial and professional occupations over the last few decades, there are still other groups – most notably Bangladeshis – who remain disproportionately represented in lower-income occupations (including making up a relatively large proportion of the long-term unemployed), yet all groups alike are shown to participate in post-compulsory education at higher rates than the white majority group. This suggests that the reasons for higher levels of participation go beyond true and objective differences in the economic resources that different ethnic groups have available to devote to their children's education.

The most obvious starting point for this discussion relates to the differential income and employment benefits (returns) of education by ethnicity. Racial discrimination against many ethnic minority groups still exists in the British labour market (Wood et al 2009), and it may be that, fearing a lack of opportunity in this regard, ethnic minority pupils from lower social-class backgrounds decide to pursue further educational qualifications in an attempt to offset this disadvantage. This is particularly true for young adults, with the youth unemployment rate being characterised along the lines of ethnicity more markedly than the 16+ rate (TUC 2015). Research has found a greater emphasis placed among ethnic minority groups on the importance of education for improving labour market outcomes, and have suggested that this greater economic motivation has a 'mitigating effect' on the social-class gradient in transition propensity in post-compulsory educational contexts which does not apply in the same way for the white majority population (Connor et al 2004:36). Lower earnings and reduced chances of employment in the labour market mean ethnic minorities face a lower opportunity cost, and correspondingly expect greater relative benefits, of continuing in education. Connor et al (2004:83) find that minority ethnic pupils and their parents are more likely than their white peers to expect economic gains from their educational investments, particularly if they are from a lower socioeconomic group.

With reasons to suppose a difference in the perceived costs and benefits of education between white and ethnic minority groups, what was the impact of the EMA in this regard? On aggregate, ethnic minority pupils are over-represented in lower-income groups; based on this, we would expect that higher relative proportions of students within each minority group would be eligible for the subsidy¹⁰⁴ and that it would therefore be more effective in reducing class differences in participation, as compared with the white group. Assessing the

¹⁰⁴ This is found to be true by Middleton et al (2005).

available evidence it is difficult to get a clear picture of whether this has indeed been the case. Using EMA pilot and administrative data, Chowdry et al (2007) found the payments had no significant effect on participation among black or Asian students, but did find a positive impact for white students. Torgerson et al (2008), on the other hand, found the EMA was a promoter of post-16 participation but was more important for black students than for white or Indian students (2008:2). Middleton et al (2005:30) found young Indian, Pakistani and Bangladeshi pupils were most likely to say they would have continued in full-time education even if they had not received the allowance, implying a larger deadweight loss of the subsidy for particular ethnic groups. The results are inconclusive and it is difficult to determine whether the EMA payments are the reason behind the differential in the importance of secondary effects between ethnic minority groups and the white group.

Breen and Goldthorpe's (1997) model does not acknowledge or incorporate that differences in educational ambition between social-class groups might be affected by variations of a cultural kind. Finding differences in secondary effects by ethnicity, however, gives reason to question this assumption. There is as much in the existing literature citing cultural factors impacting upon ethnic minorities' increased participation as there is citing economic factors. The economic influences have been seen as a mixture of 'push factors' –fewer alternative opportunities – and 'pull factors' –greater expected future benefits – both of which are more pronounced for non-white students (Leslie and Drinkwater 1999:75) for the reasons alluded to above. In addition to these financial considerations (which can largely be accounted for in the basic rational choice utility model), however, there is evidence that ethnic minority groups simply hold disproportionately positive cultural attitudes towards education in general (Tackey et al 2011:15; Leslie and Drinkwater 1999; Payne 2003), and that parents and communities of minority ethnic pupils have high aspirations for pupils, largely independent of

socioeconomic background (e.g. Jackson et al 2012; Modood 2011; Wrench and Hassan 1996).

It must be recognised that there is, of course, considerable heterogeneity between ethnic minority groups in terms of aggregate income, cultural norms, social integration, experiences of discrimination and so on. The high aspirations of South and East Asian pupils (of which Indian and Chinese are the highest attaining across all ethnic groups), who have the highest rates of continuing participation, have for some time been identified as markedly high (see Payne 2003 for a review of relevant literature), though there is evidence to suggest that all ethnic minority groups are more determined than white students to persevere in post-compulsory education despite substantially varied characteristics (e.g. Basit 1997; Eggleston 1993; Mirza 1992; Eggleston et al 1986). This discussion therefore aims not to ignore differences between these groups, but to find an explanation based on basic commonalities for why non-white groups might exhibit greater aspirations,¹⁰⁵ expectations and positive attitudes than the majority white population.

Connor et al's study highlighted an 'almost unspoken assumption' among many minority ethnic parents and students that a university education should be obtained (with the exception of black Caribbeans), and that this represented a desire among parents for their children to exploit educational opportunities that had not been open to themselves and to avoid struggling in low-paid, low-skilled occupations (2004:37,29-30). It may be, therefore, that the negative experience of working-class life leads to a heightened impetus for mobility among ethnic minority groups in a way which is not necessarily reflected among white low-income families (Demie and Lewis 2010b). Across many studies, social class appears to matter more in relation to educational achievements for white British

¹⁰⁵ Torgerson et al (2008) provide a synthesised review of relevant literature, highlighting how many studies find aspirations and motivations are major drivers for ethnic minorities' post-16 participation, but the value placed on education is not only as an end in itself for economic gain; it also derives from the belief it will lead to personal satisfaction (2008:3), and these cultural drivers are true for all ethnic minority groups compared to the white majority.

pupils (Demie and Lewis 2010a), whereas migrants and ethnic minorities have demonstrated 'educational ambitions that were not in keeping with their initial class position in Britain' (Modood 2011:311).

Feliciano (2005) examined the degree to which immigrants' educational selectivity influences the educational outcomes of their children using data from the US. She showed that immigrants differ educationally from non-migrants and that, as immigrants' positive educational selection increases, so does the level of attainment and college participation of their children. In Britain, the major minority ethnic groups have been found to be positively selected (Heath et al 2013:38), and Chapter 7 showed that patterns of educational qualifications by social class are different for ethnic minority parents and white parents: of those with degree-level qualifications, more non-whites are found in lower class categories compared with their white counterparts. Thus, ethnic minority pupils in Britain, and particularly those who have attained a prior level of education which is good enough to allow them to continue in post-compulsory academic education, are likely to be a highly selected group.

Hemsley-Brown and Fosket (2001) reason that 'middle-class aspirations relate strongly to notions of economic advancement and social status, while working-class choice is focused more strongly on the young person's own preferences and the desire to preserve social acceptability'. There is much reason to believe these class-cultural norms exist as divisions among the majority population, but, synthesising the available literature with the results found here, it would seem that for minority groups differences between social classes are not so aptly defined in this way. First, regardless of social origin, and perhaps in fact more so for those from lower-income homes seeking to pursue intergenerational upward mobility, 'economic advancement' appears to be an objective which cuts across socioeconomic status; and second, there is evidence of an increased role of parents' educational preferences over and above those of the young people themselves

(though mostly so for black African, Pakistani and Indian pupils) (Connor et al 2004:29;34), and further, that this greater parental influence, support and commitment to education (Torgerson et al 2008; Wrench and Hassan 1996; see also Payne 2003; Tackey et al 2001) have a mitigating effect on social class which it does not for white pupils (Connor et al 2004:xvi). Put differently, many ethnic groups, in spite of differences in home economic resources, possess aspirational and motivational characteristics more typical of the white dominant class than of the white working class.

Class homogeneity regarding heightened aspirations within ethnic minority groups has therefore been cited by many studies, though these have intermittently, to an extent, cited the black Caribbean group as an exception (e.g. Connor et al 2004:27; Torgerson et al 2008:3). This study also finds that black Caribbean students are the only group whose rates of participation at A-level are lower than their white counterparts. Structural changes in the educational system might explain why, in spite of this, secondary effects are also found to be of little importance for these pupils. As mentioned above, educational expansion has included an increase in the number and availability of FE colleges, and the diverse and inclusive nature of these institutions – their ‘institutional habitus’ (Reay et al 2001a) – may be more inviting not only for lower-income pupils, but specifically also for black pupils. Much research has identified that black pupils, but most notably black Caribbean pupils, have negative experiences of compulsory schooling more often than other students; higher socioeconomic status might offset some of these disadvantages, but for lower-income students we would expect this to act as a deterrent to post-compulsory participation.

While black Caribbean pupils may wish to exit the school environment, however, they may not necessarily be put off by education altogether. Instead, this could drive a preference for continuing study in a college rather than a school sixth form (Owen et al 2000; Eggleston et al 1986). Non-white students are indeed over-

represented in FE colleges, and middle-class students are under-represented, with the latter being more likely to attend sixth forms (Connor et al 2004; Tackey et al 2011). A study of young black men in post-compulsory education has suggested that 'college can offer a chance to re-enter education and mainstream opportunities for young people who have been alienated by previous experiences of schooling. In particular, college can provide a space where young black men are supported by a community of black students' (Aymer and Okitikpi 2001, cited in Bhattacharyya et al 2003). Some ethnic minority groups have been found to seek to avoid institutions where they would have low numbers of ethnic minority peers (Allen 1998; Acland and Azmi 1998). It is relevant to acknowledge, of course, that many of these students attend FE colleges to pursue further qualifications which are vocational and it is true that black students (particularly black Caribbean students) have been found to take up these courses more often than their Asian counterparts, who typically prefer to follow the academic post-compulsory route (Drew et al 1992; Connor et al 2004), though this may still serve as a tentative explanation for some of the reduction in class differences in A-level participation within this group after controlling for GCSE attainment.

Finally, Connor et al (2004) note that 'the standard socio-economic or social class measures used may be more problematic when applied to ethnic groups' (2004:38), and this is a point which could have major substantive relevance for the findings reported in this thesis. It has been shown, here and elsewhere, that the white British group is 'particularly strongly affected by socio-economic status, leading to polarised outcomes' (Tackey et al 2011:15) but that the influence is not as pronounced for ethnic minority groups; it might be fruitful to entertain the possibility that the generic occupational social-class schema employed in this chapter (and, almost always, in broader social research more generally) is found to exhibit no significant secondary effect on transition rates because it is less apt for describing divisions that exist among those outside of the white majority.

To elaborate on this point, I refer to a paper by Modood (2004) – *Capitals, Ethnic Identity and Educational Qualifications*. Looking at university entrants of 1998 by ethnicity and social class, Modood points out that, while differences in participation rates by social class are large for the white group, they vary among ethnic minority populations, being of considerable magnitude for black African and Caribbean entrants, but much less so for Chinese and Indians, and the conventional class analysis does not hold at all for Pakistanis and Bangladeshis (2004:91-93). The article seeks to explore what kinds of capital can explain the ‘motor’ which drives aspirations among predominantly working-class ethnic groups, considering ‘ethnic strategies from below’ (2004:94).¹⁰⁶ Modood considers a definition of class which categorises people according to the possession of resources, and suggests that this in itself can also be a characteristic of ethnicity: ‘that is to say, it can vary across ethnic groups within the same occupational/income classes. Hence, here ethnicity seems to cut across class, possibly even to constitute class in some ways’ (2004:93).

This ‘motor’, according to Modood, consists of a triad of factors: the first is high aspirations for upward mobility; the second is the ability of parents, relatives and the community to transmit this aspiration to pupils so they internalise it at least to an extent; and the third is that parents have enough authority over their children – reinforced by relatives and other community members – to ensure that these ambitions are realised (2004:95). This triad constitutes ‘ethnic capital’, which is a particular combination of cultural and social capitals that white British children do not typically possess. Modood claims that the high aspirations of these parents can be explained in large part by the fact that they are, predominantly, first-generation

¹⁰⁶ ‘Strategies from above’ and ‘strategies from below’, terms coined by Goldthorpe (2007), relate to the ways in which the middle-classes and working-classes, respectively, approach educational choices. In short, it refers to the ways in which the middle-classes, facing fewer resource constraints, use education as a means for maintaining their advantaged position which explains their desire to take up educational opportunities and the working-classes, with limited resources, make the equally rational decision to pursue educational opportunities at a lesser rate, seeking class stability, rather than upward mobility (Devine 2004:8-9). See Chapter 1 for a more detailed explanation.

immigrants (this is also true for a very large proportion of ethnic minority students in the LSYPE cohort) who suffered downward occupational mobility when they came to Britain as a result, mostly, of discriminatory practices in the labour market. The only occupations offered to migrants were below their educational level, so they were not able to join a social class as high as that which they enjoyed in their country of origin. Such experiences have resulted in a desire among many ethnic minority parents to push their children to use British qualifications to regain the social position previously held by the family. According to Modood, 'this "motor" cannot be explained by short-term or Britain-only class analysis, although it is partly explained (more in the case of some groups rather than others) by long-term class analysis which enquires into pre-migration class locations. However, it should be noted that this raises questions of commensurability and fit between what class means in contemporary Britain and what it means in radically different societies and economies. For example, how are Punjabi peasants who own very little individually but through an extended family own a small farm to be compared to hospital porters in London with higher levels of personal consumption and leisure time but little property?' (Modood 2004:94). Ethnic capital – which is not fully explicable in the understanding of class we apply to British society – promotes cross-class relationships. In sum, class might mean broadly similar resources for whites and ethnic minorities (i.e. a cleaner would be paid the same regardless of ethnicity), but the cultural content of their class might differ. For instance, white cleaners may have lower levels of education than, say, a Chinese cleaner, because the latter's occupational options are not commensurate with their education. Further, even if this were not the case, there may be a difference in aspirations; first-generation immigrants may have been willing to suffer the 'suppressed' effects on their class when coming to Britain in order to secure a better future for their family in the long run, and therefore place higher hopes on their children. Family class, as defined by occupational status, may be of lesser cultural consequence for ethnic minorities.

Implications for Rational Choice Theory

The secondary effects of social origin are less important for ethnic minority groups than for the white group. If we were to suppose that the reasons for this are solely due to differences in labour market opportunities, correspondingly affecting the opportunity cost of education, the rational choice model posited by Breen and Goldthorpe (1997) is unimpaired. However, the extensive body of literature which alludes to differences in educational ambitions between white and non-white children and their families suggests alternative explanations are relevant and that the assumption that decisions are not affected by cultural or normative differences can be challenged.

This has particular consequences for the relative risk aversion (RRA) assumption which suggests that, pursuing strategies from below, the working classes will only continue in education insofar as the qualifications gained can be expected to minimise their chances of downward mobility. Crucially, according to the theory, this strategy does not simultaneously equate to maximising their chances of upward mobility. In the light of the findings presented in this thesis and taking account of the contributions to the literature described above, RRA is not considered an assumption that can plausibly be applied to non-white groups who often strive for intergenerational upward mobility via the achievement of educational qualifications (Platt 2007).

Non-white groups demonstrate a desire to achieve in an academic context, irrespective of their class of origin. Many previous studies, without differentiating by ethnicity, have subsumed white children into this finding, assuming that the decline in the importance of secondary effects is uniform. The applicability of rational choice theory goes unchallenged: changes in the labour market, policy context and broader educational structure (as outlined in Section 8.3.1 above) can be cited as reasons for this shift and accord well with the suppositions of Breen

and Goldthorpe's (1997) model. However, variations by ethnicity are significant and important, and imply a need to redress the expectation that the determinants of educational aspirations are purely relational (i.e. based on differing costs and resources in accordance with one's class of origin).

The substantial diversity of the ethnic demographic of the UK, and the fact this diversity is increasing (CoDE 2012), suggests the need to move beyond universal theoretical assertions and to acknowledge that the experiences and cultures of non-white groups are likely to introduce an additional element of complexity to social inequality research; this is important to recognise, particularly in relation to the operation of secondary effects. Working-class ethnic minorities are not risk averse in the way Breen and Goldthorpe's (1997) model would suppose.

8.4 Methodological Implications

The findings presented in this thesis raise a number of methodological considerations from which future studies might benefit. This section will recap a number of these.

8.4.1 Operationalising Cultural Capital and Habitus

Following many authors before, this thesis has criticised Bourdieu for his lack of direction regarding the operationalisation of his concepts. The approach to operationalisation adopted here involves: breaking cultural capital down into its constituent parts and following the 'classical' operationalisation by including measures of beaux-arts and reading, and also following Bourdieu by including parental education; measuring both parents' and children's cultural capital; including measures of pupil habitus; and – the most novel contribution – arguing for the importance of measuring what is described as parental habitus–field.

Operationalising cultural capital in this way has not generated many new conclusions; it was already evident that reading generates the largest returns and

beaux-arts participation the smallest. However, it has proven insightful to distinguish between the different forms of cultural capital to determine which are of most influence in mediating the class gradient, and this approach has helped to identify parental education as the most important mechanism of inequality – a recurring theme throughout the thesis and one which characterises the process of primary effects discussed in Chapters 5 and 6, and also of secondary effects discussed in Chapter 7.

This thesis argues for the importance of including measures of both cultural capital and habitus in statistical models simultaneously, if one seeks to test Bourdieu. Defining and measuring habitus–field alignment has provided a novel method for ‘operationalising Bourdieu’, and this approach is justified in accordance with both the theory and wider education research. While the indicators employed to represent habitus–field alignment have a significant positive impact on outcomes, there is little evidence that these mediate the class gradient. Nonetheless, finding that this element of Bourdieu’s social reproduction theory is of little influence is useful, helping to clarify his theory.

The measure of cultural participation employed in Chapter 6 is imperfect, measuring both highbrow activities as well as typically lowbrow activities. Similarly, the measures of habitus–field alignment could be improved upon with more direct questions relating to whether parents consciously avoid interactions with the school due to discomfort. This study has faced the same limitation as almost all other studies using large-scale national representative data, which is that the measures available are imperfect proxies for Bourdieu’s concepts and are not designed for this purpose. Finally, this thesis has been unable to include measures of language use or ability, which is a considerable drawback considering Bourdieu’s strong emphasis on linguistic capital and this thesis’s aim to adhere, as closely as possible, to ‘Bourdieu Wild’ (see Section 2.2).

8.4.2 Multilevel Modelling and Longitudinal Data

Multilevel modelling is widely employed in education research, but less so in studies of cultural capital or those which seek to examine the influence of secondary effects. This thesis highlights the merits of using the technique, facilitating an examination not only of how far variability in outcomes should be attributed to school-level factors as opposed to being subsumed in the individual-level proxies of interest, but also in facilitating the use of growth curve models which can provide a far more detailed description of how inequality changes over time, and this is equally as important as understanding how it exists at any given moment. Furthermore, multilevel modelling has provided the possibility of examining school-level influences, which we know to have a considerable bearing on educational outcomes; this was of most relevance in Chapter 7.

The use of repeated-measures panel data is important for studies seeking to establish whether a causal association exists between variables, and this is relevant for those which purport to test the influence of Bourdieu's concepts.

The data and methods employed in this thesis have allowed for a more comprehensive treatment of Bourdieu's theory and a more detailed examination of the influence of secondary effects than has previously been achieved.

8.4.3 Model Specification

The Selection and Construction of Outcome Variables

Through a test of robustness of estimates in Chapter 5, this thesis highlights the importance of decisions regarding the underlying metric used in cognitive growth studies. Plewis (1996) has suggested previously that the z-scale transformation, which sets a constant standard deviation of 1, is likely to be an unrealistic portrayal of the variation associated with measures of cognition at this age; according to Plewis, it is more plausible to recognise that there is more scope for

difference in scores among older children, and variance should therefore be considered an increasing function of age. The estimates obtained from modelling were indeed shown to be sensitive to these assumptions, highlighting the dangers of using the z-scale without giving careful thought to the social realities that underlie the processes of development. These realities will differ according to the age group considered, as well as the outcome in question (e.g. see Tanner et al 1966 for a discussion regarding increasing variance in a study of height and weight), but researchers must give careful consideration to these issues in order to produce reliable, realistic and robust estimates.

Through robustness tests in Chapter 6 this thesis shows that the selection and construction of outcome variables should be given due consideration in studies examining GCSE outcomes. Most cultural capital studies examining this stage of education use a continuous points-based measure, similar to the kind employed here, though government and administrative studies tend to examine the binary outcome of whether students passed the five A*–C GCSE achievement threshold. Employing all of the same independent variables in an otherwise identical model specification shows that this choice is likely to affect findings, and suggests that researchers should be careful to rely only on estimates that are robust to variations in this decision or to ensure that the outcome they select is truly reflective of the processes they wish to capture.

Prior Attainment

Chapter 6 argued for the importance of controlling for prior attainment scores so that the influence of predictor variables is determined net of ability. The robustness tests involved running identical models with replacement measures of prior scores from various time points. The results imply that previous studies which have not included any such controls are likely to have produced inflated estimates, and those which have controlled for prior ability at a recent time point

may well have underestimated the effects of the predictors of interest. It is also important to control for prior ability in order to reduce the impact of unobserved heterogeneity. If measures of cultural capital, habitus or GCSE achievement are highly correlated with prior ability (which we know that they are), the estimates of other proxies will be overstated (Gaddis and Payton 2011). A similar point is made in Chapter 7 where, in an attempt to examine the influence of anticipatory decisions, the GCSE points score variable was replaced with a prior attainment score at an earlier time. It is recommended that, data permitting, future studies give this due consideration; the selection of prior ability score should be dependent upon the period for which the influence of substantive variables is of interest.

8.5 Suggestions for Future Research

This thesis has strongly advocated the use of multilevel modelling with longitudinal panel data for examining both the primary and secondary effects of social origin. It is clear that differences in cognitive and educational outcomes occur at various substantive levels; most prominently, variations occur over time, between individuals and between schools. Chapter 5 is able to examine influences over time and between individuals, and Chapters 6 and 7 are able to examine influences between individuals and between schools, but future studies would benefit from examining all of these influences simultaneously in one model, and over a longer trajectory. With future waves of MCS data, linked to NPD data, it will be possible to do so.

As regards both primary and secondary effects, this thesis has highlighted the decisive role of parental education in bringing about class differences in cognitive and educational outcomes. Future studies would benefit from a tight focus on examining exactly how this occurs, by seeking explicitly to explain the *parental education gradient*. Are benefits mainly derived from parents' increased skill level,

determining their degree of fluency in reading to their young children or the extent to which they can help their older children with homework, for example, or from more indirect influences such as the value placed on education, and how exactly this is expressed to children. Using proxies to represent the different educative resources and benefits that are passed down to children from educated parents will help to break this down into its constituent parts and effective policy recommendations could be derived accordingly.

In recent work, some authors have suggested that it is important to measure social origin according to parental class, education and occupational status simultaneously (Bukodi and Goldthorpe 2013; Bukodi et al 2014). While this would involve a movement away from Bourdieu – as parental education would no longer theoretically be deemed a component of cultural capital *possessed* by the advantaged but instead as a *defining characteristic* of the advantaged – in the light of the results presented here in relation to both primary and secondary effects this seems a more useful approach.

This thesis has raised a number of questions with regard to decision-making processes that might be fruitfully addressed in forthcoming projects. First, future cohorts must be examined to determine whether the finding that there has been a general decline in secondary effects remains now that the EMA has been abolished and once the effects of the recent recession have subsided. The relative importance of primary and secondary effects is a crucial question for education research, determining at which stage education policy should focus its efforts. Second, it seems important, for the validation of RAT, to determine whether proxies representing economic considerations and/or cultural variations can help explain the significant class differences between white and non-white groups in their educational aspirations. In so doing, it would be possible to draw a clearer conclusion as regards whether the RRA assumption is applicable for ethnic minority groups. Finally, future research on secondary effects would benefit from

a closer examination of the role of the institution in determining choice. Sullivan et al (2014) have shown that examining the role of schools (and their characteristics) in secondary effects relating to higher education is a useful avenue to pursue, and this should also be developed in research into the A-level transition. This thesis has only been able to scratch the surface of this topic, but the results imply that it is indeed worthy of further attention. Such attempts would require far richer school-level data than were available for this project.

Finally, this thesis has regrettably been unable to examine the transition to university among pupils in England due to a lack of data availability. Jackson (2013b) suggests secondary effects are still important at this stage. With substantial and continuing educational expansion at the tertiary level, it would be interesting to determine whether this will still be found in the near future. It is plausible to hypothesise, in line with the thesis of effectively maintained inequality (EMI) (Lucas 2001; Boliver 2010), that class distinctions will shift further, so that they are only statistically relevant for decisions between red-brick and post-92, or elite and non-elite, institutions.¹⁰⁷ On the other hand, with the new Conservative government making ever more cuts to public spending and recently announcing plans to scrap student maintenance grants for lower-income students as of 2016 (BBC 2015), class inequalities at this stage might be expected to widen. In addition, secondary effects at the university transition stage should be analysed by ethnicity, to determine whether the results presented in this thesis extend to decisions relating to higher education.

8.6 Overall Conclusions

This thesis has contributed to the literature by analysing the contribution of both primary and secondary effects in perpetuating social-class inequalities in education, as well as the extent to which Bourdieu's social reproduction theory

¹⁰⁷ Sullivan et al (2014) have begun research in this area.

can elucidate the former and rational choice explanations are plausible for the latter. Using contemporary data and advanced statistical modelling techniques, this thesis has achieved the aims set out in the introduction.

On balance, this thesis has seen that Bourdieu's concepts of cultural capital and habitus are useful for our understanding of the processes that are manifest in these primary effects. Both have direct links to attainment, for both young children (and as regards cultural participation, particularly for young boys) and adolescents approaching their GCSEs. As regards the central role Bourdieu assumes these concepts play in mediating class differences, cultural capital and habitus can explain a portion of the gradient in ability for young children, but after these differences are cemented they then widen, and Bourdieu's explanations are insufficient to account for that. However, their impact on the social-class gradient is substantial for the older group.

That cultural capital and habitus can explain some of the variation in outcomes in cognitive tests as well as in formal examinations awarded by the school provides evidence that 'information-processing theory' and 'status-seeking theory' (Ganzeboom 1982) can both describe how privilege is manifest and that these are not mutually exclusive, as previously suggested by Sullivan (2007).

Future projects will determine whether secondary effects may regain relative importance in relation to the A-level decision. Means-tested financial incentives for continuing in post-compulsory education and a context of high youth unemployment may explain the lack of choice effects found recently by Jackson (2013b) and corroborated here. These conditions have since changed, and the impact of even more recent government decisions – such as extreme welfare cuts which are shown to have 'hit the poor the hardest' (Guardian 2015) – may result in the reversal of these trends. It is important that future research determines

whether the reduction in the relative importance of secondary effects represents a long-term shift or a short-term response to policy and labour market conditions.

Further, this thesis has shown that, while secondary effects in the A-level transition are no longer apparent for many pupils, white children are an exception, and this is an area of enquiry that many rational choice theorists have neglected to examine. I have considered potential explanations relating to differences in (actual or perceived) costs and benefits, which would accord well with RAT. However other possible explanations, inspired by the wider literature, include the suggestion that minority ethnic working-class pupils and their parents, more than their white counterparts, actively pursue upward social mobility (via educational qualifications); insofar as this explanation is correct, the crucial mechanism of relative risk aversion is severely impaired for non-white populations.

This thesis has presented evidence that, across both attainment and choice effects, much of the inequality we observe between classes is driven by the privileges derived from having well-educated parents. Distinguishing between primary and secondary effects has thus far proven useful for research projects, but the most decisive mechanism of inequality – parental education – is pervasive across the two domains; as such, typical approaches which consider cultural background factors to be most applicable to primary effects and economic background factors to be most applicable to secondary effects may need to be revisited. In seeking to reduce the attainment gap, educational policy would do well to consider the ways in which the relative lack of qualifications among working-class parents, which so severely hinders the chances of educational success for their children, might be offset.

Bibliography

- Abercrombie, N., Hill, S. and Turner, B. S. (2000) *The Penguin Dictionary of Sociology*. Harmondsworth: Penguin
- Acland, T. and Azmi, W. (1998) 'Expectation and Reality: Ethnic Minorities in Higher Education' in Modood, T. and Acland, T. (eds) *Race and Higher Education*. London: Policy Studies Institute
- Allen, A. (1998) 'What are Ethnic Minorities Looking For?' in Modood, T. and Acland, T. (eds) *Race and Higher Education*. London: Policy Studies Institute
- Allison, P. D. (2002) *Missing Data*. London: Sage
- Althusser, L. (1971) 'Ideology and Ideological State Apparatuses' in Althusser, L. (eds) *Lenin and Philosophy and Other Essays*. New York: Monthly Review Press
- Amadasun, D. O. (2013) 'Black People Don't go to Galleries' [online] <http://www.museumsassociation.org/comment/30102013-black-people-dont-go-to-galleries?csort=like> (accessed on 26.11.2013)
- Anderson, I. G. and Jaeger, M. M. (2013) *Cultural Capital in Context: Heterogeneous Returns to Cultural Capital across Schooling Environments. The Danish National Centre for Social Research Working Paper 05:2013*. Copenhagen: University of Copenhagen
- Archer, L. (2003) *Race, Masculinity and Schooling*. Berkshire: Open University Press
- Arnot, M., Gray, J., James, M., Ruddock, J. with Duveen, G. (1998) *Recent Research on Gender and Educational Performance*. Office for Standards in Education Reviews of Research. London: The Stationery Office
- Arnot, M., David, M. and Weiner, G. (1999) *Closing the Gender Gap: Post-war Education and Social Change*. Cambridge: Polity Press
- Arts Council (2007) 'The Arts Debate: Findings of Research among the General Public', Arts Council, 2 February 2007
- Arts Council (2014) 'Arts – What's in a Word? Ethnic Minorities and the Arts: Executive Summary' [online] <http://www.artscouncil.org.uk/media/uploads/documents/publications/1385.pdf> (accessed on 18.03.2014)
- Aschaffenburg, K. and Maas, I. (1997) 'Cultural and Educational Careers', *American Sociological Review* 62(4): 573-587

- Barajas, M. S. (2011) 'Academic Achievement of Children in Single Parent Homes: A Critical Review', *The Hilltop Review* 5(1) Article 4
- Ball, S., Bowe, R. and Gewirtz, S. (1997) 'Circuits of Schooling' in A. Halsey, H. Lauder, P. Brown and A. S. Wells (eds) *Education, Culture, Economy, Society*. Oxford: Oxford University Press
- Ball, S., Maguire, M., and Macrae, S. (2000) *Choice, Pathways and Transitions Post-16: New Youth, New Economies in the Global City*. London: Routledge Falmer
- Ballantine, J. H. and Spade, J. Z. (2008) *Schools and Society: A Sociological Approach to Education*. London: Sage
- Basit, T. (1997) *Eastern Values; Western Milieu: Identities and Aspirations of Adolescent British Muslim Girls*. Aldershot: Ashgate
- BBC (2005) *Students get £100 Bonus Payment* [online]
<http://news.bbc.co.uk/1/hi/education/4201329.stm> (accessed on 12.05.2015)
- BBC (2007) *Home Learning Numbers Uncertain* [online]
<http://news.bbc.co.uk/1/hi/education/6389211.stm> (accessed on 03.07.2015)
- BBC (2013) 'About the Great British Class Survey' [online]
<http://www.bbc.co.uk/labuk/articles/class/> (accessed on 26.11.2013)
- BBC (2015) *Budget 2015: Student Maintenance Grants Scrapped* [online]
<http://www.bbc.co.uk/news/education-33444557> (accessed on 12.07.2015)
- Becker, R. (2003) 'Educational Expansion and Persistent Inequalities of Education: Utilizing Subjective Utility Theory to Explain Increasing Participation Rates in Upper Secondary School in the Federal Republic of Germany', *European Sociological Review*, 19(1) 1-24
- Becker, R. and Hecken, A. E. (2009) 'Higher Education or Vocational Training? An Empirical Test of the Rational Action Model of Educational Choices Suggested by Breen and Goldthorpe and Esser', *Acta Sociologica*, 52(1) 25-45
- Becker, B. (2010) 'The Transfer of Cultural Knowledge in the Early Childhood: Social and Ethnic Disparities and the Mediating Role of Familial Activities', *European Sociological Review* 26(1) 17-29
- Bell, B. A., Morgan, G. B., Kromrey, J. D. and Ferron, J. M. (2010) 'The Impact of Small Cluster Size on Multilevel Models: A Monte Carlo Examination of Two-Level Models with Binary and Continuous Predictors', *JSM Proceedings, Survey Research Methods Section*, 4057-4067
- Bellamy, K., Burghes, L. and Oppenheim, C. (2009) 'Learning to Live: Museums, Young People and Education', in Bellamy, K. and Oppenheim, C. (eds) *Learning to*

- Live: Museums, Young People and Education*. London: Institute for Public Policy Research and National Museum Director's Conference 2009
- Bennett, T., Savage, M., Silva, E., Warde, A., Gayo-Cal, M. and Wright, D. (2009) *Culture, Class, Distinction*. Oxford: Routledge
- Bernstein, B. (1971) *Class, Codes and Control, Volume 1: Theoretical Studies Towards a Sociology of Language*. Boston, MA: Routledge & Kegan Paul
- Bernstein, B. (2003) *Class, Codes and Control*. London: Routledge
- Bhattacharyya, G., Ison, L. and Blair, M. (2003) *Minority Ethnic Attainment and Participation in Education and Training: The Evidence*. Department for Education and Skills [online]
<http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/RTP01-03MIG1734.pdf> (accessed on 31.03.2015)
- Biggart, A. (2002) 'Attainment, Gender and Minimum-aged School Leavers' Early Routes in the Labour Market', *Journal of Education and Work* 15(2) 145-162
- Blackburn, R. M. (1998) 'A New System of Classes: But What Are They and Do We Need Them?' *Work, Employment, Society* (12)1 735-741
- Blanden, J., Goodman, A., Gregg, P. and Machin, S. (2004) 'Changes in Intergenerational Income Mobility in Britain' in Corak (eds) *Generational Income Mobility in North America and Europe*. Cambridge: Cambridge University Press
- Blanden, J., Gregg, P. and Machin, S. (2005) 'Educational Inequality and Intergenerational Mobility' in Machin, S. and Vignoles, A. (eds) *What's the Good of Education? The Economics of Education in the UK*. Princeton: Princeton University Press
- Blanden, J. and Machin, S. (2010) 'Intergenerational Inequality in Early Years Assessments', in K. Hansen, H. Joshi and S. Dex (eds) *Children of the 21st Century: The First Five Years*. Bristol: Policy Press
- Boliver, V. (2010) *Maximally Maintained Inequality and Effectively Maintained Inequality in Education: Operationalising the Expansion-Inequality Relationship*. Department of Sociology Working Paper, University of Oxford, Working Paper no. 2010-05
- Boliver, V. (2011) 'Expansion, Differentiation and the Persistence of Class Inequalities in British Higher Education', *Higher Education*, 61: 229-242
- Boliver, V. (2013) 'How Fair is Access to More Prestigious UK Universities?' *The British Journal of Sociology*, 64, 344-364

- Boudon, R. (1974) *Education, Opportunity and Social Inequality*. New York: Wiley
- Boudon, R. (1976) 'Comment on Hauser's Review of Education, Opportunity and Social Inequality', *American Journal of Sociology* 81(5) 1185-1187
- Bourdieu, P. (1973) 'Cultural Reproduction and Social Reproduction' in Brown, R. (eds) *Knowledge, Education and Cultural Change*. London: Tavistock
- Bourdieu, P. (1977) 'Cultural Reproduction and Social Reproduction' in Karabel, J. and Halsey A. H. (eds) *Power and Ideology in Education*. Oxford: Oxford University Press
- Bourdieu, P. (1984) *Distinction: A Social Critique of the Judgement of Taste*. Boston, MA: Routledge & Kegan Paul
- Bourdieu, P. (1988) *Homo Academicus*. Cambridge: Polity Press
- Bourdieu, P. (1990) *In Other Words: Essays towards a Reflexive Sociology*. Palo Alto, CA: Stanford University Press
- Bourdieu, P. (1990a) *The Logic of Practice*. California: Stanford University Press
- Bourdieu, P. (1990b) *In Other Words: Essays Towards a Reflexive Sociology*. Palo Alto, CA: Stanford University Press
- Bourdieu, P. (1990c) *Sociology in Question*. Cambridge: Polity Press
- Bourdieu, P. (1991) *Language and Symbolic Power*. Harvard: Harvard University Press
- Bourdieu, P. (1997) 'The Forms of Capital' in Halsey et al (eds) *Education, Culture, Economy, Society*. Oxford: Oxford University Press
- Bourdieu, P. (1998) *Practical Reason: On the Theory of Action*. Palo, Alto, CA: Stanford University Press
- Bourdieu, P. (2001) *Masculine Domination*. Palo Alto, CA: Stanford University Press
- Bourdieu, P. and Passerson, J.-C. (1977) *Reproduction in Education, Society and Culture*. London: Sage
- Bourdieu, P. and Passerson, J.-C. (1979) *The Inheritors: French Students and their Relations to Culture*. Chicago, IL: University of Chicago Press
- Bourdieu, P. and Wacquant, L. J. D. (1992) *An Invitation to Reflexive Sociology*. Cambridge: Polity Press
- Bowles, S. and Gintis, H. (1976) *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life*. London: Routledge & Kegan Paul

- Breen, R. and Goldthorpe, J. H. (1997) 'Explaining Educational Differentials: Towards a Formal Rational Action Theory', *Rationality and Society* 9(3) 275-305
- Breen, R. and Goldthorpe, J. H. (1999) 'Class Inequality and Meritocracy: A Critique of Saunders and an Alternative Analysis', *British Journal of Sociology*, 50(1) 1-27
- Breen, R. and Goldthorpe, J. (2001) 'Class, Mobility and Merit: The Experience of Two British Birth Cohorts', *European Sociological Review* 17(2) 81-101
- Breen, R., Luijckx, R., Muller, W. And Pollak, R. (2009) 'Nonpersistent Inequality in Educational Attainment: Evidence from Eight European Countries', *American Journal of Sociology*, 114, 1475-1521
- Breen, R., Luijckx, R., Müller, W. and Pollak, R. (2010) 'Long Term Trends in Educational Inequality in Europe: Class Inequalities and Gender Differences', *European Sociological Review*, 26(1) 31-48
- Breen, R. and Yaish, M. (2006) 'Testing the Breen-Goldthorpe Model of Educational Decision Making' in Morgan, S. L., Grusky, D. B. and Fields, G. S. (eds.) *Mobility and Inequality: Frontiers of Sociology and Economics*. Stanford: Stanford University Press
- Brown, N. and Szeman, I. (2000) *Pierre Bourdieu: Fieldwork in Culture*. Oxford: Rowman & Littlefield Publishers
- Browne, W. J. (2009) *MCMC Estimation in MLwiN. Version 2.13*. Bristol: Centre for Multilevel Modelling <http://seis.bris.ac.uk/~frwjb/esrc/mcmc.pdf>
- Browne, W. J. and Draper, D. (2000) 'Implementation and Performance Issues in the Bayesian Fitting of Multilevel Models', *Computational Statistics* 15, 391-420
- Browne, W. J. and Draper, D. (2006) 'A Comparison of Bayesian and Likelihood Methods for Fitting Multilevel Models', *Bayesian Analysis* 1, 473-550
- Browne, W. J., Draper, D., Goldstein, H. and Rasbash, J. (2002) 'Bayesian and Likelihood Methods for Fitting Multilevel Models with Complex Level-1 Variation', *Computational Statistics and Data Analysis* 39, 203-225
- Bryman, A. (2012) *Social Research Methods*. Oxford: Oxford University Press
- Bugyi, P. (2008) *Cultural Capital and Educational Attainment: A Critique of the Research* [online]
http://citation.allacademic.com/meta/p_mla_apa_research_citation/2/3/7/5/0/pages_237501/p237501-1.php (accessed on 01/01/2010)

- Bukodi, E., Erikson, J. and Goldthorpe, J. (2014) 'The Effects of Social Origins and Cognitive Ability on Educational Attainment: Evidence from Britain and Sweden', *Acta Sociologica* 1-18
- Bukodi, E. and Goldthorpe, J. (2013) 'Decomposing "Social Origins": The Effects of Parents' Class, Status, and Education on the Educational Attainment of their Children', *European Sociological Review* 29(5) 1024-1039
- Bukodi, E. and Goldthorpe, J. H. (2011) 'Class Origins, Education and Occupational Attainment: Secular Trends or Cohort-Specific Effects?' *European Societies* 13(3) 347-375
- Bukodi, E. and Goldthorpe, J. H. (2009) 'Class Origins, Education and Occupational Attainment: Cross-Cohort Changes Among Men in Britain' *CLS Cohort Studies 2009/3*, London: Institute of Education
- Bunting, C. (2007) 'Public Value and the Arts in England: Discussion and Conclusions of the Arts Debate', *Arts Council England*, November 2007
- Carlsson, M. and Roth, D.-O. (2007) 'Evidence of Ethnic Discrimination in the Swedish Labour Market Using Experimental Data', *Labour Economics*, 14, 716-729
- Centre on Dynamics of Ethnicity (CoDE) (2012) *How Has Ethnic Diversity Grown 1991-2001-2011?* CoDE Briefing Paper, December 2012. Manchester: University of Manchester
- Centre for Longitudinal Studies (2013) Welcome to the Millennium Cohort Study [online]
<http://www.cls.ioe.ac.uk/page.aspx?&siteid=851&siteSectionTitle=Welcome+to+the+Millennium+Cohort+Study> (Accessed on 17.12.2013)
- Centre for Multilevel Modelling (2014) *Random Slope Models* [online]
<http://www.bristol.ac.uk/cmm/learning/videos/random-slopes.html#param>
 (accessed on 13.08.2014)
- Chan, T. W. and Goldthorpe, J. (2007a) 'Social Status and Newspaper Readership', *American Journal of Sociology* 112, 1095-1134
- Chan, T. W. and Goldthorpe, J. (2007b) 'Social Stratification and Cultural Consumption: Music in England', *European Sociological Review* 23, 1-19
- Chan, T. W., Goldthorpe, J., Keaney, E. and Oskala, A. (2008) 'Attendance and Participation in Theatre, Street Arts, and Circus in England: Findings from the Taking Part Survey', *Taking Part Survey Briefing No. 8*, Arts Council England, April 2008

- Chan, T. W., Goldthorpe, J., Keaney, E. and Oskala, A. (2008) 'Have you Ever Wondered...: Taking Part Survey Briefing No. 8', Arts Council England, April 2008
- Chandola, T. and Jenkinson, C. (2000) 'The New UK National Statistics Socio-Economic Classification (NS-SEC); Investigating Social Class Differences in Self-Reported Health Status', *Journal of Public Health Medicine* 22(2) 182-190
- Cheadle, J. E. (2008) 'Educational Investment, Family Context, and Children's Math and Reading Growth from Kindergarten through the Third Grade', *American Sociological Association* 81(1) 1-31
- Cheng, Y. (1995) *Staying on in Full-time Education After 16: Do Schools Make a Difference?* Department for Education and Employment Research Series Youth Cohort Report No. 37
- Cheung, S. I. and Egerton, M. (2007) 'Great Britain: Higher Education Expansion and Reform – Changing Educational Inequalities' in Shavit, Y., Arum, R., Gamoran, A. and Menahem, G. (eds.) *Stratification in Higher Education – A Comparative Study*. Stanford, CA: Stanford University Press
- Cheung, S. and Heath, A. (2007) 'Nice Work if You Can Get It: Ethnic Penalties in Great Britain', in Heath, A. and Cheung, S. (eds) *Unequal Chances: Ethnic Minorities in Western Labour Markets*. Oxford: Oxford University Press
- Chevalier, A., Gibbons, S., Thorpe, A., Snell, M. and Hoskins, S. (2008) *Students' Academic Self-Perception*, London: Centre for the Economics of Education, London School of Economics
- Chowdry, H., Dearden, L. and Emmerson, C. (2007) *Education Maintenance Allowance: Evaluation with Administrative Data*. London: Institute for Fiscal Studies
- Clark, D. (2011) 'Do Recessions Keep Students in School? The Impact of Youth Unemployment on Enrolment in Post-compulsory Education in England', *Economica* 78, 523-545
- Clarke, P., Crawford, C., Steele, F. and Vignoles, A. (2010) *The Choice Between Fixed and Random Effects Models: Some Considerations for Educational Research*. Department of Quantitative Social Science Working Paper No 10-10. London: Institute for Education
- Clarke, P. and Wheaton, B. (2007) 'Addressing Data Sparseness in Contextual Population Research using Cluster Analysis to Create Synthetic Neighbourhoods', *Sociological Methods and Research* 35, 311-351
- Coleman, J. S. (1988) 'Social Capital in the Creation of Human Capital', *American Journal of Sociology* 94 (Supplement) S95-S120

- Connor, H., Burton, R., Pearson, R., Pollard, E. and Regan, J. (1999) *Making the Right Choice: How Students Choose Universities and Colleges*. Report by the Institute for Employment Studies to the CVCP, HEFCE and UCAS
- Connor, H., Tyres, C., Modood, T. and Hillage, J. (2004) *Why the Difference? A Closer Look at Higher Education Ethnic Minority Students and Graduates*. Research Report RR552, Department for Education and Skills [online] <http://www.bristol.ac.uk/media-library/sites/ethnicity/migrated/documents/educationreport.pdf> (accessed on 31.03.2015)
- Contini, D. and Scagni, A. (2011) 'Secondary School Choice in Italy: Ability or Social Background?' in M. Attanasio and V. Capursi (eds) *Statistical Methods for the Evaluation of University Systems*. Heidelberg: Springer
- Contini, D. and Scagni, A. (2013) 'Social Origin Inequalities in Educational Careers in Italy. Performance or Decision Effects?' in M. Jackson (eds) *Determined to Succeed? Performance versus Choice in Educational Attainment*. Stanford: Stanford University Press
- Coxon, A. P. M. and Fisher, K. (2003) 'Criterion Validity and Occupational Classification: The Seven Economic Relations Measures and the NS-SEC', in Rose, D. and Pevalin, D. J. (eds) *A Researcher's Guide to the National Statistics Socio-economic Classification*. London: Sage
- Crook, C. (1997) *Cultural Practices and Socioeconomic Attainment: The Australian Experience*. Westport, CT: Greenwood Press
- Culturally and Linguistically Appropriate Services (2013) 'Bracken Basic Concept Scale – Revised' [online] <http://clas.uiuc.edu/special/evaltools/cl02352.html> (accessed on 22.05.2013)
- Davies, R., Heinesen, E. and Holm, A. (2002) 'The Relative Risk Aversion Hypothesis of Educational Choice', *Journal of Population Economics* 15(4) 683-713
- De Graaf, P. M. (1986) 'The Impact of Financial and Cultural Resources on Educational Attainment in the Netherlands', *Sociology of Education* 59(4) 237-246
- De Graaf, P. M. (1988) 'Parents' Financial and Cultural Resources, Grades and Transition to Secondary School in the Federal Republic of Germany', *European Sociological Review* 4, 209-221
- De Graaf, N. D., De Graaf, P. M. and Kraaykamp, G. (2000) 'Parental Cultural Capital and Educational Attainment in the Netherlands: A Refinement of the Cultural Capital Perspective', *Sociology of Education* 73 (2) 92-111

- Dearden, L., Emmerson, C., Frayne, C. and Meghir, C. (2009) 'Conditional Cash Transfers and School Dropout Rates', *Journal of Human Resources* 44(4) 827-857
- Demie, F. and Lewis, K. (2010a) *White Working Class Achievement: A Study of Barriers to Learning in Schools*. London: Lambeth Council
- Demie, F. and Lewis, K. (2010b) *Raising the Achievement of White Working Class Pupils: Barriers to Learning*. London: Lambeth Council
- Demie, F. (2012) 'An Ethnographic Study of the Achievement of Black African Heritage Pupils', Paper presented for the British Educational Research Association (BERA) Conference 2012
- Demie, F. and Lewis, K. (2014) *Raising the Achievement of White Working-Class Pupils: Barriers and School Strategies*, London: Lambeth Research and Statistics Unit
- Department for Children, Schools and Families (DCSF) (2008) *The Impact of Parental Involvement on Children's Education*. Nottingham: DCSF Publications.
- Department for Culture, Media and Sports (2007) Taking Part Survey
- Department for Education (2010) 'Month of Birth and Education', *Department for Education Research Report DFE-RR017*, July 2010
- Department for Education (2010a) *Key Stage 4 Attainment by Pupil Characteristics in England, 2008/09*, 4 March 2010
- Department for Education (2010b) *Statistical First Release: GCSE and Equivalent Attainment by Pupil Characteristics in England, 2009/10*, 16 December 2010
- Department for Education (2012) 'School Workforce in England: November 2011', *Department for Education Statistical First Release SFR-06/2012*, April 2012
- Department for Education (2012a) *Statistical First Release: GCSE and Equivalent Attainment by Pupil Characteristics in England, 2010/11*, 9 February 2012
- Department for Education (2012b) *Influences on Students' Attainment and Progress in Key Stage 3: Academic Outcomes in English, Maths and Science in Year 9*, DFE-RB184a, January 2012
- Department for Education (2013) *Statistical First Release: GCSE and Equivalent by Pupil Characteristics in England, 2011/12*, 24 January 2013
- Department for Education and Skills (DfES) (2006) *Ethnicity and Education: The Evidence on Ethnic Minority Pupils aged 5 – 16*, Research Topic Paper [online] <http://dera.ioe.ac.uk/6306/1/0208-2006dom-en.pdf> (accessed on 12.12.2013)

- Department for Education and Skills (DfES) (2007) *Gender and Education: The Evidence on Pupils in England* [online]
<http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/00389-2007BKT-EN.pdf> (accessed on 31.03.2015)
- Desforbes, C. and Abouchaar, A. (2003) 'The Impact of Parental Involvement, Parental Support and Family Education on Pupil Achievement and Adjustment: A Literature Review', Research Report No. 443, Department for Education and Skills
- Desmond, T. (2009) 'Beyond the School: Museums and Young People' in Bellamy, K. and Oppenheim, C. (eds) *Learning to Live: Museums, Young People and Education*. London: Institute for Public Policy Research and National Museum Director's Conference 2009
- Devine, F. (1998) 'Class Analysis and the Stability of Class Relations', *Sociology* 32(1) 23-42
- Devine, F. (2004) *Class Practices: How Parents Help Their Children Get Good Jobs*. Cambridge University Press: Cambridge
- Devine, F. And Savage, M. (2000) 'Conclusion: Renewing Class Analysis' in Crompton, R., Devine, F., Savage, M. and Scott, J. (eds) *Renewing Class Analysis*. Oxford: Blackwell
- Devine-Eller, A. (2005) *Rethinking Bourdieu on Race: A Critical Review of Cultural Capital and Habitus in the Sociology of Education Qualitative Literature*. Rutgers University, 2 May 2005
- Devor, H. A. (1989) *Gender Blending: Confronting the Limits of Duality*. Indiana: Indiana University Press
- Diamond, J. B., Randolph, A. and Spillane, J. P. (2008) 'Teachers' Expectations and Sense of Responsibility for Student Learning: The Importance of Race, Class and Organisational Habitus', *Anthropology and Education Quarterly* 35(1) 75 – 98
- DiMaggio, P (2007b) 'Comment on John Goldthorpe/2', *Sociologica* (2) 1-7
- DiMaggio, P. (1982) 'Cultural Capital and School Success: The Impact of Status Culture Participation on the Grades of U.S. High School Students', *American Sociological Review* 47(2) 189-201
- DiMaggio, P. and Mohr, J. (1985) 'Cultural Capital, Educational Attainment and Marital Selection', *The American Journal of Sociology* 90(6) 1231-1261
- DiMaggio, P. and Ostrower, F. (1990) 'Participation in the Arts by Black and White Americans', *Social Forces* 68(3) 753-778

- DiMaggio, P. and Useem, M. (1978) 'Cultural Democracy in a Period of Cultural Expansion: the Social Composition of Arts Audiences in the United States', *Social Problems* 26(2) 180-197
- Divya, S. and Layli, U. (2007) 'A Comparative Analysis of Bangladeshi and Pakistani Educational Attainment in London Secondary Schools', *InterActions: UCLA Journal of Education and Information Studies* 3(2), Article 5
- Doescher, H. L. (2008) *Parenting with Mild Intellectual Deficits: Educational Aspirations, Expectations, and Educational Attainment of Their Children*. University of Wisconsin – Madison: ProQuest
- Dogaru, C. M. (2008) *Applying Theories of Capital to Understand Parent Involvement at School as a Component of Family-School Interaction: The Special Case of Children with Special Needs*. Oregon State University: ProQuest
- Dovey, K. (2005) 'The Silent Complicity of Architecture' in Hillier, J. and Rooksby, E. (eds) *Habitus: A Sense of Place*. Farnham: Ashgate Publishing
- Drew, D., Gray, J. and Sime, N. (1992) *Against the Odds: The Education and Labour Market Experiences of Black Young People*. Sheffield: Employment Department, England and Wales Youth Cohort Study, Report No 68
- Drummey, K. M. (2008) *The Role of Cultural and Economic Capital in Education: 1972–2002*. Boston College: ProQuest
- Dufresne, T. and Masney, D. (2006) 'Multiple Literacies: Linking the Research on Bilingualism and Bilingualities to the Practical', *Paediatrics and Child Health* 11(9) 577-579
- Dumais, S. (2002) 'Cultural Capital, Gender and School Effects: The Role of Habitus', *Sociology of Education* 75(1) 44-68
- Dumais, S. (2006) 'Early Childhood Cultural Capital, Parental Habitus and Teachers' Perceptions', *Poetics* 34: 83-107
- Dumais, S. (2008) 'Adolescents' Time Use and Academic Achievement: A Test of the Reproduction and Mobility Models', *Social Science Quarterly* 89(4) 867-886
- Dumais, S. and Ward, A. (2010) 'Cultural Capital and First-Generation College Success', *Poetics* 38(3) 245-265
- Dustmann, C., Machin, S. and Schonberg, U. (2008) 'Educational Achievement and Ethnicity in Compulsory Schooling', *CREAM Discussion Paper Series, CPD No 12/08*, September 2008
- Dustmann, C., Machin, S. and Schonberg, U. (2010) 'Ethnicity and Educational Attainment in Compulsory Schooling', *CREAM Discussion Paper No. 12/08*

- Eccles, J. S. and Harold, R. D. (2009) 'Family Involvement in Children's and Adolescents' Schooling' in Booth, A. and Dunn, J. F. (eds) *Family-School Links: How do they Affect Educational Outcomes?* New York: Routledge
- Education.com (2006) 'How do Books Enrich Cognitive Development for Age Group of 2-3 Years?' [online] <http://www.education.com/question/books-enrich-cognitive-development/> (Accessed on 16.12.2013)
- Egerton, M. (1997) 'Occupational Inheritance: The Role of Cultural Capital and Gender', *Work, Employment and Society* 11(2) 263-282
- Eggleston, J., Dunn, D. and Anjali, M. (1986) *Education for Some: The Educational and Vocational Experiences of 15-18 Year-Old Members of Ethnic Minority Groups*. Stoke-on-Trent: Trentham Books
- Eggleston, J. (1993) 'The Post-16 Education of Young Black Britons', in Fyfe, A. and Figueroa, P. (eds) *Education for Cultural Diversity: The Challenge for a New Era*. London: Routledge
- Epstein, D. (1998) *Failing Boys: Issues in Gender and Achievement*. Buckingham: Open University Press
- Erikson, R. (1984) 'Social Class of Men, Women and Families', *Sociology* 18: 500-514
- Erikson, R. and Jonsson, J. (1996) 'Explaining Class Inequality in Education: The Swedish Test Case' in Erikson, R. and Jonsson, J. (eds) *Can Education be Equalized?* Boulder, CO: Westview Press
- Erikson, R. and Jonsson, J. (1996) *Can Education be Equalized?* Boulder: Westview Press
- Erikson, R and Goldthorpe, J H (1992) *The Constant Flux: A Study of Class Mobility in Industrial Societies*. Oxford: Clarendon Press.
- Erikson, R. and Goldthorpe, J. (2009) *Income and Class Mobility between Generations in Great Britain: The Problem of Divergent Findings from the Data-sets of Birth Cohort Studies*. Equalsoc Working Paper 2009/1, 3 April 2009
- Erikson, R. and Goldthorpe, J. (2010) 'Has Social Mobility in Britain Decreased? Reconciling Divergent Findings on Income and Class Mobility', *British Journal of Sociology* 61(2) 211-230
- Erikson, R., Goldthorpe, J. H., Jackson, M., Yaish, M. and Cox, D. R. (2005) 'On Class Differentials in Educational Attainment', *PNAS* 102(27) 9730-9733
- Evans, G. (1992) 'Testing the Validity of the Goldthorpe Class Schema', *European Sociological Review* 8(3) 211-232

- Evans, G. (1998) 'On Tests of Validity and Social Class: Why Prandy and Blackburn are Wrong', *Sociology* 32(1) 189-202
- Evans, G. (2006) *Educational Failure and Working Class White Children in Britain*. Basingstoke: Palgrave
- Field, F. (2010) *The Foundation Years: Preventing Poor Children becoming Poor Adults: The Report of the Independent Review on Poverty and Life Chances*. HM Government, Cabinet Office. December 2010
- Feinstein, L. (2003) 'Inequality in the Early Cognitive Development of British Children in the 1970 Cohort', *Economica* 70, 73-97
- Feinstein, L. and Symons, J. (1999) 'Attainment in Secondary School', *Oxford Economic Papers* 51: 300-321
- Feliciano, C. (2005) 'Does Selective Migration Matter? Explaining Ethnic Disparities in Educational Attainment among Immigrants' Children', *International Migration Review*, 39(4) 841-871
- Ferguson, R. and Unwin, L. (1996) 'Making Better Sense of Post-16 Destinations: A Case Study of an English Shire County', *Research Papers in Education* 11(1) 53-81
- Field, J. (2003) *Social Capital*. New York: Routledge
- Fisher, K. (2003) 'An Initial Exploration of the Employment Conditions of Full-Time and Part-Time Workers Using the NS-SEC' in Rose, D. and Pevalin, D. J. (eds) *A Researcher's Guide to the National Statistics Socio-Economic Classification*. London: Sage
- Fleming, D. and Rogers, C. (2009) 'Museums, Young People and Social Justice' in Bellamy, K. and Oppenheim, C. (eds) *Learning to Live: Museums, Young People and Education*. London: Institute for Public Policy Research and National Museum Director's Conference 2009
- Fraser, M. and Garg, R. (2012) 'Educational Aspirations' in Levesque, R. J. R. (eds) *Encyclopaedia of Adolescence*. New York: Springer Science and Business Media
- Gabay-Egozi, L., Shavit, Y. and Yaish, M. (2010) 'Curricular Choice: A Test of a Rational Choice Model of Education', *European Sociological Review* 26(4) 447-463
- Gaddis, S. M. (2013) 'The Influence of Habitus in the Relationship between Cultural Capital and Academic Achievement', *Social Science Research* 42(1) 1-13
- Gaddis, S. M. and Payton, A. R. (2011) 'High Arts Participation or Habits and Skills? A Longitudinal Analysis of Cultural Capital among Low-Income Youth', *Paper Presented at the Annual Meeting of the American Sociological Association Annual Meeting*, Las Vegas, NV

- Ganzeboom, H. (1982) 'Explaining Differential Participation in High-Cultural Activities – A Confrontation of Information-Processing and Status-Seeking Theories' in Raub, W. (eds) *Theoretical Models and Empirical Analyses: Contributions to the Explanation of Individual Actions and Collective Phenomena*. Utrecht: ES Publications
- Gayo-Cal, M., Savage, M. and Warde, A. (2006) 'A Cultural Map of the United Kingdom 2003', *Cultural Trends* 15(2/3) 213-237
- Gewirtz, S., Ball, S. and Bowe, R. (1995) *Markets, Choice and Equity in Education*. Buckingham: Open University Press
- Ginther, D. K. and Pollak, R. A. (2004) 'Family Structure and Children's Educational Outcomes: Blended Families, Stylized Facts and Descriptive Regressions'. *Demography* 41(4) 671-696
- GL-assessment (2013a) 'British Ability Scales Third Edition' [online] <http://www.gl-assessment.co.uk/products/bas3> (accessed on 22.05.2013)
- GL-assessment (2013b) 'Progress in Maths' [online] <http://www.gl-assessment.co.uk/products/progress-maths> (accessed on 22.05.2013)
- Goldstein, H. and Woodhouse, G. (2000) 'School Effectiveness Research and Educational Policy', *Oxford Review of Education* 26(3-4) 353-363
- Goldthorpe, J. (with contributions from Llewellyn, C. and Payne, C.) (1987) *Social Mobility and Class Structure in Modern Britain*. Oxford: OUP
- Goldthorpe J H with C Llewellyn and C Payne (1980) *Social Mobility and Class Structure in Modern Britain*. Oxford: Clarendon Press.
- Goldthorpe, J. (1996) 'Class Analysis and the Reorientation of Class Theory: The Case of Persisting Differentials in Educational Attainment', *The British Journal of Sociology* 47(3) 481-505
- Goldthorpe, J. (1997) 'Problems of Meritocracy' in A. Halsey, H. Lauder, P. Brown and A. S. Wells (eds) *Education, Culture, Economy, Society*. Oxford: Oxford University Press
- Goldthorpe, J. (1997) 'The "Goldthorpe" Class Schema: Some Observations on Conceptual and Operational Issues in Relation to the ESRC Review of Government Social Classifications' in Rose, D. and O'Reilly, K. (eds.) *Constructing Classes: Towards a New Social Classification for the UK*. Swindon: ESRC/ONS
- Goldthorpe, J. (1998) 'Rational Action Theory for Sociology', *The British Journal of Sociology* 49(2) 167-192

- Goldthorpe, J. (2000) 'Social Class and the Differentiation of Employment Contracts', in Goldthorpe, J. H. *On Sociology: Numbers, Narratives and the Integration of Research and Theory*. Oxford: OUP
- Goldthorpe, J. (2007) *On Sociology: Volume Two*. Palo Alto, CA: Stanford University Press
- Goldthorpe, J. (2007a) 'Cultural Capital: Some Critical Observations', *Sociologica* (2)
- Goldthorpe, J. (2007b) 'Cultural Capital: A Response to the Comments', *Sociologica*, (2)
- Goldthorpe, J. (2007c) *On Sociology, Volume 1*. Palo Alto, CA: Stanford University Press
- Goldthorpe, J. (2007d) *On Sociology, Volume 2: Illustration and Retrospect*. Palo Alto, CA: Stanford University Press
- Goldthorpe, J. H. (2008) 'Two Oppositions in Studies of Class: A Reflection' in Lareau, A. and Conley, D. (eds) *Social Class: How Does it Work?* New York: Russell Sage Foundation
- Goldthorpe, J. (2012) *Understanding – and Misunderstanding – Social Mobility in Britain: The Entry of the Economists, the Confusion of Politicians and the Limits of Educational Policy*, Barnett Papers in Social Research, Department of Social Policy and Intervention, University of Oxford
- Goldthorpe, J. H. and Jackson, M. (2007) 'Intergenerational Class Mobility in Contemporary Britain: Political Concerns and Empirical Findings', *British Journal of Sociology* 58(4) 526-46
- Goldthorpe, J. and Jackson, M. (2008) 'Education-Based Meritocracy: The Barriers to its Realisation' in Lareau, A. and Conley, D. (eds) *Social Class: How Does it Work?* New York: Russell Sage Foundation
- Goldthorpe, J. H. and McKnight, A. (2006) 'The Economic Basis of Social Class' in Morgan, S., Grusky, D. B. and Fields, G. S. (eds) *Mobility and Inequality: Frontiers of Research from Sociology and Economics*. Palo Alto, CA: Stanford University Press
- Goldthorpe, J. H. and Mills, C. (2008) 'Trends in Intergenerational Class Mobility in Modern Britain: Evidence from National Surveys' *National Institute Economic Review* 205(1) 83 – 100
- Goldthorpe, J. H. and Mills, C. (2004) 'Trends in Intergenerational Class Mobility in Britain in the Late Twentieth Century' in Breen, R. (eds) *Social Mobility in Europe*. Oxford: Oxford University Press

- Goldthorpe, J. H. and Mills, C. (2008) 'Trends in Intergenerational Class Mobility in Modern Britain: Evidence from National Surveys', *National Institute Economic Review* 205:83-100
- Goldthorpe, J. H. and Payne, C. (1986) Trends in intergenerational class mobility in England and Wales 1972-1983. *Sociology* 20: 1-24
- Goodman, A. and Gregg, P. (2010) *Poorer Children's Educational Attainment: How Important are Attitudes and Behaviour?* York: Joseph Rowntree Foundation, March 2010
- Gorard, S., Beng, H. S. and Davies, P. (2012) *The Impact of Attitudes and Aspirations on Educational Attainment and Participation*. York: Joseph Rowntree Foundation
- Gorman, T. J. (1998) 'Social Class and Parental Attitudes toward Education: Resistance and Conformity to Schooling in the Family', *Journal of Contemporary Ethnography* 27(1) 10-44
- Gouldner, A. (1979) *The Future of Intellectuals and the Rise of the New Class*. New York: Seabury Press
- Gov.uk (2013) *National Pupil Database* [online] <https://www.gov.uk/government/collections/national-pupil-database> (accessed on 30.07.2015)
- Graetz, B. (1988) 'The Reproduction of Privilege in Australian Education', *British Journal of Sociology* 39(3) 385-376
- Griffith, A. I. and Smith, D. E. (1990) "'What Did You Do in School Today?'" Mothering, Schooling and Social Class', *Perspectives on Social Problems* 2, 3-24
- Groves, R. M. and Couper, M. P. (1998) *Non-Response in Household Interview Surveys*. New York: John Wiley & Sons
- Grusky, D. B. and Weeden, K. A. (2006) 'Does the Sociological Approach to Studying Social Mobility Have a Future?' in Morgan, S., Fields, G. And Grusky, D. B. (eds) *Poverty and Inequality*. Palo Alto, CA: Stanford University Press
- The Guardian (2012) *How Have GCSE Pass Rates Changed over the Exams' 25 Year History?* [Online] <http://www.theguardian.com/news/datablog/2012/sep/17/gcse-exams-replaced-ebacc-history-pass-rates> (accessed on 13.05.2015)
- The Guardian (2015) *Poorest Hit Hardest by Coalition Changes, says Report* [online] <http://www.theguardian.com/society/2015/jan/27/poorest-hit-hardest-coalition-changes-report> (accessed on 12.07.2015)
- Gutman, L. M. and Feinstein, L. (2007) *Parenting Behaviours and Children's Development from Infancy to Early Childhood: Changes, Continuities and Contributions*.

Wider Benefits of Learning Research Report No 22. London: Centre for Research on the Wider Benefits of Learning

Halaby, C. N. (2004) 'Panel Models in Sociological Research: Theory into Practice', *Annual Review of Sociology* 30, 507-544

Hall, R. E. (2010) *An Historical Analysis of Skin Color Discrimination in America: Victimism among Victim Group Populations*. New York: Springer Science and Business Media

Halpin, B. (1999) 'Is Class Changing? A Work-Life History Perspective of the Salariat' *Sociological Research Online* 4(3)

Halsey, A. H. (1977) 'Towards Meritocracy? The Case of Britain' in Karabel, J. and Halsey, A. H. (eds) *Power and Ideology in Education*. New York: Oxford University Press

Halsey, A. H., Heath, A. F. and Ridge, J. M. (1980) *Origins and Destinations*. Oxford: Clarendon Press

Hansen, K. and Jones, E. (2010) 'Education, Schooling and Childcare' in Hansen, K., Jones, E., Joshi, H. and Budge, D. (eds) *Millennium Cohort Study Fourth Survey: A User's Guide to Initial Findings*. London: Centre for Longitudinal Studies

Hansen, K., Joshi, H. and Dex, S. (2010) *Children of the 21st Century*. Bristol: The Policy Press

Hansen, K. and Kneale, D. (2011) 'Does How You Measure Income Make a Difference to Measuring Poverty?' *CLS Working Paper 2011/1*. London: Centre for Longitudinal Studies

Hargreaves, D. H. (1982) *The Challenge for the Comprehensive School: Culture, Curriculum and Community*. London: Routledge & Kegan Paul

Harrison, E. (2010) 'Measuring Social Class' in Blumer, M., Gibbs, J. and Hyman, L. (eds) *Social Measurement through Social Surveys: An Applied Approach*. Surrey: Ashgate

Hart, B. and Risley, T. R. (1995) *Meaningful Differences in the Everyday Experiences of Young American Children*. Baltimore, MD: Brookes Publishing

Hatt, S., Tate, J. and Baxter, A. (2008) *Working Towards HE: A Study of Aimhigher and Learners with Vocational Qualifications* [Online]
https://www.heacademy.ac.uk/sites/default/files/AHSW-Working_to_HE-Learners_Vocational_Quals.pdf (accessed on 25.05.2015)

Hauser, R. M. (1976) 'Review Essay: On Boudon's Model of Social Mobility', *American Journal of Sociology* 81(4) 911-927

- Hawkes, D. and Plewis, I. (2008) 'Missing Income Data in the Millennium Cohort Study: Evidence from the First Two Sweeps', *CLS Working Paper 2008/10*. London: Centre for Longitudinal Studies
- Haynes, J., Tikly, L. and Caballero, C. (2006) 'The Barriers to Achievement for White/Black Caribbean Pupils in English Schools', *British Journal of Sociology of Education* 27(5) 569 – 583
- Heath, A. and Brinbaum, Y. (2007) 'Explaining Ethnic Inequalities in Educational Attainment', *Ethnicities* 7(3) 291-305
- Heath, A. and Clifford, P. (1990) 'Class Inequalities in Education in the Twentieth Century', *Journal of the Royal Statistical Society Series A* 153: 1-16
- Heath, A., Fisher, S., Rosenblatt, G., Saunders, D. and Sobolewska, M. (2013) *The Political Integration of Ethnic Minorities in Britain*. Oxford: Oxford University Press
- Heath, A. and Li, Y. (2015) *The Social Mobility of Ethnic Minorities*. Centre for Social Investigation, Nuffield College, Oxford University, CSI Briefing Paper No 14, published 15 June 2015
- Heath, A. and McMahon, D. (1996) 'Educational and Occupational Attainments: The Impact of Ethnic Origins', in Karn, V. (eds) *Education, Employment and Housing among Ethnic Minorities in Britain*. London: HMSO
- Heath, A. and Payne, C. (2000) 'Social Mobility' in Halsey, A. H. and Webb, J. (eds) *Twentieth Century British Social Trends*. Basingstoke: Macmillan
- Heath, A. and Ridge, J. (1983) 'Social Mobility of Ethnic Minorities', *Journal of Biosocial Science Supplement* 8, 169-184
- Heath, A. and Sullivan, A. (2011) 'Introduction: The Democratisation of Upper Secondary Education?', *Oxford Review of Education* 37(2) 123-138
- Hemsley-Brown, J. (1999) 'College Choice: Perceptions and Priorities', *Educational Management and Administration* 27(1) 85-98
- Hemsley-Brown, J. and Foskett, N. (2001) 'Model Consumers? A Model of Choice and Decision-Making in Educational Markets', Paper presented at the Annual Conference of the British Educational Research Association, University of Leeds, England, 13-15 September 2001
- Hewison, J. (1988) 'The Long Term Effectiveness of Parental Involvement in Reading: A Follow-up to the Haringey Reading Project', *British Journal of Educational Psychology* 58: 184-190

- Holm, A. and Jaeger, M. M. (2008) 'Does Relative Risk Aversion Explain Educational Inequality? A Dynamic Choice Approach', *Research in Social Stratification and Mobility* 26(3) 199-219
- Holt, C. B. (1998) 'Does Cultural Capital Structure American Consumption?', *The Journal of Consumer Research* 25(1), 1-25
- Horvat, E. M. and Davis, J. E. (2011) 'Schools as Sites for Transformation: Exploring the Contribution of Habitus', *Youth and Society* 43(1) 142-170
- House of Commons (2012) 'Ethnic Minorities in Politics, Government and Public Life', *House of Commons Research Briefing*, SN/SG/1156, 5 January 2012
- Hout, M. (2004) *Maximally Maintained Inequality Revisited: Irish Educational Mobility in Comparative Perspective*. Survey Research Centre Working Paper Series, University of California, Berkeley, July 2004
- Hout, M. and Dohan, D. P. (1996) 'Two Paths to Educational Opportunity: Class and Educational Selection in Sweden and the United States' in R. Erikson and J. O. Jonsson (eds) *Can Education be Equalised?* Boulder: Westview Press
- Hox, J. J. (1998) 'Multilevel Modelling: When and Why' in Balderjahn, I., Mathar, R. and Schader, M. (eds) *Classification, Data Analysis and Data Highways*. New York: Springer Verlag
- Hox, J. (2009) *Multilevel Analysis: Techniques and Applications*. Mahwah, NJ: Lawrence Erlbaum Associates
- Hox, J. (2010) *Multilevel Analysis: Techniques and Applications*. New York: Routledge
- Independent (2013) 'One in Four Parents Pay Tutors to Coach their Children' [online] <http://www.independent.co.uk/news/education/education-news/one-in-four-parents-pay-tutors-to-coach-their-children-8800916.html> (accessed on 27.11.2013)
- Institute of Education (2013) *Long-term Poverty but not Family Instability Affects Children's Cognitive Development* [online] <http://www.ioe.ac.uk/51936.html> (accessed on 16.12.2013)
- Institute for Fiscal Studies (IFS) (2010) *An Efficient Maintenance Allowance?* [online] <http://www.ifs.org.uk/publications/5370> (accessed on 12.05.2015)
- Institute for Fiscal Studies (IFS) (2010) *Income Inequality in the UK* [online] http://www.ifs.org.uk/docs/ER_JC_2013.pdf (accessed on 12.05.2015)
- Institute for Social and Economic Research (ISER) (2012) *Recession: The Impact on Young People and Social Mobility* [online]

<https://www.understandingsociety.ac.uk/case-studies/recession-the-impact-on-young-people-and-social-mobility> (accessed on 14.05.2015)

Iwunze, C. (2009) *The Factors Responsible for Low Educational Achievement Among African-Caribbean Youths*. Milton Keynes: Author House

Jackson, M., Erikson, R., Goldthorpe, J. and Yaish, M. (2007) 'Primary and Secondary Effects in Class Differentials in Educational Attainment: The Transition to A-Level Courses in England and Wales', *Acta Sociologica* 50(3) 211-229

Jackson, M. (2013a) 'Introduction: How is Inequality of Educational Opportunity Generated? The Case for Primary and Secondary Effects', in Jackson, M. (eds) *Determined to Succeed? Performance versus Choice in Educational Attainment*. Palo Alto, CA: Stanford University Press

Jackson, M. (2013b) 'Social Background and Educational Transitions in England', in Jackson, M. (eds) *Determined to Succeed? Performance versus Choice in Educational Attainment*. Palo Alto, CA: Stanford University Press

Jackson, M. (2012) 'Bold Choices: How Ethnic Inequalities in Educational Attainment are Suppressed', *Oxford Review of Education*, 38(2) 189-208

Jackson, M., Jonsson, J. and Rudolphi, F. (2012) 'Ethnic Inequality in Choice-driven Education Systems: A Longitudinal Study of Performance and Choice in England and Sweden', *Sociology of Education* 85(2) 158-178

Jaeger, M. (2009) 'Equal Access but Unequal Outcomes: Cultural Capital and Educational Choice in a Meritocratic Society', *Social Forces* 87:1943-1971

Jaeger, M. (2010) *Does Cultural Capital Really Affect Educational Achievement?* CSER Working Paper Series, Working Paper No. 0001 August 2010

Jaeger, M. M. (2011) 'Does Cultural Capital Really Affect Academic Achievement? New Evidence from Combined Sibling and Panel Data', *Sociology of Education* 84(4) 281-298

Jaeger, M. and Holm, A. (2003) *Which Background Factors Matter More in Intergenerational Attainment: Social Class, Cultural Capital or Cognitive Ability? A Random Effects Approach*. Copenhagen: Centre for Applied Microeconomics. Institute of Economics, University of Copenhagen

Jaeger, M. and Holm, A. (2012) 'Conformists or Rebels? Relative Risk Aversion, Educational Decisions and Social Class Reproduction', *Rationality and Society* 24(2) 221-253

Jansen. S. J. T., Coolen, H. C. C. H. and Geotgeluk, R. W. (2011) *The Measurement and Analysis of Housing Preference and Choice*. London: Springer

- Jenkins, R. (2002) *Pierre Bourdieu*. London: Routledge
- Jerrim, J. (2012) 'The Socio-Economic Gradient in Teenagers' Reading Skills: How Does England Compare to Other Countries?' *Fiscal Studies* 33 159-184
- Jerrim, J. and Vignoles, A. (2013) 'Social Mobility, Regression to the Mean and the Cognitive Development of High Ability Children from Disadvantaged Homes', *Journal of Royal Statistical Society Series A*, 176, 1-20
- Jeynes, W. H. (2011) *Parental Involvement and Academic Success*. New York: Routledge
- Joseph Rowntree Foundation (2007) *Tackling Low Educational Achievement* [online] <http://www.jrf.org.uk/publications/tackling-low-educational-achievement> (accessed on 17.07.2013)
- Joseph Rowntree Foundation (2007) *Parenting and Ethnicity*. York: Joseph Rowntree Foundation
- Joseph Rowntree Foundation (2010) *Poorer Children's Educational Attainment: How Important are Attitudes and Behaviour?* [online] <http://www.jrf.org.uk/system/files/poorer-children-education-full.pdf> (accessed on 28.11.2013)
- Joseph Rowntree Foundation (2012) *The Impact of Attitudes and Aspirations on Educational Attainment and Participation* [online] <http://www.jrf.org.uk/sites/files/jrf/education-young-people-parents-full.pdf> (accessed on 28.11.2013)
- Jonsson, J. O. (1987) 'Class Origin, Cultural Origin and Educational Attainment', *European Sociological Review* 3(3) 229-242
- Jonsson, J. and Mills, C. (1993) 'Social Class and Educational Attainment in Historical Perspective: A Swedish-English Comparison, Part I', *British Journal of Sociology* 44(2) 213-247
- Jonsson, J. O., Mills, C. and Müller, W. (1996) 'A Half Century of Increasing Educational Openness? Social Class, Gender and Educational Attainment in Sweden, Germany and Britain' in R. Erikson and J. O. Jonsson (eds) *Can Education be Equalised?* Boulder: Westview Press
- Journal of Blacks in Higher Education (2008) 'The Black-White Divide in Cultural Pursuits' [online] http://www.jbhe.com/news_views/58_cultural_divide.html (accessed on 26.11.2013)
- Kalmijn, M. and Kraaykamp, G. (1996) 'Race, Cultural Capital and Schooling: An Analysis of Trends in the United States', *Sociology of Education* 69(1) 22-34

- Karlson, K. B. (2013) 'Summarizing Primary and Secondary Effects', *Research in Social Stratification and Mobility* 33, 72-82
- Kassem, D. and Garratt, D. (2009) *Exploring Key Issues in Education*. New York: Continuum International Publishing Group
- Kaufman, J. and Gabler, J. (2004) 'Cultural Capital and the Extracurricular Activities of Boys and Girls in the College Attainment Process', *Poetics* 32(2) 145-168
- Katsillis, J. and Rubinson, R. (1990) 'Cultural Capital, Student Achievement and Educational Reproduction', *American Sociological Review* 55, 270-279
- Kerckhoff, A. C. and Trott, J. M. (1993) 'Educational Attainment in a Changing Educational System: The Case of England and Wales' in Shavit, Y. and Blossfeld, H.-P. (eds) *Persistent Inequality: Changing Educational Attainment in Thirteen Countries*. Boulder, CO: Westview Press
- Ketende, S. (2010) *MCS Technical Report on Response*. London: Centre for Longitudinal Studies
- Keys, W. and Fernandes, C. (1993) *What Do Students Think About School? Research into the Factors Associated with Positive and Negative Attitudes towards Education*. Slough: National Foundation for Educational Research
- Kiernan, K. E. and Mensah, F. K. (2011) 'Poverty, Family Resources and Children's Educational Attainment: The Mediating Role of Parenting', *British Educational Research Journal* 37(2) 317-336
- Kingston, P. W. (2001) 'The Unfulfilled Promise of Cultural Capital Theory', *Sociology of Education*, Extra Issue: 88-89
- Kloosterman, R., Notten, N., Tolsma, J. and Kraaykamp, G. (2011) 'The Effects of Parental Reading Socialization and Early School Involvement on Children's Academic Performance: A Panel Study of Primary School Pupils in the Netherlands', *European Sociological Review* 27(3) 291-306
- Koster, J. B. (2012) *Growing Artists: Teaching the Arts to Young Children*. Belmont, CA: Wadsworth
- Kracman, K. (1996) 'The Effect of School-Based Arts Instruction on Attendance at Museums and the Performing Arts', *Poetics* 24(2-4)203-218
- Krais, B. and William, J. M. (2000) 'The Gender Relationship in Bourdieu's Sociology', *SubStance* 29, 3(93) 53-67
- Krarup, T. and Munk, M. D. (2014) 'Field Theory in Cultural Capital Studies of Educational Attainment', *British Journal of Sociology of Education* 35, 1-19

- Krein, S. F. and Beller, A. H. (1988) 'Educational Attainment of Children from Single-Parent Families: Differences by Exposure, Gender and Race', *Demography* 25(2) 221-234
- Lareau, A. (1993) *Home Advantage*. London: Falmer Press
- Lareau, A. (1997) 'Social-Class Differences in Family-School Relationships: The Importance of Cultural Capital' in Halsey *et al* (eds) *Education, Culture, Economy, Society*. Oxford: Oxford University Press
- Lareau, A. (2002) 'Invisible Inequality: Social Class and Childrearing in Black Families and White Families', *American Sociological Review* 67, 747-776
- Lareau, A. (2003) *Unequal Childhoods: Class, Race and Family Life*. Berkeley, CA: University of California Press
- Lareau, A. and Conley, D. (2008) *Social Class: How Does it Work?* New York: Russell Sage Foundation
- Lareau, A. and Horvat, E. (1999) 'Moments of Social Inclusion and Exclusion: Race, Class and Cultural Capital in Family-School Relationships', *Sociology of Education* 72(1) 37-53
- Lareau, A. and Weininger, E. (2003) 'Cultural Capital in Educational Research: A Critical Assessment', *Theory and Society* 32(5-6) 567-606
- Leckie, G. (2009) 'The Complexity of School and Neighbourhood Effects and Movements of Pupils on School Differences in Models of Educational Achievement'. *Journal of the Royal Statistical Society: Series A* 172(3) 537-554
- Leslie, D. and Drinkwater, S. (1999) 'Staying on in Full-time Education: Reasons for Higher Participation Rates among Ethnic Minority Males and Females', *Economica* 66, 63-77
- Li, Y. (2010) 'The labour market situation of minority ethnic groups in Britain and the USA', *EurAmerica: A Journal of European and American Studies* 40(2): 259-309
- Li, Y. and Devine, F. (2011) 'Is Social Mobility Really Declining? Intergenerational Class Mobility in Britain in the 1990s and the 2000s' *Sociological Research Online* 16(3) 4
- Li, Y., Devine, F. and Heath, A. (2008) *Equality Group Inequalities in Education, Employment and Earnings: A Research Review and Analysis of Trends Over Time*. Equality and Human Rights Commission, Research Report 10
- Li, Y. and Heath, A. (2007) *Employment Status of 1st and 2nd Generation Minority Ethnic Groups in Britain: A Tale of 35 Years*. ESRC: Britain Today

- Li, Y. and Heath, A. (2008a) 'Struggling onto the Ladder, Puffing up the Rungs: Employment Status and Class Position by Minority Ethnic Groups in Britain (1972-2005)' in Stillwell, J., Norman, P., Thomas, C. and SurrIDGE, P. (eds) *Population, Employment, Health and Well-being*. Berlin: Springer
- Li, Y. and Heath, A. (2008b) 'Ethnic Minority Men in the British Labour Market (1972-2005)', *International Journal of Sociology and Social Policy* 28(5/6), 231-244
- Lin, N. (2001) *Social Capital: A Theory of Social Structure and Action*. Cambridge: Cambridge University Press
- Lindsay, G., Pather, S. and Strand, S. (2006) *Special Educational Needs and Ethnicity: Issues of Over- and Under-Representation*. DfES Research Report 757. Nottingham: DfES
- Little, R. J. A. and Rubin, D. B. (2002) *Statistical Analysis with Missing Data*. New York: Wiley
- Lucas, S. R. (2001) 'Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects', *American Journal of Sociology* 106: 1642-1690
- Lucas, S. R. (2009) 'Stratification Theory, Socioeconomic Background and Educational Attainment: A Formal Analysis' *Rationality and Society* 21: 459-511
- Lupton, R. (2003) 'Neighbourhood Effects: Can we Measure Them and Does it Matter?' *CASE Paper 73*. London: London School of Economics and Political Science
- Lupton, R. and Kintrea, K. (2011) 'Can Community-Based Interventions on Aspirations Raise Young People's Attainment?', *Social Policy and Society* 10(3) 321-335
- Lynch, K. (2000) 'Research and Theory on Equality in Education' in Hallinan, M. T. (eds) *Handbook of the Sociology of Education*. New York: Springer Science and Business Media
- Maas, C. J. M and Hox, J. J. (2004) 'Robustness Issues in Multilevel Regression Analysis', *Statistica Neerlandica* 58, 127-137
- Maas, C. J. M. and Hox, J. J. (2005) 'Sufficient Sample Sizes for Multilevel Modelling', *Methodology* 1, 86-92
- Macrae, S., Maguire, M. and Ball, S. (1996) 'Opportunity Knocks: "Choice" in the Post- 16 Education and Training Market', in *Markets in Education: Policy, Process and Practice. Vol. 2: Markets in Post-Compulsory Education*. Southampton: Centre for Research in Education Marketing

- Manzo, G. (2013) 'Educational Choices and Social Interactions: A Formal Model and a Computational Test', *Comparative Social Research*, 30, 47-100
- Marjoribanks, K. (2002) *Family and School Capital: Towards a Context Theory of Students' School Outcomes*. Dordrecht: Kluwer Academic Publishers
- Maton, K. (2003) 'Pierre Bourdieu and the Epistemic Conditions of Social Scientific Knowledge', *Space and Culture* 6(1) 52-65
- May, S. (1999) 'Critical Multiculturalism and Cultural Difference: Avoiding Essentialism', in May, S. (eds) *Critical Multiculturalism: Rethinking Multicultural and Antiracist Education*. London: Falmer Press
- Mayer, S. E. and Peterson, P. E. (1999) *Earning and Learning: How Schools Matter*. Washington: Brookings Institution Press
- McClelland, K. (1990) 'Cumulative Disadvantage among the Highly Ambitious', *Sociology of Education* 63(2) 102-121
- McDonough, P. M. (1998) 'Structuring College Opportunities: A Cross-Case Analysis of Organizational Cultures, Climates and Habits' in Torres, C. A. and Mitchell, T. R. (eds) *Sociology of Education: Emerging Perspectives*. Albany, NY: State University of New York Press
- McDowell, L. (2003) *Redundant Masculinities*. Oxford: Blackwell
- McKnight, A. and Elias, P. (2003) 'Empirical Validation in Employment Relations and Conditions', in Rose, D. and Pevalin, D. J. (eds) *A Researcher's Guide to the National Statistics Socio-economic Classification*. London: Sage
- McNay, L. (2001) 'Meditations on Pascalian Meditations', *Economy and Society* 30, 139-154
- McNeal, R. B. (1999) 'Parental Involvement as Social Capital: Differential Effectiveness on Science Achievement, Truancy and Dropping Out', *Social Forces* 78(1)117-144
- McNeal, R. B. (2001) 'Differential Effects of Parental Involvement on Cognitive and Behavioural Outcomes by Socioeconomic Status', *Journal of Socio-Economics* 30, 171-179
- Media.education.gov.uk (2013) 'A Language in Common: Assessing English as an Additional Language' [online]
<http://media.education.gov.uk/assets/files/pdf/a/a%20language%20in%20common%20assessing%20eal.pdf> (accessed on 12.12.2013)
- Menard, S. W. (2008) *Handbook of Longitudinal Research: Design, Measurement and Analysis*. Burlington, MA: Elsevier

- Merton, R. K. (1948) 'The Self-Fulfilling Prophecy', *The Antioch Review* 8(2) 193-210
- Meschi, E., Swaffield, J. and Vignoles, A. (2011) 'The Relative Importance of Local Labour Market Conditions and Pupil Attainment on Post-Compulsory Schooling Decisions', IZA Discussion Paper Series, DP No. 6143
[<http://ftp.iza.org/dp6143.pdf>]
- Micklewright, J. (1989) 'Choice at Sixteen', *Economica* 56(221) 25-39
- Midouhas, E. (2012) 'Children's Well-being in Rural Compared with Urban Areas: Neighbourhood Effects and Their Pathways of Influence'. PhD Thesis, Institute of Education, University of London
- Middleton, S., Rennison, J., Cebulla, A., Perren, K. and De-Beaman, S. (2005) *Young People from Ethnic Minority Backgrounds: Evidence from the Education Maintenance Allowance Pilots Database*. Centre for Research in Social Policy – Research Report No RR627. Loughborough: Loughborough University
- Millennium Cohort Study (2012) *First, Second, Third and Fourth Surveys: A Guide to the Datasets, Sixth ed.* July 2012. London: Centre for Longitudinal Studies
- Mills, C. and Evans, G. (2003) 'Employment Relations, Employment Conditions and the NS-SEC' in Rose, D. and Pevalin, D. J. (eds) *A Researcher's Guide to the National Statistics Socio-economic Classification*. London: Sage
- Mirza, H. (1992) *Young, Female and Black*. London: Routledge
- Modood, T. (2001) 'Multiculturalism and Education in Britain: An Internally Contested Debate', *International Journal of Education Research* 35 305-317
- Modood, T. (2003) 'Ethnic Differentials in Educational Performance', in Mason, D. (eds) *Explaining Ethnic Differences: Changing Patterns of Disadvantage in Britain*. Bristol: Open Press
- Modood, T. (2004) 'Capitals, Ethnic Identity and Educational Qualifications', *Cultural Trends* 13(2) 87-105
- Modood, T., Berthoud, R., Lakey, J., Nazroo, J., Smith, P., Virdee, S. and Beishon, P. (1997) *Ethnic Minorities in Britain*. London: Policy Studies Institute
- Mohr, J. and DiMaggio, P. (1995) 'The Intergenerational Transmission of Cultural Capital', *Research in Social Stratification and Mobility* 14, 176-199
- Müller, W. (1996) 'Class Inequalities in Educational Outcomes: Sweden in Comparative Perspective' in R. Erikson and J. O. Jonsson (eds) *Can Education be Equalised?* Boulder, CO: Westview Press

- National Research Council (2002) *Methodological Advances in Cross-National Surveys of Educational Achievement*. Washington, DC: National Academy Press
- Need, A. and De Jong, U. (2001) 'Educational Differentials in the Netherlands: Testing Rational Action Theory', *Rationality and Society* 13: 71-89
- Neuman, S. B. and Dickinson, D. K. (2011) *Handbook of Early Literacy Research, Volume 3*. New York: Guilford Press
- Noble, J. and Davies, P. (2009) 'Cultural Capital as an Explanation of Variation in Participation in Higher Education', *British Journal of Sociology of Education* 30(5) 591-605
- Notten, N., Lancee, B., van de Werfhorst, H. G. and Ganzeboom, H. B. G. (2013) *Educational Stratification in Cultural Participation: Cognitive Competence or Status Motivation?* GINI Discussion Paper 77, Growing Inequalities' Impacts, August 2013
- O'Connell, A. A. and McCoach, D. B. (2008) *Multilevel Modelling of Educational Data*. Charlotte, NC: Information Age Publishing
- Ofqual (2013) Comparing Qualification Levels [online] <http://ofqual.gov.uk/help-and-advice/comparing-qualifications/> (accessed on 15.07.2013)
- Office for National Statistics (ONS) (2012) 'Quality Adjustment for Public Service Education: Triangulation', 29 March
- ONS (2013a) 'The National Statistics Socio-Economic Classification (NS-SEC rebased on the SOC2010)' [online] <http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/soc2010-volume-3-ns-sec--rebased-on-soc2010--user-manual/index.html> (accessed on 15.07.2013)
- ONS (2013b) 'Rural/Urban Definition (England and Wales)' [online] <http://www.ons.gov.uk/ons/guide-method/geography/products/area-classifications/rural-urban-definition-and-la/rural-urban-definition--england-and-wales-/index.html> (accessed on 05.07.2013)
- Oskala, A., Keaney, E., Chan T. W. And Bunting, C. (2009) *Encourage Children Today to Build Audiences for Tomorrow: Evidence from the Taking Part Survey on how Childhood Involvement in the Arts Effects Arts Engagement in Adulthood*. London: Arts Council England
- Ostrower, F. (1998) 'The Arts as Cultural Capital Among Elites: Bourdieu's Theory Reconsidered', *Poetics* 26, 43-53

- Owen, D., Green, A., Pitcher, J. and Maguire, M. (2000) *Minority Ethnic Participation and Achievements in Education, Training and the Labour Market*. Department for Education and Employment, Research Report RR225
- Patel, J. K. and Read, C. B. (1996) *Handbook of the Normal Distribution*. New York: Taylor & Francis
- Paterson, L. and Raffe, D. (1995) "'Staying On" in Full Time Education in Scotland, 1985-91', *Oxford Review of Education* 21(1) 3-23
- Paton, K. (2007) *Conceptualising 'Choice': A Review of the Theoretical Literature*. Non-participation in HE Project Series, Working Paper No 5. Southampton: University of Southampton
- Payne, G. (1987a) *Employment and Opportunity*. London: Macmillan
- Payne, G. (1987b) *Mobility and Change in Modern Society*. London: Macmillan
- Payne, J. (2003) *Choice at the End of Compulsory Schooling: A Research Review*. Research Report RR414. Nottingham: DfES Publications
- Payne, J. (1998) *Routes at 16: Trends and Choices in the Nineties*. Research Report RR55. Department for Education and Employment
- Payne, G. and Roberts, J. (2002) 'Opening and Closing the Gates: Recent Developments in Male Social Mobility in Britain', *Sociological Research Online* 6, 4
- Pevalin, D. J. (2003) 'Social Class and the Incidence of Low Birth Weights' in Rose, D. and Pevalin, D. J. (eds) *A Researcher's Guide to the National Statistics Socio-economic Classification*. London: Sage
- Phuckett, M. B. and Diffily, D. (2004) *Teaching Young Children: An Introduction to the Early Childhood Profession*. Florence, KY: Thomson Learning
- Platt, L. (2007) 'Making Education Count: The Effects of Ethnicity and Qualifications on Intergenerational Social Class Mobility', *The Sociological Review*, 55(3) 485-508
- Platt, L. (2007) *Poverty and Ethnicity in the UK*. Findings, Ref 2059. York: Joseph Rowntree Foundation: York
- Plewis, I. (1988) 'Assessing and Understanding the Educational Progress of Children from Different Ethnic Groups', *Journal of the Royal Statistical Society A*, 151, 316-326
- Plewis, I. (1996) 'Statistical Methods for Understanding Cognitive Growth: A Review, a Synthesis and an Application', *British Journal of Mathematical and Statistical Psychgov*

ology 49(1) 25-42

Plewis, I. (2004) *Millennium Cohort Study First Survey: Technical Report on Sampling*. London: Centre for Longitudinal Studies

Plewis, I. (2007) *The Millennium Cohort Study: Technical Report on Sampling, 4th Edition*. London: Centre for Longitudinal Studies

Plewis, I. (2011) 'Contextual Variations in Ethnic Group Differences in Educational Attainments', *Journal of the Royal Statistical Society A*, 174 (part 2) 419-437

Plewis, I., Mooney, A. and Creaser, R. (1990) 'Time on Educational Activities at Home and Educational Progress in Infant School', *British Journal of Educational Psychology* 60: 330-337

Prandy, K. (1998a) 'Class and Continuity in Social Reproduction', *Sociological Review* 46(2) 340 – 364

Prandy, K. (1998b) 'Understanding Social Class and Inequalities in Health', *SRG Working Paper 29*, Cambridge: Sociological Research Group

Prandy, K. (1998c) 'Class, Stratification and Party Identification' *SRG Working Paper 30*, Cambridge: Sociological Research Group

Preach, C. (1996) 'Does Britain Have Ghettos?' *Transactions of the Institute of British Geographers* 21(1) 216-235

Raftery, A. E. and Hout, M. (1993) 'Maximally Maintained Inequality: Expansion, Reform, and Opportunity in Irish Education, 1921-75', *Sociology of Education* 66(1) 41-62

Rake, K. (2000) *Women's Incomes over the Lifetime*. London: The Cabinet Office

Rasbash, J., Leckie, G., Pillinger, R. and Jenkins, J. (2010) 'Children's Educational Progress: Partitioning Family, School and Area Effects'. *Journal of the Royal Statistical Society: Series A* 173(4) 1-26

Reay, D. (1995) "'They Employ Cleaners to do that'": Habitus in the Primary Classroom', *British Journal of Sociology of Education* 16(3) 353-371

Reay, D. (1998) *Class Work: Mother's Involvement in Their Children's Primary Schooling*. London: UCL Press

Reay, D. (2000) 'A Useful Extension of Bourdieu's Conceptual Framework?: Emotional Capital as a Way of Understanding Mothers' Involvement in Their Children's Education?' *Sociological Review* 48(4) 568-585

- Reay, D. (2004) 'It's All Becoming a Habitus: Beyond the Habitual Use of Habitus in Educational Research', *British Journal of Sociology of Education* 25(4) 431-444
- Reay, D., David, M. and Ball, S. (2001a) 'Making a Difference? Institutional Habitus and Higher Education Choice', *Sociological Research Online* 5(4) <http://www.socresonline.org.uk/5/4/reay.html>
- Reay, D., Davies, J., David, M. and Ball, S. J. (2001b) 'Choices of Degree or Degrees of Choice? Class, "Race" and the Higher Education Choice Process', *Sociology* 35(4) 855-874
- Reise, S. P. and Duan, N. (2003) *Multilevel Modeling: Methodological Advances, Issues and Applications*. Mahwah, NJ: Lawrence Erlbaum Associates
- Research Centre for Museums and Galleries (2002) *The Impact of the DfES Museums and Galleries Education Programme: A Summative Evaluation*. MGEP Research Report, University of Leicester
- Ress, A. and Azzolini, D. (2014) 'Primary and Secondary Effects of Social Background on Educational Attainment in Italy. Evidence from an Administrative Dataset', *Italian Journal of Sociology of Education* 6(1) 53-80
- Riach, P. A. and Rich, J. (2002) 'Field Experiments of Discrimination in the Market Place', *Economic Journal* 112, F480-F518
- Rice, P. (1999) 'The Impact of Local Labour Markets on Investment in Further Education: Evidence from the England and Wales Youth Cohort Studies', *Journal of Population Economics* 12, 287-312
- Robbins, D. (2000) *Bourdieu and Culture*. London: Sage
- Robinson, W. S. (1950) 'Ecological Correlations and the Behaviour of Individuals', *American Sociological Review*, 15, 351-357
- Robinson, R. and Garnier, M. (1985) 'Class Reproduction among Men and Women in France', *American Journal of Sociology* 91(2) 250-258
- Robson, K. and Saunders, C. (2009) *Quantifying Theory: Pierre Bourdieu*. Berlin: Springer
- Rodgers, Y. V. D. M. and Boyer, T. (2006) 'Gender and Racial Differences in Vocational Education: An International Perspective', *International Journal of Manpower* 27(4) 308-320
- Roscigno, V. J., and Ainsworth-Darnell, J. W. (1999) 'Race, Cultural Capital and Educational Resources: Persistent Inequalities and Achievement Returns', *Sociology of Education* 72(3) 158-178

- Rose, D. and Pevalin, D.J. (eds) (2003) *A Researcher's Guide to the National Statistics Socio-economic Classification*. London: Sage Publications
- Rose, D. and Pevalin, D. J. (with O'Reilly, K.) (2005) *The National Statistics Socio-Economic Classification: Origins, Development and Use*, Institute for Social and Economic Research, ONS Publication. Hampshire: Palgrave Macmillan
- Rose, D., Pevalin, D. J. and Elias, P. (with Martin, J.) (2001) *Towards a European Socio-Economic Classification: Final Report to Eurostat of the Expert Group*. London and Colchester: ONS and ISER, University of Essex
- Roulstone, S., Law, J., Rush, R., Clegg, J. and Peter, T. (2011) *Investigating the Role of Language in Children's Early Educational Outcomes*. Department for Education Research Report DFE-RR134, June 2011
- Rutter, M., Maughan, B., Mortimore, P. and Ouston, J. (1979) *Fifteen Thousand Hours: Secondary Schools and Their Effects on Children*. London: Open Books
- Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B. and Hunt, S. (2008) *Influences on Children's Attainment and Progress in Key Stage 2: Cognitive Outcomes in Year 6*. Department for Children, Schools and Families, Research Report No DCSF-RR048
- Sawhill, I. V. (2014) *Generation Unbound: Drifting into Sex and Parenthood without Marriage*. Washington, DC: Brookings Institution
- Saunders, P. (1996) *Unequal but Fair? A Study of Class Barriers in Britain*. London: Institute for Economic Affairs
- Savage, M. and Bennett, T. (2005) 'Editors' Introduction: Cultural Capital and Social Inequality', *British Journal of Sociology* 56(1) 1-12
- Scherger, S. and Savage, M. (2009) *Cultural Transmission, Educational Attainment and Social Mobility*. CRESC Working Paper Series, Working Paper No. 70
- Scott, J., Dex, S. and Joshi, H. (eds) (2008). *Women and Employment: Changing Lives and New Challenges*. Cheltenham: Edward Elgar
- Sharma, N. and Sharma, K. (2015) "'Self-Fulfilling Prophecy": A Literature Review', *International Journal of Interdisciplinary and Multidisciplinary Studies* 2(3) 41-52
- Shavit, Y. and Blossfeld, H.-P. (1993) *Persistent Inequality: Changing Educational Attainment in Thirteen Countries*. Social Inequality Series. Boulder, CO: Westview Press

- Shavit, Y. and Blossfeld, H.-P. (1996) 'Equalising Educational Opportunity: Do Gender and Class Compete?' in R. Erikson and J. O. Jonsson (eds) *Can Education be Equalised?* Boulder, CO: Westview Press
- Silva, E. B. and Edwards, R. (2004) *Operationalizing Bourdieu on Capitals: A Discussion on 'The Construction of the Object'*. ESRC Methods Programme, Working Paper No. 7
- Singer, D. and Willett, J. (2003) *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. Oxford: Oxford University Press
- Snijders, T. and Berkhof, J. (2008) 'Diagnostic Checks for Multilevel Models' in de Leeuw, J. and Meijer, E. (eds) *Handbook of Multilevel Analysis*. New York: Springer
- Snijders, T. A. B. and Bosker, R. J. (1999) *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modelling*. London: Sage
- Snijders, T. and Bosker, R. J. (2012) *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modelling*. London: Sage
- Snowling, M. J. and Gobel, S. M. (2011) 'Reading Development and Dyslexia' in Goswami, U. (ed) *The Wiley-Blackwell Handbook of Childhood Cognitive Development*. Sussex: John Wiley & Sons
- Spera, C., Wentzel, K. R. and Matto, H. C. (2009) 'Parental Aspirations for their Children's Educational Attainment: Relations to Ethnicity, Parental Education, Children's Academic Performance, and Parental Perceptions of School Climate', *Journal of Youth and Adolescence* 38(8) 1140-1152
- Squire, C. (2009) *The Social Context of Birth*. Oxford: Radcliffe
- Stam, H. J. (2009) 'Habitus, Psychology and Ethnography: Introduction to the Special Section', *Theory and Psychology* 19, 707-711
- Stanton-Salazar, R. and Dornbusch, S. M. (1995) 'Social Capital and the Reproduction of Inequality: Information Networks Among Mexican-Origin High School Students', *Sociology of Education* 68(2) 116-135
- Stewart, S. (2010) *Culture and the Middle Classes*. Farnham: Ashgate
- Strand, S. (2007) 'Minority Ethnic Pupils in the Longitudinal Study of Young People in England (LSYPE)', Department for Schools, Children and Families, Research Report DCSF-RR002
- Strand, S. (2010) 'Do Some Schools Narrow the Gap? Differential School Effectiveness by Ethnicity, Gender, Poverty and Prior Attainment', *School Effectiveness and School Improvement* 21(3) 289-314

- Sukhnandan, L. (1999) *An Investigation into Gender Differences in Achievement. Phase 1: A Review of Recent Research and LEA Information on Provision*. Slough: National Foundation for Educational Research
- Sullivan, A. (2001) 'Cultural Capital and Educational Attainment', *Sociology* 35(4) 813-912
- Sullivan, A. (2002) 'Bourdieu and Education: How Useful is Bourdieu's Theory for Researchers?', *The Netherlands' Journal of Social Sciences* 38(2) 144-166
- Sullivan, A. (2003) 'Cultural Capital, Rational Choice and Educational Inequalities', unpublished PhD thesis, University of Oxford
- Sullivan, A. (2006) 'Students as Rational Decision-Makers: The Question of Beliefs and Attitudes', *London Review of Education* 4(3) 271-290
- Sullivan, A. (2007) 'Cultural Capital, Cultural Knowledge and Ability', *Sociological Research Online* 12(6) 1
- Sullivan, A., Cara, O., Joshi, H., Ketende, S. and Obolenskaya, P. (2010a) *The Consequences of Childhood Disadvantage in Northern Ireland at Age 5*. Belfast: Office of the First Minister and the Deputy First Minister
- Sullivan, A., Joshi, H., Ketende, S. and Obolenskaya, P. (2010b) *The Consequences at Age 7 of Early Childhood Disadvantage in Northern Ireland and Great Britain*. Belfast: Office of the First Minister and the Deputy First Minister
- Sullivan, A., Heath, A. and Rethon, C. (2011) 'Equalisation or Inflation? Social Class and Gender Differentials in England and Wales', *Oxford Review of Education* 37(2) 215-240
- Sullivan, A., Ketende, S. and Joshi, H. (2013) 'Social Class and Inequalities in Cognitive Test Scores', *Sociology* 0(0) 1-20
- Sullivan, A., Parsons, S., Wiggins, R., Heath, A. and Green, F. (2014) 'Social Origins, School Type and Higher Education Destinations', *Oxford Review of Education* 40(6) 739-763
- Susen, S. and Turner, B. S. (2011) *The Legacy of Pierre Bourdieu: Critical Essays*. London: Anthem Press
- Swartz, D. (2002) 'The Sociology of Habit: The Perspective of Pierre Bourdieu', *The Occupational Therapy Journal of Research* 22(S) 61S – 69S
- Swartz, D. (1997) *Culture and Power: The Sociology of Pierre Bourdieu*. Chicago, IL: University of Chicago Press

- Sykes, G., Schneider, B. and Plank, D. N. (2009) *Handbook of Education Policy Research*. New York: Routledge
- Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2004) *The Effective Provision of Pre-School Education (EPPE) Project: Final Report*. London: Department for Education and Skills
- Tackey, N. D., Barnes, H. and Khambhaita, P. (2011) *Poverty, Ethnicity and Education*, York: Joseph Rowntree Foundation [online]
<http://www.jrf.org.uk/sites/files/jrf/poverty-ethnicity-education-full.pdf> (accessed on 31.03.2015)
- Tanner, J. M., Whitehouse, R. H. and Takaishi, M. (1966) 'Standards from Birth to Maturity for Height, Weight, Height Velocity and Weight Velocity: British Children, 1965 (Part II)', *Archives of Disease in Childhood* 41, 613-635
- Taking Part (2012) *Taking Part 2011/2012 Adult and Child Report: Statistical Release*, London: Department for Culture, Media and Sport
- The Telegraph (2010) *Good Parenting, Not Poverty, Shapes a Child's Destiny*, 19th August
- Thomas, L. (2002) 'Student Retention in Higher Education: The Role of Institutional Habitus', *Journal of Education Policy* 17(4), 423-442
- Tizard, J., Schofield, B. and Hewison, J. (1982) 'Collaboration between Teachers and Parents in Assisting Children's Reading', *British Journal of Educational Psychology* 52, 1-15
- Toomey, D. (1993) 'Parents Hearing Their Children Read: A Review. Rethinking the Lessons of the Haringey Project', *Educational Research* 35(3) 223-236
- Torgerson, C., Gorard, S., Low, G., Ainsworth, H., Huat See, B. and Wright, K. (2008) *What are the Factors that Promote High Post-16 Participation of Many Minority Ethnic Groups? A Focused Review of the UK-based Aspirations Literature*. EPPI Centre, Social Science Research Unit, Report No 1608. London: Institute of Education
- Townsend, T. (2007) *International Handbook of School Effectiveness and Improvement Review, Reflection and Reframing*, Springer International Handbooks of Education, vol. 17, XIV, 998.
- Trade Union Congress (TUC) (2015) *Youth Unemployment and Ethnicity* [online]
<https://www.tuc.org.uk/sites/default/files/BMEyouthunemployment.pdf> (accessed on 19.05.2015)

- Trading Economics (2015) *United Kingdom Youth Unemployment Rate* [online] <http://www.tradingeconomics.com/united-kingdom/youth-unemployment-rate> (accessed on 25.05.2015)
- Tzanakis, M. (2011) 'Bourdieu's Social Reproduction Thesis and The Role of Cultural Capital in Educational Attainment: A Critical Review of Key Empirical Studies', *Educate* 11(1) 76-90
- UK Data Service (UKDS) (2015) *Cultural Capital and Social Exclusion: A Critical Investigation, 2003-2005* [online] <http://discover.ukdataservice.ac.uk/catalogue?sn=5832> (accessed on 30.07.2015)
- van de Werfhorst, H. G, and Hofstede, S. (2007) 'Cultural Capital or Relative Risk Aversion? Two Mechanisms for Educational Inequality Compared', *The British Journal of Sociology* 58(3) 391-415
- van de Werfhorst, H. G. (2010) 'Cultural Capital: Strengths, Weaknesses and two Advancements', *British Journal of Sociology of Education* 31(2) 157-169
- Varlaam, A. and Shaw, A. (1984) 'Attitudes to school: a study of fifth year pupils', in *Improving Secondary Schools* (Hargreaves Report). London: Inner London Education Authority
- Vincent, C., Ball, S. J. and Braun, A. (2010) 'Between the Estate and the State: Struggling to be a "Good" Mother', *British Journal of Sociology of Education* 31(2) 123-138
- Vryonides, M. (2007) 'Social and Cultural Capital in Educational Research: Issues of Operationalisation and Measurement', *British Educational Research Journal* 33(6) 867-885
- Wakefield, J. (2013) *Bayesian and Frequentist Regression Methods*. New York: Springer
- Walthery, P. (2006) 'Figuring Out Social Classes and Overview' [online] <http://www.radstats.org.uk/no092/walthery92.pdf> (accessed on 15.07.2013)
- Walthery, P. and Plewis, I. (2015) *Following Families Over Time and Across Studies: Towards a Generic Definition of Family Composition for use in Longitudinal Analysis of Children's Development*, e-stat Project, University of Manchester
- Waters, M., Heath, A., Tran, V. and Boliver, V. (2013) 'Second Generation Attainment and Inequality: Primary and Secondary Effects on Educational Outcomes in Britain and the US' in R. Alba and J. Holdaway (eds) *The Children of Immigrants at School: A Comparative Look at Integration in the United States and Western Europe*. New York: New York University Press

- Weininger, E. (2005) 'Foundations of Pierre Bourdieu's Class Analysis' in Wright, E. O. (eds) *Approaches to Class Analysis*. Cambridge: Cambridge University Press
- Weininger, E. and Lareau, A. (2007) 'Cultural Capital' in Ritzer, G. (eds) *Encyclopaedia of Sociology*. Oxford: Blackwell
- Widdop, P. and Cutts, D. (2011) *Cultural Consumption Mapping: Analysis of the Taking Part and Active People Surveys*. Manchester: Institute for Social Change
- Wildhagen, T. (2009) 'Why Does Cultural Capital Matter for High School Academic Performance? An Empirical Assessment of Teacher-Selection and Self-Selection Mechanisms as Explanations of the Cultural Capital Effect', *The Sociological Quarterly* 50, 173-200
- Willis, P. (1977) *Learning to Labour*. Farnborough: Saxon House
- Winkle-Wagner, R. (2010) *Cultural Capital: The Promises and Pitfalls in Educational Research*. Hoboken, NJ: John Wiley & Sons
- Wood, M., Hales, J., Purdon, S., Sejersen, T. and Hayllar, O. (2009) *A Test for Racial Discrimination in Recruitment Practice in British Cities*. Department for Work and Pensions, Research Report No 607. London: DWP
- Wolf, A. (2011) *A Review of Vocational Education – The Wolf Report* [Online] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/180504/DFE-00031-2011.pdf (accessed on 25.05.2015)
- Wong, Y-L. (2007) 'How Middle-Class Parents Help their Children Obtain an Advantaged Qualification: A Study of Strategies of Teachers and Managers for their Children's Education in Hong Kong before the 1997 Handover', *Sociological Research Online* 12(6)5
- Wooldridge, J. M. (2008) *Introductory Econometrics: A Modern Approach*. Cincinnati, OH: South-Western College Publishing
- Wrench, J. and Hassan, E. (1996) *Ambition and Marginalisation: A Qualitative Study of Underachieving Young Men of Afro-Caribbean Origin*. Department for Education and Employment Research Studies RS31
- Wright, S. M. (2000) 'Educated Mothers as a Tool for Change: Possibilities and Constraints', in O'Reilly, A. and Abbey, S. (eds) *Mothers and Daughters: Connection, Empowerment and Transformation*. Lanham, MD: Rowman & Littlefield
- Young, M. (1958) *The Rise of the Meritocracy*. Harmondsworth: Penguin
- Zimdars, A., Sullivan, A. and Heath, A. (2009) 'Elite Higher Education Admissions in the Arts and Sciences: Is Cultural Capital the Key?', *Sociology* 43(4) 648-666

Appendix A: Modelling Assumptions and Missing Data

Figure A1: Standardised Cognitive Development Outcomes at MCS2, MCS3 and MCS4: Histograms

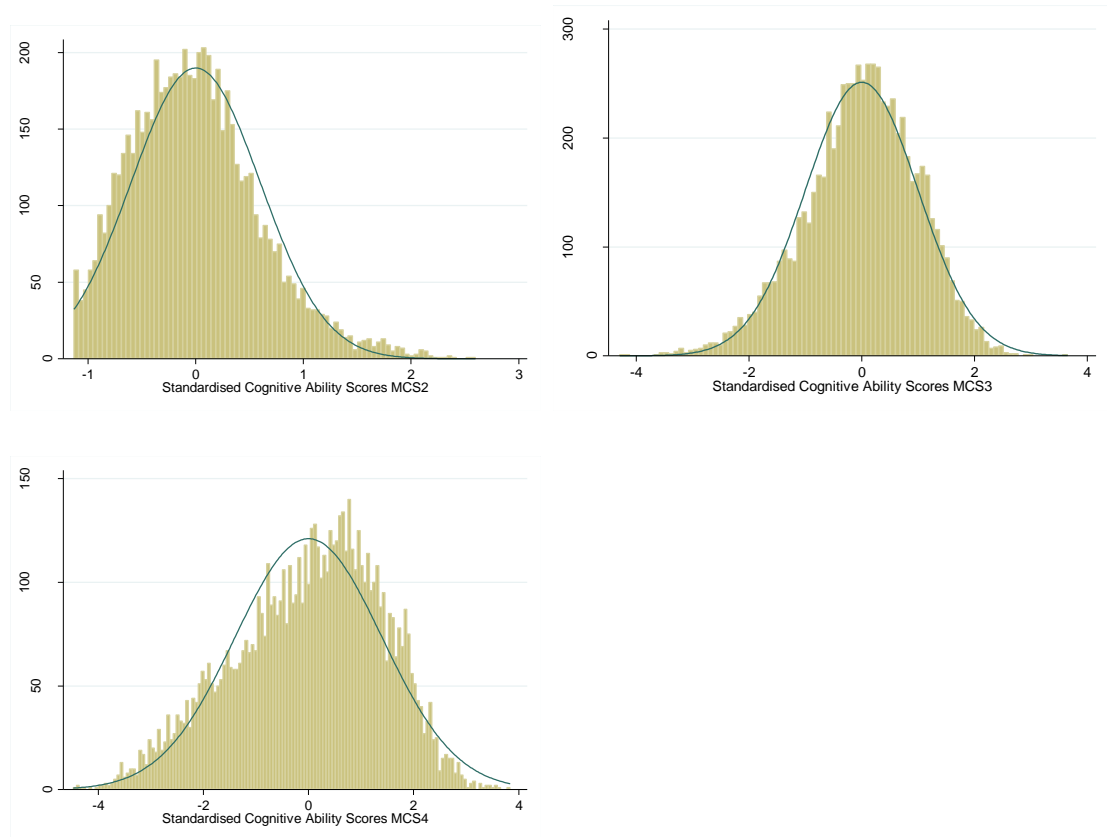


Figure A2: Standardised Residuals against Normal Scores Plot at Level 2

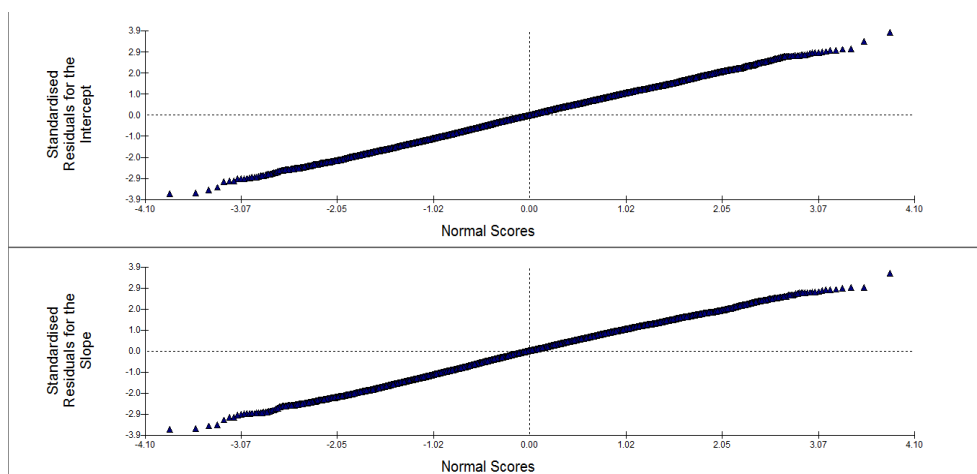


Figure A3: Standardised Residuals against Predicted Values (in Fixed Part of the Model) at Level 2

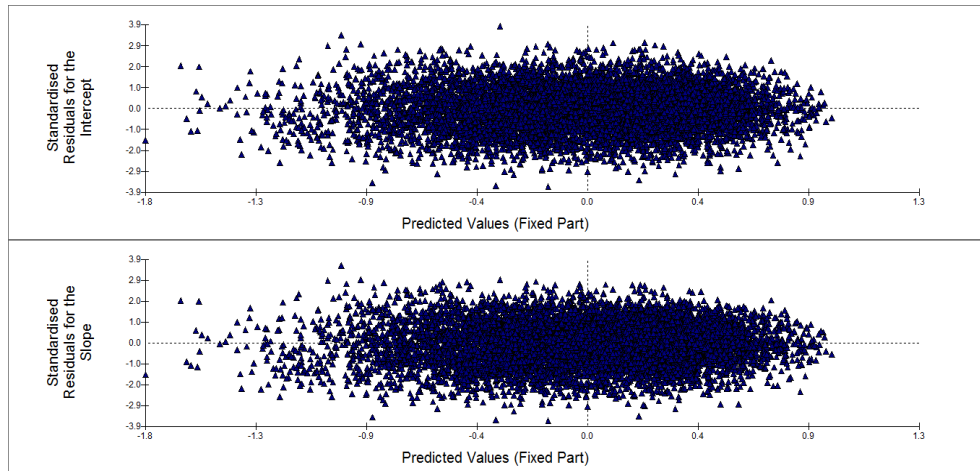


Figure A4: Standardised Intercept Residuals against Standardised Slope Residuals (Level 2)

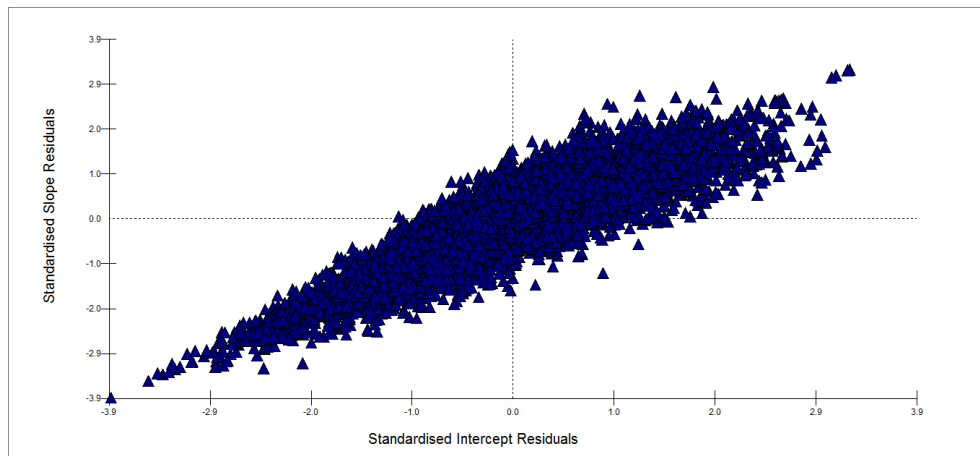


Figure A5: Standardised Residuals against Normal Scores at Level 2

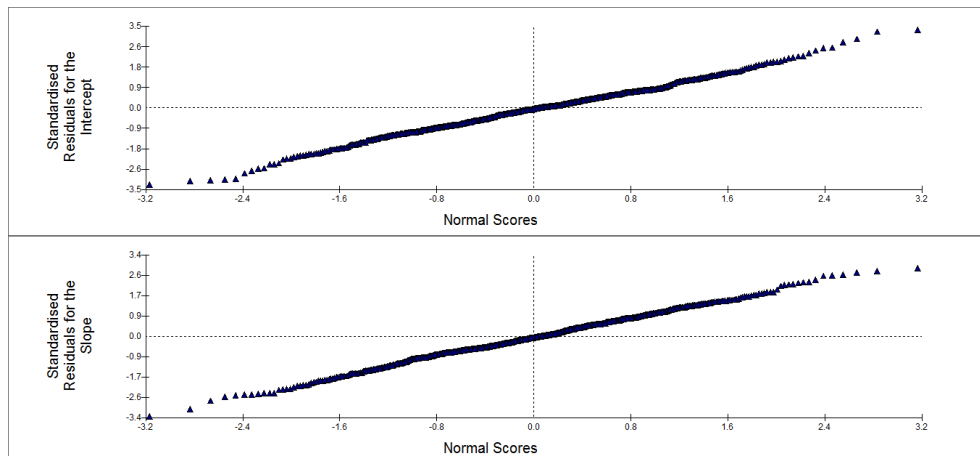


Figure A6: Standardised Residuals against Normal Scores at Level 1

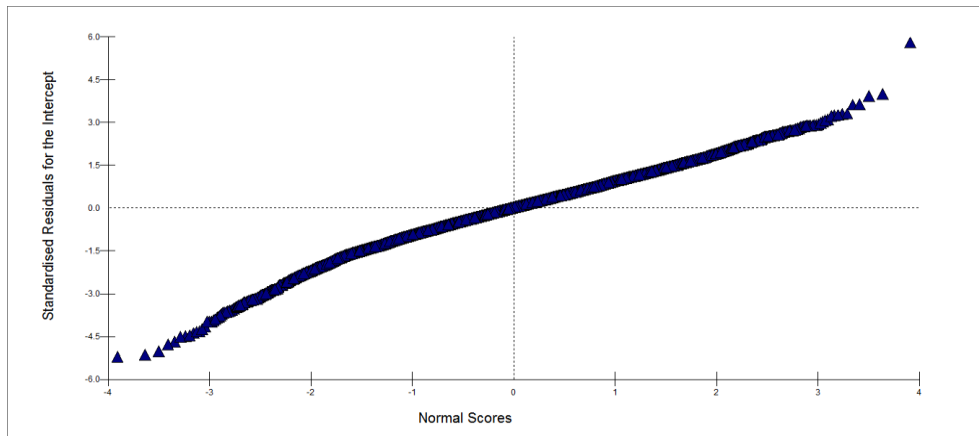


Figure A7: Standardised Residuals against Predicted Values (in Fixed Part of the Model) at Level 2

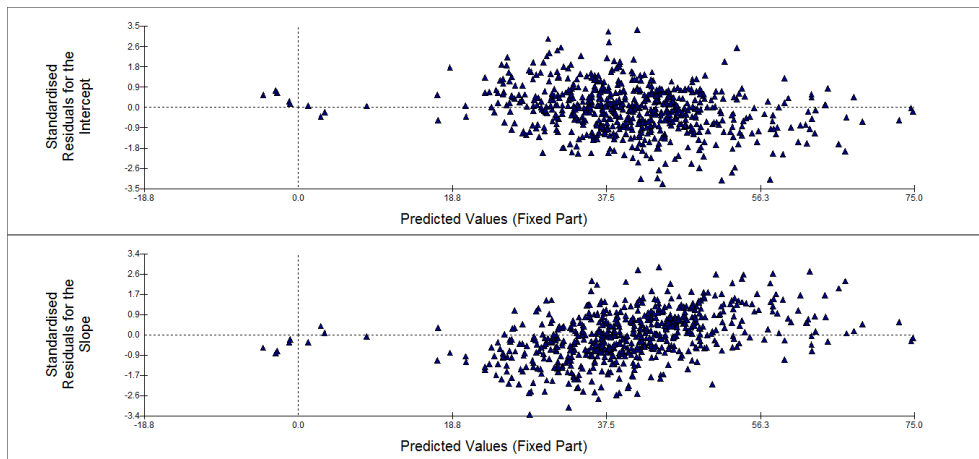


Figure A8: Standardised Residuals against Predicted Values at Level 1

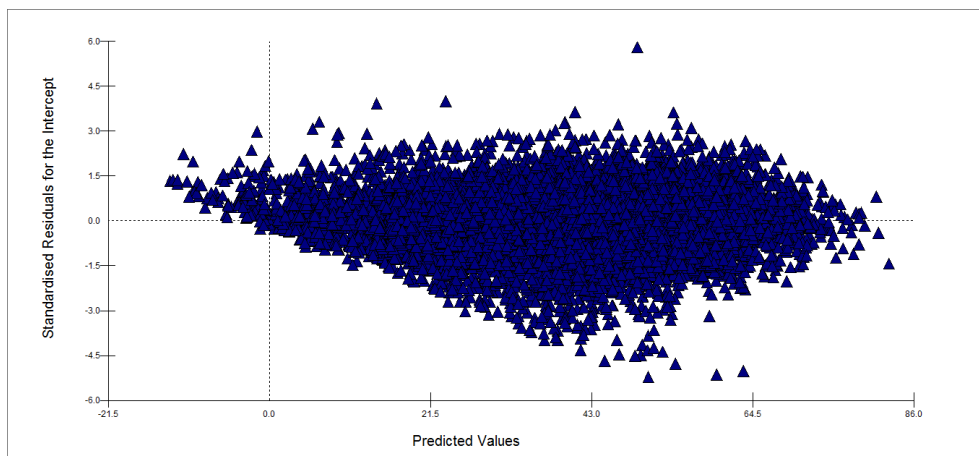


Figure A9: Histogram of Outcome Variable: GCSE Points Score

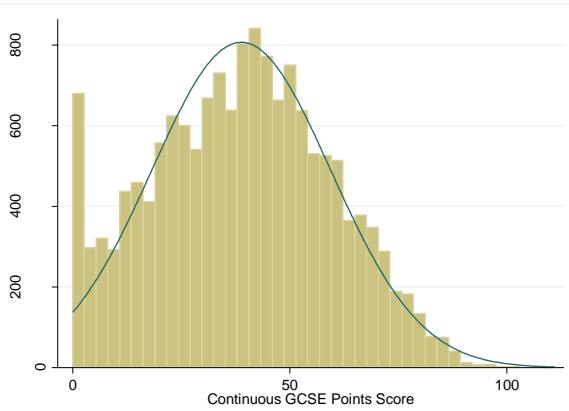


Figure A10: Slope Residuals against Intercept Residuals at Level 2

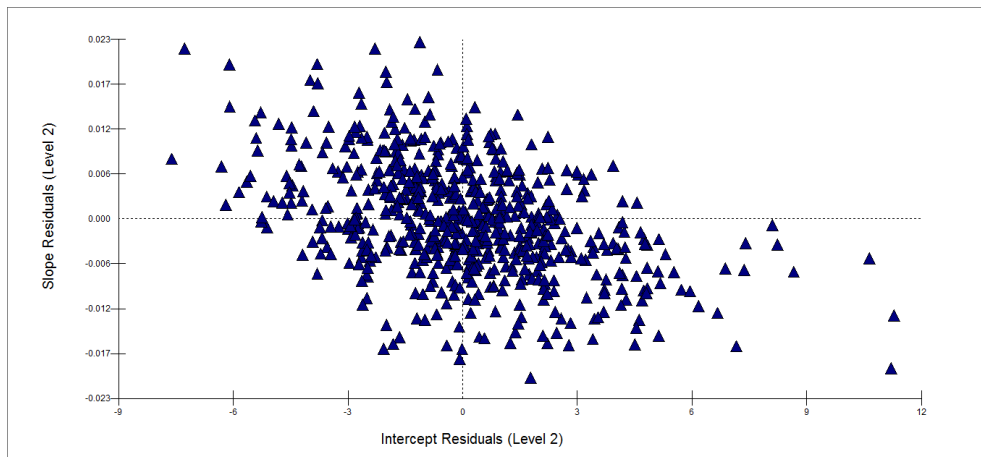


Figure A11: Trajectories for all Parameters: Final Model

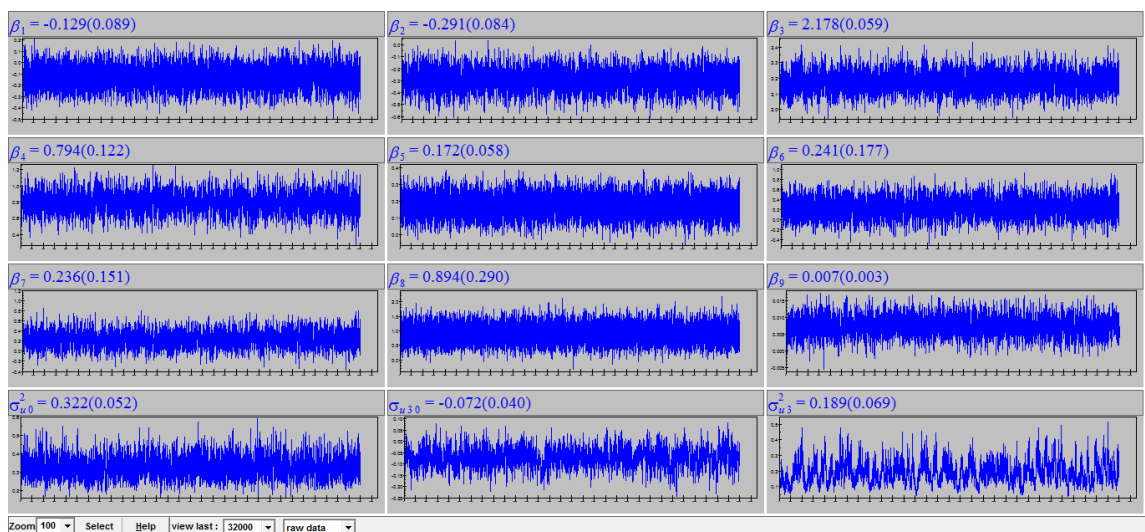


Figure A12: Diagnostics for Prior Attainment Parameter Estimate: Final Model

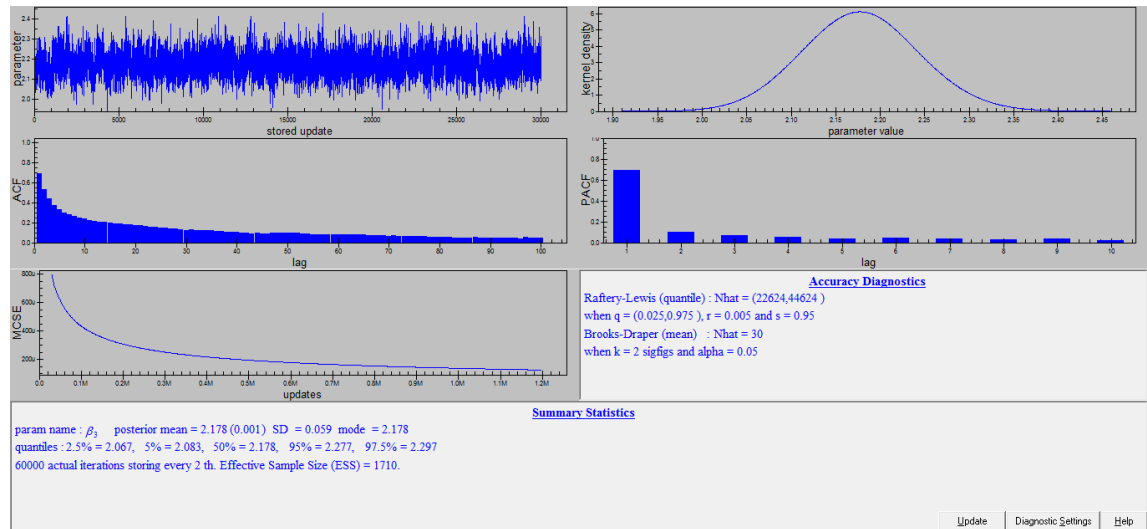


Table A1: Unit Non-Response by MCS Wave

MCS2		MCS3		MCS4	
N=1913	19%	N=2076	21%	N=2778	28%

Table A2: Item Non-Response by Variable

	N	%
Family NS-SEC	3	0.03
Gender	0	0
Ethnicity	29	0.29
Cultural participation	652	6.53
Frequency of reading	35	0.35
Parental education	3	0.03
Parents' evenings	692	6.93
Voluntary school involvement	1823	18.27
Development score at MCS1	61	0.61
Special educational needs	1819	18.23
Private school	670	6.71

Table A3: Sample Attrition and Mean Scores

	Mean Score (SE)
Overall mean score MCS2	0
Mean score at MCS2 for children with complete data	0.16 (0.02)
Mean score at MCS2 for children who dropped out at MCS3	-0.12 (0.04)
Mean score at MCS2 for children who dropped out at MCS4	-0.05 (0.03)
Overall mean score MCS3	0
Mean score at MCS3 for children with complete data	0.21 (0.03)
Mean score at MCS3 for children who dropped out at MCS4	-0.16 (0.05)

Figure A13: Unit Non-Response by Social Class

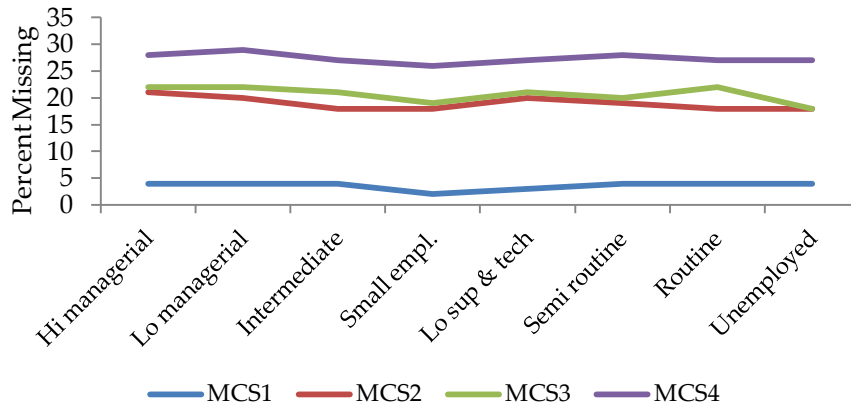


Figure A14: Unit Non-Response by Ethnicity

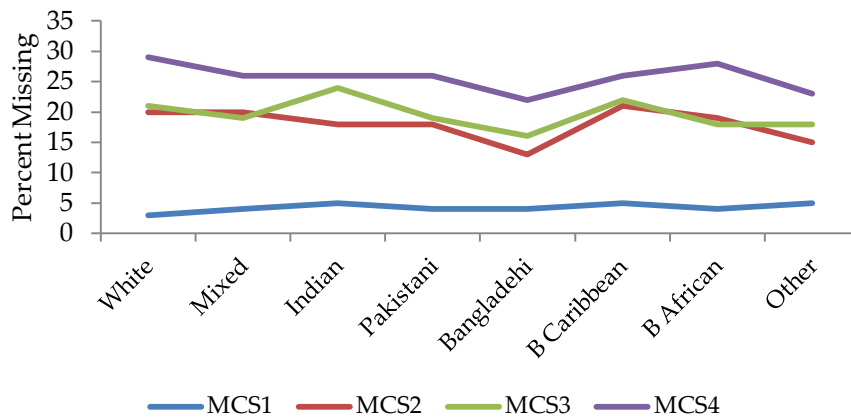


Table A4: Unit Non-Response by LSYPE Wave

Wave 2	Wave 3	Wave 4
N=2,061 13%	N=3,096 20%	N=4,058 26%

Table A5: Unit Non-Response at Each Wave by Ethnicity

	Total N Wave 1	Proportion of Productive Cases (N)		
		LSYPE Wave 2	LSYPE Wave 3	LSYPE Wave 4
White	10,328	88 (9,128)	82 (8,490)	77 (7,898)
Mixed	786	85 (669)	77 (607)	70 (552)
Indian	1,009	87 (873)	80 (810)	76 (763)
Pakistani	945	85 (802)	77 (732)	70 (664)
Bangladeshi	728	84 (612)	79 (576)	71 (516)
Black Caribbean	573	79 (454)	68 (388)	58 (335)
Black African	595	76 (451)	65 (384)	55 (328)
Other	415	80 (332)	73 (302)	66 (273)
Missing	24	88 (21)	75 (18)	67 (16)
Male	7,832	86 (6,768)	79 (6,220)	73 (5,734)
Female	7,571	87 (6,574)	80 (6,087)	74 (5,611)

Table A6: Unit Non-Response at Each Wave by Social Class

	Total N Wave 1	Proportion of Productive Cases (N)		
		LSYPE Wave 2	LSYPE Wave 3	LSYPE Wave 4
Hi Salarial	1,697	90 (1,533)	86 (1,455)	81 (1,379)
Lo Salarial	4,568	90 (4,127)	85 (3,867)	79 (3,610)
Intermediate	1,430	87 (1,241)	79 (1,136)	72 (1,034)
Small empl.	1,594	85 (1,362)	81 (1,291)	78 (1,235)
Lo supervisory	1,388	87 (1,214)	80 (1,105)	72 (1,001)
Semi routine	2,056	87 (1,789)	79 (1,622)	72 (1,490)
Routine	1,387	86 (1,197)	78 (1,080)	69 (951)
Unemployed	963	76 (736)	67 (643)	58 (554)
Missing	320	45 (143)	34 (108)	28 (91)

Table A7: Sample Attrition and Mean Scores

	Mean Score (SE)
Cases with complete data	41.22 (0.19)
Cases who dropped out after wave 1	32.94 (0.47)
Cases who dropped out after wave 2	30.49 (0.63)
Cases who dropped out after wave 3	32.17 (0.63)

Table A8: Item Non-Response by Variable

	N	Percent (%)
Family NS-SEC	320	2.08
Gender	0	0
Ethnicity	24	0.16
Cultural participation	160	1.04
Frequency of reading	162	1.05
Parental education	335	2.17
Parents' evenings	98	0.64
Easy to deal with people at [my child's] school	595	3.86
Pupils' habitus	3,431	22.27
Tuition	92	0.60
Special educational needs	121	0.79
Lone parenthood	188	1.22
Private school	0	0
School % FSM	204	1.32

Table A9: Transition Rate to A-level and Mean GCSE Score by Social Class, Ethnicity and Missing

	Transition Rate (%)	Mean Standardised GCSE Score
Salariat	73	0.59
Intermediate	61	0.19
Working	45	-0.30
Total valid case	62	0.22
Missing	41	-0.57
White	60	0.24
Mixed	61	0.21
Indian	79	0.34
Pakistani	69	-0.09
Bangladeshi	66	-0.13
B Caribbean	54	-0.30
B African	70	-0.06
Other	76	0.42
Total valid case	62	0.22
Missing	56	-0.15
Valid Cases GCSE score	62	--
Missing	28	--

Table A10: Logistic Regression Model: Probability of Missingness on Transition

	Odds Ratio
Social class (Ref: salariat)	
Intermediate	1.08
Working	1.22
Missing	5.59
Gender (Ref: male)	
Female	0.96
Missing	Excluded
Ethnicity (Ref: white)	
Non white	0.95
Missing	0.66
GCSE score (Ref: highest quartile)	
Lowest quartile	5.46
2nd quartile	2.77
3rd quartile	1.67
Missing	18.74
Private school (Ref: no)	
Yes	1.17
Missing	0.10
% FSM (Ref: highest quartile)	
Lowest quartile	0.87
2 nd quartile	0.91
3 rd quartile	0.97
Missing	0.91

Appendix B: Chapter 5

Syntax B1: Construction of Longitudinal Outcome Variable – Stata Syntax

Below gives the syntax used with the software programme Stata to construct the outcome variables for each wave 2-4 of the MCS. The variable names given are those provided in the source files, consistent with the data as downloaded from the UK Data Service (UKDS).

```
//MCS2:
mvdecode      bdbsrc00, mv(-7,-4)
generate      MCS2Outcome=bdbsrc00
egen          zMCS2Outcome=std(MCS2Outcome)
gen           zMCS2OutcomeFinal=zMCS2Outcome*0.6
//MCS3:
mvdecode      ccnsco00 cccsco00 ccpsco00, mv(-1)
generate      MCS3Outcome=ccnsco00+cccsco00+ccpsco00
egen          zMCS3OutcomeFinal=std(MCS3Outcome)
//MCS4:
mvdecode      dcwrsc00 dctots00 mtotscor, mv(-1)
generate      MCS4Outcome=dcwrsc00+dctots00+mtotscor
egen          zMCS4Outcome=std(MCS4Outcome)
gen           zMCS4OutcomeFinal=zMCS4Outcome*1.4
```

Table B1: Mean Standardised Cognitive Development by Gender

	MCS2	MCS3	MCS4
Male	0.004 (0.02)	0.040 (0.03)	0.001 (0.03)
Female	0.205 (0.03)	0.194 (0.03)	0.124 (0.03)

Table B2: Proportion of Cultural Participation by Parental Education

	Percentage Attended (%)
NVQ Level 5	89
NVQ Level 4	83
NVQ Level 3	71
NVQ Level 2	61
NVQ Level 1	48
Overseas qualifications only	46
No qualifications	42

Table B3: Proportion of Cultural Participation by Ethnicity

	Percentage Attended (%)
White	75
Mixed	73
Indian	67
Pakistani	57
Bangladeshi	52
Black Caribbean	74
Black African	58
Other	69

Table B4: Mean Frequency of Reading by Social Class

	Mean
Hi managerial	7.48
Lo managerial	7.15
Intermediate	6.74
Small empl.	6.68
Lo supervisory	6.39
Semi-routine	6.07
Routine	5.76
Unemployed	5.18

Table B6: Mean Frequency of Reading by Parental Education

	Mean
NVQ Level 5	7.42
NVQ Level 4	7.20
NVQ Level 3	6.69
NVQ Level 2	6.21
NVQ Level 1	5.75
Overseas Qualifications Only	5.61
No qualifications	5.02

Table B7: Frequency of Reading and Standardised Cognitive Development
Correlations

MCS2	0.22*
MCS3	0.22*
MCS4	0.18*

Table B8: Proportion of Parents' Evening Attendance by Social Class

	Percentage Attended (%)
Hi managerial	96
Lo managerial	96
Intermediate	94
Small empl.	91
Lo supervisory	90
Semi-routine	87
Routine	84
Unemployed	81

Table B9: Mean Standardised Cognitive Development by Voluntary Parental Participation with the School

	MCS3	MCS4	MCS2
None	-0.03 (0.03)	-0.14 (0.03)	-0.07 (0.02)
Involved in one or more ways	0.25 (0.03)	0.18 (0.03)	0.25 (0.03)

Table B10: Model Building

	VC	M1	M2	M3	M4
FIXED					
Cons	-0.03 (0.01)	-0.03 (0.01)	-0.03 (0.01)	0.42 (0.02)	0.38 (0.02)
Age		0.0004 (0.00)	0.0006 (0.00)	0.0009 (0.00)	0.0011 (0.00)
Social class					
Lo managerial				-0.23 (0.02)	-0.23 (0.02)
Intermediate				-0.38 (0.03)	-0.36 (0.03)
Small empl.				-0.54 (0.03)	-0.48 (0.03)
Lo supervisory				-0.65 (0.03)	-0.62 (0.03)
Semi-routine				-0.74 (0.03)	-0.69 (0.03)
Routine				-0.82 (0.03)	-0.77 (0.03)
Unemployed				-1.02 (0.03)	-0.85 (0.03)
Gender					
Female					0.16 (0.01)
Ethnicity					
Mixed					-0.03 (0.04)
Indian					-0.17 (0.04)
Pakistani					-0.47 (0.03)
Bangladeshi					-0.44 (0.05)
Black Caribbean					-0.32 (0.05)
Black African					-0.39 (0.04)
Other					-0.19 (0.05)

Table B11: Model Building Continued

	VC	M1	M2	M3	M4
RANDOM					
Age (level 2)					
Slope residual		0.0001 (0.00)	0.0002 (0.00)	0.0002 (0.00)	0.0001 (0.00)
Covariance		0.01 (0.00)	0.01 (0.00)	0.01 (0.00)	0.01 (0.00)
Intercept-slope corr		1.42	0.70	0.70	0.81
Age (level 1)					
Slope residual			-0.0003 (0.00)	-0.0003 (0.00)	-0.0002 (0.00)
Covariance			0.0019 (0.00)	0.0020 (0.00)	0.0002 (0.01)
Random Intercepts					
Person	0.49 (0.01)	0.49 (0.01)	0.51 (0.01)	0.40 (0.01)	0.38 (0.01)
Occasion	0.51 (0.01)	0.48 (0.01)	0.53 (0.01)	0.54 (0.01)	0.53 (0.01)
Total variance	1.00	0.97	1.04	0.94	0.91
Variance Partition					
Person	49%	51%	49%	43%	42%
Occasion	51%	49%	51%	57%	58%
MODEL					
STATISTICS					
Observation N	25054	25053	25053	25053	24981
-2* Log likelihood	66332	64594	64378	62643	61888
Df	3	3	2	7	8
BIC (N=22136)	66362	64624	64398	62713	61968

Table B12: Model-Building Continued

	M5	M6	M7	M8 FINAL
FIXED				
Cons	0.10 (0.05)	-0.39 (0.07)	-0.39 (0.07)	-0.47 (0.07)
Age	0.0011 (0.00)	0.0014 (0.00)	0.0051 (0.00)	-0.0013 (0.00)
Social class				
Lo managerial	-0.20 (0.02)	-0.14 (0.02)	-0.18 (0.02)	-0.18 (0.02)
Intermediate	-0.34 (0.03)	-0.20 (0.03)	-0.25 (0.03)	-0.25 (0.03)
Small empl.	-0.46 (0.03)	-0.29 (0.03)	-0.33 (0.03)	-0.34 (0.03)
Lo supervisory	-0.58 (0.03)	-0.38 (0.04)	-0.45 (0.04)	-0.45 (0.04)
Semi-routine	-0.66 (0.03)	-0.42 (0.03)	-0.50 (0.03)	-0.51 (0.03)
Routine	-0.73 (0.03)	-0.43 (0.04)	-0.50 (0.04)	-0.50 (0.04)
Unemployed	-0.83 (0.04)	-0.46 (0.04)	-0.52 (0.04)	-0.55 (0.04)
Gender				
Female	0.10 (0.02)	0.10 (0.01)	0.19 (0.03)	0.19 (0.03)
Ethnicity				
Mixed	-0.03 (0.04)	-0.03 (0.04)	-0.03 (0.04)	0.00 (0.04)
Indian	-0.17 (0.04)	-0.16 (0.04)	-0.16 (0.04)	-0.06 (0.04)
Pakistani	-0.51 (0.03)	-0.44 (0.03)	-0.44 (0.03)	-0.35 (0.03)
Bangladeshi	-0.46 (0.05)	-0.37 (0.05)	-0.37 (0.05)	-0.26 (0.05)
Black Caribbean	-0.32 (0.06)	-0.26 (0.06)	-0.26 (0.06)	-0.27 (0.06)

Black African	-0.46 (0.05)	-0.43 (0.05)	-0.44 (0.05)	-0.36 (0.05)
Other	-0.21 (0.05)	-0.16 (0.05)	-0.15 (0.05)	-0.06 (0.06)
Special educational needs				
Yes	-0.54 (0.03)	-0.52 (0.03)	-0.52 (0.03)	-0.52 (0.03)
MCS1 development score	0.02 (0.00)	0.02 (0.00)	0.02 (0.00)	0.02 (0.00)
Private school				
Yes	0.27 (0.03)	0.21 (0.03)	0.21 (0.03)	0.22 (0.03)
Parental education				
NVQ Level 4		-0.08 (0.02)	-0.08 (0.02)	-0.08 (0.02)
NVQ Level 3		-0.19 (0.03)	-0.19 (0.03)	-0.19 (0.03)
NVQ Level 2		-0.26 (0.03)	-0.26 (0.03)	-0.26 (0.03)
NVQ Level 1		-0.35 (0.04)	-0.35 (0.04)	-0.35 (0.04)
Overseas Qualifications		-0.28 (0.05)	-0.28 (0.05)	-0.28 (0.05)
No Qualifications		-0.46 (0.04)	-0.46 (0.04)	-0.46 (0.04)
Cultural participation				
Yes		0.10 (0.02)	0.16 (0.02)	0.19 (0.03)
Frequency of reading		0.04 (0.00)	0.04 (0.01)	0.04 (0.01)
Parents' evenings				
Attended MCS3 and MCS4		0.15 (0.03)	0.15 (0.03)	0.18 (0.03)
Voluntary schl involvement				
Yes		0.06 (0.02)	0.06 (0.02)	0.06 (0.02)
Gender* Cultural participation				
Female*Yes			-0.11 (0.03)	-0.11 (0.03)
NS-SEC*Age				
Lo salariat*Age			-0.003 (0.00)	-0.003 (0.00)
Intermediate*Age			-0.004 (0.00)	-0.004 (0.00)
Small empl*Age			-0.003 (0.00)	-0.004 (0.00)
Lo supervisory*Age			-0.005 (0.00)	-0.005 (0.00)
Semi routine*Age			-0.007 (0.00)	-0.007 (0.00)
Routine*Age			-0.006 (0.00)	-0.006 (0.00)
Unemployed*Age			-0.005 (0.00)	-0.008 (0.00)
Ethnicity*Age				
Mixed*Age			0.002 (0.00)	0.002 (0.00)
Indian*Age			0.009 (0.00)	0.009 (0.00)
Pakistani*Age			0.009 (0.00)	0.009 (0.00)
Bangladeshi*Age			0.016 (0.00)	0.016 (0.00)
Black Caribbean*Age			-0.002 (0.00)	-0.002 (0.00)
Black African*Age			0.009 (0.00)	0.010 (0.00)
Other*Age			0.008 (0.00)	0.009 (0.00)
Cultural participation*Age				
Age*Yes				0.003 (0.00)
Parents' evenings*Age				
Attended MCS3 and MCS4*Age				0.003 (0.00)

Table B13: Model-Building Continued

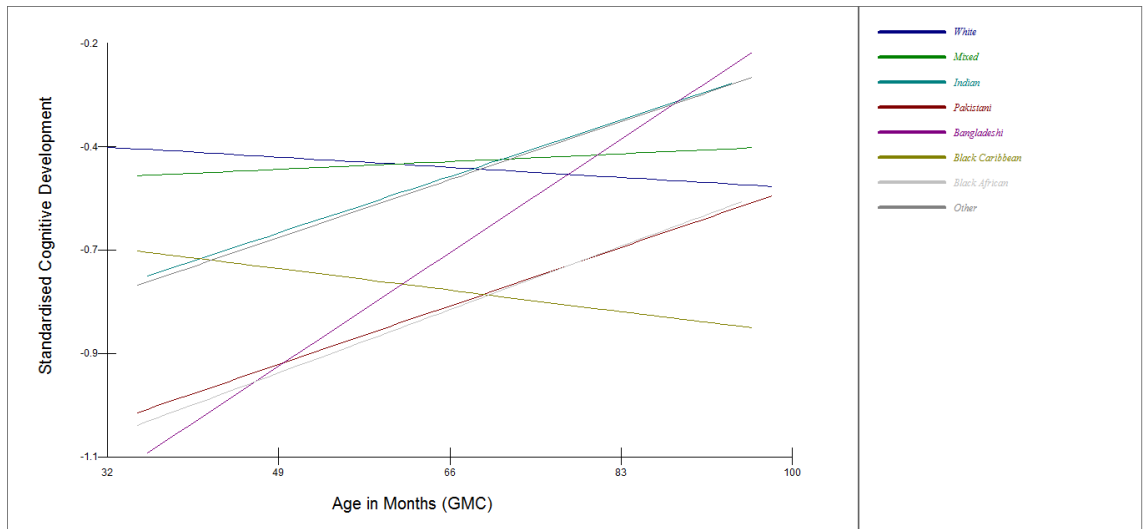
	M5	M6	M7	M8 FINAL
RANDOM				
Age (level 2)				
Slope residual	0.0001(0.00)	0.0001 (0.00)	0.0001(0.00)	0.0001 (0.00)
Covariance	0.0052 (0.00)	0.0051 (0.00)	0.0052 (0.00)	0.0052 (0.00)
Intercept-slope correlation	0.80	0.80	0.81	0.85
Age (level 1)				
Slope residual	-0.0002 (0.00)	-0.0002 (0.00)	-0.0002 (0.00)	-0.0002 (0.00)
Covariance	0.0020 (0.00)	0.0019 (0.00)	0.0015 (0.00)	0.0015 (0.00)
Random Intercepts				
Person	0.34 (0.01)	0.31 (0.01)	0.31 (0.01)	0.31 (0.01)
Occasion	0.50 (0.01)	0.50 (0.01)	0.51 (0.01)	0.51 (0.01)
Total variance	0.84	0.81	0.82	0.82
Variance Partition				
Person	40%	38%	38%	38%
Occasion	60%	62%	62%	62%
MODEL STATISTICS				
Observation N	22227	22136	22136	22136
-2* Log likelihood	54806	54113	53811	53777
Df	3	10	14	2
BIC (N=22136)	54836	54213	53951	53797

Table B14: Comparison of Estimates: Final Model (Outcome with Mean 0 and Increasing Variance) and Test Model (Outcome with Mean 0 and Variance 1)

	FINAL MODEL	TEST MODEL
FIXED		
Cons	-0.47 (0.07)	-0.40 (0.07)
Age	-0.001 (0.00)	-0.003 (0.00)
Social class		
Lo salariat	-0.18 (0.02)	-0.17 (0.02)
Intermediate	-0.25 (0.03)	-0.23 (0.03)
Small empl.	-0.34 (0.03)	-0.32 (0.03)
Lo supervisory	-0.45 (0.04)	-0.43 (0.04)
Semi-routine	-0.51 (0.03)	-0.48 (0.03)
Routine	-0.50 (0.04)	-0.48 (0.04)
Unemployed	-0.55 (0.04)	-0.52 (0.04)
Gender		
Female	0.19 (0.03)	0.20 (0.03)
Ethnicity		
Mixed	0.00 (0.04)	-0.01 (0.04)
Indian	-0.06 (0.04)	-0.11 (0.04)
Pakistani	-0.35 (0.03)	-0.42 (0.03)
Bangladeshi	-0.26 (0.05)	-0.34 (0.05)
Black Caribbean	-0.27 (0.06)	-0.27 (0.06)
Black African	-0.36 (0.05)	-0.43 (0.05)
Other	-0.06 (0.06)	-0.11 (0.06)

Special educational needs		
Yes	-0.52 (0.03)	-0.67 (0.03)
MCS1 development score	0.02 (0.00)	0.02 (0.00)
Private school		
Yes	0.22 (0.03)	0.24 (0.04)
Parental education		
NVQ Level 4	-0.08 (0.02)	-0.10 (0.03)
NVQ Level 3	-0.19 (0.03)	-0.22 (0.03)
NVQ Level 2	-0.26 (0.03)	-0.30 (0.03)
NVQ Level 1	-0.35 (0.04)	-0.41 (0.05)
Overseas qualifications only	-0.28 (0.05)	-0.31 (0.06)
No qualifications	-0.46 (0.04)	-0.53 (0.05)
Cultural participation		
Yes	0.19 (0.03)	0.19 (0.03)
Frequency of reading	0.04 (0.01)	0.03 (0.01)
Parents' evenings		
Attended at MCS3 and MCS4	0.18 (0.03)	0.18 (0.03)
Parental voluntary school involvement		
Involved in one or more ways	0.06 (0.02)	0.06 (0.02)
Gender*Cultural participation		
Female*Yes	-0.11 (0.03)	-0.13 (0.04)
NS-SEC*Age		
Lo salariat*Age	-0.003 (0.00)	-0.0003 (0.00)
Intermediate*Age	-0.004 (0.00)	-0.0002 (0.00)
Small empl*Age	-0.004 (0.00)	-0.0000 (0.00)
Lo supervisory*Age	-0.005 (0.00)	0.0001 (0.00)
Semi routine*Age	-0.007 (0.00)	-0.0012 (0.00)
Routine*Age	-0.006 (0.00)	0.0000 (0.00)
Unemployed*Age	-0.008 (0.00)	-0.0012 (0.00)
Ethnicity*Age		
Mixed*Age	0.002 (0.00)	0.002 (0.00)
Indian*Age	0.009 (0.00)	0.010 (0.00)
Pakistani*Age	0.009 (0.00)	0.013 (0.00)
Bangladeshi*Age	0.016 (0.00)	0.019 (0.00)
Black Caribbean*Age	-0.002 (0.00)	0.001 (0.00)
Black African*Age	0.010 (0.00)	0.013 (0.00)
Other*Age	0.009 (0.00)	0.011 (0.00)
Cultural participation*Age		
Age*Yes	0.003 (0.00)	0.001 (0.00)
Parents' evenings*Age		
Attended at MCS3 and MCS4*Age	0.003 (0.00)	0.001 (0.00)

Figure B1: Cross-level Interaction between Ethnicity and Age



Appendix C: Chapter 6

Table C1: Key Stage 2 Average Points Score by Class, Gender and Ethnicity

	Mean Key Stage 2 Average Points Score
Hi managerial	684.22
Lo managerial	623.93
Intermediate	578.24
Small empl.	538.76
Lo supervisory	515.78
Semi-routine	492.03
Routine	432.80
Unemployed	400.66
Male	558.26
Female	575.64
White	573.77
Mixed	567.72
Indian	556.28
Pakistani	449.53
Bangladeshi	469.18
Black Caribbean	494.82
Black African	484.97
Other	553.24

Table C2: Parental Education (Highest Qualification) by Social Class (%)

	NVQ 5	NVQ 4	NVQ 3	NVQ 2	NVQ 1	Overseas	None	
Hi Salariat	53	22	14	8	1	1	1	100
Lo Salariat	28	26	19	20	3	1	3	100
Intermediate	8	13	27	37	7	2	6	100
Small Empl.	8	12	23	35	6	3	13	100
Lo Supervisory	3	10	24	39	8	3	13	100
Semi-Routine	2	7	15	37	13	5	21	100
Routine	2	4	11	31	12	5	35	100
Unemployed	3	1	4	13	10	6	63	100

Table C3: Parental Education (Highest Qualification) by Ethnicity (%)

	NVQ 5	NVQ 4	NVQ 3	NVQ 2	NVQ 1	Overseas	None	
White	19	17	19	28	7	1	9	100
Mixed	25	18	16	20	4	4	13	100
Indian	18	11	15	22	6	3	25	100
Pakistani	11	7	9	14	4	2	53	100
Bangladeshi	3	2	4	8	3	3	77	100
B Caribbean	15	22	18	25	7	1	12	100
B African	29	15	7	14	3	7	25	100
Other	21	9	11	12	4	8	35	100

Table C4: Parental Habitus–Field by Ethnicity

	Parents Evening	'I find it easy to deal with people at [my child's] school'
	Always Attend (%)	Agree (%)
White	72	91
Mixed	74	87
Indian	80	93
Pakistani	70	90
Bangladeshi	60	89
Black Caribbean	72	92
Black African	77	93
Other	71	86

Table C5: Private Tuition and Pupil Habitus by Social Class

	Private Tuition	'People like me don't have much of a chance in life'
	Had Tuition (%)	Disagree (%)
Hi salariat	41	96
Lo salariat	32	93
Intermediate	24	92
Small empl.	25	89
Lo supervisory	16	86
Semi-routine	14	85
Routine	9	84
Unemployed	11	77

Table C6: Private Tuition and Pupil Habitus by Ethnicity

	Private Tuition	'People like me don't have much of a chance in life'
	Had Tuition (%)	Disagree (%)
White	24	90
Mixed	32	92
Indian	45	92
Pakistani	30	87
Bangladeshi	22	83
Black Caribbean	25	86
Black African	41	85
Other	37	91

Table C7: Model Building

	VC	M1	M2	M3	M4	M5
FIXED						
Cons	38.51 (0.49)	4.20 (0.41)	10.32 (0.53)	13.67 (0.57)	11.52 (0.59)	7.10 (0.62)
KS2 score		0.06 (0.00)	0.06 (0.00)	0.06 (0.00)	0.06 (0.00)	0.06 (0.00)
Social class						
Lo salariat			-3.05 (0.37)	-1.87 (0.37)	-1.83 (0.37)	-1.76 (0.36)
Intermediate			-5.16 (0.46)	-2.88 (0.48)	-2.80 (0.47)	-2.71 (0.47)
Small empl.			-3.98 (0.45)	-1.59 (0.47)	-1.68 (0.47)	-1.57 (0.46)
Lo supervisory			-7.21 (0.47)	-4.65 (0.49)	-4.56 (0.49)	-4.41 (0.49)
Semi-routine			-7.17 (0.44)	-4.47 (0.47)	-4.30 (0.46)	-4.18 (0.46)
Routine			-7.78 (0.49)	-5.04 (0.52)	-4.89 (0.52)	-4.82 (0.51)
Unemployed			-7.69 (0.56)	-4.81 (0.61)	-4.72 (0.61)	-4.76 (0.60)
Parental education						
NVQ 4				-3.89 (0.38)	-3.84 (0.38)	-3.72 (0.37)
NVQ 3				-4.67 (0.38)	-4.59 (0.38)	-4.41 (0.37)
NVQ 2				-5.91 (0.37)	-5.77 (0.37)	-5.54 (0.36)
NVQ 1				-7.49 (0.52)	-7.23 (0.52)	-6.94 (0.52)
Overseas				-4.86 (0.76)	-4.62 (0.76)	-4.45 (0.75)
None				-5.84 (0.44)	-5.52 (0.44)	-5.27 (0.44)
Cultural Participation						
Attended					3.41 (0.26)	2.96 (0.25)
Reading freq						0.51 (0.03)

Table C8: Model Building Continued

	VC	M1	M2	M3	M4	M5
RANDOM						
Random Intercepts						
School	147.07 (8.81)	48.21 (3.04)	41.04 (2.64)	37.21 (2.44)	36.79 (2.40)	35.69 (2.34)
Pupil	287.99 (3.35)	148.79 (1.78)	144.42 (1.75)	141.71 (1.72)	139.28 (1.70)	135.83 (1.66)
Total Variance	435.06	196.99	185.45	178.92	176.07	171.52
Variance Partition						
School	34%	25%	22%	21%	21%	21%
Pupil	66%	75%	78%	79%	79%	79%
MODEL STATISTICS						
N	15403	14600	14327	14263	14133	14131
-2 Log Likelihood	132603	115832	113179	112362	111103	110729
Df	3	1	7	6	1	1
Deviance (N=10804)		7517	380	241	125	253

Table C9: Model Building Continued

	M6	M7	M8	M9
FIXED				
Cons	3.64 (0.63)	0.81 (0.70)	-2.04 (0.78)	-2.87 (0.80)
KS2 score	0.06 (0.00)	0.06 (0.00)	0.05 (0.00)	0.05 (0.00)
Social class				
Lo salariat	-1.64 (0.36)	-1.52 (0.36)	-1.67 (0.38)	-1.58 (0.38)
Intermediate	-2.57 (0.46)	-2.48 (0.47)	-2.64 (0.50)	-2.43 (0.50)
Small empl.	-1.43 (0.46)	-1.37 (0.46)	-1.58 (0.49)	-1.48 (0.49)
Lo supervisory	-3.97 (0.48)	-3.86 (0.48)	-4.24 (0.52)	-3.94 (0.52)
Semi-routine	-3.62 (0.45)	-3.55 (0.46)	-3.88 (0.49)	-3.58 (0.49)
Routine	-4.24 (0.50)	-4.03 (0.51)	-4.34 (0.55)	-3.97 (0.55)
Unemployed	-4.24 (0.59)	-4.19 (0.61)	-3.18 (0.69)	-2.80 (0.69)
Parental education				
NVQ 4	-3.74 (0.37)	-3.69 (0.37)	-3.65 (0.39)	-3.43 (0.38)
NVQ 3	-4.32 (0.37)	-4.30 (0.37)	-4.23 (0.39)	-3.94 (0.39)
NVQ 2	-5.31 (0.36)	-5.31 (0.36)	-5.17 (0.38)	-4.82 (0.38)
NVQ 1	-6.33 (0.51)	-6.31 (0.52)	-6.01 (0.57)	-5.61 (0.56)
Overseas	-3.79 (0.74)	-3.33 (0.75)	-3.60 (0.79)	-3.34 (0.79)
None	-4.50 (0.43)	-4.50 (0.44)	-4.10 (0.48)	-3.77 (0.48)
Cultural participation				
Attended at least once	2.86 (0.25)	2.81 (0.25)	2.41 (0.30)	2.27 (0.30)
Reading freq	0.48 (0.03)	0.48 (0.03)	0.45 (0.03)	0.43 (0.03)
Parents evening				
Always attend	5.21 (0.24)	5.15 (0.25)	5.27 (0.27)	5.04 (0.38)
Easy dealing with school				
Agree		2.97 (0.34)	2.61 (0.38)	2.61 (0.38)
Chance in life				
Disagree			5.01 (0.38)	5.04 (0.38)
Private tuition				
Yes				3.08 (0.26)

Table C10: Model Building Continued

	M6	M7	M8	M9
RANDOM				
Random Intercepts				
School	32.98 (2.18)	32.34 (2.16)	31.48 (2.17)	29.52 (2.06)
Pupil	131.82 (1.61)	131.14 (1.63)	122.72 (1.70)	121.05 (1.69)
Total Variance	164.80	163.48	153.75	150.57
Variance Partition				
School	20%	20%	20%	20%
Pupil	80%	80%	80%	80%
MODEL STATISTICS				
N	14111	13677	10952	10952
-2 Log Likelihood	110124	106677	84785	84647
Df	1	1	1	1
Deviance (N=10804)	417	50	175	141

Table C11: Model Building Continued

	M10	M11	FINAL MODEL
FIXED			
Cons	-3.85 (0.78)	0.50 (0.87)	-1.43 (0.87)
KS2 score	0.06 (0.00)	0.05 (0.00)	0.05 (0.001)
Social class			
Lo salariat	-1.68 (0.37)	-1.41 (0.37)	-1.36 (0.37)
Intermediate	-2.64 (0.49)	-2.14 (0.49)	-2.02 (0.49)
Small empl.	-2.21 (0.48)	-1.97 (0.48)	-1.88 (0.48)
Lo supervisory	-4.24 (0.51)	-3.74 (0.51)	-3.66 (0.50)
Semi-routine	-3.84 (0.48)	-3.03 (0.48)	-2.97 (0.48)
Routine	-4.51 (0.54)	-3.70 (0.54)	-3.58 (0.54)
Unemployed	-4.08 (0.68)	-2.54 (0.69)	-2.74 (0.69)
Parental education			
NVQ 4	-3.32 (0.38)	-3.22 (0.38)	-2.95 (0.37)
NVQ 3	-3.82 (0.38)	-3.80 (0.38)	-3.45 (0.38)
NVQ 2	-4.76 (0.38)	-4.55 (0.38)	-4.19 (0.37)
NVQ 1	-5.79 (0.55)	-5.46 (0.55)	-5.18 (0.55)
Overseas	-3.65 (0.77)	-3.30 (0.77)	-3.14 (0.77)
None	-5.20 (0.48)	-4.81 (0.48)	-4.54 (0.48)
Cultural participation			
Attended at least once	2.03 (0.29)	1.99 (0.29)	2.02 (0.29)
Reading freq	0.35 (0.03)	0.34 (0.03)	0.34 (0.03)
Parents evening			
Always attend	4.91 (0.26)	4.77 (0.26)	4.82 (0.26)
Easy dealing with school			
Agree	2.53 (0.37)	2.31 (0.37)	2.29 (0.37)
Chance in life			
Disagree	4.99 (0.37)	4.92 (0.37)	5.05 (0.37)
Private tuition			
Yes	2.50 (0.26)	2.37 (0.26)	2.40 (0.26)
Gender			
Female	3.31 (0.23)	3.16 (0.23)	3.19 (0.23)
Ethnicity			
Mixed	-0.19 (0.49)	0.63 (0.50)	0.71 (0.49)
Indian	5.94 (0.51)	6.07 (0.51)	6.20 (0.50)
Pakistani	5.24 (0.57)	5.77 (0.57)	5.90 (0.56)
Bangladeshi	7.33 (0.71)	8.42 (0.73)	8.67 (0.71)
B Caribbean	-1.19 (0.65)	0.26 (0.66)	0.18 (0.65)
B African	3.39 (0.73)	4.68 (0.73)	4.65 (0.72)
Other	6.29 (0.75)	6.86 (0.75)	7.06 (0.74)
Special educational needs			
Yes		-1.50 (0.31)	-1.46 (0.30)
Lone parent household			
At some point in life		-1.90 (0.25)	-1.82 (0.25)
Private school			
Yes		4.61 (1.19)	5.30 (1.28)
School % FSM		-0.17 (0.01)	-0.13 (0.01)

Table C12: Model Building Continued

	M10	M11	FINAL MODEL
RANDOM			
Random Intercepts			
School	28.66 (2.00)	21.04 (1.58)	25.5 (4.94)
Pupil	115.56 (1.61)	114.45 (1.61)	110.85 (1.59)
Total Variance	144.22	135.49	136.35
Random Slopes			
School			0.0001 (0.00)
Covariance			-0.0371 (0.00)
Variance Partition			
School	20%	16%	19%
Pupil	80%	84%	81%
MODEL STATISTICS			
N	10941	10804	10804
-2 Log Likelihood	84063	82758	82635
Df	8	4	2
Deviance (N=10804)	488	236	123

Figure C1: Predicted School Lines from Final Random Slope Model

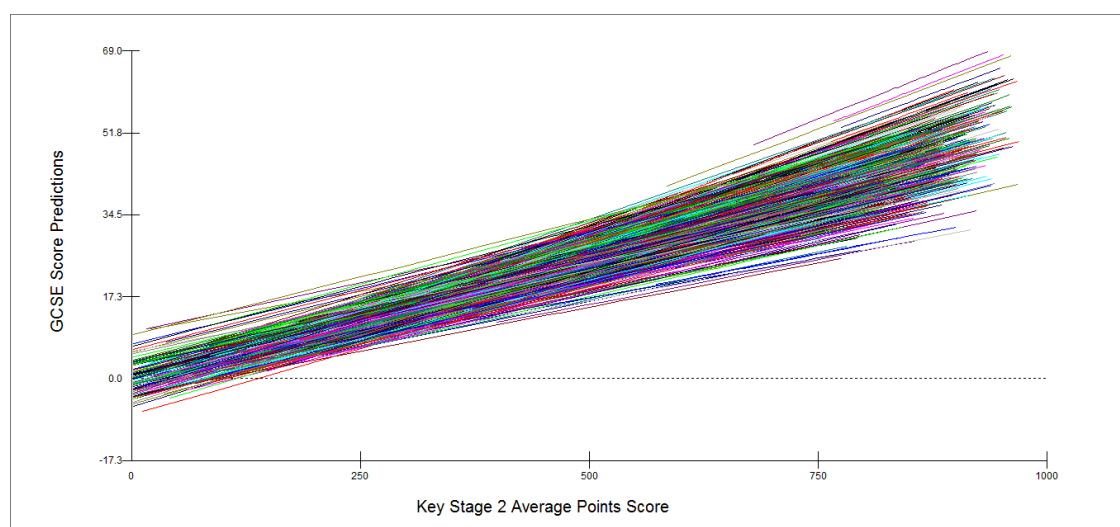


Table C13: Comparison of Estimates: Original Model (Continuous Points-Based Outcome) and Test Model (Binary Outcome)

	ORIGINAL MODEL	MCMC MODEL
FIXED		
Cons	-1.40 (1.62)	-8.69 (0.38)
KS2 score	0.05 (0.00)	0.01 (0.000)
Social class		
Lo salariat	-2.94 (1.60)	-0.15 (0.11)
Intermediate	-2.55 (1.89)	-0.19 (0.14)
Small empl.	-1.52 (1.74)	-0.09 (0.14)
Lo supervisory	-5.29 (1.73)	-0.39 (0.14)

Semi-routine	-2.17 (1.68)	-0.34 (0.13)
Routine	-0.44 (1.75)	-0.51 (0.15)
Unemployed	-2.01 (1.87)	-0.45 (0.20)
Parental education		
NVQ Level 4	-2.94 (0.37)	-0.59 (0.11)
NVQ Level 3	-3.45 (0.38)	-0.64 (0.12)
NVQ Level 2	-4.18 (0.37)	-0.77 (0.10)
NVQ Level 1	-5.17 (0.55)	-0.93 (0.16)
Overseas Qualifications Only	-3.12 (0.76)	-0.97 (0.23)
No Qualifications	-4.54 (0.48)	-0.89 (0.14)
Cultural participation		
Attended at least once	2.02 (0.29)	0.37 (0.09)
Reading freq (estimate*16)	5.44 (0.48)	0.80 (0.16)
Parents' evening attendance		
Attended every year	4.84 (0.26)	0.63 (0.07)
Easy to deal with school		
Agree	2.27 (0.37)	0.18 (0.07)
Chance in life		
Disagree	5.09 (1.47)	0.95 (0.12)
Private tuition		
Yes	2.39 (0.26)	0.36 (0.07)
Gender		
Female	3.18 (0.23)	0.40 (0.06)
Ethnicity		
Mixed	0.72 (0.49)	0.001 (0.14)
Indian	6.19 (0.50)	1.42 (0.14)
Pakistani	5.89 (0.56)	1.25 (0.16)
Bangladeshi	8.63 (0.71)	1.64 (0.20)
Black Caribbean	0.18 (0.65)	0.13 (0.18)
Black African	4.73 (0.72)	1.07 (0.21)
Other	7.13 (0.74)	1.13 (0.22)
Special educational needs		
Yes	-1.44 (0.30)	-0.52 (0.09)
Lone parent household		
At some point in life	-1.81 (0.25)	-0.22 (0.07)
Private school		
Yes	5.26 (1.28)	1.52 (0.33)
School % FSM	-0.13 (0.01)	-0.02 (0.00)
NSSEC*Pupil habitus		
Lo salariat*Disagree	1.70 (1.64)	
Intermediate*Disagree	0.56 (1.94)	
Small empl. *Disagree	-0.42 (1.79)	
Lo supervisory*Disagree	1.86 (1.79)	
Semi-routine*Disagree	-0.93 (1.71)	
Routine*Disagree	-3.69 (1.80)	
Unemployed*Disagree	-0.92 (1.94)	

Table C14: Comparison of Estimates: Original Model (Continuous Points-Based Outcome with Interaction Term) and Test Model (Binary Outcome)

	ORIGINAL MODEL	MCMC MODEL
RANDOM		
Random Intercepts		
School	24.722 (4.88)	2.08 (0.43)
Pupil	110.65 (1.59)	3.29
Total Variance	135.37	5.37
Random Slopes		
School	0.00011 (0.00)	0.000003 (0.00)
Covariance	-0.03536 (0.01)	-0.00227 (0.00)
Variance Partition		
School	18%	39%
Pupil	82%	61%
MODEL STATISTICS		
N	10804	10804
-2 Log Likelihood	82611	
Df	2	2
Deviance (N=10804)	119	
DIC		7892

Table C15: Impact of Cultural Capital, Parental Habitus-Field and Pupil Habitus on Social-Class Gradient in GCSE Scores – MCMC Binary Model

	MI	MII	Overall reduction (%)
Lo salariat	-0.40 (0.09)	-0.20 (0.10)	51
Intermediate	-0.66 (0.10)	-0.24 (0.12)	64
Small empl.	-0.38 (0.11)	-0.001 (0.13)	100
Lo sup & tech	-0.92 (0.11)	-0.41 (0.13)	55
Semi routine	-1.03 (0.10)	-0.42 (0.12)	60
Routine	-1.08 (0.12)	-0.54 (0.14)	50
Unemployed	-0.99 (0.14)	-0.39 (0.18)	60

Table C16: Comparison of Estimates: Final Model with Alternative Models

	No prior ability measure*	Key Stage 2 (Final Model)	Key Stage 3
Parental education			
NVQ Level 4	-5.32 (0.46)	-2.95 (0.37)	-1.66 (0.31)
NVQ Level 3	-6.15 (0.47)	-3.45 (0.38)	-1.88 (0.31)
NVQ Level 2	-7.92 (0.46)	-4.18 (0.37)	-2.41 (0.31)
NVQ Level 1	-10.13 (0.69)	-5.18 (0.55)	-3.03 (0.45)
Overseas Qualifications Only	-8.75 (0.92)	-3.14 (0.77)	-1.61 (0.61)
No Qualifications	-9.94 (0.58)	-4.54 (0.48)	-2.29 (0.39)
Cultural participation			
Been at least once	4.24 (0.36)	2.02 (0.29)	0.82 (0.24)
Reading freq (estimate * 16)	11.84 (0.64)	5.44 (0.48)	2.24 (0.32)
Parents' evening attendance			
Attended every year	6.09 (0.33)	4.82 (0.26)	3.51 (0.21)
Easy to deal with school			
Agree	2.57 (0.46)	2.29 (0.37)	1.63 (0.30)
Chance in life			
Agree	9.32 (0.45)	5.05 (0.37)	2.72 (0.30)
Private Tuition			
Yes	2.61 (0.32)	2.40 (0.26)	1.79 (0.21)

* Note that the model with no prior ability measure also does not (cannot) include a random slope for prior ability

Table C17: Comparison of Social-Class Parameter Estimates and Total Reduction in Social Class Gradient from Continuous Model with Alternative Models

	No prior ability measure			Key Stage 2 (continuous model)			Key Stage 3		
	MI	MII	%	MI	MII	%	MI	MII	%
Lo salariat	-5.48	-2.77	49%	-3.05	-1.58	48%	-1.63	-0.70	57%
Intermediate	-8.76	-3.78	57%	-5.16	-2.43	53%	-2.80	-0.96	66%
Small empl.	-10.17	-4.42	57%	-3.98	-1.48	63%	-2.05	-0.62 [†]	70%
Lo supervisory	-14.16	-6.77	52%	-7.21	-3.94	45%	-3.83	-1.86	51%
Semi routine	-14.47	-6.83	53%	-7.17	-3.58	50%	-3.38	-1.46	57%
Routine	-17.14	-8.02	53%	-7.78	-3.97	49%	-3.83	-1.70	56%
Unemployed	-18.25	-7.60	58%	-7.69	-2.80	64%	-3.21	-0.50 [†]	84%

Note: All parameter estimates are statistically significant at the 0.05 level, with the exception of [†]

Appendix D: Chapter 7

Table D1: Odds and Odds Ratios of Making Transition to A-level by Eight-Category Ethnicity Variable

	Transition rate (%)	N (weighted)		Odds of making transition
		No	Yes	
White	60	2,868	4,345	1.52
Mixed	61	97	151	1.56
Indian	79	50	186	3.72
Pakistani	69	64	142	2.22
Bangladeshi	66	31	60	1.94
Black Caribbean	54	67	78	1.16
Black African	70	61	143	2.34
Other	76	49	154	3.14
Total		8,546		
All	62			1.60
Odds ratios				
Mixed/White	1.03	Black Caribbean/White		0.76
Indian/White	2.45	Black African/White		1.54
Pakistani/White	1.46	Other/White		2.07
Bangladeshi/White	1.28			

Note: The odds are calculated using the weighted N, so these are reported here in place of the unweighted N.

Table D2: Prior Attainment at GCSE by Ethnicity and Gender

	Standardised mean GCSE score	N
White	0.24	6,741
Mixed	0.21	523
Indian	0.34	739
Pakistani	-0.10	607
Bangladeshi	-0.13	484
B Caribbean	-0.30	434
B African	-0.06	465
Other	0.42	282
Male	0.13	5,068
Female	0.30	5,224

Note that the mean scores by ethnicity vary very slightly between this chapter and Chapter 6. Aside from the fact the variable is standardised here, where in Chapter 6 it is not, this is due to the slightly different sample employed here, with those who are missing on the outcome having been excluded. Overall, the same pattern is found, though the position of white and mixed children relative to all other groups are alternated.

Figure D1: Proportion of Students Making Transition to A-level by Ethnicity and Standardised GCSE Points Score (Grouped)

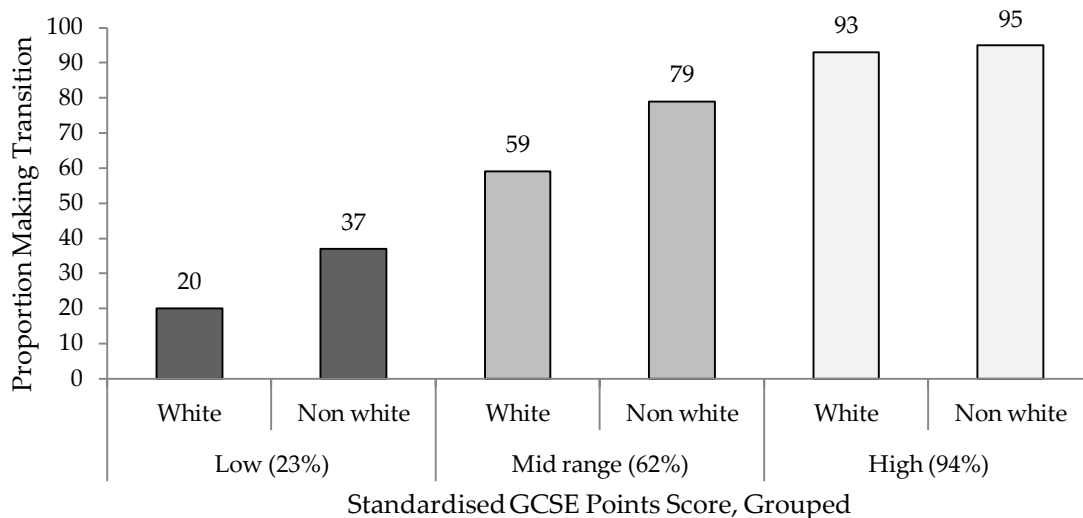


Figure D2: Proportion of Students Making Transition to A-level by Gender and Standardised GCSE Points Score (Grouped)

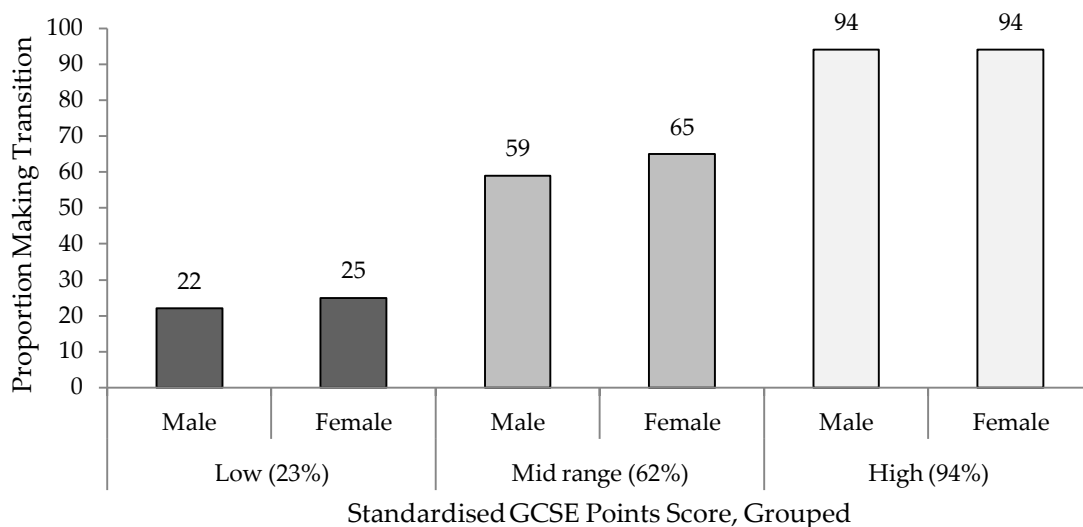


Figure D3: Social Class Proportions within each Ethnic Group¹⁰⁸

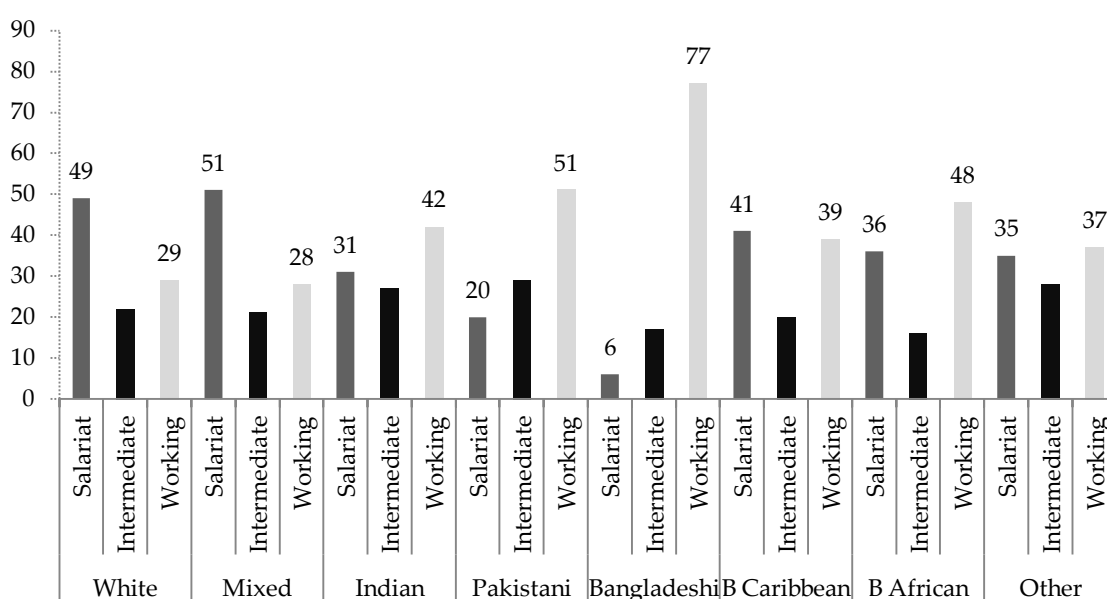


Table D3: Robustness Check: Anticipatory Decisions

	M8: FINAL MODEL	FINAL MODEL+ PLANS AT 16
FIXED EFFECTS		
Cons	0.17 (0.08)	-0.48 (0.13)
Intermediate	-0.12 (0.09)	-0.15 (0.09)
Working	-0.29 (0.09)	-0.32 (0.09)
GCSE score	2.18 (0.06)	2.12 (0.06)
Non white	0.79 (0.12)	0.72 (0.13)
Female	0.17 (0.06)	0.12 (0.06)
Non white*Intermediate	0.24 (0.17)	0.28 (0.18)
Non white*Working	0.23 (0.15)	0.29 (0.16)
Private school	0.90 (0.29)	0.90 (0.30)
% FSM	0.01 (0.00)	0.01 (0.00)
Plan to stay in FT education at 16		0.84 (0.11)
RANDOM INTERCEPTS		
School-level variance	0.32 (0.05)	0.31 (0.05)
Pupil-level variance	3.29	3.29
Total variance	3.61	3.60
RANDOM SLOPES		
School level	0.19 (0.07)	0.21 (0.08)
Covariance	-0.07 (0.04)	-0.08 (0.04)
MODEL STATISTICS		
Variance partition		
School level	9%	9%
Pupil level	91%	91%
N	9775	9201
DIC	8164	7504

¹⁰⁸ Note that research using other data has found differences in the distribution of ethnic groups across social class categories (e.g. Li et al 2008). However, comparing these results with those given by Strand (2007:28) who also used LSYPE data, the class-by-ethnicity proportions are very similar.

Table D4: Robustness Check: Model Building using Parental Education in place of Social Class

	M0: VC	M1	M2	M3	M4	M5	M6	M7	M8
FIXED EFFECTS									
Cons	0.69 (0.04)	1.82 (0.07)	0.99 (0.09)	0.68 (0.09)	0.60 (0.09)	0.72 (0.11)	0.66 (0.11)	0.62 (0.10)	0.56 (0.11)
A level		-1.06 (0.08)	-0.49 (0.09)	-0.45 (0.10)	-0.45 (0.09)	-0.54 (0.11)	-0.51 (0.11)	-0.51 (0.11)	-0.53 (0.11)
Lower/no qualifications		-1.53 (0.08)	-0.58 (0.10)	-0.43 (0.10)	-0.45 (0.09)	-0.61 (0.11)	-0.59 (0.12)	-0.57 (0.11)	-0.61 (0.11)
GCSE Score			2.06 (0.05)	2.08 (0.05)	2.06 (0.05)	2.06 (0.05)	2.14 (0.06)	2.12 (0.06)	2.17 (0.06)
Non white				0.97 (0.07)	0.98 (0.07)	0.61 (0.17)	0.67 (0.19)	0.68 (0.19)	0.60 (0.20)
Female					0.17 (0.06)	0.17 (0.06)	0.17 (0.06)	0.17 (0.06)	0.17 (0.06)
Non white*A level						0.26 (0.20)	0.22 (0.22)	0.23 (0.21)	0.21 (0.23)
Non white*lower qual						0.49 (0.18)	0.45 (0.21)	0.46 (0.20)	0.45 (0.22)
Private school								0.62 (0.27)	0.80 (0.29)
% FSM									0.01 (0.00)
RANDOM INTERCEPTS									
School-level variance	0.64 (0.06)	0.47 (0.05)	0.49 (0.06)	0.35 (0.05)	0.34 (0.05)	0.34 (0.05)	0.31 (0.05)	0.31 (0.05)	0.32 (0.05)
Pupil-level Variance	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29
Total Variance	3.93	3.76	3.78	3.64	3.63	3.63	3.60	3.60	3.61
RANDOM SLOPES									
School-level							0.21 (0.07)	0.18 (0.07)	0.22 (0.07)
Covariance							-0.06 (0.04)	-0.08 (0.04)	-0.07 (0.04)
MODEL STATISTICS									
Variance partition:									
School	16%	13%	13%	10%	9%	9%	9%	9%	9%
Pupil	84%	87%	87%	90%	91%	91%	91%	91%	91%
N	10355	10205	10144	10129	10129	10129	10129	9851	9745
Df		2	1	1	1	2	1	1	1
DIC	12599	12014	8717	8563	8556	8552	8535	8245	8118

Table D5: Predictions from Final Model, with 95% upper and lower bound CIs

GCSE Score	Class	Lower bound CI	Prediction	Upper bound CI
-1.5	Salariat	0.08	0.10	0.11
	Intermediate	0.08	0.10	0.11
	Working	0.08	0.09	0.11
-1	Salariat	0.20	0.22	0.24
	Intermediate	0.20	0.22	0.24
	Working	0.19	0.21	0.23
0	Salariat	0.63	0.65	0.67
	Intermediate	0.62	0.65	0.67
	Working	0.62	0.64	0.66
1	Salariat	0.92	0.93	0.94
	Intermediate	0.92	0.93	0.94
	Working	0.91	0.93	0.94
1.5	Salariat	0.97	0.97	0.98
	Intermediate	0.97	0.97	0.98
	Working	0.97	0.97	0.98
2	Salariat	0.99	0.99	0.99
	Intermediate	0.99	0.99	0.99
	Working	0.99	0.99	0.99
3	Salariat	1.00	1.00	1.00
	Intermediate	1.00	1.00	1.00
	Working	1.00	1.00	1.00
3.5	Salariat	1.00	1.00	1.00
	Intermediate	1.00	1.00	1.00
	Working	1.00	1.00	1.00