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Fair Access and Widening Participation at the University of Liverpool

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By

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AUTHOR'S DECLARATION

This thesis is the result of my own work. The material contained in this thesis has not been presented, nor is currently being presented, either in part or wholly for any other degree qualification.

I designed this research in conjunction with my supervisors and was solely responsible for data collection, analysis and write-up.

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ABSTRACT

across higher education (HE) institutions in the United Kingdom (UK). The lower grades achieved by a large proportion of students from socio-economically disadvantaged backgrounds represents one of the main entry barriers to these students. However, though students' trajectories into university are heavily dependent on their school qualifications, these alone are limited as predictors of academic potential. The current thesis explores how these inequalities play out at the University of Liverpool (UoL), looking also at the period prior to admission as educational inequalities reflect the long-term negative effects of childhood disadvantage.

Aim: To investigate socio-economic inequalities in relation to participation and attainment at the UoL.

Methods: A traditional sequential mixed methods design is followed, where quantitative studies 1 and 2 were carried out prior to qualitative study 3. These studies are combined using a pragmatic approach. Two retrospective cohort studies investigate associations between the educational and socio-demographic background characteristics of students on

Introduction: Socio-economic inequalities in participation and attainment are ubiquitous three year-programmes (study 1) and the medical programme (study 2) with participation and attainment at the UoL. Underpinned by phenomenology, qualitative study 3 investigates the challenges faced by thirteen socio-economically disadvantaged students throughout their educational trajectories from primary school to the UoL.

Results: Studies 1 and 2 depict the on-going socio-economic differences in participation at the UoL. Regarding attainment, in both studies, entry grades were positively associated with final attainment. Most entry-level differences narrowed or disappeared at university in both studies though the variables sex, ethnicity, and school type predicted significant differences in final attainment. As such, privately educated students performed less well than comprehensive school students at university in both studies. In Study 3, two main themes were derived from the data: 'identity' and 'engagement'. These themes emerged across narratives in the types of disruption, barriers and instability that were discussed by individuals and in the ways that they attempted to cope and/or adapt to disadvantage.

Conclusions: The findings of the quantitative studies suggest that educational attainment at school is a good, albeit imperfect, predictor of academic attainment at university. These findings support the use of contextual background information, alongside school grades in university admissions processes as a means of refining the selection of students. In turn, individuals' narratives expose a more complex picture of what it means to be disadvantaged, depicting the factors that may affect students' trajectories to HE prior to the point of admissions. Hence, combining quantitative and qualitative studies provides a more nuanced evaluation of 'disadvantage' highlighting various mechanisms that may drive differences in the educational outcomes of socio-economically disadvantaged students. Findings advocate for further evidence using mixed methods to help address these inequalities and widen participation at universities fairly.

TABLE OF CONTENTS

| | |
|---|-------------|
| AUTHOR'S DECLARATION | ii |
| ACKNOWLEDGEMENTS..... | iii |
| ABSTRACT | iv |
| TABLE OF CONTENTS | v |
| LIST OF TABLES..... | viii |
| GLOSSARY OF TERMS | 1 |
| CHAPTER ONE..... | 1 |
| 1. Introduction to the study | 1 |
| 1.1. <i>Socio-Economic Inequalities in Higher Education</i> | 1 |
| 1.2. <i>About Participation in Higher Education</i> | 3 |
| 1.3. <i>Socio-Economic Background and Educational Outcomes</i> | 5 |
| 1.4. <i>The Present Study</i> | 11 |
| CHAPTER TWO | 19 |
| 2. Literature Review | 19 |
| 2.1. <i>Introduction</i> | 19 |
| 2.2. <i>Socio-Economic Background and Disadvantage</i> | 19 |
| 2.3. <i>Mechanisms for Identifying Social Class and Disadvantage</i> | 21 |
| 2.4. <i>Educational Disadvantage</i> | 27 |
| 2.5. <i>Demographic Characteristics</i> | 31 |
| 2.6. <i>Why is it important to address socio-economic inequalities in HE participation?</i> | 34 |
| 2.7. <i>How socio-economic inequalities in HE participation are currently addressed</i> | 36 |
| 2.8. <i>Addressing gaps in the literature</i> | 40 |
| CHAPTER THREE | 44 |
| 3. Methodology..... | 44 |

| | |
|---|------------|
| 3.1. Introduction..... | 44 |
| 3.2. Study Context..... | 44 |
| 3.3. Connecting Methods: Epistemology | 46 |
| 3.4. Quantitative Studies: Data Extraction | 51 |
| 3.6. Selecting Outcome Variables | 61 |
| 3.7. Factors influencing educational attainment (independent variables)..... | 63 |
| 3.8. Statistical Analyses..... | 70 |
| 3.9. Qualitative Study: Students' Trajectories into University..... | 71 |
| CHAPTER FOUR..... | 79 |
| 4. Participation and Attainment in Three Year Programmes..... | 79 |
| 4.1. Data and context..... | 79 |
| 4.2. Abstract..... | 80 |
| 4.3. Introduction..... | 80 |
| 4.4. Method..... | 87 |
| 4.5. Results..... | 92 |
| 4.6. Discussion..... | 101 |
| 4.7. Concluding Comments | 107 |
| CHAPTER FIVE..... | 109 |
| 5. Participation and Attainment at Medical School..... | 109 |
| 5.1. Abstract..... | 110 |
| 5.2. Introduction..... | 111 |
| 5.3. Methods | 112 |
| 5.4. Results..... | 116 |
| 5.5. Discussion..... | 125 |
| 5.6. Conclusion | 132 |
| CHAPTER SIX..... | 134 |
| 6. The lived experience of disadvantage: stories of identity, engagement and transition . | 134 |
| 6.1. Abstract..... | 135 |
| 6.2. Introduction..... | 135 |
| 6.3. Methodology..... | 141 |

| | |
|---|------------|
| 6.4. Procedure | 145 |
| 6.5. Data Analysis..... | 148 |
| 6.6. Results | 149 |
| 6.7. Discussion..... | 166 |
| 6.8. Conclusion | 181 |
| CHAPTER SEVEN | 183 |
| 7. General Discussion..... | 183 |
| 7.1. Introduction..... | 183 |
| 7.2. Quantitative Differences in Participation and Attainment | 184 |
| 7.3. Connecting Divergent Methods | 201 |
| 7.4. Qualitative Findings | 202 |
| 7.5. Contributions of a Pragmatic Mixed Methods Design | 216 |
| 7.4. Strengths and Limitations | 221 |
| 7.5. Implications and Directions for Future Research | 228 |
| 7.6. Conclusions..... | 235 |
| REFERENCES..... | 237 |
| LIST OF APPENDICES..... | 289 |
| Appendix 1 – Interview Guide..... | 290 |
| Appendix 2- Participant Letter of Introduction | 293 |
| Appendix 3 – Participant Information Sheet | 295 |
| Appendix 4- Consent Form | 299 |
| Appendix 5 (Pertaining to Chapter Four)..... | 301 |
| Appendix 6 (Pertaining to Chapter Five)..... | 310 |

LIST OF TABLES

| | |
|--|-----|
| Table 1: University of Liverpool Widening Access Performance | 45 |
| Table 2: Descriptive Breakdown of Sample Characteristics for Variables Included in Studies 1 and 2 | 56 |
| Table 3: Proportion of Missing School type, School performance and UCAS tariff point data by IMD Quintile..... | 58 |
| Table 4: Proportion of Missing School type, and UCAS tariff point data by School Performance | 58 |
| Table 5: Proportion of Missing Information Pertaining to School type and IMD quintile by School Performance..... | 60 |
| Table 6: Proportion of Missing Information Pertaining to School type and School performance by IMD Quintile | 60 |
| Table 7: Description of Independent Variables (Contextual Factors)..... | 64 |
| Table 8: Description of Outcome (Educational Performance) and Predictor (Contextual Factors) Variables..... | 89 |
| Table 9: Descriptive Breakdown of Characteristics of Study Sample for Students in all Three-Year Degree Programmes | 93 |
| Table 10: Unconditional Bivariate Logistic Regression Models for Student Characteristics with Final Degree Performance (2.1 and 1 st versus lower classification) ... | 97 |
| Table 11: Multiple Logistic Regression Including all Student Characteristics (deprivation (IMD), school grades, school type, school performance, neighbourhood participation and sex) and Final Year Performance (2.1 and 1st versus lower categories) | 100 |

| | |
|--|-----|
| Table 12: Description of Outcome (Educational Performance) and Predictor (Contextual Factors) Variables..... | 114 |
| Table 13: Descriptive Breakdown of Characteristics of Study Sample | 117 |
| Table 14: Linear Regression between Contextual Variables and Fourth Year Performance | 120 |
| Table 15: Linear Regression between Contextual Variables and Fourth Year Performance Divided by Sex..... | 122 |
| Table 16: Multiple linear regression including all Contextual Variables and Fourth Year Performance | 124 |
| Table 17 Criteria for Eligibility in UoL Scholar Scheme | 145 |
| Table 18: Descriptive Breakdown of Characteristics of Students in three-year programmes (using top three A-Levels)..... | 302 |
| Table 19: Unconditional Bivariate Logistic Regression Models for Student Characteristics with Final Degree Performance (2.1 and 1 st versus lower classification) . | 304 |
| Table 20: Multiple Logistic Regression Model for Student Characteristics with Final Degree Performance (2.1 and 1 st versus lower classification) | 307 |
| Table 21: Strobe Checklist for Study 1 | 308 |
| Table 22: Strobe Checklist for Study 2 | 310 |

GLOSSARY OF TERMS

Access agreement: An agreement between the Office for Fair Access (OFFA) and a university or college which sets out how the university/college intends to safeguard and promote fair access to higher education through its outreach work, financial support etc. It also includes targets and milestones, set by the university/college itself. All institutions that wish to charge above the basic level of tuition fees must have and adhere to an access agreement (Higher Education Funding Council for England [HEFCE], 2015).

Access course/Access to Higher Education (HE) course: Courses that prepare learners who do not have standard entry qualifications for HE courses (Department for Business, Innovation and Skills [BIS, 2014]).

BIS (Department for Business, Innovation and Skills): The department of UK Government with ultimate responsibility for higher education in England.

Fair Access: This refers to the distribution of students from under-represented backgrounds within HE Institutions in England, and whether this is fair by a number of socio-economic and educational criteria (Boliver, 2013; DfES, 2003).

Foundation course A HE course designed to prepare students who have qualifications that are acceptable for entry in general, but are not appropriate to a specific course of study. Foundation courses are also used as Year 0 of a degree course to enable students with non-traditional qualifications to participate in HE by preparing them for a full degree programme. (HEFCE, 2015)

Further education Further education is education of people over compulsory school age (at the time of writing this age was 16 in England), which does not take place in a secondary school. It may be in a sixth-form college, a further education college or a higher education institution. Further education courses are generally up to the standard of GCE A-level or NVQ Level 3 (HEFCE, 2014).

Higher Education Institution (HEI): This refers to a university or college of HE (HEFCE, 2015).

Outcomes: The term “Outcomes” is used to refer both to the end result of activity (for example, the outcome of outreach activity should be improved participation rates in HE for students from disadvantaged backgrounds) and to the result of the students’ experience in HE (for example, the qualifications attained and subsequent progression to further study or to/within employment) (BIS, 2014)..

Outreach Activity: This refers to activities that help to raise awareness of HE, aspirations and attainment among people from disadvantaged backgrounds, for example, summer schools that give a taste of university life, homework clubs for pupils who may not have

anywhere to study at home, or universities forming and sustaining links with employers and communities (BIS, 2014; HEFCE, 2015).

Participation: This is a term that is used to refer to the number of students that are admitted into courses in HEIs. More generally, 'participation' also refers to individuals' engagement in different aspects of the student lifecycle, from outreach and pre-entry activity through to on-course engagement and the achievement of successful outcomes in terms of HE attainment and progression to employment or further study (HEFCE, 2015).

Post-1992 universities: HEIs that acquired university status as a result of the provisions of the Further and Higher Education Act 1992 (HEFCE, 2015).

Progression: The term 'progression' refers to whether students access HE and progress into suitable employment or further study opportunities (BIS, 2014).

Retention: This is the term used to describe whether students remain in one HEI and complete their programme of study within a specific timeframe (BIS, 2014).

UCAS Tariff Points/Scores: The Universities and Colleges Admissions Service (UCAS) is the central administration service for university and college applications in the UK. UCAS assigns a tariff score to full-time HE applicants' entry qualifications according to the grades or levels they achieved. These tariff scores are often used by HEIs as minimum entry requirements for their courses (Singleton & Longley, 2009).

Widening participation (WP): This term generally refers to the measures, including outreach activities and interventions, used to increase the participation of under-represented groups and ensure that all those with the potential to benefit from higher education have the opportunity to do so, whatever their background and whenever they need it. The term 'Widening Participation' is also used to describe students that are under-represented within HE, including students from socio-economically disadvantaged backgrounds, students with disabilities and some ethnic minority groups (Boliver, 2013; DfES, 2003).

CHAPTER ONE

1. Introduction to the study

In this chapter I discuss the pervasive socio-economic inequalities in participation in Higher Education to contextualise the rationale and objectives of this thesis (Section 1.4.)

1.1. Socio-Economic Inequalities in Higher Education

Globally, socio-economic and demographic inequalities in higher education (HE) participation are the subject of on-going concern and debate (Crawford, 2014; Hannum & Buchmann, 2005; Holsinger & Jacob, 2009; Soo-yong Byun & Kyung-keun Kim, 2010). There is a long history of remedial action to address the root causes of these inequalities. The imperative of addressing these inequalities was first proposed in the US with regard to race (Mathers, Sitch, Marsh, & Parry, 2011). The racial preference given by US universities to students is known as 'Affirmative Action' and is intended to compensate for the historic injustice of slavery and segregation (Golland, 2011; Jenkins & Moses, 2014; Sanders, 2004). In the UK, attention is primarily focused on extending access to prospective students who are identified as coming from under-represented socio-economic groups (Gorard, Smith, May, Thomas, Adnett & Slack, 2006; Moore, Sanders & Higham, 2013; Singleton, 2010a). Different terms are often used to describe these students, including 'non-traditional', 'minority' or 'Widening Participation' (WP) students, who, along with students with disabilities and some ethnic minority groups, are currently underrepresented in HE (Gorard, 2008; Maras, 2007; Mason & Sparkes, 2002).

Though debates about access to HE in the UK have largely focused on socio-economic differences in rates of participation, assessment of these differences is complicated as social class in itself is difficult to define, identify and measure (Rubin et al., 2014). Historically, income has been regarded as the symbolic marker of disadvantage, where social class has frequently been defined in relation to this

(Ackerman & Brown 2006). However, this is considered a narrow view of social class, as this is related to multiple factors in addition to income and closely bound to other socio-demographic variables in educational contexts, such as age, ethnicity, cultural and social capital (Reay, Davies, & Ball, 2001a; Reay, Crozier, & Clayton, 2009; Rubin et al., 2014).

In this thesis, socio-economic background, social class and disadvantage are considered to be related as social class is viewed as a person's socio-cultural *background*, which in turn may be enmeshed with their position in an economic hierarchy based on their income, education level, and occupation (Liu et al., 2004). This relates to disadvantage as those who are low in an economic hierarchy can be viewed as being 'disadvantaged' in terms of having access to lower levels of economic, social and cultural capital. This interpretation of socio-economic disadvantage resonates with Bourdieu's (1985) paradigm of class theorising, which provides a perspective on how educational inequalities are generated.

Bourdieu (1985) described class fractions as a product of the uneven distribution and deployment of forms of capital between different social groups and unequal encounters between working-class and middle-class habituses. Habitus refers to a cognitive or internal system of structures that are embedded in individuals, through socialisation with family, culture, and education, which influence individuals' perceptions of practices in society (Dumais, 2002). In this paradigm, differences in education outcomes are seen as inequalities that result from differential access to resources based on the levels of capital that more powerful groups have (Bourdieu & Passeron, 1990). Access to higher and the 'right types' of capital is said to confer individuals with a number of advantages and even act as a protective mechanism against downward mobility (Sullivan, 2000). A plethora of studies describe these advantages, how they affect the educational outcomes of individuals and underpin pervasive socio-economic differences in HE participation (Blanden & Machin, 2004; Crawford, 2014; Croxford & Raffe, 2013; The Sutton Trust, 2009). For example, McKnight (2015) described how, despite low attainment in early cognitive tests, children from affluent backgrounds were able to secure the most privileged educational pathways and career outcomes. Conversely, children from socio-economically disadvantaged family

backgrounds that were high attaining in early cognitive assessments were found to be comparatively less successful at converting their early high potential into career success. Such findings highlight how social, rather than biological processes, may mediate the systematic differences in educational outcomes between different socio-economic groups. Thus, these differences can be viewed as social inequalities as they are *systematic, socially produced*, and widely considered to be *unfair*, because they are generated and maintained by social arrangements that are unjust and do not provide all with the same chance of success (Evans & Peters, 2001; Whitehead, 1992). The current thesis explores these socio-economic inequalities in HE participation and attainment, including the factors that generate them and prevent the widening of access to students from socio-economically disadvantaged backgrounds.

1.2. About Participation in Higher Education

The assessment of socio-economic background and more specifically socio-economic disadvantage in educational contexts is typically based on a number of measures, that are often used in conjunction, including: area based measures of material deprivation, parental income, parental occupation and educational background (Benson & Borman, 2010; Bodovski, 2010; Crawford, 2014; Schildberg-Hoerisch, 2011; Shumow & Lomax, 2002; The Sutton Trust, 2015). Trends and socio-economic inequalities in students' educational outcomes have frequently been explored using such measures as it is generally agreed that these inequalities relate to various, frequently overlapping forms of disadvantage (Bodovski, 2010; Dumais, 2002; Skeggs, 2004). This section describes these trends, whilst the mechanisms that are used to identify socio-economic background and disadvantage are discussed in greater detail in Chapter Two.

Some increase has been observed in the number of students from disadvantaged backgrounds that are accessing universities in the UK (Department for Business, Innovation and Skills, [BIS], 2014). In particular, the rate of young people entering HE from the most disadvantaged areas increased from 13% in the late 1990s to 20% in 2011; this represents a proportional increase of 52% (BIS, 2014; Higher Education

Funding Council for England, [HEFCE], 2013a). Over the same period, the participation rate of students from socio-economically advantaged backgrounds increased from 51% to 60%, a proportional increase of 16% (HEFCE, 2013a; Office for Fair Access, [OFFA], 2014a). As such, HEFCE'S (2013a) analysis of young people's progression rates into HE further indicates that young people in the most disadvantaged areas would need to treble their participation rate in order to match the rate of those from the most socio-economically affluent areas.

Socio-economic inequalities in participation are most prominent at universities with the highest average entry requirements ("tariffs"), and in particular at Russell Group universities (Boliver, 2013; Byrom, 2009; Crawford, 2014; Gibbons & Vignoles, 2012; Singleton, 2010b; The Sutton Trust, 2004; 2010a; 2010b). This trend has remained worryingly flat over recent years (BIS, 2014). OFFA (2014a) confirmed this in a study, which examined trends in young participation in English HE, by both students' backgrounds, and the selectivity of the university or college attended. They found that participation of the most disadvantaged 40% of young people has changed minimally since the mid 1990's (from 2.4% at the beginning of the period to 2.9 % at the end). At the end of the period they analysed, the most advantaged 20% of young people were 6.3 times more likely to enter one of these universities than the most disadvantaged 40%, compared to 6.4 at the start.

The socio-economic/demographic profiles of students vary greatly among institutions with different entry requirements, but also by subject, programme and course of study (Gallagher, Niven, Donaldson, & Wilson, 2009; HEFCE; 2013b; OFFA, 2014a). Hence, it is important to disaggregate inequalities in HE participation to address and understand these complexities. Singleton (2010a) investigated progression to HE using a range of data available at both individual and neighbourhood levels. He observed that the number of students that were enrolled across different subjects varied in terms of their socio-economic characteristics (based on geo-demographic classifications). Subjects such as medicine, dentistry and veterinary science were found to be a more prevalent option in more socio-economically affluent geo-demographic clusters, whereas subjects like engineering and biological sciences were more uniformly

appealing across different groups. This study also provided further evidence of the large differences in rates of progression to HE amongst different socio economic groups, ranging from 64% in areas classified as wealthy, to only 8% in less affluent areas.

1.3. Socio-Economic Background and Educational Outcomes

The following sections describe factors that influence socio-economic inequalities in academic attainment and participation in HE.

1.3.1. Barriers from Childhood

Socio-economic differences in education begin early in the life course and include differential childhood opportunities, access to resources, beliefs and networks (Aronson, 2008). Various studies corroborate this, documenting the early and long-term effects of disadvantage, arising from access to lower levels of capital (social, cultural, economic) on individuals' educational and career outcomes (Gayle, Berridge, & Davies, 2002; Holsinger & Jacob, 2009; McKnight, 2015; Peruzzi, 2015; Reardon, 2011).

Economically disadvantaged children typically enter school with less developed cognitive skills than their peers, and have been found to perform less well across a number of different tasks (Aikens & Barbarin, 2008; Coley, 2002; Feinstein, 2003; Connelly, Sullivan & Jerrim, 2014). For example, Aikens and Barbarin (2008) found that children from disadvantaged backgrounds, were slower at acquiring language skills, had a greater tendency to exhibit delayed letter recognition, phonological awareness, and were generally more prone to having reading difficulties. Similarly, Coley (2002) observed that economically disadvantaged children were less proficient at mathematical tasks from ordinal sequencing to adding and subtracting. Socio-economic differences in academic performance such as these have been identified among children from early ages, spanning across different subjects, and typically widening with time (Coley, 2002; Delaney, Harmon, & Redmond, 2011; Feinstein, 2003; Greenman, Bodovski, & Reed, 2011; Office for Standards in Education, Children's Services and Skills [Ofsted], 2011).

The Sutton Trust (2015) found that children from socio-economically disadvantaged areas who were shown to be bright in their national tests at 11, were

barely half as likely as their more affluent classmates to get the A-levels they needed to go to a good university. However, even when they have obtained appropriate qualifications, students from socio-economically disadvantaged backgrounds are less likely to apply to elite/top universities compared to students from affluent backgrounds (Reay et al., 2010; Reay, Davies, David, & Ball, 2001; The Sutton Trust, 2004). According to Diamond, Vorley, Roberts, & Jones, (2012) this is because students' choices, which can impact on their educational outcomes, are shaped by their social position, previous education, familial/social experiences, and economic circumstances. Hence, though early inequalities in attainment and cognitive performance are frequently described as the precursors for socio-economic differences in HE participation, the social processes that influence these inequalities require consideration (Blanden & Machin, 2004; 2010; Breen & Jonsson, 2005; Crawford, 2014; Feinstein, 2003; Gayle, Berridge, & Davies, 2002; Holsinger & Jacob, 2009; Reardon, 2011).

1.3.2. Equity in University Admissions Process

A number of factors within university admissions processes have been found to contribute to socio-economic inequalities in participation in HE (Chowdry, Crawford, Dearden, Goodman, & Vignoles, 2013; Chowdry, Dearden, Jin, & Lloyd, 2012; Hayward & James, 2005; Harrison & Hatt, 2010; Singleton, 2010a; 2010b). The university admissions process in the UK is discussed and these contributing factors are highlighted in the following sections.

Currently, applications to almost every full-time undergraduate HE course in the UK are processed through the University Central Admissions Service (UCAS) (Singleton & Longley, 2009). This is the organisation responsible for managing applications to HE courses in the UK. UCAS provides students with information about courses offered by Higher Education Institutions (HEIs) and, in turn, provides HEIs with information about students. This information is compiled by HEI staff and saved along with their performance information once at university.

The majority of students apply to HE courses six months before taking their final exams and eight months before receiving the grades they achieve for these exams.

Candidates can apply to a maximum of five different university programmes (although this is restricted to 4 applications for those applying to medical, veterinary and dental schools). Students applying to university programmes must submit a reference from the school, a personal statement, and age-16 qualifications. Considerable weight however, is attributed to the grades that students are expected to achieve in their Advanced (A) Level Examinations, generally in three subjects (Arulampalam, Naylor, & Smith, 2011).

Various studies have questioned the reliability and accuracy of predicted grades with some studies reporting that approximately only 51% of grades are predicted correctly (Everett & Papageorgiou, 2011; Hayward, Sturdy, & James, 2005; Gill & Chang, 2013; Gill & Rushton, 2011). Furthermore, a pattern has been identified whereby students from academically successful independent schools tend to receive overestimated predicted grades compared to those from less successful state schools (BIS, 2013; Everett & Papageorgiou, 2011). BIS (2013) compared grade prediction accuracy in the 2012 university admissions to grade prediction accuracy in 2009, investigating how this varied between groups divided by socio-economic and demographic characteristics. They found that students from the least affluent socio-economic group had the lowest grade prediction in 2009 and continued to have the lowest grade prediction accuracy in 2012.

Inequalities within HEIs and highly selective programmes in the UK are perpetuated by current admissions systems, as they do not provide all with the same chance of success (Chowdry et al., 2013; Hayward & James, 2005; Harrison & Hatt, 2010; Singleton, 2010a; 2010b). For example, though medicine attracts a lower proportion of applicants from lower social classes compared to more affluent applicants, previous studies have found that even when other factors are controlled, the odds of being accepted at medical school are lower for applicants from lower social classes and state schools (Garrud, 2011; Mathers & Parry, 2009). Such findings further illustrate how admissions arrangements can be unfair and systematically mediate socio-economic inequalities in educational outcomes amongst different groups. These issues must be addressed to decrease the socio-economic stratification of HEIs in the UK and promote social mobility.

1.3.2.1 Paper Qualifications and True Academic Potential

Following the reception of a conditional offer from a HEI, acceptance on HE programmes depends almost entirely upon the academic qualifications obtained by students at A-level or equivalent examinations (Arampaulam et al., 2011). Some courses such as Medicine, Dentistry and Veterinary science, have multi-staged admissions processes, where offers for entry are conditional on students' fulfilling further requirements and having relevant work experience. For example, information pertaining to interview performance is often used in selection processes in these programmes (Benbassat & Baumal, 2007; Cleland, Patterson & Dowell, 2014; McManus, 2003). However, though this information can play an important role, offers of places on these courses are primarily dependent on applicants' performance in pre-entry examinations (Arampaulam et al., 2011; McManus, 2003; McManus, Woolf & Dacre, 2008; McManus, Woolf, Dacre, Paice, & Dewberry, 2013).

Gorard (2005) highlighted the importance of paper qualifications in the admissions process, indicating that two-thirds of applicants were accepted based on their AS and A-levels alone (UCAS, 1999). As such, the poorer academic qualifications obtained by a large proportion of students from disadvantaged backgrounds is widely viewed as the main cause of their lower representation in HE, and has been considered to be more important as an explanation for the underrepresentation of these students in HE than other barriers at the point of entry (Chowdry et al., 2013; Palardy, 2008; Steele, Vignoles, & Jenkins, 2007; The Sutton Trust, 2004).

It is problematic that after the conditional offer stage; universities focus on students' academic results as a sole or principal basis for selection, without considering the circumstances in which results were obtained (Chowdry et al., 2013; Gorard, 2008; Steele et al., 2007; The Sutton Trust, 2010a). The continued reliance on school attainment measures has been questioned for various reasons (McManus, Dewberry, Nicholson, Dowell , 2013). Firstly, due to the issue of grade inflation, which has been documented in official statistics over the past two decades, where student attainment in different examinations has increased year-on-year in the UK (Connelly et al., 2014). This

is said to be particularly problematic for the selection of students in highly competitive programmes like medicine and dentistry, where a large proportion of applicants achieve the highest grades (ceiling effect) as this makes it difficult to discriminate between them (Sonner, 2000). Secondly, according to Crawford (2014) there are concerns that academic qualifications alone do not reflect other attributes required for academic success, like independent study skills and other behavioural or non-cognitive attributes. Thirdly, previous studies have found that school grades, due to the environments in which they are achieved, may be limited in the extent to which they are truly reflective of students' academic potential (Garlick & Brown, 2008; Gorard, 2008; HEFCE, 2013a; McNabb, Pal, & Sloane, 2002; Mullen, 2011; The Sutton Trust, 2010c). Extensive research corroborates this, indicating that the lower grades achieved by a large proportion of students from socio-economically disadvantaged backgrounds are not necessarily due to a lack of ability, but relate more to the long-term negative effects of deprivation, socialisation processes and the quality of education that they receive (HEFCE, 2013a; Hoare & Johnston, 2010; Mullen, 2011).

Though a number of studies have identified limitations associated with the predictive validity of school grades, their usage in isolation during university selection processes means that students' trajectories into HE remain principally, if not uniquely, dependent on them (Chowdry et al., 2013; Gorard, 2008; HEFCE, 2014; Mullen, 2011; The Sutton Trust, 2010c). Addressing these issues is important as a means to ensuring that selection processes at universities are fair and as stated in the 2003 White Paper ensuring that "*All those who have the potential to benefit from higher education should have the opportunity to do so*" (DfES, 2003 p. 68).

The use of the phrase "*potential to benefit*" in the White Paper marked the beginning of a growing acceptance of the idea that prior attainment in formal examinations may not be a reliable indicator of prospective ability without some consideration of the socio-economic context in which that attainment came about (BIS, 2011; Boliver, 2013). The implementation of contextual data in university admissions processes, in which academic attainment is placed into the context in which it was obtained (including both comparative school and socio-economic data), has been

recommended as a method of making fairer interpretations of students' school grades by helping to discern the extent to which these may or may not reflect their 'true academic potential' (BIS, 2013; Mullen, 2011). Hoare and Johnston (2010) explain the rationale behind this, indicating that if the face-value academic quality of each candidate's application is a good, unbiased predictor of degree potential, and all things held equal WP students get lower grades at school than their non-WP counterparts because they are of lower academic quality then there is no need for the use of contextual data in admissions processes. Conversely, if the predictive validity of exam grades as indicators of degree performance is limited and WP students suffer from some form of 'educational disadvantage' that affects or undervalues their academic potential compared to their non-WP counterparts then, they argue that there is a case for the use of contextual data. Thus, to justify the implementation of contextual data in university admissions, evidence is required that can adequately demonstrate the impact of students' background characteristics on academic performance (Bridger et al., 2012).

1.3.2.2 Identification and Targeting of WP students

It is important that Universities use robust mechanisms in admissions processes to enable the identification of disadvantaged individuals with the academic potential to succeed (Batey, Brown & Corver, 1998; BIS; 2014; Hoare & Johnston, 2010). Ensuring the accuracy of these measures is central to widening access amongst these groups and as a means of identifying those students that may require additional support once at university. Furthermore, this is also important because failure to target correctly means that scarce resources could be wasted on groups that are already well represented within HE (Hatt & Harrison, 2009; 2010; Harrison, 2011).

Despite the importance of measuring disadvantage accurately, limitations have been identified in the primary mechanism that is currently used for discerning students' socio-economic background during the university admissions process (Ackerman & Brown, 2006; Harrison & Hatt, 2010). This is described in detail in Chapter Two (section 2.3). To briefly summarise here, prospective students' socio-economic background is currently derived from parental occupation information that is provided by students

during the UCAS application process and then grouped by the National Statistics Socio-Economic Classification System (NS-SEC). This measure is considered a weak proxy for socio-economic background and casts doubt on the credibility of findings in numerous studies where it was used, including research using nationally collated data (Gorard, 2005; Hoare & Johnston, 2010). Thus, when put into practice, the use of NS-SEC (particularly in isolation) to identify and target individuals from disadvantaged backgrounds could potentially have an adverse effect on the life chances and opportunities of individuals (Harrison & Hatt, 2009; 2010).

It is necessary to recognise the complexities surrounding the identification of disadvantage to accurately identify WP cohorts and address inequalities in HE (Gorard, 2008; Gorard & See, 2013; HEFCE, 2015). These complexities are evident in the diverse circumstances of socio-economically disadvantaged families, the multiple sources of risk, short and long-term determinants of negative educational outcomes (Ackerman & Brown, 2006; Easton-Brooks & Davis, 2007; Gorard & See, 2009; Powis, James, & Ferguson, 2007; Connelly et al., 2014).

1.4. The Present Study

Each investigation in the current thesis follows a case-study approach to explore factors that affect the participation and attainment of students from socio-economically disadvantaged backgrounds at the University of Liverpool (UoL). A case study approach was adopted purposively as a means of monitoring current admissions arrangements at the UoL and delineating the importance of context. This is considered important as the geographic location and composition of universities should be recognised when interpreting socio-economic and demographic trends in HE participation (Callender, 2011; Singleton, 2010b). Additionally, recognising this context and knowing where the data originated from is also important because it helps the reader better understand the significance of findings and how studies may be situated within overall trends in educational policy.

Overall, this thesis follows traditional sequential mixed methods design, where a quantitative phase of analyses (Chapters Four and Five) was carried out prior to a

qualitative phenomenological study (Chapter Six) (Creswell & Clark, 2011). An overarching pragmatic philosophical perspective is used to integrate these mixed method studies as this approach allows researchers to draw on the relative strengths of differing methods (Creswell, 2009; Green, 2008). For example, while quantitative studies can play a crucial role in identifying factors that appear to be significantly associated with participation and attainment in education, they do not provide insight into the possible reasons for these differences. Conversely, one of the strengths of qualitative studies lie in the knowledge these provide of the dynamics of social processes, social context, and in their ability to answer 'how' and 'why' questions in these domains (Mason, 2006). Thus, to expose a more complete picture of factors that may influence socio-economic inequalities in students' educational outcomes, both (qualitative and quantitative) methods are important.

The issues that are addressed throughout this thesis relate to WP and fair access. The term 'fair access' refers to the distribution of students from under-represented backgrounds within HEIs in England, and whether this is fair by a number of socio-economic and educational criteria (DfES, 2003). In turn, the term 'Widening Participation' refers to students from under-represented backgrounds but more generally, this term is used to describe the activities intended to widen access to disadvantaged groups in HE (Boliver, 2013; HEFCE, 2014). Chapter Two provides insight into these WP activities/interventions, including the use of contextual data in admissions processes (BIS, 2011; Cable & Willets, 2011, Croxford & Raffe, 2013; Milburn, 2009).

Though the terms 'fair access' and 'Widening Participation' differ in meaning, they are related as the principal aim of WP activities and interventions is to promote fair access and hence achieve a diverse cross-section of social groups within HE (Bridger et al., 2012). As such, both WP and fair access are concerned with addressing the barriers that may prevent students from lower income and other under-represented backgrounds from attending university (BIS, 2014). Albeit in different ways, the mixed method studies that are comprised in this thesis address these issues as they seek to provide insight into factors that may prevent the widening of access to students from disadvantaged backgrounds and promote fair access to HE.

Quantitative studies 1 and 2 (Chapter Four and Five) explore differences in the distribution of students at the UoL (based on their socio-demographic and educational background characteristics). This is central to fair access and necessary to identify and address inequalities in participation. However, to ensure that access to HE is fair, it is important that those with academic potential to benefit from HE have the opportunity to do so (DfES, 2003). Studies 1 and 2 endorse this by investigating associations between students' contextual background characteristics and their academic attainment, at school and university to identify contextual effects on attainment. In doing so, these studies seek to provide evidence to guide institutional policy in respect of contextual data. This is necessary as there is currently a lack of published research and limited guidance surrounding the use of contextual data in admissions processes (BIS, 2011; Cable & Willets, 2011, Croxford & Raffe, 2013; Mathers & Parry, 2009; Milburn, 2009).

As discussed throughout this Chapter, it is also important to understand that socio-economic disadvantage has a detrimental impact on the educational outcomes of children from a very early age (Breen & Jonsson, 2005; Coley, 2002.; Feinstein, 2003). Consequently, though HEIs are often blamed for 'failing poorer students', and barriers within admissions processes have been found to affect the widening of access amongst these groups, socio-economic inequalities in HE participation also reflect the long term negative effects of childhood disadvantage and require early intervention (Chowdry et al., 2013; Crosnoe & Cooper, 2010; Gorard & See, 2013). Consideration of individuals' trajectories and the defining moments throughout these is essential to guide WP interventions and effectively increase participation of under-represented groups in HE (Byrom, 2009; Crosnoe & Cooper, 2010). For these reasons, study 3 (Chapter Six) investigates factors that are perceived to be influential, as barriers and/or facilitators to socio-economically disadvantaged students throughout their educational trajectories from primary school to HE. This final study follows a qualitative method of enquiry to provide insight into individual differences that are not captured by quantitative studies, facilitating greater social understanding and increasing options for action.

1.4.1 Overall aim and objectives of this research

The overall aim of the current thesis is to explore socio-economic differences in participation and attainment at the UoL. As previously explained, a pragmatic approach is taken which combines quantitative and qualitative methods to examine these differences as both methods were considered important and necessary to adequately inform different aspects of WP policy and promote fair access to HE (du Toit, 2003). Thus, using these divergent methods, the main objectives of the current thesis are to answer the following questions:

1. What are the associations between UoL students' socio-demographic and educational background characteristics with participation and attainment (at school and university)?
2. To what extent do school grades reflect 'true academic potential' at university?
3. Do associations between students' socio-demographic and educational background characteristics with participation and attainment vary between different programmes and HEIs?
4. Why are there socio-economic differences in participation and attainment and what underlying factors influence these?
5. Are there commonalities and differences in the factors students from socio-economically disadvantaged backgrounds perceive to be influential throughout their educational trajectories to the UoL?
6. What are the barriers and facilitators that emerge throughout the educational trajectories of students from socio-economically disadvantaged backgrounds that may underpin differences in participation and attainment at university?
7. What are the policy implications of all of the above?

At the outset, I did not seek to integrate the mixed method studies comprised in the current thesis but rather to draw on concepts from each perspective to explore differences in participation and attainment. This appears to be common in the field of

educational research, where the integration of qualitative and quantitative findings is exercised rarely in mixed methods articles (Bryman, 2008; Niglas, 2004). However, following a review of the literature, the wider benefits of integrating mixed method studies became apparent. For example, Bryman (2008) argued that even when a fusion of the two sets of findings was not envisioned at the outset of a project it might be valuable to consider whether the findings suggest interesting contrasts or help to clarify each other. This and the notion that the integration of quantitative and qualitative findings has the potential to offer insights that could not otherwise be gleaned were my key motivations for integrating the mixed method studies in this thesis (Bryman, 2007; Mason, 2009). To this end, a final main objective of the current research is to answer the following question:

8. What does the mixed methods design contribute to the interpretation of findings over and above that of single methods?

1.4.2. Thesis Structure

The ways that socio-economic inequalities in participation and attainment are investigated are discussed in the following paragraphs in relation to each of the chapters comprised in this thesis.

Chapter Two (literature review) discusses the complexities surrounding the identification of disadvantage, the mechanisms that are currently used to identify different forms of disadvantage, and their individual strengths and limitations. This chapter also provides insight on the reasons why it is important to address inequalities in participation, and the ways these can be addressed. This chapter finalises by highlighting key gaps in the literature that the current thesis seeks to address.

Chapter Three (methods) describes the methods followed in the three empirical studies comprised in this thesis in full detail. This also explains the use of a traditional sequential mixed methods design, the different epistemological perspectives inherent in this thesis and the overarching use of a pragmatic approach for integration.

Chapter Four (study 1) presents and discusses a retrospective cohort study that focuses on students in three-year degree programmes at the UoL. This study explores differences in participation and academic attainment (at school and university) between students based on their socio-demographic and educational background characteristics. Whilst analyses centres principally on differences in academic attainment, inequalities in participation in relation to the distribution of students based on socio-economic background characteristics (e.g. IMD, POLAR 3, school background) are examined. This study also investigates the extent to which school grades are representative of 'true academic' potential by comparing group differences in attainment at school compared to university. In doing so, this explores how students' socio-demographic and educational background characteristics relate to educational disadvantage, which may affect or undervalue their academic attainment. Understanding this is important because students' trajectories into HE are often uniquely dependent on their school qualifications, though these alone are said to be limited as predictors of academic potential due to the environments in which they are achieved. (e.g. Chowdry et al., 2013; Palardy, 2008). As such, academic attainment and participation are inextricably linked as the poorer academic qualifications obtained by a large proportion of students from socio-economically disadvantaged backgrounds is widely viewed as the main cause of their lower representation in HE. This chapter addresses objectives 1 and 2 above, and also generates an understanding of how patterns may differ between HEIs, thus addressing objective 3.

Chapter Five (study 2) presents and discusses a retrospective cohort study that focuses specifically on medical students at the UoL. Differences have been identified in the socio-demographic composition of students enrolled in these programmes that may influence trends in academic performance (Crawford, 2014; Do, Parry, Mathers, & Richardson, 2006; Gallagher et al., 2009; Gorard, 2008; Singleton, 2010a). Like study 1, this study examines the associations between students' socio-demographic and educational background characteristics with participation and academic attainment. Further, Study 2 also investigates the extent to which school grades are representative of 'true academic' potential by comparing group differences in attainment at school

compared to university. Hence, both studies explore the idea that the grades students achieve in formative examinations at school may not be a reliable indicator of prospective ability without some consideration of the socio-economic context in which these grades were achieved (BIS, 2011; Boliver, 2013; Hoare & Johnston, 2010). Study 2 addresses objectives 1 and 2 above. This also addresses objective 3 in describing how differences in attainment in particular may vary between programmes based on students' socio-demographic and educational background characteristics.

Chapter Six (study 3) presents and discusses study 3. Underpinned by a phenomenological approach, study 3 focuses on the lived experience of a purposive sample of 13 students from socio-economically disadvantaged backgrounds to identify commonalities and differences in how they perceived different factors affected their trajectories to the UoL. This study addresses objectives 4-6 as this also investigates potential barriers and facilitators that may underlie and drive patterns in participation and academic attainment.

Chapter Seven (discussion) collates the results of studies 1-3. The results of quantitative studies 1-2 (Chapter Four and Chapter Five) are summarised alongside each other to facilitate comparison between findings. Whilst studies 1-2 focus on differences in participation and attainment, they primarily centre on attainment. To provide greater insight into inequalities in participation Chapter Seven describes the differences in participation that were identified in studies 1-2 in greater detail and in relation to past research. Further, the findings and interpretations of the mixed method studies are integrated in Chapter Seven following a pragmatic approach. More specifically, the ways in which the results of these studies converge, and/or diverge from each other is examined and discussed (Tashakkori & Teddie, 2010). However, going beyond this, I also address objective 8 above and discuss the unique information that the pragmatic mixed method findings produce over and above single methods. I finalise this chapter by discussing the strengths and weaknesses of this research, the implications that findings have for policymakers and HEIs alike, and suggestions for future research. While policy implications are discussed in studies 1-3 to address objective six, Chapter Seven also

addresses this by describing the overall implications that findings have for policymakers and HEIs.

Studies 1-3 of this thesis are based on articles that are either published, or under review. Hence, each chapter provides brief details of the relevant study such that these can be read independently of other chapters.

CHAPTER TWO

2. Literature Review

2.1. Introduction

In this chapter, I explain the complexities surrounding the identification of disadvantage, the mechanisms that are currently used to identify different forms of disadvantage, and their individual strengths and limitations. I examine the reasons why it is important to address inequalities in participation (Section 2.6.) along with the WP interventions designed to achieve this (Section 2.7.). I finalise this chapter by summarising the gaps in the literature and how I seek to address these in the current thesis (Section 2.8).

2.2. Socio-Economic Background and Disadvantage

As discussed in Chapter One, the identification and measurement of social class and disadvantage is complex and frequently debated but critical as a means to understanding and addressing pervasive inequities in educational outcomes between students from different socio-economic groups (Stevenson & Lang, 2010). Understanding these complexities is necessary to ensure that access to university is fair and inform WP policies at HEIs. In part, the identification and measurement of social class is complicated because social class does not reflect an observable attribute and is often considered to be more subjective than other demographic characteristics such as sex or race. Assessments of social class in HE are mostly based on objective measures that are broadly associated with different types of disadvantage based on levels of capital (social, cultural, economic). Such measures include: family income, parental occupation, parental education, and material deprivation (Bourdieu & Passeron, 1990; Connelly et al., 2014; HEFCE, 2013b; 2015).

Numerous measures can be used to identify social class and socio-economic disadvantage, and sometimes these measures are used in conjunction with each other (Archer, Hutchings, & Ross, 2005; Connelly et al., 2014; Moreau & Leathwood, 2006a). Additionally, the literature identifies a number of factors that may mediate associations between different measures of social class and students' educational outcomes. These

factors include the skills, knowledge, dispositions and educational practices used by families (Connelly et al., 2014). For example, educational practices (i.e. home reading cultures, use of routine, rules and monitoring) are often emphasised as being influential in relation to educational outcomes (Bodovski, 2010; Dubow, Boxer, & Huesmann, 2009; Greenman et al., 2011; Hartas, 2011; Shumow & Lomax, 2002). Kiernan and Mensah (2011) illustrated this, in a study where differences in parenting practices (based on composite measures) accounted for up to 40% of the effect of childhood disadvantage on educational outcomes at age five. However, just as factors like educational practices are associated with measures of social class related to family background, including parental occupation, these are also associated with structural factors, like neighbourhood affluence. For example, Shumow and Lomox (2002) found that neighbourhood affluence was a predictor of parental involvement and monitoring, which also predicted differences in academic and social-emotional adjustment of adolescents. This highlights some of the complexities involved in understanding the influence of different factors on students' educational trajectories, as the different predictors and measures of disadvantage are interlinked and have a composite influence on students' educational trajectories (Jenkins, Kneale, Lupton, & Tunstall, 2011; Katz, Corlyon, La Placa & Hunter, 2007; Peruzzi, 2015).

The extent to which particular factors are emphasised as the determinants of socio-economic differences in educational outcomes varies between studies and the theoretical perspectives of researchers (Connelly, et al., 2014; Greenman et al., 2011). Whilst some researchers have argued that structural factors like school and neighbourhood characteristics are particularly important determinants of inequalities in attainment and participation (Batey, Brown & Corver, 1998; Bowen, Bowen, & Ware, 2002) others argue that socialisation processes may be more influential (Ganzach, 2000; Hartas, 2011; Sullivan, Ketende, & Joshi, 2013). Despite on-going debate over this, there is general consensus that different forms of disadvantage are interlinked and, in some cases, indirectly affect educational outcomes and access to HE (Sullivan, 2000). In effect, different forms of capital (social, economic, cultural) do not operate independently of one another, but interplay with one another (Skeggs, 1997, 2004). Additionally, research in psychology and sociology has stressed the more subjective and intersectional nature of social class (Reay, 2001).

Hence, though based on objective measures an individual may be categorised as being "working class", they may perceive themselves as being "middle class". Recognising these complexities is important as the extent to which an individual feels disadvantaged or identifies as being from a certain social class may mediate the effect this has on their educational outcomes and engagement with education (Ashmore et al., 2004; Brown, 2000).

2.3. Mechanisms for Identifying Social Class and Disadvantage

The following sections describe a number of characteristics that are related to socio-economic and educational disadvantage and how these are associated with educational outcomes. The ways that some of these mechanisms are currently used or could be used to identify these different forms of disadvantage are also discussed. This is necessary to understand the strengths and limitations of these as potential targeting methods and evaluate the accuracy of these mechanisms. Such an evaluation could aid decision-making processes, not only during admissions processes but also before and after the point of admission. Accuracy in measuring disadvantage is important for HEIs, the government and most importantly students themselves as these methods and overall admissions processes affect their life chances and opportunities (Ackerman & Brown, 2006; Harrison & Hatt, 2010).

2.3.1. Family Background Characteristics

Differences in educational outcomes are often interrogated using measures pertaining to students' family characteristics. For example, significant associations have been documented between parental occupation and students' educational outcomes, including the likelihood that individuals have of getting academic qualifications (Carnevale & Strohl, 2013; Stephenson et al. 2015). In turn, research indicates that this is linked to parental education, which appears to have a direct influence on children's ability to succeed educationally, particularly whether or not parents have degree level qualifications (McKnight, 2015). For example, according to Stephenson et al., (2015) less than 15% of students whose parents have no degree qualifications can expect to obtain a bachelor's degree themselves. Katz et al. (2007) indicate that in addition to having lower levels of

education, parents living in poverty are more likely to face a range of issues that interact and affect children's educational outcomes including: lack of access to jobs/services, isolation, mental and physical ill health and domestic violence. These are some of the factors that may underpin the effects of parental education and occupation on inter-generational mobility, as the continuing influence of parental occupations on children's occupations is at least in part due to the effects of family background on educational opportunity and attainment (Blanden, Gregg, & Macmillan, 2007; Dubow et al., 2009; McIntosh & Munk, 2009;McKnight, 2015).

2.3.1.1. National Statistic Socio-Economic Classification (NS-SEC)

Currently, the primary social classification used in the UK for targeting and identifying groups that are under-represented in HE is the National Statistics Socio-Economic Classification (NS-SEC) (Stevenson & Lang, 2010). This is the measure that is used to flag applicants' social class during the University Central Admissions Service (UCAS) application process, and in theory to identify applicants who are socio-economically disadvantaged. Based on NS-SEC, social class is identified from data derived by asking university applicants for parental occupation of their highest earning parent, or if over 21, for the occupation of the person contributing the highest income to their household. However, as explained previously, there are a number of flaws and limitations with this measure, starting with the notion that social class is itself a subjectively experienced concept (Moreau & Leathwood, 2006a). Furthermore, by discerning social class based on applicants' views, this measure is prone to error and manipulation (Harrison & Hatt, 2009; 2010; Stevenson & Lang, 2010).

NS-SEC typically includes 8 possible classifications ranging from most affluent in NS-SEC 1 'Higher Managerial and Professional Occupations' to NS-SEC 8 'Never Worked, or Long- Term Unemployed'. From 2002, both the Higher Education Statistics Agency (HESA) and the University and Colleges Admission Service (UCAS) have used a simplified version of this classification, comprising seven groups. Students from routine/manual occupations, between NS-SEC 4 to 7 are those that are considered WP students. In this simplified version of the classification, NS-SEC 8 (long-term unemployed or never worked) is excluded. This is

problematic, particularly in areas of high deprivation as those applicants from families that never worked or experienced life-long unemployment may be those that would most benefit from additional support or consideration. These applicants may feel unable to answer the N-SEC question that is posed on the UCAS application form with an appropriate response and consequently are more likely to omit the information (Harrison, 2011). Hatt and Harrison (2009) provided supporting evidence for this, indicating that 25% of students do not answer this question during the university admissions process, and that those applicants tend to come from areas of high deprivation and low participation in HE. Similar findings have been reported previously (Rudd, 1987).

The limitations of using NS-SEC are inherent in numerous studies, including research using nationally collated data. Gorard (2005) highlighted this indicating how social class was unclassified for 30% of the students in research by Mayhew et al.'s (2004), which used this UCAS data. Similarly, Hoare and Johnson (2010) described this caveat in their own research on educational attainment, where social class, identified using NS-SEC data, was missing for 42% of students. However, despite its well-known limitations, much of the research examining associations between socio-economic background and educational outcomes using this measure has identified significant positive associations between these variables (e.g. HEFCE, 2003, 2005; Hoare & Johnston, 2010; Smith & Naylor, 2005).

2.3.2. Neighbourhood Measures of Disadvantage

Socio-economic disadvantage can also be identified by attaching locations to individuals' domicile postcodes and linking these to measures of locational context (Greenman et al., 2011; Webber & Butler, 2007). Different measures of locational context/neighbourhood disadvantage exist, broadly working on the premise that neighbourhoods have shared characteristics (e.g. ethnicity, education, employment and type of housing) (Vickers & Rees, 2007; Voas & Williamson, 2001). Numerous studies support this, indicating that disadvantaged families are more likely to live in disadvantaged neighbourhoods (Ackerman & Brown, 2006; Callender, 2011; Gibbons & Vignoles, 2012; HEFCE, 2014; Lupton, 2004; Singleton, 2010b). Furthermore, Webber and Butler (2005) explain how these trends are influenced by the ways in which residents select

neighbourhoods and segregate themselves within urban settings, which also produces spatial inequalities at the level of pupil and school attainment.

Neighbourhood affluence has generally been found to have a positive relationship with IQ, verbal ability, and/or reading achievement from early childhood (Aikens & Barbarin, 2008; Garner & Raudenbush, 1991; Klebanov, Brooks-Gunn, & Duncan, 1994). Conversely, factors relating to environmental adversity are said to progressively construct poor outcomes for disadvantaged children at school (Greenman et al., 2011; Jenkins et al., 2011; Katz et al., 2007). Residence in neighbourhoods with higher deprivation has been linked to a number of factors that have been considered to lead to negative educational outcomes including: poorer home physical environment, poorer health outcomes and even lower levels of maternal warmth (Ackerman & Brown, 2006; Flouri, Mavroveli, & Midouhas, 2013; Garner & Raudenbush, 1991; Harris, Johnston & Burgess, 2007). The mechanisms underlying these associations have been discussed in different ways, incorporating various factors associated with neighbourhood deprivation, including specific characteristics; such as perceived levels of social disorganization which have been associated with negative educational outcomes at different stages of development (Connelly et al., 2014; Bowen, Bowen, & Ware). Alternatively, some of the negative factors that are associated with poverty and neighbourhood deprivation including stress and depression have been found to affect parenting and, indirectly, children's academic attainment (Jenkins et al., 2011; Katz et al., 2007; Whitty, 2001). This highlights some of the complexities that are involved in trying to interpret socio-economic differences in attainment and participation. Hence, though in part these differences may be due simply to factors like lack of resources (Connelly et al., 2014), numerous variables are influential, which do not act independently of one another (Chowdry et al., 2013; HEFCE, 2015).

Whilst numerous studies have identified meaningful associations between neighbourhoods with economic hardship and educational outcomes, some have questioned whether pronounced or systematic regional differences exist in educational attainment (Cullis, 2008; Leckie, 2009; Osborne & Shuttleworth, 2004). Scrutiny of these studies has indicated that they may not have identified significant associations due to flawed data, and other limitations with conceptualisation and measurement (Connelly et al., 2014). For

example, it has been argued that studies using arbitrary boundaries such as electoral wards may fail to adequately capture neighbourhoods or may fail to measure the things that really matter about neighbourhoods (Lupton, 2004). This highlights some of the factors that must be taken into account when selecting measures and interpreting associations between these and individual outcomes, as these decisions can impact on research findings.

2.3.2.1 Index of Multiple Deprivation

The Index of Multiple Deprivation (IMD) is a well-recognised composite measure of deprivation based on data pertaining to seven different dimensions (Income, Employment, Health and Disability, Education, Skills and Training, Barriers to Housing and Services, Living Environment and Crime) (Crawford, 2014; Flouri et al., 2013; HEFCE, 2013a). Using the IMD, postcodes can be linked to a small area geography known as Lower Layer Super Output Areas (LSOAs). LSOAs are small areas in England, containing between 1000 and 3000 inhabitants, and have an average population of 1,500 people (Greenman et al., 2011; Noble, Wright, Smith, & Dibben, 2006; Office for National Statistics, [ONS] 2009). In most cases, they are smaller than wards, thus enabling the identification of small pockets of deprivation. There are 32,482 LSOAs in England. They have each been given an overall IMD score of between 1 and 32,482 based on the seven dimensions of the IMD. Higher IMD scores indicate greater levels of overall neighbourhood deprivation (The Sutton Trust, 2015).

The IMD has been recommended for measuring deprivation in areas where there is low take-up of Free School Meal (FSM) eligibility, and for identifying where people from targeted NS-SEC groups 4 to 7 might be concentrated (HEFCE, 2007). Additionally, HEFCE (2007) found IMD to be a more valid measure than NS-SEC in measuring progression of WP students to HE. Though the relationship between social class, deprivation and ability is well documented compared to fields like health, a limited number of studies have used the IMD in educational research (Broecke & Nicholls, 2007; Feinstein, 2003; Harrison, 2011; Lupton, 2004; Sammons et al., 2014).

2.3.2.2 POLAR 3

A further neighbourhood measure of disadvantage that has received relatively little attention in educational research, despite it being devised by HEFCE to identify individuals that come from areas with lower levels of participation in HE, is the Participation Of Local Areas classification (POLAR 3) (Corver, 2010; HEFCE, 2015). The POLAR 3 classification is a UK-wide area-based measure that groups geographical areas according to the proportion of young people living in them who participate in HE by the age of 19 (HEFCE, 2010; HEFCE, 2014). This is known as the 'young participation rate'. The POLAR 3 classification was created by ranking 2001 Census Area Statistic (CAS) Wards by their 'young participation rates' in HE for the combined 2005 to 2009 cohorts (BIS, 2014). There are a total of 8,850 CAS wards in England and Wales with an average population of just under 6000 (Finney & Jivraj, 2013). The POLAR 3 classification reports the rates of participation for those wards, and is typically divided into quintiles. Currently, POLAR 3 is used as a WP benchmark at many HE institutions in the UK as this is considered an indicator of the relative levels of educational advantage or disadvantage for people based on the areas in which they reside (BIS, 2014). HEFCE (2014) provided evidence that supports this, indicating that students from neighbourhoods with lower levels of participation in HE, based on POLAR 3, were consistently less likely to achieve a 2.1 or a first class degree at university.

2.3.2.3 Geodemographic Classifications

Geodemographics are area classifications that combine geographic, demographic, and lifestyle information to classify areas on the basis of similar characteristics (e.g. age, ethnicity, education, employment and type of housing (Harris, Johnston & Burgess, 2007; Vickers & Rees, 2007)). Different geodemographic classifications can be used to identify socio-economic disadvantage drawing on a range of data to incorporate a wealth of different dimensions of social differentiation covered by the census, which makes them robust for this purpose (Farr & Webber, 2001; Singleton, 2010a; Vickers & Rees, 2007). The notion that place and population are inextricably linked forms a key part of area classifications (Brunsdon, Longley, Singleton, Ashby, 2011). For example, Voas and Williamson (2001) highlighted that residents in many pockets of Liverpool share the

common experiences of low income, non-participation in local elections, and non-compliance with the requirement to complete a Census form.

Various geodemographic classifications exist including: Mosaic from Experian, the National Classification of Census Output Areas, and Output Area Classification (OAC) which is in the public domain (Batey & Brown, 2007; Farr & Webber, 2001; Singleton, 2010b; Vickers & Rees, 2007). A fine-grained geo-demographic classification is 'A Classification of Residential Neighbourhood' (ACORN) from CACI (see: <http://www.caci.co.uk/acorn/>). The ACORN classification system segments the UK's population into neighbourhood categories, which range from 'hard pressed' (representing low SES) to wealthy achievers (high SES) on the other side of the spectrum. Market analysis company CACI created ACORN using their consumer databases in addition to census information (Webber & Farr, 2008). ACORN classifies post-codes into 57, 17 and then 5 broad financial categories: wealthy, urban, comfortable, moderate and struggling. The category 'hard pressed' represents those people with the lowest SES, and 'Wealthy achievers' those with the highest SES. The postcodes are assigned to one of the ACORN categories if 80% or more of the population living in the area fitted into the category. Though used in a limited number of educational studies, ACORN has been used as a proxy for social class, analysing access and participation of different groups in HE (see for example Singleton & Longley, 2009; Tonks, 2009).

2.4. Educational Disadvantage

Students' educational background characteristics, particularly the school type they attended and school performance, are associated with a number of advantages/disadvantages that have been found to influence differential educational and labour market outcomes (Crawford, 2014; McKnight, 2015).

2.4.1. School Type

School type attended (i.e. private vs. state) is frequently used to conceptualise social class (Stevenson & Lang, 2010), based partly on the overlap between income and attendance at fee-paying schools (Connelly et al., 2014; McNabb et al., 2002). The type of school that a student attends significantly affects their access to the most selective

universities (i.e. Russell Group Universities) (McKnight, 2015; The Sutton Trust, 2004; 2010a; Zimdars, 2007). The extent of these inequalities are depicted by the Sutton Trust in numerous studies which compare differential levels of participation between students from private schools and those from disadvantaged backgrounds. For example, Sutton Trust (2010c) reported that students from private schools were up to 55 times more likely to attend Oxbridge than state school students who qualified for FSM. Indeed, though less than 10% of all UK secondary schools are independent schools, they contributed over half the undergraduate admissions at Oxford University (Zimdars, 2010). In turn, both the type of school and type of university students attend, also affects their job prospects and is reflected in the proportion of graduates in leading positions that went to independents schools in the UK (Davies, Mangan, Hughes, & Slack, 2013; McKnight, 2015). According to the Sutton Trust (2012), 44% of individuals in leading positions in the UK went to independent schools, and 27% went to grammar schools. Ten leading independent schools accounted for 12% of leading people for which school data was available.

A number of advantages are associated with attendance at fee-paying schools, which influence differential attainment, participation in HE and labour market outcomes (McKnight, 2015). Advantages include: the quality of education students receive, better resourcing, the type of subjects on offer and the teachers' qualifications (Darling-Hammond, 2000; Ehrenberg & Brewer, 1994; Hoare & Johnston, 2010; Smithers, & Tracey, 2003; Smithers & Robinson, 2003; The Sutton Trust, 2009). Ogg et al., (2009) emphasise the importance of teachers' qualifications as a key factor, indicating that the greater the qualifications of a teacher, the greater the value added to students' test scores. They highlight that teachers at private schools tend to have higher qualifications in terms of more firsts and upper seconds, from higher status universities than teachers from state schools. Additionally, according to Hoare & Johnston (2010) teachers at private schools place a greater focus on preparing students for university. McKnight (2015) corroborated this, indicating that private schooling has a double benefit for children, as this is not only on average conducive to higher attainment, but additionally bestows a "little something extra" which is said to influence whether individuals are recruited to elite professions (Ashley, Duberley, Ommerlad, & Scholarios, 2015). This "extra" advantage refers to soft skills,

including for example the language/accent used by students, and presentation. These factors contribute to the pervasive socio-economic inequalities in HE participation as economically affluent students are more likely to attend competitive independent schools, or high performing schools (Cobbold, 2010; Leithwood, Harris, Strauss, 2010; Lupton, 2004) from which university is the natural and presumed next step (Archer & Hutchings, 2000; Forsyth & Furlong, 2003).

Though students from fee-paying schools tend to have better overall performance, a 'school type effect' has also been documented (Hoare & Johnson, 2010; Ogg et al., 2009; Smith & Naylor, 2001). Specifically, for a given set of A-Level results, the degree performance of students that attended state schools has been found to be higher, compared to those that attended private schools (HEFCE, 2003; 2013a; 2014; Hoare & Johnston, 2010; Naylor & Smith, 2005; The Sutton Trust, 2010b). This has been reported in various studies, and seems robust even at different types of university, supporting the usage of school type information as a means of identifying educational disadvantage/advantage (HEFCE, 2003; Henry, 2013; Naylor & Smith, 2002; Smith & Naylor, 2001; The Sutton Trust, 2010c). Such studies have argued that due to the environment in which they are achieved, school grades do not reflect students 'true academic potential' (Hoare & Johnston, 2010). Hence, while students attending state schools may not achieve grades that reflect their full potential, and have higher unobserved ability, attending independent schools bestows students with a number of advantages, which may enable them to achieve to their full potential and on average attain higher entry grades than students from state schools (Ogg et al., 2009). In turn, researchers have argued that school grades are also limited as indicators of degree attainment, because these may not reflect other non-cognitive skills, like independent study skills required for succeeding in HE (Crawford, 2014). However, according to HEFCE (2003) the effect of school type on academic performance at the most selective HE Institutions is unclear. They suggest that this could be attributed to the comparatively little variability between students at these institutions, given that the majority of students tend to have the maximum value of A-level points, and it is therefore difficult to measure differences in HE achievement based on this. This was evidenced at

the University of Cambridge where Parkes (2011) compared the distribution of students' final results by school type and did not identify any significant differences.

2.4.2. School Performance

According to Burgess et al. (2008), children from socio-economically deprived backgrounds are more likely to attend poor performing schools than their more affluent peers. School performance overlaps with school type and socio-economic disadvantage as a disproportionate number of failing schools are located in areas of high socioeconomic deprivation, where underachievement is an outcome of numerous challenging factors (Benson & Borman, 2010; Cobbold, 2010; Greenman et al., 2011; Leithwood et al., 2010; Lupton, 2004; OFFA, 2014a). Indeed, different types of disadvantage tend to co-occur and have a cumulative impact on students' educational outcomes (Crosnoe & Cooper, 2010; Lupton, 2004; Powis et al., 2007). This was corroborated by OFSTED (2013) in a report that documents the wide variability in school performance between local authorities. They found that the proportion of good or outstanding schools in the most deprived areas was 20 percentage points lower than in the least deprived areas. In contrast, the proportion of outstanding schools in the least deprived areas is nearly double that found in the 'deprived' and 'most deprived' communities (OFSTED, 2013).

Conversely, the best performing schools tend to have a more affluent intake (Ball, Bowe, & Gewirtz, 1996; Steele et al., 2007; Sutton Trust, 2009). According to the Sutton Trust (2006), only 3% of pupils were eligible for FSM in the 200 top state schools, in comparison to the national average of 14%. Additionally, only 9% of the top 200 comprehensive state schools had an intake of FSM eligible pupils that was above the national average, and at 65% of these schools, less than 5% of pupils were registered as being eligible for FSM.

Whilst attendance at high performing schools and particularly fee-paying schools is associated with various advantages which can contribute to students' higher average attainment, attendance at low performing schools is associated with various disadvantages. These include teaching staff with fewer qualifications, higher pupil and teacher turnover,

and difficulties in teacher recruitment (Ball et al., 1996; Cobbold, 2010; Leithwood et al., 2010; Lupton, 2004; Ogg et al., 2009; The Sutton Trust, 2009). It is clear that, when combined, these factors influence differences in educational outcomes across regions of the UK, particularly for pupils from low- income backgrounds, as a disproportionate number of these students attend poor performing schools and come from neighbourhoods with low participation in HE (Cassen, 2007; Chowdry et al., 2012; Forsyth & Furlong, 2003; Lupton, 2004; OFSTED, 2013). However, unlike school-type differences in performance, between-school differences in performance are only moderate in the UK (Kirsch et al., 2002; Marks, 2006). This could explain why despite the overlap between school performance and school type- where fee-paying schools are predominantly higher performing, the average performance of students at a school does not appear to have a consistent effect on academic attainment in HE (Ogg et al., 2009). There is disagreement regarding the direction of the effect of school performance on academic attainment (HEFCE, 2003; Smith & Naylor, 2001; McManus, Dewberry, et al., 2013) including whether or not school performance has a significant effect at all (HEFCE, 2014; Hoare & Johnson, 2010). HEFCE (2003) suggest that the effects of school performance on HE attainment may be more contingent on factors such as A-level points, students' sex, and subject and subsequently more variable as a predictor than school type as a result.

2.5. Demographic Characteristics

When considering access to HE, and the complex issues of equity, it is also important to consider the role of sex and ethnicity. These individual characteristics are often included in discourse around 'Widening Participation' due to the ways that they are, historically associated with disadvantage, and inequality in participation and outcomes in HE (Broecke, 2007; Connor & Modood, 2004; Gorard, 2008; Harris et al., 2007; Jacobs, 2008). Hence, though these characteristics are not the central focus of the current thesis, they will each be discussed in turn.

In the UK, the proportion of students from ethnic minorities attending HE has increased substantially since the 1960's, when only few ethnic minority students achieved the necessary qualifications for entry (Richardson, 2008, 2010). Such differences are often

attributed to factors like structural inequalities inherent in particular societies, which are said to reduce both the achievement and the aspirations of children from ethnic minorities, affecting their participation in HE. Today, whilst trends in HE participation differ between ethnic minority groups, compared to white British students, overall people from ethnic minorities are currently more likely to have degree level qualifications or equivalent than White British students (Lymeropoulou & Parameshwaran, 2014). The people with the highest proportions of degree level qualifications in the UK are those of Chinese (43%), Indian (42%) and Black African (40%) ethnicities. Richardson (2011) delineated the extent to which the participation rates of some groups of ethnic minorities has 'widened' where participation rates of Asian and Black people are at least one and a half times the participation rate of white people in the UK. However, despite the fact that members of these minority groups are *more likely* than their White counterparts to participate in HE generally, they are strikingly comparatively *under-represented* at the Old Universities and Russell Group Universities in particular (Boliver, 2013; Zimdars et al., 2009). Additionally, people from certain ethnic minorities continue to be proportionally under-represented within HE in general compared to White British people, including people from the White Gypsy or Irish Traveller, Pakistani, Bangladeshi, and White and Black Caribbean groups (Connor & Modood; 2004; Lymeropoulou & Parameshwaran, 2014).

Though ethnic inequalities in HE participation have improved, ethnicity continues to be discussed in the context of WP (Gorard, 2008; Harris, Johnston, & Burgess, 2007; Richardson, 2008; Woolf, Potts, & McManus, 2011). This is partly due to the pervasive differences in HE participation that remain between certain ethnic minority groups, and the inequalities in participation existent at different types of HEI. However, in particular previous studies have highlighted significant variations in the academic attainment of students of different ethnicities (Richardson, 2008, 2010). Differences in the academic attainment of students of different ethnicities have been identified at various stages of their educational trajectories. For example, these differences have been identified in the results students obtain in their national examination for the General Certificate of Secondary Education (GCSEs) taken at the end of compulsory schooling when they are 16 years old. Attainment in these examinations was found to be highest for students of Indian

origin followed by White British students. Students from Bangladeshi, Pakistani or Black backgrounds performed significantly less well (Connor & Modood, 2004).

With regards to degree performance, White British students on average have been found to achieve higher grades than students from other ethnicities, even when entry level grades are held constant (Broecke & Nicholls, 2007; HEFCE, 2014; Jacobs, 2008; Richardson, 2008). These differences appear to be largely consistent across numerous studies comparing 'degree attainment' or the odds students have of achieving 'good degrees'. For example, according to Richardson (2008), the odds that a White student has of being awarded a 'good degree (2.1. or first class degree) are twice that of an Asian student and three times that of a Black student.

Like ethnic minority groups, historically, women were also under-represented in HE. However, by 1992, young women's participation rates were equal to those of men in England (Broecke & Hamed, 2008). Currently, rates of participation in HE are greater for females than males (HEFCE, 2013a; 2013b). This is a gap that continues to widen in favour of women (Goldthorpe, 2000; McKinstry, 2008). To a degree, the widening of this gap is associated with differences in attainment between males and females. These differences are well documented from early stages of students' educational trajectories, with females consistently achieving higher grades than males (HEFCE, 2013a; 2014; Richardson & Woodley, 2003; Sheard, 2009; Strand, 2014). For example, in 2007, 65% of girls achieved 5 + A*-C GCSEs or equivalent compared to 55.8% of males (DfES, 2007). Furthermore, females are more likely to sit A-levels, and are more likely to pass and achieve higher A-level grades than males (Broecke & Hamed, 2008). This explains why females typically enter university with higher grades than males. However, recent studies have found that even when entry grades are held equal, females outperform males in their academic achievement in HE (Dayioğlu & Türüt-Aşık, 2007; Sheard, 2009). This was not always the case, and contrasts with previous studies where males were up to 50 % more likely to achieve first class degrees (McCrum, 1996; Mellanby, Martin, & O'Doherty, 2000). The underperformance of males compared to females and their differential rates of participation in HE require further investigation, particularly as these differences appear to be widening further (HEFCE, 2014; McKinstry, 2008). In addition, differences in participation

rates between males and females are exacerbated when neighbourhood disadvantage is taken into consideration. According to HEFCE (2013a), compared to young males living in the most disadvantaged areas, young females are 35 % more likely to participate in HE by age 19. Additionally, it is important to acknowledge and further explore how differences in participation and attainment in HE between males and females also appear to vary by age, and between subjects, as these also have differential effects on labour market outcomes (Hu & Wolniak, 2013; Richardson & Woodley, 2003).

2.6. Why is it important to address socio-economic inequalities in HE participation?

Education is considered a vehicle for social mobility, which can influence economic stratification and affect the long-term prospects of individuals (Ashley et al., 2015; Breen & Jonsson, 2005; Cabinet Office, 2011; Haveman & Smeeding, 2006). Whilst the children of economically disadvantaged parents may lack access to resources and opportunities in ways that undermine their social mobility and influence the reproduction of economic stratification across generations, education can help to reduce these effects (Ball, 2003; Blanden et al., 2007; Bowen et al., 2002; Cabinet Office, 2011). This is critical as non-traditional/disadvantaged students who progress to HE are then in a position where they are more likely to progress into higher professional roles, and positions where they have historically been underrepresented (McKnight, 2015; The Sutton Trust; 2015).

Wilkinson and Pickett (2005) have discussed the detrimental impact of social inequality across multiple disciplines, including education. They argue that inequality is central to many problems within society including higher levels of crime, illiteracy, drug addiction, and obesity amongst other issues. Education is considered imperative for alleviating the detrimental repercussions associated with inequality, raising skill levels, and contributing to national productivity (Feinstein, 2003; Lynch, Smith, Hillemeier, Shaw, Raghunathan, & Kaplan, 2001; Uphoff, Pickett, Cabieses, Small, & Wright, 2013; Wilkinson & Pickett, 2009; Dorling, 2010). The underlying social reasons for increasing socio-economically disadvantaged students' access to universities are frequently discussed in relation to the wider economic benefits that education has to society (GDP etc) and

individuals as those who attend university are more likely to have higher salaries and be economically self-sufficient (The Sutton trust, 2004; HEFCE, 2013b; 2015).

Thus, from a social justice perspective, HE should be open to all who have the academic potential and the desire to attend (Archer, 2003; Roberts; 1993; Department for Education and Skills, 2003). This notion is echoed in the Schwartz report which states that: *'A fair admissions system is one that provides equal opportunity for all individuals, regardless of background, to gain admission to a course suited to their ability and aspirations'* (Department for Education and Skills, 2003, p. 5). This is also important because the representation of students from diverse backgrounds has positive effects on learning, and does not limit other students' exposure to diverse cultural and intellectual perspectives. This diversity rationale for WP has often been discussed, specifically with regard to subjects like medicine, where increasing diversity is considered an important means of providing more culturally sensitive healthcare to increasingly heterogeneous populations (Mathers et al., 2011).

The ever-increasing pressure to extend access to prospective students from under-represented backgrounds has been augmented by a number of changes in tuition fees, and the way in which HE is financed in the UK. These changes followed the introduction of variable tuition fees from £1,200 in 2005/06 to up to £3,375 in 2011/12 and the recent increase in tuition fees to up to £9000 (Bowes et al., 2013; Crawford & Dearden, 2010; Crawford, 2012; OFFA, 2014b). HE institutions that wish to charge the additional fees must adhere to an Access Agreement with the Office for Fair Access (OFFA).

The OFFA is an independent public body that holds responsibility for safeguarding fair access to higher education. The main way that OFFA does this, is by ensuring that HE institutions meet the targets set in their Access Agreements (OFFA, 2014b). These are technical, strategic documents that outline access measures HE institutions intend to put in place to safeguard and promote fair access to HE (e.g. outreach work, financial support). Access agreements include targets and milestones around retention, attainment, and progression, set by individual universities and colleges, which have to be approved by OFFA's Director of Fair Access (<https://www.offa.org.uk/access-agreements/>).

Access targets are of great financial importance to English institutions as those who fail to meet their WP targets can be heavily fined but more significantly, their right to charge top fees can be removed and capped at £6,000 (Cable & Willets, 2011; Harrison, 2011;OFFA, 2014). As a result, WP has become a greater focus for both government education policy and Universities in the UK alike. Hence, to meet WP targets and milestones it will become increasingly important for Universities to have robust mechanisms in place to be able to identify and measure appropriate targets in relation to admissions, progression and retention (Bridger, Shaw & Moore, 2012; Browne, 2010; Clayton, 2012). Further, in terms of public accountability, it is critical for institutions to be open, and to have confidence in their methods of targeting WP students. This is important as targeting methods that are inaccurate, imprecise or otherwise error prone can have negative effects on the life chances and opportunities of prospective students (Harrison & Hatt, 2010; Stringer, 2008).

2.7. How socio-economic inequalities in HE participation are currently addressed

In the UK, the underrepresentation of individuals from socio-economically disadvantaged backgrounds is addressed in various ways at different universities. Methods include programmes, such as Foundation or graduate entry programmes, typically devised by HEIs to facilitate entry and accessibility to students by providing alternative routes into courses and particular academic domains (McHarg, Mattick, & Knight, 2007; Mathers & Parry, 2009; Hoare & Johnson, 2010; Byrom 2009). Though these programmes are viewed favourably, research suggests that they are limited in scope, as the number of WP students entering these courses are small, and subsequently they have not led to significant changes in socio-economic profiles of UK student populations (Deakin, 2011; Garlick & Brown, 2008; Mathers et al., 2011).

The main approaches to WP in terms of policy initiatives have been through individual universities' outreach activities and interventions which target students at different stages of their educational trajectories (Byrom, 2009; Deakin, 2011; Hoare & Johnston, 2010; McHarg et al., 2007). Broadly, outreach activities aim to compensate for

perceived deficiencies associated with non-traditional students' backgrounds by raising aspirations, building study skills, and encouraging them to apply to HE (Lawler, 1999; Bowes et al., 2013). Such activities are not unique to the UK, and are carried out internationally to promote more equitable access to education to all individuals with academic potential regardless of background (Maras, 2007; Mooney, 2005). For example, outreach activities are used as a means of introducing the possibility of attending university to primary school pupils who may otherwise be unfamiliar with it. Compensatory interventions such as this are largely aimed at 'equalising playing fields' for students to realise their potential regardless of external circumstances (Bowes et al., 2013). Additionally, a number of universal interventions also exist which aim to address psychosocial factors that affect educational outcomes such as stereotyping; targeted interventions that consider the needs of specific student groups are necessary (HEFCE, 2015). However, concerns have been raised regarding the influence and nature of pre-university interventions (Byrom, 2009) and the capacity of these efforts to enable opportunity (Schmidt, 2007). In particular, the lack of empirical evidence used to guide interventions aimed at increasing participation of non-traditional students is problematic (Mathers & Parry, 2009; Mcharg et al., 2007).

According to Ball (2003), little attention has been paid to the defining moments in individuals' trajectories, even though this could influence the relative merits (success/failure) of WP interventions. Byrom (2009) highlighted the importance of this in a study that explored 16 students' experiences of applying to university and their first term at university following their participation in a Sutton Trust Summer School. Byrom found that students were strongly influenced by their background contexts, the friendship groups they did or did not make and their interactions with educational systems. However, the extent to which the Sutton Trust intervention influenced students' educational trajectories and more specifically their decisions to attend university was considered questionable as these students had already decided to go to university by the time of the intervention.

According to HEFCE (2015) whole institution approaches require buy-in from professional services, students and academics. They highlight the ways that institutions differ regarding the extent to which staff and students are aware of differential outcomes, and discuss how institutional cultures influence the impact that interventions can have.

Bowes et al., (2013) corroborated this, depicting how a range of contextual factors (e.g. mission, geographical location, entry tariffs) shape and influence institutional priorities and approaches to WP. For example, 'inclusive' institutions, tending to have a large number of WP students, are more likely to focus their efforts on improving retention. In turn, 'selective' research-intensive institutions (such as the UoL), are known to have lower proportions of WP students than inclusive or smaller HEI's and are more likely to focus their interventions and outreach activities on widening access. For such WP interventions to be effective, it is critical that they are informed by research on students' educational trajectories and the key time points at which decisions are made. However, according to Ball et al. (2003) little attention has been paid to the defining moments in individuals' trajectories, even though this could influence the relative merits (success/failure) of such interventions. They argue that without tracking individuals throughout their educational trajectories and understanding their choices, it is difficult to evaluate the extent to which WP measures are working. This is also important as a means to identifying and addressing barriers that affect socio-economically disadvantaged students at the point of admissions to university, and within the system through which they are currently selected for Universities.

Applicants can be given additional consideration during the university admissions process to enable or encourage their participation in HE. This is referred to as positive action. For example, students may be given greater chances of being interviewed or their entry grade requirements could be lowered for certain programmes. Such concessions could be made when non-traditional applicants participate in access schemes or programmes affiliated with individual universities. Access programmes are typically offered to 'disadvantaged' students that fulfil relevant eligibility criteria at schools and colleges working with dedicated WP units at most HE institutions (Bowes et al., 2013). These access programmes typically comprise of a range of activities, both academic and social, aimed at preparing and exposing prospective students to the HE environment. Though these schemes and widening access activities are considered to be effective, they are limited in the number of students these reach and are often focussed exclusively on under-represented groups in the areas in close proximity to the institution (Bowes et al., 2013).

Concessions, in the form of reduced grades, or additional consideration may also be given to 'non-traditional' students, through the use of contextual data (BIS, 2014). As briefly explained in Chapter One, contextual data refers to data that help place academic attainment into the context of the circumstances in which the results were obtained, and includes both comparative school and socio-economic data (Bridger, et al., 2012; Moore et al., 2013). Given that the predictive validity of exam grades as indicators of degree performance has been found to be limited and inconsistent between all groups of students and degree subjects, the use of contextual data is increasingly endorsed (e.g. BIS, 2013). The implementation of contextual data in the university admission process, in which academic attainment is placed into the context in which it was obtained, could enable a more sophisticated interpretation of exam grades and thus help to increase fair access to HE (Mullen, 2011). Examples of contextual data include average school performance, school progression to HE, allowances such as Free School Meals (FSM), and postcode data (such as ACORN, or IMD).

Historically, the use of contextual data in admissions has been controversial, and has been associated with positive discrimination and social engineering (Henry, 2012; Smith, 2012). Critically, there are claims that giving lower entry requirements to socio-economically disadvantaged applicants is unfair, as it discriminates against students from affluent backgrounds, who have attended independent schools, and may 'dumb down' student bodies and result in reduced academic excellence for HE institutions (Trowler & Trowler, 2010; Hoare & Johnson, 2010). However, a powerful riposte to these claims is the evidence that students from comprehensive schools perform equally well in their degrees or can actually outperform their more affluent independent school counterparts once they reach university level (Hoare & Johnston, 2010; Sutton Trust, 2010b; Smith & Naylor, 2001; Smith & Naylor, 2004). Such findings highlight the limitations associated with school grades and are thus used as rationale to justify the implementation of contextual data in university admissions and offer students reduced grades based on their background characteristics. However, apart from the controversies surrounding the use of contextual data, there is a further challenge to offering students reduced grades using contextual data, in the tension between a policy to lift a cap on ABB+ students (in 2013/14) and WP objectives, as many

WP students do not typically achieve at this level (CFE, 2013; Bowes et al., 2013). Hence, whilst the use of contextual data in university admissions has been encouraged as part of a broader WP Policy agenda, the challenges and tensions surrounding the use of contextual information in admissions may deter institutions from adopting this (Bowes et al., 2013). Given these challenges, it is particularly critical that institutional policy in respect of contextual data is transparent and underpinned by firm empirical evidence (BIS, 2011; 2013; Cable & Willets, 2011, Croxford & Raffe, 2013; Milburn, 2009 Supporting Professionalism in Admissions [SPA], 2011).

It is the responsibility of individual HE institutions to attract WP students and ensure fair access to HE (BIS, 2014). This requires suitable methods of identifying prospective WP students during the application process, something that could help mitigate differences in levels of participation between groups. Institutions use different types of contextual information based on research identifying a range of background characteristics that influence educational disadvantage and differentiated performance (BIS, 2014). These include school effect, socio-economic background, and personal attributes. An increasing number of HE institutions already choose to use contextual information in their admissions processes to help them identify applicants academic potential and even as a tool to target outreach (BIS, 2014; Bridger et al., 2012; SPA, 2012). However, publicly available research examining the relationship between contextual background characteristics and achievement in general is highly limited (Bradshaw et al., 2007; Gorard, 2008; Bridger et al., 2012; Mullen, 2011; SPA, 2013; Zimdars, 2007). Addressing these issues is critical as it could help address inequalities persistent in UK HE participation (Sutton Trust, 2005; Stringer; 2008).

2.8. Addressing gaps in the literature

As discussed in the preceding paragraphs there are number of limitations and gaps in the current literature on socio-economic background and educational outcomes. These limitations and how this thesis seeks to address them are summarised below.

1. Various studies have examined associations between students' background characteristics with participation and academic performance nationally and at individual

universities (HEFCE, 2003; 2014; Henry, 2013; McManus, Dewberry, et al., 2013; Smith & Naylor, 2005). However, to my knowledge, no previous case studies at English Russell Group Universities have used both postcode-based measures of disadvantage along with school background information to identify educational disadvantage despite the limitations associated with measures such as NS-SEC and known differences in student composition existent between HE institutions (Gibbons & Vignoles, 2012; Harrison & Hatt, 2010; Reay et al., 2001a; Singleton, 2010b). Chapters Four and Five (studies 1-2) explore differences in students' academic attainment and participation based on their educational and socio-demographic backgrounds characteristics, using postcode measures of disadvantage (IMD and POLAR 3) to identify socio-economic background.

2. Though the use of contextual data as a WP dimension in university admissions processes has been recommended as a means of identifying educational disadvantage that may prevent students from performing to the best of their ability, there is currently no standardised or universal approach to the use of contextual data and very limited guidance on best practice (Cleland et al., 2012; Selecting for Excellence Group, 2014). As such, research examining the relationships between contextual background characteristics and achievement in general is highly limited (Bradshaw et al., 2007; Gorard, 2008; SPA, 2013; Zimdars, 2007). Chapters Four and Five (studies 1-2) seek to provide insight into this, to help guide the potential use of contextual data as a WP dimension in university admission processes (BIS, 2011; Cable & Willets, 2011, Croxford & Raffe, 2013; Mathers & Parry, 2009; Mcharg et al., 2007; Milburn, 2009). This is important to ensure that those with academic potential to benefit from HE have the opportunity to do so (DfES, 2003). Thus, the extent to which the grades students achieve in formative examinations at school are representative of their potential at university is investigated, highlighting the contextual background characteristics that may affect whether school grades are under/over-stated.

3. Whilst socio-economic inequalities in HE participation are most prominent in over-subscribed competitive programmes such as medicine, there is a dearth of research focusing specifically on medical students, and considering measures of disadvantage, alongside relative school performance to identify contextual effects on prior academic attainment (Do et al., 2006; Hilton & Lewis, 2004; McManus, Dewberry, et al., 2013;

McManus, Woolf, et al., 2013; Tiffin, Dowell, & McLachlan, 2012). Given that differences have been identified in the socio-demographic composition of students even between elite universities, recognising these differences and exploring how trends in participation and academic performance may vary, is important (Ackerman et al., 2013; Callender, 2011; Parkes, 2011; Hoare & Johnston, 2010; Singleton, 2010a). Acknowledging these differences, Chapter Five (study 2) investigates the associations between students' contextual background characteristics with participation and academic performance at the UoL medical school. These associations have not previously been explored specifically using both postcode-based measures of disadvantage along with school background information in published academic research at other medical schools.

4. A limited number of studies were found that focused specifically on the educational trajectories of students from disadvantaged backgrounds at Russell Group Universities. Various studies corroborate this and discuss the need for qualitative research focusing on individual's educational trajectories to university (Mathers & Parry, 2008 ; Mcharg et al., 2007; Ball, 2003; Byrom 2009). Chapter Six (study 3) follows a phenomenological qualitative approach, centring on the lived experiences of a purposive sample of 13 UoL students from socio-economically disadvantaged backgrounds during the formative period between primary school and HE. By exploring this critical period, the findings from this study could help to identify barriers and facilitators that may influence whether or not students from WP backgrounds attend university and determine where and when support should be provided.

5. Most studies exploring inequalities in HE have been carried out using large-scale data sets. However, these studies do not capture the complexity of human experience and how different factors may have varying roles for different individuals (Stevenson & Lang, 2010). Hence, though findings from quantitative studies provide coherent patterns of participation and attainment, they do not provide insight into the factors, including experiences and decision-making processes which underpin the pervasive inequalities in attainment and participation in HE (i.e. HESA, 2008, 2009). Chapter Six seeks to provide insight into this, and identify factors that may underpin socio-economic differences in participation and attainment. By exploring the experiences and decision-making process of socio-

economically disadvantaged students, this study seeks to provide evidence that can be used to inform WP strategies.

CHAPTER THREE

3. Methodology

3.1. Introduction

In this chapter I explain the methods for the three empirical studies comprised in this thesis. I begin by outlining the context in which these studies were carried out (Section 3.2.). I then discuss the epistemological and theoretical frameworks that underpin these studies and the overarching use of a pragmatic approach for linking these studies, their different perspectives, and findings where appropriate (Mason, 2006). In doing this, I highlight how qualitative study 3 follows an alternative but complementary line of investigation to quantitative studies 1 and 2 to help understand phenomena in greater depth and from different perspectives. I subsequently describe how data were generated for quantitative studies 1 and 2 (Chapters Four and Five) as these utilised datasets derived from the same source. This is followed by an explanation of the exclusion criteria that were applied and the main sources of missing data in both these studies (Section 3.4.). After outlining these data quality issues, I go on to specify the differences between the quantitative studies, and explain the rationale for the selection of outcome variables in each of these. I then discuss the educational, socio-demographic and academic information included in both of the datasets in Section 3.7. The methods underpinning study 3 (Chapter Six) are explained in Section 3.9. This follows a qualitative method of enquiry to examine the experiences of individuals in their educational trajectories from primary school to university.

3.2. Study Context

The studies in this thesis focus solely on students at the University of Liverpool (UoL). As recommended in previous research (e.g. Hoare & Johnston, 2010), each investigation follows a case-study approach to enable a more precise evaluation of the impact of various determinants of HE performance and participation specific to the UoL. By following this approach, the wide heterogeneity of student composition in different UK

universities, and the faculties within them are acknowledged. The findings of the studies should consequently be interpreted in the context of the geographical and demographic population of the UoL.

The UoL is one of the six original “red brick” civic universities and a founding member of the Russell Group (The Sutton Trust, 2010b). Members of the Russell Group have been defined as 'high status' institutions (e.g. Chowdry et al., 2013; Crawford 2014). Socio-economic differences have been identified between students attending different types of institutions, as well as differences in degree outcomes between different types of institution (HEFCE, 2013b; 2014; McKnight, 2015; The Sutton Trust, 2010c; 2015). Traditionally, elite universities in the UK have tended to have a greater proportion of students from more affluent backgrounds and have higher entry requirements (Chowdry et al., 2013). However, the UoL campus is based in the city of Liverpool; one of the most socio-economically deprived areas in England (based on lower super output areas) (Department for Communities and Local Government, [DCLG] 2011).The UoL typically attracts a higher proportion of local applicants than other members of the Russell Group and this may contribute to the slightly higher proportion of students from socio-economically disadvantaged backgrounds attending this university compared to the Russell Group average. Table 1 indicates these proportions relative to the rest of the Russell Group/ HEIs in the UK.

Table 1: University of Liverpool Widening Access Performance

| | 1. Low Participation Neighborhoods (LPN) | 2. Lower Socioeconomic Groups (NS-SEC 4-7) | 3. State Schools/ Colleges | 4. Low Income Households |
|-------------------------|---|---|-----------------------------------|---------------------------------|
| University of Liverpool | 8.5% | 22.0% | 87.6% | 27.4% |
| English Russell Group | 5.5% | 18.3% | 72.5% | 21.4% |
| England | 10.2% | 30.9% | 88.5% | 31.6% |

Note: 1–4 from the UoL 2014 Access Agreement.

The total student population at the UoL is approximately 19,300, and of these, approximately 16,000 are undergraduates. These students are divided across three faculties, Health and Life Sciences (HLS), Humanities and Social Sciences (HSS), and Science and Engineering (SE). The data examined in studies 1-2 of this thesis cover students from all three faculties, but not all degree programmes. Specifically, students on four-year programmes were not included in either dataset as these programmes have different codes of assessment and thus differ with regards to weighting, averaging, progression and profiling. Additionally, longer programmes often include time in industry or result in unclassified degrees and have to be analysed and compared in different ways. Study 3 (Chapter Six) also included participants from the three different faculties of the UoL, across a range of three and five year programmes. Further detail on these issues is provided throughout the present chapter for each of these studies.

Ethical approval was sought independently for the quantitative studies comprised in Chapter Four and Five to the qualitative study comprised in Chapter Six. The process of gaining ethical approval for the quantitative studies took place prior to the extraction of data, and was granted by the UoL Ethics Committee. In designing the qualitative study, ethical consideration was given to a number of separate issues surrounding the sensitivity of research topics, confidentiality, and informed consent. This is discussed in further detail in Section 3.9.2.

3.3. Connecting Methods: Epistemology

Epistemology is a core area of philosophy that is concerned with the origin, nature, methods and limits of human knowledge (Creswell, 2007; Mol, 2002; Tashakkori & Teddlie, 2010). This poses the following questions: What counts as knowledge? What is the nature of reality? How do we know what we know? What constitutes valid knowledge and how can we obtain it (Berger & Luckmann, 1991). Put succinctly, Mol (2002) argues that epistemology is essentially concerned with reference, asking whether representations of reality are accurate.

Within this thesis, combined methods are used (qualitative and quantitative) so that the advantages of each compliment the other, while the insufficiencies of individual

approaches are offset (Bryman, 2008). Whilst individually, the quantitative and qualitative studies follow different epistemological approaches an overarching pragmatic approach is used to integrate them. In this section I intend to clarify the different epistemological perspectives inherent in this thesis and the overarching use of a pragmatic approach for linking them. In doing so, I intend to highlight the challenges and benefits of using different methodologies to help understand phenomena in greater depth and from different perspectives.

Pragmatism is a popular epistemology within mixed methods research (Tashakkori & Teddlie, 2010). In part this is because pragmatic approaches accommodate different perspectives recognising the different worldviews of quantitative and qualitative paradigms to address given research questions (Morgan, 2007). In effect, pragmatism views knowledge as relative, not universally valid and constantly redefined rather than absolute such that there may be singular or multiple realities (Creswell & Clark, 2011). This supports the use of different approaches and methods as a means to providing enhancement or clarification of the results from one method with the results from the other (Johnson & Onwuegbuzie, 2004). Hence, this approach is well suited to the combined use of divergent (qualitative and quantitative) methods to study socio-economic inequalities in participation and attainment in educational contexts.

Since quantitative approaches have an important role in measuring socio-economic differences in participation and attainment, and qualitative approaches can provide an understanding of the perspective of those individuals that experience disadvantage in these domains, the use of both of these approaches is important in providing a greater understanding into socio-economic inequalities in educational contexts. In this regard, it is clear that approaches that combine quantitative and qualitative methods are essential if researchers and practitioners are to understand the relationship between socio-economic disadvantage and inequalities in HE. Furthermore, as Mason (2006) points out, our understanding of phenomena may be inadequate if we view these along a single dimension, since social experience and lived realities are multi-dimensional.

The current thesis follows a traditional sequential mixed methods design, where a qualitative phenomenological study (Chapter Six) was carried out after a quantitative phase of analyses. (Chapters Four and Five) (Creswell et al., 2004). Underpinned by positivism, studies 1 and 2 (Chapter Four and Chapter Five) examined the associations between students' socio-demographic and educational background characteristics with subsequent degree performance attempting to make objective and unbiased assertions based on these trends. Positivism is an approach to science based on universal laws, with an emphasis on measurement with objectivity and neutrality (Creswell, 2007; 2013).

The methods followed by positivists are those of natural science, focussing on testing theories and hypotheses, and thus making explanations based on empirical evidence (Denzin & Lincoln, 2011; Teddlie & Tashakkori, 2008). Though positivist quantitative studies such as those comprised in this thesis are needed to identify factors that appear to be significantly associated with participation and attainment in education, and could be used to make predictions in future studies, they do not provide insight into the possible reasons for these differences. For example, though students from the most deprived areas have been found to enter university with lower grades in a number of studies (e.g. HEFCE, 2003; Hoare & Johnston, 2010), these studies do not capture the underlying meaning of these trends, the subjectivity of reality, and the complexity of human experience. These are some of the caveats associated with quantitative studies and the positivist epistemology underpinning these (Crotty, 1998). Conversely, one of the strengths of qualitative studies lie in the knowledge these provide of the dynamics of social processes, social context, and in their ability to answer 'how' and 'why' questions in these domains (Mason, 2006). As such, advocates of mixed methods research cite this complementarity as one of the key motivations for mixing methods as well as: to gain a fuller picture of the phenomenon under study, and to enhance the strengths and minimize the weakness of individual methods (Bryman, 1998; 2004). However, mixed methods approaches raise challenges in reconciling different epistemologies and in integrating different forms of data and knowledge (Mason, 2006).

To a large extent, the difficulties of mixing divergent methods stem from the fact that qualitative and quantitative methods have developed from opposing paradigms that

view knowledge and reality in different ways (Creswell, 2013; Denzin, 2010). Though in theory, differences in epistemological beliefs should not prevent qualitative researchers from using data collection methods that are typically quantitative or vice versa, this is not always the case (Bryman, 2008). As such, epistemological differences between these approaches are considered by many as an important barrier to the integration of quantitative and qualitative studies. Some argue that this problem derives from the positivists "narrow" definition of the concept of science and focus on measurement with objectivity and neutrality (Bryman, 2008; Hamati –Ataya 2012). Johnson and Onwuegbuzie (2004), discuss the problems with this, indicating that fully objective and "value free research" is a myth and "positivists" disregard the fact that many human decisions (which are subjective) are made throughout the research process. Further, quantitative and qualitative approaches have also been described as antagonistic due to their differences in generalizability (Bryman, 2008).

In terms of generalizability, "positivist" studies tend to focus on assessing how generalizable the study findings are to the wider population. Conversely, with qualitative approaches, the emphasis tends to be on the individual, credibility (confidence in the truth of the findings) and confirmability (the extent to which findings are shaped by the participants) (Lincoln & Guba, 1985). Pragmatism is an approach to mixing methods that does not view the distinction between knowledge that is context dependent (qualitative approaches), and knowledge that is generalizable (quantitative approaches) as a valid one (Mayoh, & Onwuegbuzie, 2013). This distinction is not viewed as valid because knowledge is rarely specific to a particular context (for example one student from a socio-economically disadvantaged background) nor is it universally generalizable (representative of all universities) (Morgan, 2007). Furthermore, instead of expecting reality to find its correspondence in knowledge, pragmatism focuses on the importance of transferability in terms of how findings and their implications may vary or be similar in different contexts (Morgan 2007). In this sense, pragmatism is said to offer a middle position, both philosophically and methodologically that can help to build a bridge between different and in some ways conflicting philosophies that underpin quantitative and qualitative studies (Johnson & Onwuegbuzie,2004).

The final study that is comprised in this thesis (Chapter Six) followed a qualitative method of inquiry, drawing on social constructionism to explore the subjective and complex experiences of socio-economically disadvantaged students in their trajectories from primary school to the UoL. Social constructionism is an epistemology that recognises that meanings are constructed in different ways, depending on how people engage with the world (Berger & Luckmann, 1991; Creswell, 2007; Gergen & Gergen, 2000). This epistemology is compatible with multiple theoretical perspectives including phenomenology (Haase & Myers, 1988; Koch, 1999; Racher & Robinson, 2003). Phenomenological research focuses on lived experience, and is comprised of the accounts of multiple individuals (Creswell, 2007).

Whilst phenomenological approaches focus on the social construction of meaning and subjective experience, positivism in a sense ignores subjectivity and the individual consciousness of actors within society (Bryman, 1984; Moran, 2002; Schutz, 1972). These differences are inherent in the objectives, methods, and findings of the empirical studies of this thesis, and in a sense divide these into two separate lines of investigation. However, from a pragmatist perspective, these different approaches do not contradict each other, but suit different purposes and have different goals (Mol, 2002). Additionally, previous studies highlight how the phenomenological method is malleable, and can be adapted to fit within the field of methods, such as mixed methods research (Mayoh & Onwuegbuzie, 2013). In particular, there is strong justification for the adoption of a quantitative phase in order to identify the most relevant phenomenological experience to be explored using phenomenological methods (Van Manen, 1990).

Mixed methods studies with a phenomenological component frequently use quantitative findings to inform the phenomenological focus within the second phase of the research. Thus, the quantitative data can provide orientation toward the phenomena that are uncovered within the preliminary quantitative phase, or alternatively help identify participants for the phenomenological phase who can provide information rich experiential accounts (Mayoh & Onwuegbuzie, 2013).

Following a pragmatic approach, the integration of quantitative and qualitative studies in the current research occurs primarily at the stage of interpretation of findings (Chapter Seven). This involves examining the extent to which results converge, or diverge from each other and from single methods (Patton, 1985). In doing this, I intend to reconcile the two lines of investigation that are followed by showing how the combined usage of these two contrasting approaches helps to provide a more nuanced understanding of the factors that influence access and participation in HE. To assert this further, in Chapter Seven I will discuss what the mixed methods design adds to the interpretation of findings over and above that of single methods.

3.4. Quantitative Studies: Data Extraction

The UoL central database includes each student's demographic, socio-economic and educational background information from when they apply, to when they leave university or graduate. The University Central Admissions Service (UCAS), the organisation responsible for managing applications to HE programmes in the UK (Singleton & Longley, 2009) provides HEIs with this application information about students. This information is compiled by HEI staff and saved, along with their performance information once at university, in the university central database. The relevant portions of these data were derived from the UoL central database in the form of two independent 'master' datasets. These datasets were individually analysed in two retrospective cohort studies (Chapter Four and Chapter Five) presented in this thesis.

3.4.1. Settings

The dataset examined in study 1, included undergraduate students who had enrolled on full time three-year classified degrees at the UoL between 2004/5 and 2009/10 and successfully graduated within three years of entry. The data set examined in study 2, included students on the five-year Medical (MBChB) programme at the UoL that had successfully graduated within 5 years of entry, registering between 2004/5 and 2006/7. These years of entry/exit were selected as these were the last entry years that allowed analysis of both entry and exit points for students that had successfully completed three

year degree programmes, and the five year MBChB. There were no significant changes to the University's admission policies or grading criteria over this time period.

The two master data-sheets that were generated from the UoL central database were examined independently because they differ in important ways. To begin with, assessments, grading criteria and selection processes differ between three-year degree programmes and the five-year medical programme (see section 3.6.2 for more information). For example, three-year degrees are classified and medical degrees are not. Conversely, grading and degree classification for the three-year programmes are largely consistent between faculties making it possible to include students on these programmes and explore associations within one dataset. Moreover, previous research indicates that the socio-economic/demographic profiles of students on highly competitive subjects such as medicine, differs to other programmes, as this typically attracts a considerably lower proportion of students from less affluent socio-economic groups compared to other programmes (Gallagher et al., 2009; McManus, Woolf, et al., 2013; Singleton, 2010a). Thus, it was considered important to examine inequalities in participation and attainment between students on three-year programmes and the five- year medical programme independently to identify potential differences between these. Maintaining this level of disaggregation is also important to refine the targeting of students with academic potential who are currently underrepresented within different programmes (Singleton, 2010a). Further, the benefits of using contextual data alongside school grades as a means of identifying students' true academic potential could be greatest for highly selective programmes such as medicine where a large proportion of applicants have the highest entry grades making it particularly difficult to discriminate between them (e.g. Tiffin et al., 2012).

Like medicine, veterinary science and dentistry are also known to be selective and competitive programmes, and also attract a higher proportion of affluent students compared to most other programmes (Gallagher et al., 2009). However, differences were identified in the admissions/grading criteria between these selective programmes such that all three could not be examined in one dataset. For example, the veterinary science and dentistry programmes differ from one another and from the medical programme in terms

of when final exams are taken, the ways in which formative examinations are assessed and how different components are weighted in relation to final outcomes. It is due to these differences that one dataset contained data pertaining to undergraduate (UG) students on three-year degree programmes and the other contained data relating exclusively to students on the five-year medical degree programme (MBChB).

Though datasets for studies 1 and 2 were examined independently, both studies examined associations between students' contextual background characteristics (school type, school performance, socio-economic deprivation, neighbourhood participation, sex and ethnicity) in relation to participation and academic attainment (at school and university). These datasets shared a number of similarities. Firstly, students included in both datasets were represented by unique student ID numbers and were not identifiable. Secondly, both datasets included variables pertaining to general programme related information. These variables included the individual modules students were enrolled on, the credits allocated to these, the term in which they started, and year of study. Both datasets also incorporated variables pertaining to entry-level attainment, including the grades and corresponding UCAS tariff scores students' achieved in each subject for entry to HE. UCAS tariff points are a system used to allocate points to post- GCSE qualifications achieved by students during the UCAS application process to Universities in the UK (A=120, B=100, C=80 etc). A number of variables pertaining to students' academic attainment in HE, were also present in both datasets, including their attainment in different courses (modules), and an average score for every year of their programme. However, whilst all of these variables were included in both datasets, not all were incorporated in analyses and the measures representative of students' final attainment differed between the datasets (see section 3.6. for more detail on outcome variables used in studies 1 and 2).

3.4.2. Participants: Exclusion/Inclusion Criteria

The two datasets that were derived from the UoL central database for the purposes of retrospective cohort studies 1 and 2 included only students registered on full time three-year classified degrees and the five-year medical programme respectively. These datasets were generated from the UoL database using pre-specified exclusion criteria to make

comparisons between students as homogenous as possible. Pre-specified exclusion criteria included (i) students pursuing part-time degree programmes, (ii) degree programmes that did not attract standard UCAS entry and students who did not gain access through standard UCAS entry (for example those who enter through foundation degrees and/or through an access courses) and (iii) students admitted based on their attainment in international examinations such as the International Baccalaureate (IB) and other international examinations. Based on exclusion criteria, dataset for study 1 included data for a total of 5,369 students on three-year degree programmes at the UoL. In study 2 there were data for 571 medical students. Thus, studies 1 and 2 are not representative of the entire UoL intake, but these include all those students that fit inclusion criteria for whom there was comparable postcode, school background and university performance information.

3.4.3. Data Quality Issues-Missing Data

Data were missing for a number of key variables. Table 2 presents a descriptive breakdown of the sample characteristics of studies 1 and 2. This depicts the proportion of missing versus non-missing data for each of the variables included in the analyses of these studies. For both study samples, information pertaining to university performance was generally complete except in special circumstances, including cases where students were absent from examinations due to ill health or other mitigating circumstances considered within the University's policy. In some of these cases the Board of Examiners is able to decide whether it has sufficient evidence of student's achievement to determine whether an award should be given. Though a greater proportion of data were missing for study 1, as shown on Table 2, a proportion of school type, and school performance data were also missing for study 2. Principally, this data were missing where this was unavailable from the Department for Education (DfE) website. However, in some cases students' school background information was missing altogether. Secondly, socio-economic information was also missing as not all postcodes were valid, and could be matched to IMD and/or POLAR 3 scores. Thirdly, a proportion of UCAS tariff point data were also missing in both studies but particularly for study 1.

Where data were missing for key variables, students were excluded from analyses using total case deletion/complete case analysis (Peugh & Enders, 2004). This is a common technique for dealing with missing data, however, it is recognised that this approach can be problematic and introduce bias when those individuals that are excluded are not a random sample of the population (Altman & Bland, 2007; Peugh & Enders, 2004). Thus, though the dataset for study 1 included data for 5,369 students, due to the amount of missing data, the multi-variable analysis only included 3,728 students for whom data were complete (1,641, [30.6%] missing). In turn, the dataset for study 2 included data for 571 medical students, but the multi-variable analysis included 478 students for whom data were complete (93 [16.3%] missing).

Table 2: Descriptive Breakdown of Sample Characteristics for Variables Included in Studies 1 and 2

| Variables | Study 1 N (%). | Study 2 N (%) |
|---------------------------------------|-------------------|------------------|
| <i>School type:</i> | | |
| Independent | 567 (10.6) | 110 (20.88) |
| Grammar | 605(11.9) | 115(21.82) |
| Comprehensive | 2640(51.9) | 163(30.93) |
| Sixth form | 1205(23.7) | 105(19.92) |
| State (other) | 68(1.3) | 34(6.45) |
| Unknown | 780 (14.5) | 44 (7.7) |
| Total | 4589 (85.5) | 527 (92.3) |
| <i>School performance</i> | | |
| High | 3865 (81.8) | 426 (89.31) |
| Low | 861(18.2) | 51(10.69) |
| Unknown | 776 (14.5) | 93 (16.3) |
| Total | 4593 (85.5) | 457(83.7) |
| <i>Deprivation*:</i> | | |
| 1 | 655(13.5) | 88(17.81) |
| 2 | 687(14.2) | 74(14.98) |
| 3 | 916(18.9) | 76(15.38) |
| 4 | 1153(23.9) | 112(22.670) |
| 5 | 1423(29.4) | 144(29.15) |
| Unknown | 526(10) | 76 (13.3) |
| Total | 4834 (90.0) | 495(86.7) |
| <i>POLAR 3:#</i> | | |
| High | 4010(76.7) | 571 (80.9) |
| Low | 1220(23.3) | 462 (19.1) |
| Unknown | 139 (2.6) | 0 |
| Total | 5230 (97.4) | 571 |
| <i>Sex:</i> | | |
| Males | 2221(41.4) | 196(34.39) |
| Females | 3148(58.6) | 375(65.61) |
| Total | 5369 (100) | 571 |
| <i>Ethnicity</i> | | |
| White | 4913 (91.5) | 448(78.46) |
| Asian | 127 (2.4) | 75(13.13) |
| Black | 65(1.2) | 5(0.88) |
| Chinese | 48 (0.9) | 13(2.28) |
| Mixed | 111 (2.1) | 23(4.03) |
| Other | 105 (2.0) | 7(1.23) |
| Total | 5369 (100) | 571 |
| <i>Entry Level Attainment~</i> | | |
| Unknown | 353 (6.6) | 21 (3.7) |
| Total | 5016 (93.4) | 550(96.3) |
| <i>Term 3 Attainment</i> | | |
| Unknown | 94 (1.8) | 1 (0.2) |
| Total | 5275 (98.2) | 570 (99.8) |

~ Entry level attainment= Total UCAS tariff points (study 1), and top three A-level tariff points (study 2)

Post-hoc cross-tabulation of the data was carried out to assess the patterns of 'missingness' between variables included in analyses of both studies. For study 1, missing attainment related data (degree outcomes and UCAS tariff point data) were randomly distributed amongst groups based on POLAR 3, sex, and ethnicity. Table 3 presents the proportion of missing school type, school performance and UCAS tariff point information by IMD quintile for study 1. This indicates that in particular data were missing for students from quintile 1 (most deprived) compared to the other quintiles for UCAS tariff points and school performance. This suggests that missing UCAS tariff data and school background information was related to deprivation. At least in part, this may be attributed to the fact that UCAS tariff point data were primarily missing for most students with 'non-standard' qualifications (e.g. b-techs) who were largely from the most deprived socio-economic quintile based on the IMD. These findings are consistent with previous studies that indicate that students with non-standard qualifications are more likely to be from socio-economically disadvantaged backgrounds (Broecke & Nicholls, 2007; Callendar, 2005; Gorard, 2012).

Table 4 presents the proportion of school type and UCAS tariff point data that are missing for high and low performing schools in study 1. This indicates that a greater proportion of UCAS tariff point data were missing for students that had previously attended low performing schools (14.6%) compared to those that had attended high performing schools (2.2%). This is consistent with the finding that UCAS tariff point and school performance information were primarily missing for students from IMD quintile 1 (most deprived) as different types of disadvantage overlap, where students that previously attended low performing school are also more likely to be educationally disadvantaged (e.g. Ogg et al., 2009).

Study 1 (Chapter Four- three-year programmes) Cross-tabulations

Table 3: Proportion of Missing School type, School performance and UCAS tariff point data by IMD Quintile

| | IMD Quintiles N(%) | | | | | Total |
|---------------------------|--------------------|------------|------------|-------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 | |
| Total UCAS tariff | 555 (84.7) | 644(93.7) | 856 (93.4) | 1101 (95.5) | 1372 (96.4) | 5016 (93.4) |
| Missing N (%) | 100(15.3) | 43(6.3) | 60(6.6) | 52(4.5) | 51(3.6) | 353 (6.6) |
| School type | 554 (84.6) | 581 (84.6) | 797 (87.0) | 983 (85.3) | 1193 (83.8) | 4589 (85.5) |
| Missing (%) | 101(15.4) | 106(15.4) | 119(13.0) | 170(14.7) | 230(16.2) | 780(14.5) |
| School Performance | 560 (85.5) | 615 (89.5) | 857 (93.6) | 1057 (91.7) | 1333 (93.7) | 4593 (85.5) |
| Missing N (%) | 95(14.5) | 72(10.5) | 59(6.4) | 96(8.3) | 90(6.3) | 776 (14.5) |

Table 4: Proportion of Missing School type, and UCAS tariff point data by School Performance

| | School Performance N (%) | | |
|----------------------------|--------------------------|------------------------|-------------|
| | Low Performing School | High Performing School | Total |
| Total Tariff Points | 750 (85.4) | 3634 (97.8) | 5016 (93.4) |
| Missing N (%) | 127(14.6) | 81(2.2) | 353(6.6) |
| IMD Quintiles | 845 (96.2) | 3577 (96.3) | 4834(90.0) |
| Missing | 33(3.8) | 138(3.7) | 776(14.5) |
| School Type | 797 (90.8) | 3306 (89.0) | 4589 (85.5) |
| Missing N (%) | 81(9.2) | 409(11.0) | 780(14.5) |

For study 2, missing data were more evenly distributed across groups compared to study 1. Table 5 presents the proportion of missing school type and IMD data that were missing for high and low performing schools in study 2. This shows that the proportion of missing varied minimally between these variables i.e. missing school performance data were not related to school type or IMD quintile. Table 6 presents the proportion of missing school type, and school performance information by IMD quintile for study 2. Though it is reassuring that the proportion of missing data appears to be more randomly distributed between groups than in study 1, a slightly higher proportion of school type and school performance information was also primarily missing for students from the most socio-economically deprived areas (quintile 1) compared to their more affluent counterparts. This suggests that to a degree missing school background information was related to deprivation. However, this was not the case with UCAS tariff data, where the proportion of missing data did not vary significantly between groups i.e. unlike study 1 missing UCAS tariff information in study 2 was unrelated to deprivation or school background. In part this is because less UCAS tariff information was missing in study 2 compared to study 1. Additionally, the proportion of students that had entered the UoL medical school with non-standard qualifications (15 out of 21 students for whom UCAS tariff point data were missing) was also substantially lower which could help explain why unlike study 1, missing UCAS tariff data were unrelated to deprivation in this second study.

Altogether, these findings suggest that data were not missing completely at random, particularly in study 1, as a disproportionate amount of data were missing for students from disadvantaged backgrounds (low performing schools, and most deprived areas). Though these biases should be recognised, they do not affect all analyses for which most data were available in the current study. Hence, while the internal (univariate) associations reported in these studies are likely to be valid, the large amount of missing data should be taken into account when interpreting results. Further, it is acknowledged that rather than using total case deletion, alternative approaches for dealing with missing data such as multiple imputation (MI) which pools estimates across several imputed data sets are likely to be more appropriate as the use of this leads to more precise, less biased parameter estimates and inferences (Allison, 2001).

Study 2 (Chapter Five- Medical Students) Cross-tabulations

Table 5: Proportion of Missing Information Pertaining to School type and IMD quintile by School Performance

| | School Performance N (%) | | Total |
|----------------------|--------------------------|------------------------|------------|
| | Low Performing School | High Performing School | |
| School Type | 51 (100) | 425 (99.5) | 527 (92.3) |
| Missing N (%) | 0 | 2(0.5) | 44(7.7) |
| IMD Quintiles | 45 (86.7) | 364 (85.2) | 495(86.7) |
| Missing N (%) | 6(11.8) | 63(14.8) | 76(13.3) |

Table 6: Proportion of Missing Information Pertaining to School type and School performance by IMD Quintile

| | IMD Quintiles N (%) | | | | | Total |
|---------------------------|---------------------|-----------|-----------|------------|------------|------------|
| | 1 | 2 | 3 | 4 | 5 | |
| School type | 77 (87.5) | 68 (91.9) | 70(92.1) | 103 (91.2) | 134 (93.1) | 527 (92.3) |
| Missing N (%) | 11(12.5) | 6(8.1) | 6(7.9) | 10(8.8) | 10(8.8) | 44(7.7) |
| School Performance | 69 (78.4) | 66 (89.2) | 62 (81.6) | 90 (79.6) | 122 (84.7) | 478 (83.7) |
| Missing N (%) | 19(21.6) | 8(10.8) | 14(18.4). | 23(20.0).4 | 22(15.3) | 93(16.3) |

3.6. Selecting Outcome Variables

The principal outcome variables that were examined in studies 1 and 2 are outlined in the following sections. These variables are also described in the relevant method sections of these chapters, albeit in less detail. It is important to note that UCAS tariff points (top 3 A-levels points and/or total tariff points) were used as both a dependent and independent variable in both studies. Additionally, in both studies, inequalities in participation in relation to the distribution of students based on their socio-economic background characteristics (e.g. IMD, POLAR 3, school background) are also investigated.

3.6.1. Three Year Programmes Outcome Variables

In addition to UCAS tariff points, two principal outcome variables were examined in Study 1 (Chapter Four): (i) average university attainment and (ii) final degree classification.

Students' average university attainment was represented as a percentage indicating the average mark achieved for each year of their degree. At the UoL students' final year averages are calculated by multiplying the marks they obtained on these modules by the number of credits allocated to the modules to which the mark relates. They are then totalled together and divided by 120 (the total number of credits for a year of study). This results in an average mark for the year. Degree classifications are based on these average marks, weighted 70% from the mean final year mark and 30% from the mean second year mark. Thus, only the marks for years two and year three are used to determine degree classifications. Analyses in study 1 focused on students' final (third) year average as this has a 70% weighting on overall degree classification.

Degrees classification was made according to the UK undergraduate degree classification system; first class typically being awarded to those who achieved 70% and above, 2:1 to those who achieved between 60% and 69%, 2:2 awarded to those achieving 50% and 59%, and third-class degrees awarded to students achieving between 40% and 49%. In the UK, a degree that is awarded first-class or upper second-class honours is typically considered a "good degree" (e.g. Richardson, 2008; Smith & Naylor, 2001). This is widely recognised, not only in other studies but also in the employment market, as

specifications for many graduate jobs state that they only consider candidates with upper second and first class degrees (Moreau & Leathwood, 2006b; Richardson, 2008). For these reasons, students' final degree classifications were selected for analyses as the main outcome variable included in the analyses instead of average performance where a binary classification (1st and 2:1 versus others) was used for most analyses.

3.6.2. MBChB Outcome Variables

As explained in section 3.4. , the examinations and attainment outcomes of medical students differs in various ways to those of students on three year degree programmes. To clarify this further, the formative examinations taken by medical students at the UoL are assessed in different ways and have different pass marks to three-year UG programmes. For example, unlike students on most three-year programmes, medical students' are tested on their communication and clinical skills. These can only be passed (85%) or failed (55%), contrasting from the majority of examinations taken by students on three-year undergraduate programmes which typically have a pass mark of 40%. Another difference is that the marks that medical students are allocated for written papers, and special study modules are standard-set. The marks that are released to students are banded to a fixed mark where scores are 'normalised' to a pass-mark of 60% then banded to 55 (fail), 65(pass, i.e. 60-69), 75(good pass/merit), 85 (excellent/distinction). All assessment components are weighted equally within-year, and must be passed by students to allow progression. In order to accurately explore associations between contextual background characteristics and attainment, it was important to select the most appropriate indicator of students' academic attainment. This in itself was complex as there are various indicators that could have acted as potential markers of students' HE attainment in medical school.

Though students' overall grades in the medical programmes are not classified in the same way as three year degree programmes (1st, 2.1 etc) , the School of Medicine can award degrees with commendation, distinction or merit. Whilst this could be used as a potential marker of attainment for students, these awards are based on students' performance in specific elements of the medical programme as opposed to overall performance and hence do not capture differences in achievement accurately. Student

rankings are another potential indicator of academic attainment in medical school. This refers to ranks that are allocated to students based on their performance within cohorts. Ranks are provided according to the scoring system used for the UK Foundation Programme Office (UKFPO) ranking. In this scoring system, the 85 result band is ranked with a score of 3, the 75 merit band is ranked with a score of 2, 65 pass result band is ranked with score of 1, and second attempts are given a score of 0. Students are currently given their interim ranking scores at the end of the penultimate year as this is when they sit their final examinations and their final ranking score at the start of the final year. However, student rankings were not used in analyses as the primary indicator of achievement, as these ranks are limited in the extent to which they accurately capture differences in attainment between students (0 is not indicative of their attainment, and low marks or fails 55 are not included at all). Given that the final year of the medical programme is a placement year, which students either pass or fail, the average attainment of students in year four was therefore selected as the main outcome variable that was included in analysis.

3.7. Factors influencing educational attainment (independent variables)

The main educational/ socio-demographic and academic independent (explanatory) variables are presented in Table 2. These are also discussed in Chapters Four and Five for each retrospective cohort analysis. UCAS tariff points are also included in Table 2 because as explained previously, these were used as a dependent variable and independent variable in studies 1-2.

Table 7: Description of Independent Variables (Contextual Factors)

| <i>Independent Variables</i> | <i>Description</i> |
|---------------------------------------|--|
| UCAS Tariff Points | UCAS Tariff points are a system used for allocating points to post GCSE qualifications in the UK (e.g. for A levels, A=120, B= 100, C=80 etc.). Study 1 uses Total UCAS Tariff points as a measure of prior attainment as this enables comparison between applicants with different volumes/types of achievement. In study 2 UCAS tariff points were used to calculate students' three highest A-level points, and used a measure of prior achievement for entry to higher education. |
| School Type | The type of school students' attended for their A-levels were organised into five categories including: independent schools, state grammar schools, state comprehensives, sixth form colleges and the category labelled state other (includes voluntary aided schools, voluntary controlled schools, technical colleges and adults colleges). |
| School Performance | School performance data were used to contextualise prior attainment, represented by the overall percentage of students gaining 5A*-E or more at A-levels or equivalent. |
| Neighbourhood Participation (POLAR 3) | POLAR 3 data were matched to the Census Area Statistics (CAS) wards to illustrate the typical HE participation profile within which students were domiciled. POLAR 3 data is reported as five quintiles: ordered from '1' (lowest participation) to '5' (highest participation). A binary classification was created to compare performance of students residing in areas of lowest participation (1 and 2) to others (3, 4 and 5). Quintiles 1 and 2 are those areas, which attract additional widening participation funding for each student domiciled within them. |
| Multiple Deprivation (IMD) | The IMD (2010) was used to identify the multiple facets of total deprivation. Students' postcodes were matched to Lower Layer Super Output Areas (LSOAs), which contain an average of 1,500 households. These were then used to append IMD scores provided that students had a valid English postcode. There are 32,482 LSOAs in England. IMD ranks LSOA with 1 as most deprived and 32,482 as least deprived. For the analyses IMD scores were divided into quintiles, where quintile 1 includes the most deprived areas and quintile 5 includes the least deprived. |
| Sex/ Ethnicity | Sex and ethnicity were self-reported by students during the university application process. Students' ethnicities were categorised as one of the following: White, Asian, Black, Chinese, and Mixed and Other. |

3.7.1. UCAS Tariff Points

As described in Table 7, UCAS tariff points reflect students' school grades in post-GCSE formative examinations (based on the sum of points allocated to each qualification). In addition to the total UCAS tariff points each student had achieved, both datasets also indicated students' qualifications in individual subjects, and the points allocated to each. In some cases this information was used to calculate and verify the accuracy of UCAS Tariff Points indicated on datasets (i.e. when outliers were identified through visual inspection of datasets and/or preliminary statistical analyses).

While previous studies have found that school grades are good predictors of degree attainment, some have questioned the extent to which they represent 'true academic potential' (Crawford, 2014; Hoare & Johnson, 2010; Connor et al., 2004; HEFCE, 2013b; 2014; Kirkup, Wheater, Morrison, & Durbin, 2010). This was explored in the two quantitative studies in this thesis, by comparing group differences in students' attainment at school to group differences in students' university attainment when entry grades were held constant.

As the current thesis is interested in students from disadvantaged backgrounds, it was considered important to include students that were admitted to the university with 'non-standard' qualifications (e.g. b-techs) as research suggests these students are more likely to suffer from educational disadvantage (Broecke & Nicholls, 2007; Callendar, 2005; Gorard, 2012). For this reason, students' total UCAS Tariff points were used as a measure of prior achievement for entry to HE in study 1 (Chapter 4) as this measure enables comparison between applicants with different volumes/types of achievement including those with non-standard qualifications. However, since study 1 has been published, two main problems were identified with the use of total UCAS Tariff points as a measure of prior attainment to HE. Firstly, UCAS tariff point data were primarily missing for a large proportion of students with non-standard qualifications. Secondly, the use of total UCAS tariff points does not control for the number of qualifications that a student has. This means that students with more qualifications generally have higher total UCAS points,

which may not be equivalent to the grades of students with fewer qualifications (Taylor, Rees, Sloan & Davies, 2013).

It is possible to control for the number of qualifications a student has by calculating students' UCAS tariff points from their three highest A-level points as both datasets also contained students' specific A-level qualifications. As this was considered a way of making comparisons fairer, when analyses were carried out for study 2 (Chapter Five), students' top three A-level points were used as a measure of prior attainment for entry to HE, rather than students' total UCAS Tariff points. Further, to ensure consistency between studies 1 and 2 and make comparisons between students as fair as possible, analyses for study 1 were repeated using top three A-level points as a measure of prior attainment (see appendix for results of study 1 analyses using top three A-level points). However, it is also important to note that though UCAS tariff scores appear to reflect all qualifications equally, in practice this is not always the case. Universities across the UK and specific departments openly describe necessary qualifications for entry, such as subject specific requirements, and look more favourably at certain qualifications over others (Shepherd, 2011). Additionally, whilst A-Level qualifications in subjects such as General Studies and Critical Thinking are considered equivalent to other A-level subject qualifications by a number of departments at the UoL, some departments do not consider them as valid, and others will only accept them under certain conditions. Hence, though UCAS tariff points/ top three-A-level points may have also been based on grades students achieved on these subjects, they may not have been considered for entry to the UoL based on subject specific requirements (these requirements are detailed on the UoL website and in the entry profiles in the UCAS website).

Though previous studies using students' top three-A-level points as a measure of prior attainment to HE have excluded students with non-standard qualifications (e.g. Hoare & Johnston, 2010), regardless of whether top three A-levels or total UCAS points were used as a measure of prior attainment, for unknown reasons, this prior attainment information was largely missing for students with non-standard qualifications. The only way of controlling for this issue would be to exclude these students from datasets; however, as explained previously, this would be counter to the focus of the current research. Hence,

despite the fact that UCAS tariff points were missing for a large proportion of students with non-standard qualifications (particularly in study 1), they were not excluded from datasets, as the inclusion of these students was considered important.

3.7.2. Educational Background

School background was assessed in terms of (i) school type and (ii) school performance. The datasets initially only included the names and postcodes for schools that students had attended whilst sitting their A-levels. This potentially would not fully capture educational disadvantage in those students who initially attended poor performing schools up to GCSE level, and prior to studying for their A-levels. This is important when considering the extent to which school related information is accurately representative of educational advantage/ disadvantage.

School type and school performance information were therefore added manually to datasets by extracting this information from the UK government's annually published school performance tables (<http://www.education.gov.uk/schools/performance/>).

3.7.2.1. School Performance

School information was limited to the school that students attended for their A-levels, rather than their GCSEs. The percentage of students gaining 5A*-E or more A-levels (or equivalent) was used as the indicator of school performance. Based on this, a binary classification was created where "high" performing schools, represented those schools where 82.5% of students and above achieved 5A*-E or more at A-level or their equivalent. Hence, "low" performing schools were those where less than 82.5% of students achieved 5A*-E or more at A-level or their equivalent based on averages reported in DfE performance tables.

3.7.2.2. School Type

In some studies (e.g. Hoare & Johnston, 2010) school types are organised into four categories: independent schools, state grammar, state comprehensive, and other. However, as a considerably high proportion of students had attended sixth form colleges,

this was made into a further category for the current analysis. Hence school classifications were (i) independent schools, (ii) state grammar schools, (iii) state comprehensives, (iv) sixth form colleges and (v) state other (including voluntary aided schools, voluntary controlled schools, technical colleges and adult colleges).

3.7.3. Area- Based Measures of Disadvantage

Both datasets included students' home post-codes. These were used to generate two area-based measures of disadvantage: Participation of Local Areas (POLAR) 3 and the Index of Multiple Deprivation (IMD). Analysis examined how these two measures were associated with participation and academic attainment.

3.7.3.1. POLAR 3

The Participation of Local Areas (POLAR) classification is a UK-wide area-based measure that groups geographical areas according to the proportion of young people living in them who participate in HE by the age of 19 (HEFCE, 2010; HEFCE, 2014). This is known as the 'young participation rate'. The POLAR 3 classification is based on the ranking of 2001 Census Area Statistic (CAS) Wards by 'young participation rates' in HE (for the combined 2005 to 2009 cohorts). There are a total of 8,850 CAS wards in England and Wales with an average population of just under 6000 (Finney & Jivraj, 2013). The POLAR 3 classification reports the rates of participation for those wards, and is typically divided into quintiles. This is a publicly available classification, used extensively in the HE sector, and notably by HEFCE to inform targeting and support funding for WP activities.

Whilst the POLAR3 classification has been found to correlate with other measures of disadvantage (HEFCE, 2010; HEFCE, 2014), correlations vary between wards in relation to the degree to which they are classed as being disadvantaged. This is attributed to the notion that, unlike other measures of disadvantage, the primary purpose of POLAR3 is to capture educational disadvantage in the form of a young person's likelihood of progressing into HE based upon where they live. HEFCE (2014) recommend using this in conjunction with other measures of disadvantage. They argue that this complementary use can have benefits for targeting WP participants. They highlight that the POLAR classification is not

necessarily an appropriate substitute for other measures of disadvantage, and users of the classification should bear this in mind.

3.7.3.2. Index of Multiple Deprivation

The Index of Multiple Deprivation 2010 (IMD) is a well-recognised official composite measure of deprivation. The IMD covers data pertaining to seven different dimensions (Income, Employment, Health and Disability, Education, Skills and Training, Barriers to Housing and Services, Living Environment and Crime)(Flouri et al., 2013; Noble et al., 2006). Using IMD, postcodes can be linked to small area geography known as lower layer super output areas (LSOAs). LSOAs are small areas in England, containing between 1000 and 3000 inhabitants with an average population of 1500 (Greenman et al., 2011). In most cases, these are smaller than wards, thus enabling the identification of small pockets of deprivation. There are 32,482 LSOAs in England. Each LSOA is given an overall IMD score between 1 and 32,482 based on different dimensions of the IMD. Higher IMD scores indicate greater levels of neighbourhood deprivation (Office for National Statistics, [ONS], 2009). The index has been used as a measure of SES to explore differences in attainment between students in previous studies (Chowdry et al., 2013; Crawford, 2014; HEFCE, 2013a; The Sutton Trust, 2015).

3.7.4. Demographic Characteristics

The socio-demographic characteristics that were examined in both datasets were sex, ethnicity, age and disability, reported by students during the UCAS university application process. Students' ethnicities were categorised as White, Asian, Black, Chinese, Mixed and Other.

Only sex and ethnicity were included in the current analyses. Though not being the central focus of either analysis, they were considered as potentially important factors in relation to educational outcomes and have been frequently discussed in relation to Widening Participation (see Chapter 1.2.2. for more information on this). Whilst disability and age have also been found to be associated with academic performance (e.g. Richardson

& Woodley, 2003; Taylor, 2004), they were not included in these analyses due to small numbers limiting the power for statistical analyses.

3.8. Statistical Analyses

Analyses in studies 1 and 2 were designed to explore research questions centred on the relationships between students' contextual background characteristics (socio-economic deprivation, residence in low participation neighbourhood, school type, school performance, sex, ethnicity and UCAS tariff points) and their participation and attainment at the UoL. Hence, these studies seek to address objectives 1-3 of the current thesis and provide insight into:

1. The associations between UoL students' socio-demographic and educational background characteristics with participation and attainment (at school and university).
2. The extent to which school grades reflect 'true academic potential' at university.
3. How associations between students' socio-demographic and educational background characteristics with participation and attainment vary between different programmes and HEIs.

All analyses were undertaken using SPSS (version 21). Initially, conventional hypothesis testing was carried out summarising the statistical significance of associations between the independent and outcome variables, including entry level-attainment (e.g. Chi-squared tests for categorical comparisons, t-tests for continuous). Chi-squared comparisons (2x1) were also carried out to investigate differences in participation within groups based on students' contextual background characteristics. Hence, the demographic profile and patterns of participation, based on students' background characteristics are also explored and discussed in both studies.

3.8.1. Analyses Three-year Degree Programmes

Unconditional univariate logistic regression was carried out to summarise the associations between contextual background characteristics and academic performance (defined as good (2.1, first classification) versus other (not including fail)).

Unconditional multivariable logistic regression was carried out to identify which factors were independently associated with academic performance.

3.8.2. Analyses Medical Programme

Univariate linear regression was carried out to examine the associations between contextual background characteristics and academic performance (as a percentage) of medical students at year four. Analysis was also conducted to explore differences in these associations between males and females. In the final analytic stage, multivariable linear regression modelling was carried out to identify which factors were independently associated with academic performance.

3.9. Qualitative Study: Students' Trajectories into University

Underpinned by phenomenology, study 3, explored how students from socio-economically disadvantaged backgrounds perceived their experiences in their trajectories to HE. This study was carried out as a means of identifying the factors that students perceived to be influential, including those that acted as facilitators and/or barriers throughout their educational trajectories. This seeks to address objectives 4-6 of this thesis and provide insight into:

- Why there are socio-economic differences in participation and attainment and what underlying factors influence these. (Objective 4)
- Commonalities and differences in the factors students from socio-economically disadvantaged backgrounds perceive to be influential throughout their educational trajectories to the UoL. (Objective 5)
- Barriers and facilitators that emerge throughout the educational trajectories of students from socio-economically disadvantaged

backgrounds that may underpin differences in participation and attainment at university. (Objective 6)

3.9.1. Epistemology and Theoretical Perspective

As described in section 3.3. the epistemology inherent in the final study of this thesis (Chapter Six) was social constructionism, as this recognises that meanings are constructed in different ways, depending on how people engage with the world (Berger & Luckmann, 2011; Creswell, 2007; Crotty, 1998). This epistemology was reflected in the objectives of this final study, which aimed to understand phenomena from the perspective of those experiencing it, as opposed to an objective measurable reality (Finlay, 2009). More specifically, a phenomenological approach was selected as the best method for clarifying the knowledge and subjective experiences of individuals as it is lived (Creswell, 2007; Crotty, 1998; Finlay, 2009). According to Berger and Luckmann (1991) this is the method that is best suited for exploring the subjective experiences of daily life, by questioning reality. Schutz and Luckmann (1973) also discuss this, delineating the importance of exploring meaning in a circumspect way by questioning the social influences and knowledge that we take for granted.

Phenomenology is an inductive qualitative research approach rooted in the 20th century philosophical traditions of Edmund Husserl (descriptive) and Martin Heidegger (interpretive) (Heidegger & Krell, 1978; Husserl & Kersten, 1983; Reiners, 2012; Van Manen, 2007). Husserl developed a descriptive approach to phenomenology as a method used to describe everyday conscious experience by suspending all suppositions and preconceived opinions using techniques such as 'bracketing' (Finlay, 2009; Husserl & Kersten, 1983). Bracketing is a process that is frequently used in phenomenological studies whereby researchers refrain from making assumptions, biases and putting aside previous knowledge (Berger & Luckmann, 1991; Giorgi, 2012; Husserl & Kersten, 1983). Whilst descriptive approaches to phenomenology seek to describe subjective phenomena in more objective ways, by using techniques such as 'bracketing', interpretative phenomenologists, such as Heidegger argue that it is impossible to negate or escape our experiences related to the phenomenon under investigation (Reiners, 2012).

Interpretative approaches to phenomenology are based on the notion that meanings emerge through interpretation and are not standard across different socio-cultural groups (Finlay, 2009; Heidegger & Krell, 1978; Ricoeur, 1970). Interpretative phenomenology is typically used when a research question asks for the meaning of the phenomenon whereas descriptive phenomenology is used when researchers seek to describe phenomena and bracket their biases (Creswell, 2007; Finlay, 2009). Though the uses of different approaches to phenomenology are debated, some researchers prefer to see description and interpretation as a continuum where specific work may be more or less interpretive (Finlay, 2009; Giorgi, 2012; Van Manen, 2007). Landridge (2009) corroborated this, arguing that boundaries between descriptive and interpretive approaches would be antithetical to the spirit of the phenomenological tradition. In line with these views, the final empirical study comprised in this thesis draws on both of these approaches to phenomenology. This draws on descriptive approaches to phenomenology (Berger & Luckmann, 1991; Schutz, 1963; Schutz & Luckmann, 1983), by trying to examine subjective phenomena in more objective ways, and by not imposing an a priori analytic framework. However, going beyond describing subjective phenomena in more objective ways, the purpose of the study in Chapter Six was to understand the meaning of phenomenological description, which according to Heidegger lies in interpretation (Heidegger & Krell, 1978). Thus, in this sense the final study follows an interpretative approach to phenomenology as this seeks to understand how individuals from disadvantaged backgrounds perceived their lived experiences in their trajectories from primary school to university in terms of what this meant to them.

3.9.2. Ethical Considerations

As explained previously, the process of ethical review for this final study was carried out independently from the two quantitative studies (Chapter Four and Chapter Five). During this process, consideration was given to a number of issues surrounding the sensitivity of the research topic, confidentiality, informed consent, and the preservation of participants' anonymity. It was recognised that this research explored potentially sensitive topics with participants that had been invited to take part specifically because they were members of socio-economically disadvantaged groups. Strategies were put in place to

address this and ensure that participants did not feel under any pressure to take part in the study. Firstly, the topics and aims of the research were explained to participants prior to their arrival at the interview setting and once again in person. Participants were reminded that they did not have to answer any questions that they did not want to and that they were free to withdraw from interviews at any point. As such, the study adhered to the practice of "process consent" described by Ellis (2009) as a means of acknowledging changing research relationships. This can also be seen as a means of ensuring that participants did not feel obliged to participate in this study at any point, and recognizing the notion that researchers can be seen to occupy positions of power (Denzin & Lincoln, 2011; Ellis, 2009). To address potential power imbalances further, I made conscious efforts to establish a reciprocal relationship with my participants from the initial point of contact, by establishing rapport, promoting openness, and empowering them as experts of their own experience (Bradbury-Jones, Sambrook, & Irvine, 2011; Elliott, 2005; Josselson, 2007; Kvale, 1996).

The ethical dilemmas surrounding this study were carefully scrutinized from the point of inception to maintain the moral integrity of this research at all times. Following this process of ethical review, in accordance with University guidelines, approval was obtained from the UoL research Ethics committee.

3.9.3. Sample and Recruitment

Participants in the final study were selected purposefully to include students who "had experiences relating to the phenomenon to be researched" and were all from socio-economically disadvantaged backgrounds (Kruger, 1988, p. 150). According to Welman and Kruger (1999) purposive sampling is the most important kind of non-probability sampling as this ensures that participants fit the criteria with regards to their background characteristics and life experiences. This is critical as participants are the primary unit of analysis (Groenewald, 2004).

Participants in this study were drawn from a cohort of students that had taken part in access programmes offered by the Educational Opportunities team at the UoL (<https://www.liv.ac.uk/educational-opportunities/>). The Educational Opportunities team

run a variety of projects and initiatives aimed at widening access to young people from disadvantaged backgrounds. The majority of students that took part in this study had completed the 'Scholars' Scheme', a programme offered to year 12 students at a number of local (partner) schools and thus fulfilled eligibility criteria required for this. Eligibility criteria pertain to students' academic attainment, and educational/socio-economic backgrounds. In turn, the 'scholars' programme includes a range of activities, lectures and academic assignments designed to prepare students for university. Students that complete this programme successfully are guaranteed a conditional offer at the UoL along with other benefits.

All students who participated in this study were initially contacted via e-mail, sent to them by a member of the Educational Opportunities team at the UoL. The e-mail contained information about the study, its aims, objectives, and the principal investigator's contact details (see Appendix X). It was specified that participation was optional/voluntary, that participants would remain anonymous in all written reports, and that they could withdraw from the study at any point. Students who wished to participate were asked to reply in order to register their interest.

For phenomenological studies, long interviews with 2 to 10 participants are typically considered sufficient to reach saturation (Creswell, 2007; Moran, 2002). In total, 13 students took part in this study, surpassing typical recommendations for phenomenological studies. However, this allowed for the possibility of exploring the lived experiences of students in diverse programmes at the university and potential differences between males and females. All participants had commenced their studies in September 2013 or 2014 and registered on full time programmes at different faculties of the UoL.

3.9.4. Procedure

Initial e-mail contact between myself and the students who had expressed an interest in taking part in the study, was seen as an opportunity for developing rapport with participants, making them feel able to communicate freely, and ask any questions they had. The students were invited to attend face-to-face interviews at the School of Psychology at the University of Liverpool (UoL) at a time that was convenient for them. This setting was

chosen purposefully as a convenient and familiar location to participants as they were all students at the UoL at the time that the study was carried out. Furthermore, as the study was carried out during term time, this made it possible for participants to attend interviews between or after lectures. However, it was acknowledged that conducting interviews within the university setting could affect the balance of power and perceived authority of the researcher. I addressed this potential power imbalance by adopting an empathic and understanding position, and sharing details about my own background as a researcher and as a student. By having this rapport and sharing this information I sought to create an informal and open environment and minimise any power imbalances between us.

Interview dates and times were confirmed via e-mail with those students that had expressed an interest in taking part in the study. All interviews took place over a period of three weeks. The project was thoroughly explained to each participant before commencing the interview including the aims and objectives of the study, and participant information sheets were also provided (see Appendix). I fully and carefully discussed the consent process with each student, emphasising the openness of the interview process to minimise any nervousness they may have associated with the interview process. I explained that interviews could last between 60 and 90 minutes, and that these interviews would be recorded, transcribed, and analysed with their permission. It was also explained that participants would not be identifiable in any reports. Participants were then asked to sign consent forms if they were happy to proceed with the interview.

3.9.4.1. Data Gathering Methods

Phenomenological studies primarily rely on in-depth interviews to collect data (Creswell, 1998). A semi-structured interview schedule was designed as means of eliciting individuals' personal stories and developing an understanding of lived experience (Punch, 1998). This method of interviewing represents part of a process of co-construction where researchers attempt to understand the world from the point of view of the subject, in order to unfold the meaning of people's experiences (Kvale, 1996, P1-2). Allowing meaning to flow from the participants themselves, rather than imposing this as researchers, is at the centre of phenomenological research (Koch, 1999; Moustakas, 1994; Schutz, 1972).

As such, phenomenological researchers frequently stress the importance of acknowledging that what is viewed as common sense in everyday reality is surrounded by innumerable interpretations, which are often taken for granted (Berger & Luckmann, 1991; Schutz & Luckmann, 1973). One of the ways that this was taken into consideration in the present research was by using bracketing to help understand subjective experiences in more objective ways (Creswell, 2007; Moustakas, 1994). From a practical perspective this involved consciously trying to set aside pre-judgments and personal experiences, and opening interviews in an unbiased and receptive way (Dowling, 2007; McNamara, 2005; Moran, 2002). However, it is critical to note that bracketing is not only an initial first step but rather a process whereby researchers "bracket" previous understanding, and knowledge, by also looking at data with the attitude of relative openness (Finlay, 2009).

The interview protocol was structured chronologically around the key stages of students' educational trajectories, to help guide them through their experiences in a logical progression (Mauder, Gingham, & Rogers, 2010). The interview schedule contained 10 open-ended questions and a number of probes to allow natural conversation to flow, whilst giving interviewees the opportunity to describe their own experiences as freely as possible (Kvale, 1996) (See Appendix X). In this method of interviewing, participants are invited to tell their 'stories' with relative freedom, allowing them to describe their experiences, and the meaning that they attribute to this (Elliott, 2005; Josselson, 2007). In this sense, the interview schedule acted as a guide, where attention was paid to the narratives told by students, and they were asked to expand on these where appropriate.

The first question of the interview schedule asked students to discuss their educational background in terms of the types of schools and/ or college they went to from primary school and served to contextualise the way that subsequent questions were framed. Some of the topics covered throughout the interviews included: academic and social successes and challenges at each stage, subject choices, deciding to attend university, and factors that helped or hindered their entry into university. The interview process itself was iterative and involved going back and forth between topics to discern the implications the different topics had for one another.

All transcripts were anonymised and transcribed verbatim to maintain participant confidentiality. During the process of data collection, notes were taken of key observations and potential coding schemes. In phenomenology this is referred to as 'memoing' (Groenewald, 2004). Interview transcripts were then uploaded to QSR NVivo, a qualitative data management software programme.

Thematic analysis was used to analyse data as this can be used with different theoretical frameworks, including constructionist/phenomenological studies to explore the experiences of participants working to both reflect reality, and to unpick or unravel the surface of reality (Attride-Stirling, 2001; Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2008).

CHAPTER FOUR

4. Participation and Attainment in Three Year Programmes

4.1. Data and context

In this chapter I explore the demographic profile and patterns of participation and academic attainment in a data cohort of undergraduate students on three-year degree programmes at the University of Liverpool.

This chapter has been published after submission to the journal *Studies in Higher Education*:

Thiele, T., Singleton, A., Pope, D., & Stanistreet, D. (2014). Predicting students' academic performance based on school and socio-demographic characteristics. *Stud High Educ*; 27; 1–23.

I adapted the format of the published to be consistent with the rest of the thesis. This includes the methods described in this chapter (Section 4.4.), which are presented as an abridged replication of the methods described in Chapter Three. This chapter also provides additional information on missing data and participation that is not presented in the published study. Further, since this study has been published, I have re-run analyses using students top three A-level points as a measure of prior achievement to HE (for consistency with study 2) as the results presented herein use total UCAS tariff points (see appendix).

4.2. Abstract

Students' trajectories into university are often uniquely dependent on school qualifications though these alone are limited as predictors of academic potential. The present retrospective cohort study endorses this, examining associations between school grades, school type, school performance, socio-economic deprivation, neighbourhood participation, sex and academic achievement at a British University. Consistent with past research large entry-level differences between students from different backgrounds generally narrowed by final year at university. Students from the most deprived areas performed less well than more affluent students. Female students performed better than their male counterparts. Contrasting with past research, though school performance was positively associated with entry grades, students from low performing schools were more likely to achieve the highest degree classifications. Additionally, privately educated students did not enter university with the highest grades, but performed less well than comprehensive school students at final year. These variations exemplify how patterns observed nationally may differ between higher education institutions.

4.3. Introduction

Despite a dramatic increase in higher education participation in England over the last half century, the underrepresentation of students from socio-economically disadvantaged backgrounds remains a glaring reality (Blanden & Machin, 2004; Breen & Jonsson, 2005; Croxford & Raffe, 2013; Haveman & Smeeding, 2006; Singleton, 2010b). These students are known as Widening Participation (WP) students, who along with students with disabilities and some ethnic minority groups, are currently underrepresented in Higher Education (HE) (Gorard, 2008; Mason & Sparkes, 2002). Differences in HE participation are largely attributed to the poorer school level academic qualifications obtained by a large proportion of students within low socio-economic status classifications (SES) and are associated with educational disadvantage (Chowdry et al., 2013; Steele, Vignoles, & Jenkins, 2007; The Sutton Trust, 2005). Further, research comparing the academic performance of students from different school types and backgrounds in HE suggests that school qualifications do not necessarily represent 'true academic potential

'(Hoare & Johnston, 2010; Ogg et al., 2009; Peers & Johnston, 1994; Stringer, 2008; Zimdars, 2010). In particular, the finding that students from independent schools tend to enter university with higher grades than students from (non-fee paying) state schools but perform less well once at university when entry grades are held constant, is regarded as rationale for utilising contextual data alongside school grades in the university admissions process (HEFCE, 2003; 2014; Hoare & Johnston, 2010; Naylor & Smith, 2005, Sutton Trust, 2010a).

Contextual data places academic attainment into the context of the circumstances in which the results were obtained, including comparative school and socio-economic data (Bridger et al., 2012). The implementation of contextual data alongside school grades is often recommended on the grounds that currently university admissions systems in the UK focus almost entirely on students' past academic results, often without giving any consideration to the context in which these were achieved (Gorard, 2008; Chowdry et al., 2010; HEFCE, 2014; Mullen, 2011; Jerrim & Vignoles, 2012; The Sutton Trust 2010b). The use of contextual data alongside school grades is frequently discussed as a 'Widening Participation' dimension in university admission processes (BIS, 2011; Cable & Willets, 2011, Croxford & Raffe, 2013; Milburn, 2009). Whilst the term 'Widening Participation' is used to refer to students from under-represented backgrounds, it is used here because more generally, this term refers to the activities/ intervention intended to widen access to disadvantaged groups in HE (HEFCE, 2014). The principal aim of introducing the use of contextual data as WP dimension to university admissions processes is to promote 'fair access' to HE (Bridger et al., 2012). The term 'fair access' refers specifically to the distribution of students from under-represented backgrounds within HEIs in England, and whether this is fair by a number of socio-economic and educational criteria (Boliver, 2013; DfES, 2003).

Though the usage of contextual data in admission has been historically controversial, associated with positive discrimination and social engineering (Henry, 2012; Smith, 2012), it has progressively become more acceptable and is now being actively encouraged provided that institutional policy is transparent and based on evidence (Department for Business, Innovation & Skills [BIS] 2011; Supporting Professionalism in

Admissions [SPA], 2011). A survey looking at the use of contextual data in admissions carried out by SPA in 2012 found that out of 17 HE institutions approximately one third (37%) were using contextual data in admissions and 57% were planning to use it (SPA, 2013). Though the type of contextual information used varies widely between institutions, this generally includes information relating to students' personal details, school and college data, and area level data (Bridger et al., 2012; SPA, 2013). However, research examining this and relationships between contextual background characteristics and achievement in general is highly limited (Bradshaw et al., 2007; Gorard, 2008; SPA, 2013; Zimdars, 2007). Addressing these issues is critical as it could help mitigate inequalities persistent in UK HE participation (Stringer, 2008). The extent of such inequalities is reflected empirically with more than two fifths of students studying at Oxbridge Universities being privately educated, despite the fact that just 7% of schools in the UK are independent (The Sutton Trust, 2008).

Greater degrees of socio-economic inequality and social stratification have been associated with pervasive negative educational, health and crime related outcomes (Feinstein, 2003; Lynch et al., 2001; Uphoff et al., 2013; Wilkinson & Pickett, 2009). Promoting fair access to HE is considered imperative as a means to reducing these inequalities, and associated detrimental repercussions (Haveman & Smeeding, 2006). Concomitantly, increasing equality of opportunity is important for raising skill levels, contributing to national productivity and social mobility (Dorling, 2010). These are considered priority issues in the UK where currently the usage of contextual data as part of the University admissions process is promoted as part of a broader WP policy agenda (BIS, 2011; Cable & Willets, 2011, Croxford & Raffe, 2013; Milburn, 2009). This is specifically promoted within government reports proposing 'HEIs should continue to use, and where possible, expand the range of all the information available to them to identify the best students with the greatest potential to reach the highest academic achievement' (Department for Children, Schools and Families, [DCSF] 2008, p. 12).

The ever-increasing pressure to widen access to prospective students from socio-economically deprived groups has been greatly augmented by a substantial increase in tuition fees from £3,600 to a maximum of £9000 per annum (Cable & Willets, 2011; Harrison, 2011). Consequentially, identifying and targeting people from socio-economically

disadvantaged areas with academic potential has become of even greater financial importance to higher education institutions, as potential to charge the full uncapped amount is only permissible if the Office for Fair Access (OFFA) considers that programmes are being made available to everyone with academic potential (Browne, 2010; Clayton, 2012). Moreover, the usage of contextual data in the admissions process could help widen participation and identify students that may require academic support (Henry, 2013). However, justifying the implementation of contextual data in University admissions necessitates a robust evidence base, which can adequately demonstrate the impact of students' background characteristics on academic performance (Bridger et al., 2012). This paper seeks to expand this evidence base by examining relationships between a selected range of school and socio-demographic factors identified as predictors of educational disadvantage, and academic attainment at a British University.

4.3.1. Contextual Background Characteristics

The literature identifies a range of background characteristics that influence educational disadvantage and differentiated participation and attainment including: school effects, socio-economic background, and personal attributes.

In comparison to students from more affluent backgrounds, a disproportionate number of students from socio-economically disadvantaged backgrounds attend poor performing schools and come from neighbourhoods with low participation in HE (HEFCE, 2010), and this can impact on their chances of entering HE (Forsyth & Furlong, 2003; Gorard, 2012; Leathwood, 2004; Voigt, 2007). Although there is an overlap between school type and school performance, where fee-paying schools are predominantly higher performing, the associations between school type and school performance with academic performance at university has been found to differ between studies (HEFCE, 2003; 2005; 2014; Smith & Naylor, 2001). Indeed, the average performance of students at a school does not appear to have a consistent effect on academic attainment in HE (Ogg et al., 2009). There is disagreement regarding the direction of the effect of school performance on academic attainment, (HEFCE, 2003; Smith & Naylor, 2001) including whether or not school performance has a significant effect at all (HEFCE, 2014; Hoare & Johnson, 2010).

Furthermore, even though fee-paying schools tend to have better overall performance, a 'school type effect' has been documented whereby for a given set of A-Level results, the degree performance of students that attended state schools, has been found to be higher, compared to those that attend private schools, when all other factors are held equal (HEFCE, 2003; HEFCE, 2005; HEFCE, 2014; Hoare & Johnston, 2010; Naylor & Smith, 2005; Sutton Trust, 2010b). This 'school type effect' has been evidenced in numerous studies, where it is considered to make a "strong case" for making lower offers to individuals from disadvantaged backgrounds as on average their performance at HE would at least match that of an independent school student (HEFCE, 2003; 2005; Henry, 2013; Naylor & Smith, 2005; Smith & Naylor, 2001; Kirkup et al., 2010). The justification is based largely on the assumption that independent school pupils are at an advantage over students from state schools with a similar level of ability, who may be in an environment that prevents them from achieving grades reflective of their true academic potential (McNabb et al., 2002). School type differences in HE achievement appear to be less marked between students with the highest A-level achievement and HEIs with highest entry requirements. This has led researchers to question whether the 'school type effect' exists at these institutions in the past (HEFCE, 2003; 2014; Parkes, 2011).

A further variable that is associated with disadvantage and individual performance is socio-economic background. This attribute also often interacts with school effects given patterns of social selection associated with school admissions policy (Singleton, Longley, Allen & O'Brien, 2011). Various studies have found that students from the least affluent socio-economic groups tend to perform less well than their more affluent peers (HEFCE, 2014; Hoare & Johnston, 2010; Smith & Naylor, 2001). Research examining this effect has often used the National Statistics Socio-Economic Classification (NS-SEC), the method currently used to identify SES during the university admissions process (Hoare & Johnston, 2010; Harrison & Hatt, 2009; Harrison, 2011; Singleton, 2010b). However, a number of flaws have been identified with the use of NS-SEC as a contextual background characteristic, particularly as around 25% of students do not provide this self-identified non-mandatory information on application to HE, and those who omit this, often fit into target WP populations (Harrison & Hatt; 2009; 2010; Singleton, 2010b).

An alternative approach to NS-SEC utilises postcodes, linking individuals to a domicile location by geo-coding home postcode. However, in presenting such analysis, this is accompanied by an important caveat that the measure relates to the context of an area in which a student lived, rather than an attribute they personally possess (Osborne & Shuttleworth, 2004; Gorard, 2012). That said, for the majority of undergraduate admissions, NS-SEC is also not an individual measure, as this relates to parental occupation, although geographic context could perhaps be considered applicable at a household scale.

By attaching locations to the domicile postcodes of students, these can be linked to a range of indicators of locational context, each of which pertain to a spatial unit of a given zonal size. Such indicators include the Index of Multiple Deprivation 2010 (IMD), which is a well-recognised measure of deprivation, comprising of data pertaining to seven different dimensions (Income, Employment, Health and Disability, Education, Skills and Training, Barriers to Housing and Services, Living Environment and Crime) . IMD scores are derived at the scale of Lower Layer Super Output Areas (LSOAs), which are areas containing between 400 and 1200 households. The IMD has however received surprisingly little attention in educational research compared to other fields, despite being recommended by the HEFCE (2007) as a means of identifying people from NS-SEC groups 4 to 7 (Broecke & Nicholls, 2007; Feinstein, 2003; Harrison, 2011; Lupton, 2004).

A further measure that has received relatively little attention in educational research, despite it being devised by HEFCE to identify those from backgrounds with lower levels of participation in HE, is the Participation of Local Areas classification (POLAR 3) (Corver, 2010). POLAR 3 was created by HEFCE, by ranking 2001 Census Area Statistic (CAS) Wards by their young participation rates for the combined 2005 to 2009 cohorts. There are a total of 8,850 CAS wards in England and Wales with an average population of just under 6000 (Finney & Jivraj, 2013). The POLAR 3 classification reports the rates of participation for those wards, and is typically divided into quintiles. There are also limited examples of research using the POLAR classification, which is particularly surprising considering this is used by HEFCE for calculating widening participation funding, and by the Higher Education Statistics Agency (HESA) to measure institutional performance (HEFCE, 2012; HEFCE 2013a). However, recently HEFCE (2014) used both POLAR 3 and the Indices of Deprivation

Affecting Children (IDACI) as postcode-based measures of disadvantage and found that students from neighbourhoods with lower levels of participation in HE and students from less affluent areas respectively were consistently less likely to achieve a 2.1 or a first class degree at university.

Finally, personal characteristics such as sex and ethnicity are also known to influence academic performance (Ackerman, Kanfer, & Beier, 2013). Research suggests that on average females generally achieve higher grades than males throughout education; with some studies reporting that males may be more likely to achieve a first class degree (Dayioğlu & Türüt-Aşık, 2007; McCrum, 1994; McCrum, 1996; McNabb, et al., 2002; Mellanby, Martin, & O'Doherty, 2000; Pomerantz, Altermatt, & Saxon, 2002; Sheard, 2009; Gneezy, Niederle, & Rustichini, 2003; Hu & Wolniak, 2013; McNabb et al., 2002; Pomerantz et al., 2002). Though the present study does not focus on ethnicity, significant differences in performance and participation have been documented between ethnic groups. In the UK, white students as an overall category have been found to perform slightly better than students who were not self-identified as white (Broecke & Nicholls, 2007; HEFCE, 2014; Richardson, 2011; Jacobs, 2008).

Previous studies have examined associations between students' background characteristics with participation and academic performance nationally and at individual universities (Smith & Naylor, 2001; HEFCE, 2003; 2005; 2014; Henry, 2013). However, no previous case studies have been found which use both postcode-based measures of disadvantage along with school background information to identify educational disadvantage despite the limitations associated with measures such as NS-SEC and known differences in student composition existent between HE institutions (Gibbons & Vignoles, 2012; Reay et al., 2010; Singleton, 2009; Singleton, 2010a). This is critical from an admissions perspective as it is the responsibility of individual HE institutions to ensure that their fair admissions policies are grounded in empirical evidence and it is in their interests to target those students with the academic potential to perform well in their studies. The present study at a British University endorses this by investigating the extent to which students' contextual background characteristics influence academic /degree performance. More generally, this study explores socio-economic inequalities in academic attainment and

participation in HE, as both are relevant to WP and fair access. Thus, inequalities in the distribution of students based on their socio-demographic and educational background characteristics are also explored in the current study.

4.4. Method

Measuring and Modelling Contextual Background and Achievement

The methods discussed in this section are discussed in detail in Chapter Three.

Study Context

This study examines data from the University of Liverpool (UoL) one of the six original “red brick” civic universities and a founding member of the Russell Group. Traditionally, such elite universities in the UK have tended to have an over-representation of students from more affluent backgrounds, and are more selective, with higher entry requirements (Sutton Trust, 2010b). However, the fact that the university campus is based in a city with some of the most socio-economically deprived areas in the country; means that traditionally the University has attracted a relatively high proportion of applicants from socio-economically disadvantaged backgrounds.

4.4.1. Data/Setting

Data for the study were obtained from the University central student database, which includes all necessary student background information and tracks performance from the point of application, through to graduation. For the purposes of this study, only students registered on full time three-year classified degrees entering the University between 2004/5 and 2009/10, and then graduating three years after their entry were included. This was the last entry year that allowed analysis of both entry and exit points. There were no significant changes to the University’s admission policies or grading criteria during this time period, so data were stratified by year of entry but also treated as a single dataset. The dataset contains socio-demographic (sex, age, ethnicity, disability, domicile), school attended, prior attainment (based on Universities and Colleges Admission Service [UCAS] tariff points), and HE performance information for 5,369 students. The full list of

variables included in the analysis is described in Table 8. Though school grades (UCAS Tariff Points) are presented with predictor variables in Table 8, this was also used as an outcome variable to explore group differences in entry-level attainment.

Table 8: Description of Outcome (Educational Performance) and Predictor (Contextual Factors) Variables

| Variables | Description |
|-----------------------------|---|
| <i>Outcome Variables</i> | |
| Average Performance | Students' university academic performance was represented as a percentage indicating the average mark achieved for each year of their degree. Most analyses focused on final year performance as this has a 70% weighting on the overall degree. |
| Final degree classification | Degrees were classified according to the UK undergraduate degree classification system; 1st class typically being awarded to those who achieved 70% and above, 2.1 to those who achieved between 60-69%, 2.2 awarded to those achieving 50-59%, and 3rd class degrees awarded to students achieving between 40 -49%. For most analyses a binary classification (1 st and 2.1 versus others) was used. |
| <i>Predictor Variables</i> | |
| UCAS Tariff Points | UCAS Tariff points are a system used for allocating points to post GCSE qualifications in the UK (e.g. for A levels, A=120, B= 100, C=80 etc.). Total UCAS Tariff points were used as a measure of prior attainment for entry to higher education as this measure enables comparison between applicants with different volumes/types of achievement. |
| School Type | The type of school students' attended for their A-levels were organised into five categories including: independent schools, state grammar schools, state comprehensives, sixth form colleges and the category labelled state other (includes voluntary aided schools, voluntary controlled schools, technical colleges and adults colleges). |
| School Performance | School performance data were used to contextualise prior attainment, represented by the overall percentage of students gaining 5A*-E or more at A-levels or equivalent. Based on this, a binary classification was created where "high" performing schools, represented those schools where 82.5% of students and above achieved 5A*-E or more at A-level or their equivalent. , "Low" performing schools were those where less than 82.5% of students achieved 5A*-E or more at A-level or their equivalent based on averages reported in DfE performance tables. |
| Neighbourhood Participation | POLAR 3 data were matched to the Census Area Statistics (CAS) wards to illustrate the typical HE participation profile within which students were domiciled. POLAR 3 data is reported as five quintiles: ordered from '1' (lowest participation) to '5' (highest participation). A binary classification was created to compare performance of students residing in areas of lowest participation (1 and 2) to others (3,4 and 5). Quintiles 1 and 2 are those areas, which attract additional widening participation funding for each student domiciled within them. |
| Multiple Deprivation | The IMD (2010) was used to identify the multiple facets of total deprivation. Students' postcodes were matched to Lower Layer Super Output Areas (LSOAs), which contain an average of 1,500 households. These were then used to append IMD scores provided that students had a valid English postcode. There are 32,482 LSOAs in England. IMD ranks LSOA with 1 as most deprived and 32,482 as least deprived. For the analyses IMD scores were divided into quintiles, where quintile 1 includes the most deprived areas and quintile 5 includes the least deprived. |
| Sex/ Ethnicity | Sex and ethnicity were self-reported by students during the university application process. Students' ethnicities were categorised as one of the following: White, Asian, Black, Chinese, and Mixed and Other. |

4.4.2. Exclusion Criteria

In order to make comparisons between degree programmes and students as fair as possible, students registered on four and five- year programmes including Veterinary Science, Medicine and Dentistry were excluded from the dataset. Secondly, only students with a postcode within England were included in the analyses as the IMD is produced separately in each of the four UK administrations. Students from outside the UK were also excluded. Finally, only data for students who completed three-year degrees programmes successfully were included in this study. Thus, the current study is not representative of the entire university's intake, but these include all those students for whom there was comparable postcode data, data on school and university performance.

4.4.3. Data Analysis

Analyses were designed to explore research questions centred primarily on the relationships between school type, school performance, socio-economic background and academic performance (at school and university). This focuses on three outcome variables: i) entry level attainment (UCAS tariff points) ii) average university attainment and principally iii) final degree classification. However, as explained previously, analyses were also designed to investigate differences in the distribution of students' at the university based on their contextual background characteristics.

Statistical significance of associations between the independent and outcome variables was initially assessed using conventional hypothesis testing for categorical (Chi-squared) and continuous (independent t-test) comparisons. Chi-squared comparisons (2x1) were also carried out to investigate differences in participation within groups based on students' contextual background characteristics. Univariate logistic regression was carried out summarising the association between contextual background characteristics and academic performance; this was defined as good (2.1, first classification) versus other. Multivariable logistic regression was carried out to identify which factors were independently associated with academic performance. No entry criteria were specified for selection of factors to go into the model, as all were judged a priori to be important for inclusion. All independent variables (socio-economic deprivation, residence in low

participation neighbourhood, school type, school performance, sex, ethnicity and UCAS tariff points) were selected into the model using forced entry. Possible interactions were investigated between: school type x sex; school type x school performance; school type x sex x school performance, where sufficient numbers allowed analysis.

All analyses were undertaken using SPSS (version 21).

4.5. Results

There was no evidence of collinearity between the explanatory factors used in the analysis (all associations were non-significant $p>0.05$).

Table 9 presents a descriptive summary of the association between each of the contextual background characteristics and academic performance. This also illustrates the demographic profile and patterns of participation of students' on three-year programmes at the UoL based on their contextual background characteristics. The proportion of missing data for each item in the dataset is described at the bottom of Table 9. Though the dataset includes 5,369 students multi-variable analysis only includes 3,728 students for whom data were complete (30.6% missing).

Table 9: Descriptive Breakdown of Characteristics of Study Sample for Students in all Three-Year Degree Programmes

| Variable | No. | UCAS Tariff Points | | Final year average | | Indicator of student performance | | | | | |
|---|------|--------------------|--------|--------------------|------|----------------------------------|-------|--------------------|-------|-------------------------|-------|
| | | M | SD | M | SD | Degree – 1 st class | | Degree – class 2.1 | | Degree – class 2.2/ 3rd | |
| | | | | | | No. | % | No. | % | No. | % |
| School type: | | | | | | | | | | | |
| Independent | 564 | 359.40 | 74.92 | 61.59 | 6.48 | 53 | 9.40 | 345 | 61.17 | 166 | 29.43 |
| Grammar | 511 | 389.73 | 77.74 | 62.52 | 6.20 | 60 | 11.45 | 336 | 64.12 | 128 | 24.43 |
| Comprehensive | 2350 | 348.99 | 87.21 | 62.73 | 6.61 | 327 | 13.84 | 1506 | 63.73 | 530 | 22.43 |
| Sixth form | 1081 | 389.54 | 89.09 | 62.20 | 6.65 | 136 | 12.58 | 673 | 62.26 | 272 | 25.16 |
| State (other) | 55 | 335.64 | 82.07 | 61.79 | 6.53 | 4 | 7.27 | 34 | 61.82 | 17 | 30.91 |
| | | p<.0005 | | p=.01 | | p=.01 | | p=.01 | | p=.01 | |
| School performance: | | | | | | | | | | | |
| High | 3526 | 375.03 | 83.62 | 62.58 | 7.03 | 439 | 11.84 | 2394 | 64.58 | 874 | 23.58 |
| Low | 1822 | 333.26 | 96.61 | 62.36 | 6.44 | 136 | 15.61 | 520 | 59.70 | 215 | 24.68 |
| | | p<.0005 | | p=.42 | | p<.01 | | p<.01 | | p<.01 | |
| Deprivation*: | | | | | | | | | | | |
| 1 | 655 | 301.67 | 153.58 | 61.48 | 7.75 | 89 | 13.61 | 381 | 58.26 | 184 | 28.13 |
| 2 | 687 | 336.84 | 122.84 | 62.50 | 6.54 | 90 | 13.12 | 437 | 63.70 | 159 | 23.18 |
| 3 | 917 | 340.25 | 122.14 | 62.51 | 6.51 | 125 | 13.66 | 561 | 61.31 | 229 | 25.03 |
| 4 | 1153 | 350.81 | 113.98 | 62.83 | 6.21 | 150 | 13.01 | 753 | 65.31 | 250 | 21.68 |
| 5 | 1423 | 361.74 | 108.14 | 62.50 | 6.42 | 189 | 13.28 | 909 | 63.88 | 325 | 22.84 |
| | | p<.0005 | | p<.01 | | p<.01 | | p<.01 | | p<.01 | |
| POLAR 3:# | | | | | | | | | | | |
| High | 4010 | 364.70 | 87.83 | 62.46 | 6.37 | 510 | 12.72 | 2539 | 63.33 | 960 | 23.95 |
| Low | 1222 | 356.78 | 92.31 | 62.13 | 7.22 | 175 | 14.37 | 739 | 60.67 | 304 | 24.96 |
| | | p=0.01 | | p=.02 | | p=.18 | | p=.18 | | p=.18 | |
| Sex: | | | | | | | | | | | |
| Males | 1985 | 351.80 | 88.94 | 61.77 | 7.15 | 281 | 12.7 | 1290 | 58.1 | 649 | 29.23 |
| Females | 2949 | 370.10 | 88.73 | 62.93 | 6.11 | 423 | 13.4 | 2082 | 66.2 | 641 | 20.38 |
| | | p<.0005 | | p<.0005 | | p<.0005 | | p<.0005 | | p<.0005 | |
| Ethnicity | | | | | | | | | | | |
| White | 4913 | 363.74 | 89.16 | 62.63 | 6.14 | 644 | 13.11 | 3125 | 63.62 | 1143 | 23.27 |
| Asian | 127 | 351.79 | 89.67 | 60.03 | 6.55 | 12 | 9.60 | 61 | 48.80 | 52 | 41.60 |
| Black | 65 | 325.89 | 78.71 | 60.76 | 5.87 | 7 | 10.77 | 32 | 49.23 | 26 | 40.00 |
| Chinese | 48 | 352.00 | 96.62 | 62.60 | 9.07 | 12 | 25.00 | 25 | 52.08 | 11 | 22.92 |
| Mixed | 111 | 360.20 | 82.22 | 62.67 | 7.13 | 17 | 15.32 | 68 | 61.26 | 26 | 23.42 |
| Other | 105 | 347.42 | 97.19 | 63.21 | 6.53 | 12 | 11.43 | 61 | 58.10 | 32 | 30.48 |
| | | p<.0005 | | p<.0005 | | p<.0005 | | p<.0005 | | p<.0005 | |
| Item Missingness: UCAS Tariff Points 353; School Type 780; School Performance 776; IMD, 535; POLAR 3 139; Final Attainment, 71 | | | | | | | | | | | |

*Defined by quintiles of Index of Multiple Deprivation (1 = Most deprived.... 5 = Least deprived)

Significant differences were observed in the UCAS tariff points of students from different school backgrounds, quintiles of socio-economic deprivation, neighbourhoods with different levels of participation in HE and between males and females. Significant differences in participation were identified in the distribution of students based on their contextual background characteristics (sex, ethnicity, school type, school performance, IMD, and POLAR 3).

Firstly, significant differences were observed in the distribution of students based on their ethnic backgrounds ($\chi^2(5)=3,951.13, p<0.0005$), as students in the dataset were predominantly self-classified as white, (91.5%), and aged under 21 (92.4%). Though the percentage of males and females in the study was relatively uniform (58.4% females), differences in participation were statistically significant between males and females ($\chi^2(1)=160.05, p<0.0005$). Additionally, a small percentage of students in the sample were identified as having a medical condition/disability (6.5%).

Significant differences were observed in the proportion of students at the university based on the types of school they had previously attended ($\chi^2(1)=3,243.51, p<0.0005$). The majority of students came from comprehensive schools and sixth form colleges (3431, 75.2%). Students who attended grammar schools and sixth form colleges came into university with the highest UCAS tariff points (Table 9). However, similar findings were not reflected in university attainment, as students from comprehensive schools achieved the highest average final year grades, and generally performed better than students from all other school types. Conversely, students from independent schools and students from the category of schools 'state other' achieved the lowest average grades at university compared to students from other school types. Moreover, these students were also significantly more likely to achieve degree classifications below a 2.1.

The majority of students had previously attended schools that were considered high performing in terms of A-level performance/equivalent (3526, 80.9%) ($\chi^2(1)=3,624.20, p<0.0005$). These students entered university with higher A-level (or equivalent) grades compared to those who went to lower performing schools ($p<0.0005$). However, by final

year at university, differences in overall mark averages were no longer statistically significant.

Significant differences in participation based on neighbourhood participation in HE (POLAR 3) were observed ($X^2(1)=1,488.35$, $p<0.0005$), where the majority of students in the study came from neighbourhoods with high levels of participation (HPN) in HE . In terms of academic attainment, students from HPN also entered university with significantly higher UCAS tariff points than students from low participation neighbourhoods (LPN), however, by the final year at university, differences between students from LPN and HPN were no longer statistically significant.

Significant socio-economic inequalities in the distribution of students at the university were also evidenced based on IMD quintile ($X^2(4)=435.33$, $p<0.0005$). As such, the number of students within each quintile increased as deprivation decreased, so there were 2.17 times more students in quintile 5 (least deprived) than quintile 1 (most deprived). There was also a positive relationship between IMD quintile and UCAS tariff points such that students from the least deprived areas entered university with the highest UCAS tariff points and conversely, students from the most deprived areas entered with the lowest UCAS tariff points. By contrast, material deprivation predicted only slight differences in academic achievement once students were at university. Indeed, only students from the most deprived socio-economic quintile, achieved slightly less well on average and were more likely to achieve lower second class or a lower degree classification, but this was not statistically significant.

Finally, a consistent statistically significant association was observed for sex in relation to academic attainment in both school and university attainment. Males entered university with significantly lower grades than females, achieved lower average marks at University, and were also less likely to get a 'good degree' (2:1 or above).

Table 10 summarises the results for contextual background factors in relation to final degree classification. Compared to students from the most deprived quintile (IMD), students from all of the other IMD quintiles were slightly more likely to obtain a good degree; however, this association was only statistically significant for IMD quintiles 4 and 5. Secondly, compared to students who had attended comprehensive schools, students from the four other types of school were less likely to obtain a good degree, but this association was only statistically significant for students from independent schools. Finally, sex and UCAS tariff points were both found to predict significant differences in the probability of getting a good degree.

There were no significant differences in the likelihood of achieving a good degree at university between groups of students who came from neighbourhoods with low/high participation and between those students that attended schools with low/high levels of performance (Table 10).

Table 10: Unconditional Bivariate Logistic Regression Models for Student Characteristics with Final Degree Performance (2.1 and 1st versus lower classification)

| Indicator variable | | Odds Ratio 'Good Degree' | | | |
|---------------------------------|------|--------------------------|-------|------------|---------|
| Variable | No. | % | OR | 95% CI | p-value |
| School Type | | | | | |
| State Comprehensive (reference) | 2334 | 51.5 | 1 | | |
| Sixth Form College | 1068 | 23.6 | 0.85 | 0.72-1.01 | .07 |
| State Other | 54 | 1.2 | 0.65 | 0.36-1.17 | .15 |
| State Grammar | 521 | 11.5 | 0.87 | 0.69-1.08 | .21 |
| Independent School | 556 | 12.3 | 0.69 | 0.56-0.85 | <.0005 |
| School performance: | | | | | |
| High (reference) | 3663 | 81.0 | 1 | | |
| Low | 857 | 19.0 | 0.96 | 0.80-1.14 | .62 |
| Deprivation*: | | | | | |
| 1(reference) | 642 | 13.5 | 1 | | |
| 2 | 678 | 14.2 | 1.28 | 0.99-1.64 | .06 |
| 3 | 907 | 19.0 | 1.134 | 0.90-1.43 | .28 |
| 4 | 1145 | 24.0 | 1.37 | 1.09-1.71 | .01 |
| 5 | 1401 | 29.4 | 1.33 | 1.07-1.65 | .01 |
| POLAR 3:# | | | | | |
| High (reference) | 3964 | 76.8 | | | |
| Low | 1198 | 23.2 | 0.97 | .83-1.13 | .65 |
| Sex: | | | | | |
| Males (reference) | 2179 | 41.1 | 1 | | |
| Females | 3119 | 58.9 | 1.58 | 1.39-1.80 | <.0005 |
| Ethnicity | | | | | |
| White (reference) | 4913 | 91.5 | 1 | | |
| Asian | 127 | 2.4 | 0.43 | 0.30-0.62 | <.0005 |
| Black | 65 | 2 | 0.45 | 0.27-0.75 | <.01 |
| Chinese | 48 | 0.9 | 1.07 | 0.53- 2.15 | .86 |
| Mixed | 111 | 2.1 | 1.02 | 0.65-1.61 | .93 |
| Other | 105 | 2 | 0.75 | 0.48-1.17 | .20 |
| UCAS Points (continuous) | 4952 | 92.2 | 1.01 | 1.01-1.01 | <.0005 |

*Defined by quintiles of Index of Multiple Deprivation (1 = Most deprived.... 5 = Least deprived)

Neighbourhood HE participation (POLAR 3)

Multivariable logistic regression was carried out to estimate how students' background characteristics including: neighbourhood participation (POLAR 3), deprivation, educational background, and personal characteristics influenced their odds of getting a good degree. Table 11 presents these results incorporating the six background characteristics simultaneously and degree performance as a binary outcome (1st and 2.1 versus all others).

Whilst the majority of associations between socio-economic deprivation and educational performance were initially found to be statistically significant in the univariate analysis, in multivariable analysis socio-economic deprivation was observed to exert less of an influence on the chances of getting a good degree after allowing for the effects of the other variables (Table 11). Hence, compared to students from the most deprived socio-economic quintile, (quintile 1) only students from quintile 4 were statistically more likely to achieve a good degree (OR= 1.44; 95%CI =1.07-1.95).

Compared to comprehensive school students, multivariable analyses revealed that students from all other types of school had significantly lower odds of achieving a good degree (with the exception of the category 'state other' where the association was not statistically significant (OR = 0.57; 95% CI=0.27-1.21). The difference was greatest between students from comprehensive schools and students from independent schools who were found to be 40% less likely to achieve a good degree (OR= 0.60; 95% CI=0.48-0.77).

Though performance of school did not significantly predict differences in educational performance univariately, there was a significant association in the multivariable analysis. Here it was found that students from schools that were high performing were significantly less likely to achieve a good degree than those from low performing schools (OR= 0.78; 95% CI=0.62-0.98). Associations between neighbourhood participation (POLAR 3) and degree classification remained non-significant.

Students' sex also remained a significant predictor in multivariable analysis. Compared to males, females were more than 50% more likely to achieve a good degree (OR =1.52; 95% CI=1.39- 1.78). Finally, students' UCAS tariff points (entry-level performance) were also significantly associated with university performance in the multivariable analysis

(OR = 1.01; 95% CI= 1.01- 1.01). None of the interactions that were investigated achieved statistical significance ($p>0.05$).

Table 11: Multiple Logistic Regression including all Student Characteristics (deprivation (IMD), school grades, school type, school performance, neighbourhood participation and sex, N=3728) and Final Year Performance (2.1 and 1st versus lower categories)

| Indicator variable | Odds Ratio 'Good Degree (1 st or 2i)' | | |
|---------------------------------|--|------------|---------|
| Variable | OR | 95% CI | p-value |
| State Comprehensive (reference) | 1 | | |
| Sixth Form College | 0.67 | 0.55-0.82 | <.0005 |
| State Other | 0.58 | 0.27- 1.24 | .16 |
| State Grammar | 0.71 | 0.54-0.94 | .016 |
| Independent School | 0.61 | 0.48-0.77 | <.0005 |
| School performance: | | | |
| Low (reference) | 1 | | |
| High | 0.78 | 0.62-0.98 | .03 |
| Deprivation*: | | | |
| 1(reference) | 1 | | |
| 2 | 1.25 | 0.92-1.70 | .16 |
| 3 | 1.03 | 0.76-1.39 | .85 |
| 4 | 1.34 | 0.99-1.82 | .06 |
| 5 | 1.17 | 0.87-1.59 | .31 |
| POLAR 3:# | | | |
| Low (reference) | 1 | | |
| High | 1.08 | 0.86-1.34 | .52 |
| Sex: | | | |
| Males (reference) | 1 | | |
| Females | 1.52 | 1.30-1.79 | <.0005 |
| Ethnicity | | | |
| White (reference) | 1 | | |
| Asian | 0.52 | 0.33-0.82 | <.0005 |
| Black | 0.47 | 0.24-0.89 | 0.002 |
| Chinese | 1.33 | 0.52- 3.38 | .55 |
| Mixed | 1.33 | 0.73-2.40 | .35 |
| Other | 0.84 | 0.47-1.53 | .57 |
| UCAS Points (continuous) | 1.01 | 1.01-1.01 | <.0005 |

*Defined by quintiles of Index of Multiple Deprivation (1 = Most deprived.... 5 = Least deprived)

#Neighbourhood HE participation

4.6. Discussion

The principal aim of this research was to explore the relationship between students' contextual background characteristics with participation and academic performance at the UoL. The current findings provide additional evidence of the on-going socio-economic inequalities in HE participation (e.g. Crawford et al., 2014; HEFCE, 2014). These findings also depict a number of characteristics that are associated with students' chances of achieving a 'good degree' (upper second or first class degree). No other case studies have been found where this is explored using both postcode-based measures of disadvantage and school background information. Hence, a critical part of this research involved investigating whether patterns identified in previous studies were also evidenced at this University and exploring potential variations which could exist as a consequence of the differences in student intake and performance which are known to exist even between elite universities (Hoare & Johnston, 2010; Singleton 2010b).

4.6.1. Principal Findings from Results

Socio-economic inequalities in participation were identified, where students from disadvantaged areas were under-represented at the UoL compared to students from more affluent areas (based on IMD and POLAR 3). Such inequalities in participation are well documented, and are often attributed to the poorer academic qualifications obtained by a large proportion of students from disadvantaged backgrounds (Chowdry et al., 2013b; Feinstein, 2003; Stevenson & Lang, 2010; Strand, 2014). For this reason, a crucial part of the analysis involved addressing the extent to which school grades are representative of 'true academic' potential by comparing group differences in attainment at school compared to university. Consistent with other studies, school grades (UCAS tariff points) were found to be a strong and significant predictor of academic performance (Connor et al., 2004; HEFCE, 2013; HEFCE, 2014; Kirkup et al., 2010; McKenzie & Schweitzer, 2001). Statistically significant associations were observed between all of the contextual background characteristics IMD, school type, school performance, neighbourhood participation and school grades. However, even though many of these associations remained statistically significant by final year at university, differences decreased substantially.

Socio-economic differences persisted in final year performance at university but were only statistically significant between students from the most deprived areas and those from the second least deprived group *ceteris paribus*. Additionally, students from the most deprived areas were found to be more likely to achieve degree classifications of 2.2 or below. Unlike the IMD, POLAR 3, hence coming from neighbourhoods with low or high levels of participation in HE did not predict significant differences in final year performance. Conversely, the type of school that students attended had a significant and differential impact on school achievement compared to university achievement. Students from independent schools were found to be less likely to achieve a 'good degree' compared to students from comprehensive schools despite being more likely to enter university with higher grades. . To an extent, this is similar to the relationship between school performance and academic achievement as students from low performing schools achieved slightly higher final averages than their counterparts from high performing schools. Finally, one variable that did not follow any of the patterns evidenced hitherto was sex. Males entered university with lower grades than females, and once at university were also less likely to achieve either a first or an overall good degree.

4.6.2. How do these findings relate to the current evidence base/other studies?

Differences in academic achievement by SES have been reported in numerous studies (Delaney, Harmon, & Redmond, 2011; Hoare & Johnson, 2010). These are typically evidenced from a young age, and span across a number of subjects (Aikens & Barbarin, 2008; Coley, 2002; Chowdry et al., 2009; Evans, 2008). Consequently, the differences in academic performance observed in this study are not surprising, particularly as differences that persisted by the third year at university were primarily between students that came from the most deprived areas and students from some of the most affluent areas. Similar findings have been reported in past research and attributed to differences in a range of factors including: family support, family history in HE (Allardice & Blicharski, 2000; HEFCE, 2014; Richardson, Abraham & Bond, 2012) term time working (Moreau & Leathwood, 2006a; Salamonson, Everett, Koch, Andrew, & Davidson, 2012), and differences in expectations and aspirations (Pampaka, Williams, & Hutcheson, 2012; Thomas, 2001).

In this research, the gap in academic attainment between students from neighbourhoods with low or high levels of participation in HE (POLAR 3) was only significant at entry level. Though slight differences prevailed even by final year at university, these were not significant. HEFCE (2014) found little variation in academic performance when POLAR quintiles were examined together and entry grades were taken into account. However, they also found that in particular students from the areas with lowest participation rates (POLAR quintile 1) performed significantly less well and achieved the lowest proportions of high degree classifications.

Though previous studies have reported males as being up to 50 % more likely to achieve first class degrees than females (McCrum, 1996; Mellanby et al., 2000), in more recent studies females have been found to outperform males, consistent with the findings from this study (Dayioğlu & Türüt-Aşık, 2007; Sheard, 2009). The gap in academic performance between males and females is alarming and though this does not relate to WP per se, requires further exploration, particularly, as differences in subject choice between males and females are acknowledged and studies have found that trends may vary by age, between subjects and have differential effects on employability outcomes (Ackerman et al., 2013; Richardson & Woodley, 2003; Hu & Wolniak; 2013). Consequently, future research should explore interactions between sex, subject choice, SES and outcomes.

The findings pertaining to the relationship between school performance and academic achievement are difficult to reconcile unreservedly with past research, as it is not only highly limited, but findings have been mixed and largely inconsistent (HEFCE, 2003; Hoare & Johnson, 2010; Smith & Naylor, 2001). According to HEFCE (2003), findings have been particularly mixed because the effect of school performance varies largely, depending on factors such as A-level points, students' sex and subject. The findings of this research are consistent with those of Smith and Naylor (2001) who also found evidence of a positive association between attendance at lower performing schools and degree performance. They argue that when comparing two students with the same A-levels, the student who is less advantaged, coming from a state school with lower overall performance is more likely to have greater underlying ability. This suggests that the school qualifications achieved by students from low performing schools may not represent their true/ academic potential.

However, these results contrast with the findings of HEFCE (2003) regarding the direction of the association between school performance and degree attainment and other studies where no significant association was found (HEFCE, 2014; Hoare & Johnson, 2010). This highlights the need for further research exploring variations in school performance.

Students from independent schools did not enter the University with the highest grades, as was the case in other studies (HEFCE, 2003; 2005; 2014; Hoare & Johnson, 2010; Naylor & Smith, 2002; Smith & Naylor, 2001). However, consistent with past research, once at university, students from independent schools achieved lower results than students from all but one of the other school types, including comprehensive school students (Hoare & Johnson, 2010). This effect is said to occur largely because independent school students are at an advantage over students from state schools and this advantage is reflected in their qualifications and progression to HE (Dorling, 2010). This advantage is associated with factors including: the quality of education students receive, types of subjects offered, a greater focus on preparing students for university and indeed altogether better resourcing as educational spending (23%) on privately educated children in Britain is more than almost any other rich nation in Europe (Hoare & Johnson 2010). According to Ogg et al (2009), teaching effects at independent schools inflate the qualifications obtained by their students. Either or both of these arguments could explain why comprehensive school students enter university with lower results than independent school students but all other factors held equal, finalize with higher results.

4.6.3. Implications of these Findings

Similar findings documented at other universities have been considered to make a 'strong case' for making reduced offers to students from particularly disadvantaged backgrounds (HEFCE, 2014; Henry, 2013; Hoare & Johnson, 2010; Kirkup et al; 2010; Naylor & Smith, 2002; Smith & Naylor, 2001; The Sutton Trust, 2010b). However, critics argue that making reduced offers to students from socio-economically/educationally disadvantaged backgrounds discriminates against students from affluent backgrounds/independent schools and may reduce academic excellence at HE institutions (HEA, 2010). The findings of the present study represent a powerful riposte to such arguments, providing additional

support for the 'school type effect' and the notion that school grades may not reflect true academic potential. Hence, these findings contribute to the growing body of evidence delineating the need for the implementation of contextual data alongside school qualifications in the admissions process (Kirkup et al., 2010).

4.6.4. Limitations

The present research has various limitations that must be taken into consideration when interpreting these findings. Firstly, it is not possible to control for all factors that affect university attainment. Some prominent factors that were not controlled for include: working during term time (Moreau & Leathwood, 2006a) living at home (Holdsworth, 2006), student engagement (Hu & Wolniak, 2013; Johnson & Reynolds, 2013), family history in HE (Allardice & Blicharski, 2000; Delaney et al., 2011), and individual characteristics including intelligence (Farsides, & Woodfield, 2003; Haworth, Davies, & Plomin, 2013; Mega, Ronconi, & De Beni, 2014). Secondly, this study included only those students that successfully completed their degrees; and not those that failed or dropped out; future research should examine trends in academic achievement in these groups of students. Hence, it is important to take into account that these findings are not representative of all university applicants. Another limitation of this research is that the IMD relates only to LSOAs and not postcodes or smaller geographical units (Gorard & See, 2009; Hoare & Johnston, 2010; Smith & Naylor, 2001; Taylor et al., 2013). Indeed, Gorard (2012) highlights that some of the most deprived families actually live in heavily polarised areas, such as inner London boroughs. Despite this, the IMD was found to be a useful tool for identifying significant differences in performance. Similarly, POLAR 3 is also restricted in this sense as it is also based on aggregate data. Thus, it must be considered that trends relating to both IMD and POLAR 3 do not necessarily relate to individuals themselves but rather to the areas in which they are based (Taylor et al., 2013).

A final and common limitation relevant to the present study lies in the high proportion of missing data as this could significantly bias analyses and results, and is something that must be taken into account (Gorard, 2008; 2012). In particular, a large proportion of school background data were missing, in most cases this was because this

information could not be obtained from the DfE website. Additionally, for an unknown reason, UCAS tariff points were missing for 353 students that did not have A-level qualifications and had alternative non-standard qualifications for which data were not available. Previous studies have excluded students' with non-standard qualifications from analyses and used students' top three A-level points as a measure of prior attainment (e.g. Hoare & Johnston, 2010). However, their exclusion would be counter to the focus of our analyses as past research suggests that students with non-standard qualifications are more likely to suffer from educational disadvantage (Broecke & Nicholls, 2007; Callendar, 2005; Gorard, 2012). Hence, despite the fact that UCAS tariff points were missing for students with non-standard qualifications, they were not excluded from datasets as the inclusion of these students was considered important.

A complete-case analysis was used to deal with missing data, whereby individuals with missing data on any variable were excluded from analysis (list-wise). This is a common technique for dealing with missing data, however, it is recognised that this approach can be problematic and introduce bias when those individuals that are excluded are not a random sample of the population (Altman & Bland, 2007; Schafer & Graham, 2002). Though these biases should be recognised, they do not affect all analyses for which most data was available in the current study. Hence, while the internal (univariate) associations reported in this study are likely to be valid, the large amount of missing data in this study is problematic and should be taken into account when interpreting the results of the current study. Further, it is acknowledged that alternative approaches for dealing with missing data such as multiple imputation (MI) which pools estimates across several imputed data sets are likely to be more appropriate than complete case analysis as this leads to more precise, less biased parameter estimates and inferences (Allison, 2001).

4.6.5. Directions for Future Research

The need for further research exploring educational disadvantage and variations in academic performance is indisputable, as a number of questions remain unanswered. This is partly due to the strict exclusion criteria that were used to make comparisons between students as fair as possible. Future studies should focus on those students who entered

university via non-standard routes and compare performance of students with different types of school qualifications as trajectories throughout higher education may be influenced by these factors. Secondly, it is critical for future research to explore why differences in achievement at university occur in order to support students and identify those at risk of dropping out, failing and/or not achieving a 'good degree'. Thirdly, associations between contextual background and academic performance in programmes extending beyond three years including medicine, dentistry and veterinary science require further exploration. Addressing the paucity of research on this is essential as these programmes are highly oversubscribed, selective and competitive; having higher entry requirements than most other programmes. Finally, it is important to note that even within elite universities, there are major differences in student composition and student performance. Consequently, though the present case study illustrates important differences between different groups of students at a British University, analyses must be expanded to include other universities. In particular, analysis should focus on the most competitive and selective universities, known as elite universities as these are often criticized for having comparatively less WP students to other universities (Singleton, 2010b). The lack of research on this is problematic and must be addressed as convincing evidence is necessary for guiding the decision making process in the implementation of contextual data alongside school qualifications.

4.7. Concluding Comments

Understanding factors which are associated with differences in HE participation and academic performance is crucial, particularly given the expansion that the British higher education system has undergone in the last decade, changing financial regimes, and the inequalities which persist (Breen & Jonnson, 2005; Connor et al., 2001; Haim & Yossi, 2013; The Sutton Trust 2010b;). Though there is general awareness that prior opportunities and social background impact on academic performance and subsequently access to HE, utilising contextual data for admissions in an evidence-based manner is less well understood (Bridger et al., 2012; Zimdars, 2007). This may represent one of the underlying reasons why current contextual considerations are so limited (Zimdars, 2007).

However, the usage of contextual information in admissions can be regarded as a mechanism for ameliorating the current admissions systems by addressing limitations related to the usage of examination marks as these alone are not considered an appropriate proxy of an applicant's true academic potential (Ogg et al., 2009). The present study provides insight into the associations between different background characteristics and academic outcomes, contributing to the evidence base that advocates the implementation of contextual data alongside school grades during the admissions process. This illustrates how contextual data can be utilised to identify students with school qualifications that may not reflect the extent of their academic potential, but also to help identify those at risk of underperforming once they are in HE (Bridger et al., 2012; Lupton, 2004; Ogg et al., 2009). Thus, going beyond purely theoretical analysis, the practical repercussions of the present research could help raise academic attainment to higher levels, and more generally, improve the student experience (Bridger et al., 2012). Unfortunately, research on this remains highly limited despite the fact it is critical to HE institutions, the UK government, and most importantly, to students themselves as changes in admissions may impact on their life chances and subsequent career opportunities (Jacobs, 2008; Mullen, 2011). Further research is necessary to ensure university policies are based on firm evidence to safeguard fair access to HE.

CHAPTER FIVE

5. Participation and Attainment at Medical School

In this chapter I explore the demographic profile and patterns of attainment in a data cohort of medical students on a five-year degree programme. I conclude that disaggregating the inequalities in HE participation is critical to guide decision-making and refine targeting of disadvantaged students during admissions processes.

This chapter has been accepted after submission to the journal *BMJ Open* for publication:

Thiele, T., Singleton, A., Pope, D., & Stanistreet, D. (2015). The Role of Students' Context in Predicting Academic Performance at a Medical School: a Retrospective Cohort Study. *BMJ Open* .

I have changed the format, and included additional information on missing data and participation to be consistent with the rest of the thesis. Reflecting the presentation of the published article, methods are included in this chapter, which summarise the methods described in Chapter Three.

5.1. Abstract

Objectives: This study examines associations between medical students' background characteristics (postcode-based measures of disadvantage, high school attended, socio-demographic characteristics) and academic achievement at a Russell Group University.

Design: Retrospective cohort analysis.

Setting: Applicants accepted at the University of Liverpool medical school between 2004 and 2006 finalising their studies between 2010 and 2011.

Participants: 571 students (with an English home postcode) registered on the full time Medicine and Surgery programme who successfully completed their medical degree.

Main outcome measures: Final average at year four of the medical programme (represented as a percentage).

Results: Entry grades were positively associated with final attainment ($p < 0.001$). Students from high performing schools entered university with higher qualifications than students from low performing schools ($p < 0.001$), though these differences did not persist at university. Comprehensive school students entered university with higher grades than independent school students ($p < 0.01$), and attained higher averages at university, though differences were not significant after controlling for multiple effects. Associations between school type and achievement differed between sexes. Females attained higher averages than males at university. Significant academic differences were observed between ethnic groups at entry level, and university. Neither of the postcode-based measures of disadvantage predicted significant differences in attainment at school or university.

Conclusion: The findings of this study suggest that educational attainment at school is a good, albeit imperfect, predictor of academic attainment at medical school. Most attainment differences observed between students either decreased or disappeared during university. Unlike previous studies, independent school students did not enter university with the highest grades, but achieved the lowest attainment at university. Such variations depict how patterns may differ between subjects and higher education institutions. Findings advocate for further evidence to help guide the implementation of changes in admissions processes and widen participation at medical schools fairly.

5.2. Introduction

Pervasive inequalities in higher education (HE) participation are greatest in selective and oversubscribed programmes such as medicine (Garlick & Brown, 2008; Mathers & Parry, 2009; Seyan, Greenhalgh, & Dorling, 2004). In 2008, out of seven socio-economic groups included in the National Statistic Socio-economic Classification (NS-SEC), the most affluent three groups (i.e. students with parents in professional occupations) accounted for 85% of medical students in the UK (Deakin, 2011). These differences in participation are largely associated with the well-documented gap in educational attainment between students from socio-economically disadvantaged backgrounds and more privileged students (Coley, 2002; Feinstein, 2003; Leithwood et al., 2010; Lupton, 2004; OFSTED, 2011). Concomitantly, university admissions systems in the UK focus predominantly on the academic records of prospective students, though the extent to which these are representative of students' academic potential has been questioned (Gorard, 2008; Kirkup et al., 2010). This represents a major entry barrier for lower socioeconomic status (SES) applicants (Chowdry et al., 2013; Garlick & Brown, 2008; HEFCE, 2013a; Hoare & Johnston, 2010; Palardy, 2008; Smith & Naylor, 2005).

Though numerous interventions have aimed to widen and extend access to underrepresented groups in the UK medical student population, evidence suggests these have had limited impact (Mathers et al., 2011; Powis, Hamilton, & Gordon, 2004; Rolfe, Ringland, & Pearson, 2004). The integration of school, domicile "neighbourhood" and socio-economic contextual information into the university admission system more generally has been argued to offer a useful tool to assist widening participation by situating individual prior attainment within the context of the circumstances in which results were obtained (Cable, 2011; Croxford & Raffe, 2013; Henry, 2013). The argument follows that inclusion of contextual data could enable universities to identify academic potential that may not be reflected in prior attainment alone, and most importantly, assist in making decisions about students from disadvantaged backgrounds (McManus, Dewberry, et al., 2013).

Although previous studies have examined associations between students' background characteristics with HE participation and academic performance nationally and

for individual universities (HEFCE, 2013a; Hoare & Johnston, 2010; McManus, Dewberry, et al., 2013; Smith & Naylor, 2005), there are a dearth of studies focusing specifically on medical students, and considering measures of disadvantage, alongside relative school performance to identify contextual effects on prior academic attainment (Bridger et al., 2012; Do et al., 2006; Garlick & Brown, 2008; Hilton & Lewis, 2004). Ensuring such impacts are understood, and then managed in an equitable way is critical to medical school admissions systems engendering greater social responsibility, given that students' life chances and opportunities can be impacted by such decisions (Bridger et al., 2012; McHarg et al., 2007; Tonks, 2003). Arguments for increasing diversity in medical schools also focus on the benefits that training in demographically heterogeneous populations has on doctors' understanding of others socio-cultural backgrounds which can improve the quality of medical care they provide (Lemon & Stone, 2013; Mathers et al., 2011). Post admission, it is also of great importance, that medical schools can identify and provide appropriate support structures for students with academic potential to perform well in their studies, and assist those that may require additional support (Greenbank, 2006; Mathers et al., 2011; McHarg et al., 2007).

Given that differences have been identified in the socio-demographic composition of students even between elite universities, recognising these differences and exploring how trends in participation and academic performance may vary, is important (Ackerman et al., 2013; Callender, 2011; Parkes, 2011; Hoare & Johnston, 2010; Singleton, 2010a). The present study at the University of Liverpool endorses this and investigates differences in participation and academic attainment based on medical students' contextual background characteristics.

5.3. Methods

The methods described here were also discussed in detail in Chapter Three.

5.3.1. Study Context

This study utilizes data from the University of Liverpool (UoL), one of the six original “red brick” civic universities and a founding member of the Russell Group. Traditionally,

such elite universities in the UK have tended to have a greater proportion of students from more affluent backgrounds and have higher entry requirements (The Sutton Trust, 2010a). This coupled with the fact that medicine is amongst the most competitive and selective programmes, with the highest entry requirements, is known to affect the composition of students (Gallagher et al., 2009; Singleton, 2010a; 2010b). Despite this, the university campus is based in Liverpool; a city with some of the most socio-economically deprived areas in the UK, and has traditionally attracted a high proportion of applicants from socio-economically disadvantaged backgrounds relative to the Russell Group average (this is presented in Table 1/ Chapter Three).

5.3.2. Data and Context

Ethical approval was requested and granted by the UoL. Data for the study were then obtained from the UoL central student database. This includes all necessary student background information and tracks performance from the point of application through to graduation. The study focused on students entering the UoL between 2004/5 and 2006/07. This was the most recent entry year that allowed analysis of both entry and exit points. There were no significant changes to the University's admission policies or grading criteria during this time period, so data were stratified by year of entry but also treated as a single dataset. The dataset contained socio-demographic (sex, age, ethnicity, disability, domicile), school attended, prior attainment, and HE performance information for 571 students. The full list of variables included in the analysis is described in Table 12.

Table 12: Description of Outcome (Educational Performance) and Predictor (Contextual Factors) Variables

| Variables | Description |
|---|---|
| Outcome Variable | |
| Year Four Performance | Students complete final examinations in year four of the medical programme (year five is a practical year where students undertake 8 clinical rotations). |
| Predictor Variables | |
| UCAS Tariff Points | UCAS Tariff points are a system used for allocating points to post-GCSE qualifications in the UK (e.g. for A levels, A=120, B= 100, C=80 etc.). These were calculated from students' three highest qualifications and used as a measure of prior achievement for entry to HE. |
| School Type | The type of school students attended for their A-levels were organised into five categories including: independent schools, state grammar schools, state comprehensives, sixth form colleges and a category labelled state other (includes voluntary aided schools, voluntary controlled schools, technical colleges and adults colleges). |
| School Performance | School performance data were used to contextualise prior attainment, represented by the overall percentage of students gaining 5A*-E or more at A-levels or their equivalent. Based on this, a binary classification was also created where "high" performing schools, represented those schools where 82.5% of students and above achieved 5A*-E or more at A-level or their equivalent. "Low" performing schools were those where less than 82.5% of students achieved 5A*-E or more at A-level or their equivalent. These thresholds were assigned based on the national averages reported in Department for Education (DfE) performance tables ¹ . |
| "Neighbourhood" Domicile: Higher Education Participation Rate (POLAR 3) | POLAR 3 data were matched to the Census Area Statistics (CAS) wards to illustrate the typical HE participation rate within which students were domiciled. POLAR 3 data is reported as five quintiles ordered from '1' (lowest participation <20%) to '5' (highest participation >60%). A binary classification was created to compare performance of students residing in areas of lowest participation (1 and 2) to others (3,4 and 5). Quintiles 1 and 2 are those areas, which attract additional widening participation funding for each student domiciled within them ² . |
| Multiple Deprivation | The IMD (2010) was used to identify the multiple facets of total deprivation. Students' postcodes were matched to Lower Layer Super Output Areas (LSOAs), which contain an average of 1,500 households. These were then used to append IMD scores provided that students had a valid English postcode. There are 32,482 LSOAs in England. IMD ranks LSOA with 1 as most deprived and 32,482 as least deprived. For the analyses, ranks were divided into quintiles, where quintile 1 includes the most deprived LSOA and quintile 5 includes the least deprived. ³ |
| Sex/ Ethnicity | Sex was self-reported by students during the university application process. Ethnicity was also self-reported by students and based on this, categorised as one of the following: White, Asian, Black, Chinese, and Mixed and Other. |

1 DfE link <http://www.education.gov.uk/schools/performance/>

2 HEFCE POLAR 3 link: http://www.hefce.ac.uk/media/hefce/content/pubs/2013/201328/HEFCE_2013_28.pdf

3 IMD link: <https://www.gov.uk/government/publications/english-indices-of-deprivation-2010>.

The five-year MBCHB programme has an annual intake of approximately 280 students. However, specific exclusion criteria were applied that reduced the number of students included in the analyses. Firstly, only data for students who successfully completed the full time five-year medical degree programmes were included in this study. Secondly, students' permanent home addresses/postcodes were used to generate the two area-based measures of disadvantage depicted on Table 12: Participation of Local Areas (POLAR 3) and the Index of Multiple Deprivation (IMD). Students provide their home address/postcode, during the UCAS application process (usually this is their parents' home address). Correspondence from universities and UCAS is typically sent to students' home address. Due to the use of students' home postcodes rather than term-time postcodes, and the fact that the IMD is generated separately for each of the UK administrations, students from outside of England were excluded from analyses. Thus, the current study is not representative of the entire UoL medical school intake, but includes all those students for whom there was comparable postcode, school and university performance data.

5.3.3. Data Analysis

Given that the final year of the medical programme at the UoL is a placement year which students either pass or fail, the average attainment of students in year four was selected as the main outcome variable that was included in analyses. Differences were also explored in entry level-attainment (UCAS tariff points) based on students' contextual background characteristics (socio-economic deprivation, residence in low participation neighbourhood, school type, school performance, sex, and ethnicity). Statistical significance of associations between the independent and outcome variables was assessed using conventional hypothesis testing for categorical (Chi-squared) and continuous (independent t-test) comparisons. Chi-squared comparisons (2x1) were also carried out to investigate differences in participation within groups based on students' contextual background characteristics.

Univariate linear regression was conducted to describe the association between contextual background characteristics (socio-economic deprivation, residence in low participation neighbourhood, school type, school performance, sex, ethnicity and UCAS

tariff points) and academic performance (as a percentage) of medical students at year four. As differences in degree performance have been observed between males and females in a number of studies, (e.g. Smith & Naylor, 2005) univariate linear regression was also conducted to explore the extent to which trends between contextual background characteristics and attainment varied between males and females.

Multivariable linear regression modelling was conducted to identify which factors were independently associated with academic performance at year four. No entry criteria were specified for selection of factors to go into the model, as all were judged a priori to be important for inclusion. All independent variables (socio-economic deprivation, residence in low participation neighbourhood, school type, school performance, sex, ethnicity and UCAS tariff points) were selected into the model using forced entry. Possible interactions were investigated between: school type x sex; school type x school performance; school type x sex x school performance, where sufficient numbers allowed analysis (Hayes, 2013).

All analyses were undertaken using SPSS (version 21).

5.4. Results

There was no evidence of statistical collinearity between the explanatory factors used in the analysis (all associations were non-significant $p > 0.05$).

Table 13 presents a descriptive breakdown of the association between each of the contextual background characteristics and academic performance. This also illustrates the demographic profile and patterns of participation, based on students' contextual background characteristics. The proportion of missing data for each item in the dataset is described at the bottom of Table 8. In total, there were 93 (16.3%) missing cases. Hence, though the dataset includes 571 students, multi-variable analysis only includes 478 (83.7%) students for whom data were complete.

Table 13: Descriptive Breakdown of Characteristics of Study Sample

| Indicator variable | Indicator of Student Performance | | | | | |
|---------------------------|---|--------|--------------------|----------|----------------|--|
| | Variable | N (%) | UCAS Tariff Points | | Year 4 Average | |
| | | Mean | sd | Mean | sd | |
| School type: | | | | | | |
| Independent | 110 (20.88) | 342.43 | 27.29 | 73.56 | 2.46 | |
| Grammar | 115(21.82) | 342.11 | 32.95 | 73.92 | 2.58 | |
| Comprehensive | 163(30.93) | 347.30 | 18.88 | 74.25 | 2.43 | |
| Sixth form | 105(19.92) | 346.73 | 23.25 | 74.31 | 2.46 | |
| State (other) | 34(6.45) | 335.17 | 48.30 | 74.73 | 1.93 | |
| | | p<0.01 | | p=0.05 | | |
| School performance | | | | | | |
| High | 427 (89.31) | 346.82 | 42.85 | 74.22 | 2.52 | |
| Low | 51(10.69) | 338.05 | 22.81 | 73.96 | 2.20 | |
| | | p=0.04 | | p=0.40 | | |
| Deprivation*: | | | | | | |
| 1 | 88(17.81) | 335.24 | 69.89 | 73.82 | 2.57 | |
| 2 | 74(14.98) | 339.71 | 70.45 | 74.38 | 1.99 | |
| 3 | 76(15.38) | 345.21 | 69.83 | 73.93 | 2.27 | |
| 4 | 112(22.670) | 342.94 | 70.03 | 74.17 | 2.42 | |
| 5 | 144(29.15) | 343.57 | 70.27 | 74.24 | 2.63 | |
| | | p=0.25 | | p=0.54 | | |
| POLAR 3:# | | | | | | |
| 1 | 44(7.72) | 335.35 | 69.81 | 73.62 | 3.00 | |
| 2 | 65(11.40) | 348.52 | 70.29 | 73.92 | 2.07 | |
| 3 | 109(19.12) | 341.37 | 70.28 | 74.37 | 2.64 | |
| 4 | 145(25.44) | 343.10 | 69.89 | 74.02 | 2.41 | |
| 5 | 207(36.32) | 341.09 | 70.13 | 74.27 | 2.34 | |
| | | p=0.26 | | p=0.35 | | |
| Sex: | | | | | | |
| Males | 196(34.39) | 339.90 | 69.90 | 73.76 | 2.66 | |
| Females | 375(65.61) | 343.18 | 70.19 | 74.33 | 2.30 | |
| | | p=0.23 | | p=0.01 | | |
| Ethnicity | | | | | | |
| White | 448(78.46) | 341.25 | 31.35 | 74.41 | 2.33 | |
| Asian | 75(13.13) | 344.66 | 28.97 | 72.97 | 2.52 | |
| Black | 5(0.88) | 325.00 | 30.00 | 74.40 | 2.34 | |
| Chinese | 13(2.28) | 351.67 | 13.37 | 71.80 | 3.00 | |
| Mixed | 23(4.03) | 343.48 | 25.34 | 74.07 | 2.27 | |
| Other | 7(1.23) | 353.33 | 10.33 | 73.42 | 3.30 | |
| | | p=0.87 | | p<0.0005 | | |
| Item Missingness: | School Type 44; School Performance 93; IMD 76; UCAS Tariff Points 21. | | | | | |

*Deprivation defined by quintiles of Index of Multiple Deprivation (1 = Most deprived.... 5 = Least deprived)

Neighbourhood HE participation (1 = Lowest participation.... 5 =Highest participation)

Significant differences were identified in the distribution of students based on each of their contextual background characteristics (ethnicity, sex, IMD, POLAR 3 and school background). Students were predominantly white (78.5%) though there were a high proportion of Asian students (13.1%) compared to other ethnic minorities. These group differences in participation based on ethnicity were statistically significant ($\chi^2(1)=184.98$, $p<0.001$). Almost two thirds of the students were female (65.61%) ($\chi^2(1)=56.11$, $p<0.001$). In terms of deprivation, there were 3.27 times less medical students from the most deprived areas (quintile 1), compared to those students coming from the least deprived areas (quintile 5) (compared to 2.17 in three year programme) ($\chi^2(4)=35.31$, $p<0.001$). Similarly, there were 4.7 times more students from HPN compared to students from LPN ($\chi^2(4)=149.94$, $p<0.001$). Additionally, the majority of students had previously attended high performing schools (436, 89.3%) ($\chi^2(1)=297.77$, $p<0.001$).

With respect to academic performance, significant differences were observed in the UCAS tariff points of students where prior attainment had been obtained from different school types. Students from schools denominated under the category 'state other' entered university with the lowest UCAS tariff points (M=335.17; SD=48.30) but achieved the highest final attainment at university (M= 74.73, SD = 1.93) along with students from comprehensive schools (M =74.25, SD= 2.43) ($p=0.05$). Students from independent schools attained the lowest averages at university (M =73.56, SD = 2.46) ($p=0.05$).

Only 18% of the student population came from the most deprived quintile of IMD. These students were admitted into university with the lowest entry grades (M = 335.35 SD = 69.89) and achieved slightly lower final grades at university, though these differences were not statistically significant ($p>0.05$). Similarly only 8% of students came from neighbourhoods with the lowest HE participation (highest quintile of POLAR 3) and this indicator did not predict significant differences in performance at entry level or by final year at University.

Differences in UCAS tariff points between males and females were not significant. However, at University, males performed slightly, but significantly less well (M = 73.76, SD = 2.66) than females (M =74.33, SD = 2.30) ($p=0.01$). Finally, with regard to ethnicity, though

there were no significant differences in students' UCAS tariff points by the fourth year at university, significant differences were observed in the attainment of different ethnic groups. These differences varied from those identified at entry level. This was particularly noticeable in the attainment of Chinese students. Specifically, they achieved the lowest averages at university compared to students from other ethnicities ($M = 71.80$ $SD = 3.0$) despite entering university with the second highest grades out of all the ethnic groups ($M = 351.67$ $SD = 13.37$).

Table 14 summarises the results of univariate linear regression, depicting associations between contextual background factors in relation to average attainment at fourth year. A significant positive association was found between UCAS tariff points (school grades) and fourth year performance. For every unit increase in UCAS tariffs points, a 0.18% increase in final year average performance was observed ($B = 0.01$, $p < 0.001$). Students from ethnic minorities were more likely to achieve lower averages than white students, though these differences were only statistically significant for Chinese ($M = 71.80$ $SD = 3.0$) ($B = -2.61$, $p < 0.001$) and Asian students ($M = 72.97$ $SD = 2.51$) ($B = -1.44$, $p < 0.001$).

Female students attained slightly, but significantly, higher averages ($M = 74.33$, $SD = 2.31$) at university than their male counterparts ($M = 73.76$, $SD = 2.66$) ($B = -0.57$, $p = 0.01$). A significant association between school type and final year performance at university was also identified. Specifically attendance at comprehensive schools was associated with higher university achievement compared to attendance at independent schools ($B = -0.82$, $p < 0.005$). There was no significant difference in attainment between students who came from neighbourhoods with differing levels of participation in HE (POLAR 3) or between those students that attended schools with low/high levels of performance.

Table 14: Linear Regression between Contextual Variables and Fourth Year Performance

| Variable | \bar{x} | <i>sd</i> | <i>B</i> | 95% CI | Sig. |
|--|--------------|-----------|----------|-------------|-------------------|
| School Type | | | | | |
| State Comprehensive (reference) | 74.25 | 2.43 | | | |
| Sixth Form College | 74.31 | 2.46 | -0.07 | -.64-.50 | 0.81 |
| State Other | 74.72 | 1.92 | 0.35 | -.53-1.24 | 0.44 |
| State Grammar | 73.92 | 2.58 | -0.45 | -1.01-0.11 | 0.11 |
| Independent School | 73.56 | 2.46 | -0.82 | -1.38--0.25 | .005 |
| Ethnicity | | | | | |
| White (reference) | 74.41 | 2.33 | | | |
| Black | 74.40 | 2.34 | -0.012 | -2.12-2.09 | 0.99 |
| Asian | 72.97 | 2.51 | -1.44 | -2.03--.861 | <0.001 |
| Chinese | 71.80 | 3.00 | -2.61 | -4.70--1.31 | <0.001 |
| Other | 73.92 | 2.50 | -0.50 | -1.38-.387 | 0.27 |
| Sex | | | | | |
| Female (reference) | 74.33 | 2.31 | | | |
| Male | 73.76 | 2.66 | -0.57 | -.99--0.15 | <0.01 |
| Continuous Variables | | | | | |
| School Performance [^] | | | 0.005 | -0.16-0.01 | 0.40 |
| SES (IMD Percentile)* | | | 0.004 | -.003-.011 | 0.28 |
| UCAS Tariff Points | | | 0.01 | 0.01-0.02 | p<0.001 |
| Polar 3 [#] | | | 0.06 | -0.05-0.27 | 0.19 |
| Model Parameters (for UCAS Tariff Points) | | | | | |
| B0 | 69.38 | | | | |
| R | 0.18 | | | | |
| R Square | 0.03 | | | | |

[^]School performance-based on the percentage of students achieving 3 A-levels or equivalent

[#] Neighbourhood HE participation (1=Lowest Participation...5=Highest Participation)

*Defined by Percentiles of Index of Multiple Deprivation (1 = Most deprived.... = 100 Least deprived)

Table 15 summarises the results for contextual background factors in relation to fourth year attainment divided by sex. Univariate linear regressions revealed significant statistical differences between males and females in associations between school type, ethnicity, UCAS Tariff points and Fourth Year performance. UCAS Tariff Points were more strongly associated with fourth year achievement for males ($B = 0.02, p < 0.001$) than females ($B = .02, p < 0.01$). With regards to school type, compared to comprehensive school students, males from independent schools were more likely to achieve lower averages ($M = 73.76, SD = 2.66$) ($B = -1.36, p < 0.01$). Though female students from independent schools on average had lower attainment than comprehensive school students, unlike with males, attendance at independent schools for females did not predict significant differences in attainment at university ($M = 73.98, SD = 2.31$) ($B = -.44, p = 0.206$). Additionally, males from Sixth Form Colleges and not females were more likely to achieve lower averages than comprehensive school students, though this association only approached significance ($M = 73.27, SD = 2.82$) ($B = 1.02, p = 0.069$). Secondly, with regards to ethnicity, students that classified themselves as Asian were significantly more likely to achieve lower averages at fourth year of university, where males performed slightly less well ($M = 72.01, SD = 3.03$) ($B = -2.11, p < 0.001$) than females ($M = 73.60, SD = 2.37$) ($B = -0.95, p < 0.01$). In contrast, females and not males of Chinese ethnicity were significantly more likely to achieve lower averages than students that classified themselves as White ($M = 71.20, SD = 3.13$) ($B = -3.35, p < 0.001$).

Table 15: Linear Regression between Contextual Variables and Fourth Year Performance Divided by Sex

| Variable | Males | | | | | Females | | | | |
|--|-----------|-----------|----------|-------------|--------|-----------|-----------|----------|-------------|--------|
| | \bar{x} | <i>sd</i> | <i>B</i> | 95% CI | Sig. | \bar{x} | <i>sd</i> | <i>B</i> | 95% CI | Sig. |
| School Type | | | | | | | | | | |
| State Comprehensive (ref) | 74.07 | 2.31 | | | | 74.37 | 2.51 | | | |
| Sixth Form College | 73.27 | 2.82 | -1.02 | -2.12-.08 | 0.069 | 74.74 | 2.17 | 0.31 | -.35-.97 | 0.357 |
| State Other | 74.54 | 1.41 | 0.26 | -1.79-2.30 | 0.806 | 74.77 | 2.06 | 0.34 | -.61-1.30 | 0.481 |
| State Grammar | 73.91 | 3.04 | -0.38 | -1.44-.69 | 0.485 | 73.93 | 2.38 | -0.50 | -1.14-.14 | 0.127 |
| Independent School | 73.76 | 2.66 | -1.36 | -2.33--0.38 | 0.007 | 73.98 | 2.31 | -0.44 | -1.13-0.25 | 0.206 |
| Ethnicity | | | | | | | | | | |
| White (ref) | 74.12 | 2.43 | | | | 74.56 | 2.27 | | | |
| Black | 73.89 | 3.14 | -0.23 | -3.84-3.37 | 0.898 | 74.74 | 1.89 | 0.18 | -2.39-2.75 | 0.890 |
| Asian | 72.01 | 3.03 | -2.11 | -3.13-1.10 | <0.001 | 73.60 | 2.37 | -0.95 | -1.66--.24 | <0.01 |
| Chinese | 72.50 | 2.96 | -1.62 | -3.73-0.485 | 0.130 | 71.20 | 3.13 | -3.35 | -5.05--1.66 | <0.001 |
| Other | 74.48 | 2.66 | 0.36 | -1.48-2.18 | 0.700 | 73.71 | 2.35 | -0.85 | -1.83-.132 | 0.090 |
| Continuous Variables | | | | | | | | | | |
| <i>School Performance</i> [^] | | | 0.03 | -0.04-0.09 | 0.38 | | | 0.001 | -.03-0.3 | 0.961 |
| <i>SES (IMD Percentile)</i> [*] | | | .002 | -0.01-0.02 | 0.80 | | | 0.01 | -0.003-0.01 | 0.173 |
| <i>Polar 3</i> [#] | | | 0.15 | -0.14-0.45 | 0.31 | | | 0.07 | -0.12-0.25 | 0.491 |
| <i>UCAS Tariff Points</i> | | | 0.02 | 0.005-0.03 | <0.001 | | | 0.01 | 0.003-0.02 | <0.01 |

[^]School performance-based on the percentage of students achieving 3 A-levels or equivalent

^{*}Defined by Percentiles of Index of Multiple Deprivation (1 = Most deprived.... = 100 Least deprived)

[#] Neighbourhood HE participation (1 = Lowest participation.... 5 =Highest participation)

Multivariable linear regression was carried out including all of the following variables: UCAS tariff points, ethnicity, sex, school type, school performance, deprivation, and neighbourhood participation and fourth year performance (Table 16). When all these variables were included in the model, UCAS tariff points (school grades) and ethnicity were found to be independently associated with fourth year performance. UCAS tariff points (school grades) ($B= 0.01, p<0.001$) remained significantly positively associated with fourth year performance. Ethnicity remained a significant predictor of final attainment. Specifically, on average, Chinese and Asian students achieved 3.01% ($B= -3.01, p=0.001$) and 1.41% less ($B= -1.41, p<0.001$) than white students respectively. Though school type differences remained, where independent school students were more likely to achieve lower averages compared to students from other school types, this association was no longer statistically significant when all the variables were incorporated into the model. Similarly, though males performed slightly less well than females, the association between sex and academic achievement approached significance but was not statistically significant ($B= -0.49, p=0.068$). However, the overall model explains only 12% of the variation in the final grade suggesting that other factors, including chance must also play a role. None of the interactions that were investigated achieved statistical significance ($p>0.05$).

Table 16: Multiple linear regression including all Contextual Variables and Fourth Year Performance

| Variable | \bar{x} | <i>sd</i> | <i>B</i> | 95% CI | Sig. |
|---------------------------------|-----------|-----------|----------|-------------|---------|
| School Type | | | | | |
| State Comprehensive (reference) | 74.25 | 2.43 | | | |
| Sixth Form College | 74.31 | 2.46 | -0.12 | -.82-.57 | 0.727 |
| State Other | 74.72 | 1.92 | 0.67 | -.72-1.92 | 0.370 |
| State Grammar | 73.92 | 2.58 | -0.22 | -.98-.54 | 0.566 |
| Independent School | 73.56 | 2.46 | -0.29 | -.99-.42 | 0.426 |
| Ethnicity | | | | | |
| White (reference) | 74.41 | 2.33 | | | |
| Black | 74.40 | 2.34 | -2.51 | -5.77-.75 | 0.131 |
| Asian | 72.97 | 2.51 | -1.41 | -2.11-.72 | <0.0005 |
| Chinese | 71.80 | 3.00 | -3.01 | -4.70--1.31 | .001 |
| Other | 73.92 | 2.50 | -0.56 | -1.58-.47 | .288 |
| Sex | | | | | |
| Female (reference) | 74.33 | 2.31 | | | |
| Male | 73.76 | 2.66 | -0.49 | -1.02-0.04 | 0.07 |
| Continuous Variables | | | | | |
| School Performance [^] | | | 0.01 | -.010-0.02 | 0.486 |
| SES (IMD Percentile)* | | | 0.003 | -0.01-0.01 | 0.458 |
| Polar 3 [#] | | | 0.05 | -0.15-0.24 | 0.634 |
| UCAS Tariff Points | | | 0.01 | 0.003-0.02 | 0.010 |
| Model Parameters | | | | | |
| <i>B0</i> | 70.14 | | | | |
| R | 0.35 | | | | |
| R Square | 0.12 | | | | |

[^]School performance-Based on the percentage of students achieving 3 A-levels or equivalent

[#] Neighbourhood HE participation (1=Lowest Participation...5=Highest Participation)

*Defined by Percentiles of Index of Multiple Deprivation (1 = Most deprived.... = 100 Least deprived)

5.5. Discussion

The principal aim of this research was to explore differences in participation and academic performance based on students' contextual background characteristics at the UoL medical school. This has not previously been investigated using both area-based measures of disadvantage and school background information within a medical school environment. As such, whilst the use of contextual data in admissions is promoted and considered a powerful tool medical schools can use to widen participation there is a paucity of research focusing specifically on medical students, and considering measures of disadvantage, alongside educational background characteristics to identify contextual effects on academic attainment (Cleland et al., 2012; Do et al., 2006).

5.5.1. Principal Findings from Results

The current findings depict the under-representation of students from disadvantaged areas compared to those from more affluent areas (based on IMD and POLAR 3). These socio-economic differences in participation are well documented, and are often attributed to the poorer academic qualifications obtained by a large proportion of students from disadvantaged backgrounds (Chowdry et al., 2013b; Feinstein, 2003; Stevenson & Lang, 2010; Strand, 2014). As such, socio-economic inequalities in participation are particularly prominent at medical schools, compared to other UCAS programmes, partly because this is a highly selective programme with higher entry requirements (Deakin, 2011; Garlick & Brown, 2008; Mathers & Parry, 2009). For these reasons, a crucial part of this analysis explored the extent to which school grades in isolation are representative of 'true academic potential' by comparing group differences in attainment at school compared to university. Consistent with other studies, school grades (UCAS tariff points) were found to be a strong and significant predictor of academic performance, (HEFCE, 2014; McKenzie & Schweitzer, 2001; Peers & Johnston, 1994; The Sutton Trust, 2010c). Statistically significant associations were also observed between three of the contextual background characteristics and students' school grades including school type, average school performance, and ethnicity. Though school grades were the strongest predictor of university attainment, school type, ethnicity, and sex also predicted statistically

significant differences, albeit with some differences to those observed when students entered university.

Compared to students from comprehensive schools, students from independent schools achieved lower averages at fourth year despite being more likely to enter university with higher grades. This association was similar for males and females, but statistically significant only for males. Ethnic differences in academic attainment evidenced at entry level, differed to the associations observed between these variables by fourth year of university. Overall, students that classified themselves as white were more likely to achieve a higher average at fourth year than students of other ethnicities, though they did not enter university with the highest grades. These associations also varied slightly between males and females. With regards to sex, there were no statistically significant differences in the entry grades of males and females. However, by fourth year at university, male students performed significantly less well than female students. Socio-economic deprivation (IMD) and coming from neighbourhoods with low or high levels of participation in HE (POLAR 3) did not predict significant differences in final year performance.

5.5.2. How do these findings relate to the current evidence base?

The type of school students attended appears to have a consistent effect on degree performance as other studies (HEFCE, 2013a; 2014; Hoare & Johnston, 2010; Smith & Naylor, 2005). Specifically, research suggests that for a given set of A- Level results, the degree performance of students who attended state schools has been found to be higher compared to those who attended private schools, when other factors were held equal (Kirkup et al., 2010.; Do et al., 2006; Gorard, 2008; HEFCE, 2005; Hoare & Johnston, 2010; Smith & Naylor, 2005). Unlike other studies (HEFCE, 2013a; Hoare & Johnston, 2010; Smith & Naylor, 2005), students from independent schools did not enter the UoL with the highest grades. However, consistent with past research, once at university, students from independent schools achieved lower results than comprehensive school students, though these differences were not significant once all variables were incorporated into the model (HEFCE, 2013a; McManus, Dewberry et al., 2013). This is critical as past research suggests that even after controlling for other variables, attending fee-paying schools raises the

probability of being accepted on medical degree programmes by between 1-3 percentage points compared to attending a comprehensive school (Arulampalam et al, 2011; McManus et al., 1995; Seyan, 2004). Researchers have postulated a number of reasons for this, focussing primarily on the advantages of attending independent and grammar schools (HEFCE, 2013a; Mathers et al., 2011; McKenzie & Schweitzer, 2001; McManus et al., 1995). Such advantages are subsequently reflected in academic attainment at school but, in this case, do not appear to have a strong impact on university attainment.

Despite the overlap between school type and school performance and the fact that both have similar benefits in relation to school attainment, results relating to school performance are more difficult to reconcile with past research, given that findings have been more inconsistent (HEFCE, 2005; 2014; Hoare & Johnston, 2010; McManus, Dewberry et al., 2013; Smith & Naylor, 2005). Indeed, though there is evidence that medical students from schools with higher average prior achievement perform less well once at university despite entering with higher marks (Garlick & Brown, 2008; Mathers & Parry, 2009; Seyan, 2004). That said, recent studies have found that, conditional on prior attainment, students from the worst performing schools were likely to outperform those from the best-performing schools (Crawford, 2014; HEFCE, 2014; Sutton Trust, 2010). Researchers have attributed these disparities principally to differences in A-level points, and subject area (Arulampalam et al, 2011; HEFCE, 2003; Peers & Johnston, 1994; Singleton, 2010b).

Though socio-economic differences in academic achievement have been identified in other studies (Feinstein, 2003; HEFCE, 2015; OFFA, 2014), they have not been explored using these specific measures in published academic research at other medical schools. It is possible that neither of the postcode measures of disadvantage (IMD or POLAR 3) predicted significant differences in academic achievement at medical school because less variation exists in the demographic backgrounds of students admitted onto medical programmes compared to that of other programmes (Gallagher et al., 2009; Tiffin et al., 2012). However, further research is needed to explore this, as previous studies exploring these effects have focussed largely on students in classified degree programmes and utilised the National Statistics Socio-Economic Classification (NS-SEC) as a measure of social class (Harrison & Hatt, 2009; Hoare & Johnston, 2010; Smith & Naylor, 2005). A number of these studies have

identified significant socio-economic differences in degree performance based on NS-SEC data (Gorard et al., 2006; HEFCE, 2003; Hoare & Johnston, 2010). However, various flaws have been identified with NS-SEC, which affect the accuracy and credibility of findings derived from studies that use this measure (Harrison & Hatt, 2009; 2010; Rudd; 1987). Critically, NS-SEC is derived from non-mandatory information that is self-declared by individuals on application to HE making this prone to manipulation and error (Harrison & Hatt; 2009, 2010). Additionally, there is evidence that around 25% of students do not provide this information, and those who omit this, often fit into target WP populations (Harrison & Hatt; 2009, 2010). For example, Hoare and Johnston (2010) identified significant socio-economic differences in attainment between students on classified degree programmes based on NS-SEC data, but highlight the caveat that NS-SEC data was missing for 42% of students in their study.

Sex and ethnic differences in educational attainment have been reported in various studies across different medical schools in the UK (Croxford & Raffe, 2013; Dewberry et al., 2013; Mathers et al., 2011; McManus Dewberry et al., 2013; Peers & Johnston, 1994). Though there were no significant differences in the entry grades of males and females, consistent with previous research, females achieved higher averages than males at university (Crook, 2010; Dayioğlu & Türüt-Aşık, 2007; Garlick & Brown, 2008; McKenzie & Schweitzer, 2001; McManus et al., 1995; Sheard, 2009). Interestingly, associations between variables, specifically UCAS tariff points, ethnicity, school type and academic achievement at university differed between males and females. UCAS tariff points were a slightly stronger predictor of university achievement for males than females, even though there were no entry-level differences. Sub-group differences in school grades and the extent to which these predict university performance have been identified in other studies and are associated with institutional and personal factors (Ackerman et al., 2013; Richardson, 2008; Richardson & Woodley, 2003; Sheard, 2009). Ethnic differences in attainment have also been associated with these factors and appear to be widespread (Garlick & Brown, 2008; Seyan, 2004; Woolf et al., 2011). Though students that classify themselves as White have consistently been found to achieve higher degree outcomes than students recording other ethnicities, variations exist with regards to the particular ethnic groups that perform less

well (Connor & Modood, 2004; Garlick & Brown, 2008; McManus et al., 1995). In this study despite entering with higher grades, students that classified themselves as Chinese and Asian performed less well than students from other ethnic groups (Arulampalam et al., 2011; Calvert et al., 2009; Powis et al., 2004; Richardson & Woodley, 2003; Richardson & Jacobs, 2008). These associations varied depending on sex. Most notably, only females and not males that classified themselves as Chinese performed significantly worse than students that classified themselves as White. Though it is difficult to discern the extent to which these differences are generalizable and the present study does not focus on sex/ethnic differences per se, these differences require further exploration and the literature indicates that these are not local or atypical problems (Garlick & Brown, 2008).

5.5.3. Implications of these Findings

The present study raises a number of implications for policymakers and universities that are interested in using contextual background information to inform their decision-making processes and admissions policies. While medical schools have developed complex selection processes to select the individuals to whom offers are made, the ability to meet the academic offer is of crucial importance and represents a principal basis for selection (Chowdry et al., 2013; Gorard, 2008). This study corroborates previous research depicting limitations associated with school grades as indicators of future performance and 'true academic potential' (e.g. Garlick & Brown, 2008). Such evidence has previously been used to justify the implementation of contextual data, alongside school grades, in university admissions processes (Crawford, 2014; Hoare & Johnston, 2010). This may be particularly beneficial in highly competitive programmes such as medicine, where a large proportion of applicants achieve top marks, making it especially difficult to select between them (Cleland et al., 2012; Gallagher et al., 2009). However, the uses and importance of contextual information extend beyond the point of admissions (Cleland et al., 2012; Dowell et al., 2015; Harrison & Hatt, 2009). By providing insight into the associations between contextual background characteristics and academic attainment, the current analysis also depicts how contextual information could help identify students that may require additional support once at university. Additionally, the use of different types of contextual information in admissions processes is important to triangulate data and ensure that the identified

individuals are truly from widening participation backgrounds (Selecting for Excellence Group, 2014).

Though the use of contextual data in medical admissions processes is increasingly encouraged, there is no standardised or universal approach to the use of contextual data and very limited guidance on best practice (Cleland et al., 2012; Dowell et al., 2015; Selecting for Excellence Group, 2014). As such, there are various questions and practical issues surrounding the implementation of policies relating to school type/school level performance including questions of how to 'equate' between nations, how to treat applicants who have changed school, how to identify able applicants who obtained scholarships to attend a fee-paying school and how to ensure that applicants report their educational establishment correctly/truthfully (Dowell et al., 2015). Firm empirical evidence is required to address these issues and guide institutional policy in respect of contextual data.

5.5.4. Limitations and Directions for Future Research

The present study has various limitations that must be taken into consideration when interpreting findings. Firstly, it is important to note that this study included only students who were successfully admitted and completed their medical degree. Hence, nothing is known about students that failed or dropped out, thereby restricting the extent to which findings are representative of all medical students. Additionally, in other studies, interactions have been documented between background characteristics, educational disadvantage and the likelihood of dropping out of medical school, which could be explored further (Woolf et al., 2011). Future research should consequently include these students, and explore when and why students fail and drop out of programmes. Such information is necessary to ensure that 'at risk' students are successfully identified and supported.

A second limitation of this research is that both the IMD and POLAR 3 are based on aggregate data. Consequently, it should be noted that trends relating to both IMD and POLAR 3 do not necessarily relate to individuals themselves but rather to the areas in which they are based. An alternative approach to IMD/POLAR 3 could be to utilise NS-SEC.

However, as explained previously, this has limitations, and for the majority of undergraduate admissions, NS-SEC is also not an individual measure, as this relates to parental occupation (Harrison & Hatt, 2009; 2010). Hence, though postcode measures of disadvantage have weaknesses, there is less uncertainty attached to these measures, and it is unlikely that a student would manipulate their postcode as they have the imperative that they actually want contact from UCAS or the university, which is where the postcodes are sourced. Another limitation of this kind of research is that it is not possible to control for everything that affects academic attainment. Some prominent factors which are likely to affect participation and performance include: personality, motivation, study skills, family history in HE, (Dubow et al., 2009; Schildberg-Hoerisch, 2011), parental occupation, particularly coming from medical families, (Powis et al., 2004; Schildberg-Hoerisch, 2011) and intelligence (Haworth et al., 2013). Indeed, some variance also relates to chance and other factors that are unpredictable, including life events and illness.

A further potential limitation of the current study is that information from personal statements, and interview performance was not included in analyses even though students in the data cohort examined were selected on the basis of these measures as well as their academic attainment. Analyses focussed on academic attainment, primarily, due to the weighting this has in the selection process (Cleland et al., 2012; McManus, 2003). Additionally, information from the personal statements of students in the cohort was highly limited, as these were marked simply as yes/no to interview. Hence, this did not provide enough information on which to correlate the quality of a statement with on course performance. Data from traditional interviews was also not included in analyses, as previous studies have identified various limitations with these (Basco et al., 2008; Benbassat & Baumal, 2007; Cleland et al., 2015). It would have been useful to incorporate data from multiple mini-interviews (MMIs) as these are said to offer improved reliability and validity over traditional interview approaches (Cleland et al., 2014) and students' UK Clinical Aptitude Test (UKCAT) scores which appear to be less sensitive to background effects compared to school grades (James, Yates & Nicholson, 2010). However, UoL medical school has only recently changed its selection process to introduce the use of UKCAT, MMIs and alter the use of personal statements. Hence, though the present study illustrates

important differences between different groups of students at a medical school in the UK, future studies should explore how the use of additional criteria (e.g. MMIs, UKCAT) in selection processes affect widening participation and predict differences between students based on their educational and socio-demographic backgrounds. Such studies should take more sophisticated approaches to modelling using path analysis or other forms of causal modelling, and expand analysis to compare sub-groups and include other universities.

Finally, it is also important to note that even though most data were complete in the current study, a proportion of school background information was missing, mainly because this could not be obtained from the DfE website. Additionally, a number of post-codes were not valid and/or these could not be matched to the IMD. A complete-case analysis was used to deal with missing data, whereby individuals with missing data on any variable were excluded from analysis (list-wise). This is a common technique for dealing with missing data, however, it is recognised that this approach can be problematic and introduce bias when those individuals that are excluded are not a random sample of the population (Altman & Bland, 2007; Schafer & Graham, 2002). Though these biases should be recognised, they do not affect all analyses for which most data was available in the current study. Hence, while the internal (univariate) associations reported in this study are likely to be valid, the proportion of missing data in this study should be taken into account. Further, it is acknowledged that rather than using complete case analyses, alternative approaches for dealing with missing data such as multiple imputation (MI) which pools estimates across several imputed data sets are likely to be more appropriate as this leads to more precise, less biased parameter estimates and inferences (Allison, 2001).

5.6. Conclusion

Though there is increasing interest in the idea that the true academic potential of some students is not reflected in their examination results, there is a paradoxical lack of research exploring how contextual background characteristics can be used to identify such potential at medical schools in the UK (Garlick & Brown, 2008; Kirkup et al., 2011). This is important, given the persisting socio-economic inequalities in participation at a medical school that are depicted in this study and a plethora of others (e.g. Crawford et al., 2014;

HEFCE, 2014). The current analyses provide insight into the associations between contextual background characteristics and academic attainment. In doing so, this illustrates how educational attainment at school is a good, albeit imperfect, predictor of academic attainment at a medical school. A recommendation from this analysis is that implementation of contextual data alongside school attainment during the admissions process could provide a more detailed and relevant assessment of candidates (Garlick & Brown, 2008; McNabb et al., 2002). Furthermore, this could also help to refine the targeting of students from disadvantaged backgrounds and to identify those students who may require additional support once at university (Selecting for Excellence Group, 2015). That said, the patterns observed in the current study, differed in some ways from previous research exploring associations between contextual background characteristics and academic attainment. These variations exemplify how patterns observed nationally may differ between HE institutions and programmes (HEFCE, 2003; Hoare & Johnston, 2010; OFFA, 2014). Further research is needed to explore these differences at individual medical schools and guide institutional policy in respect of contextual data. This may be key in reducing inequalities perpetuated by current admissions systems, by promoting social mobility and decreasing the socio-economic stratification of medical schools in the UK.

CHAPTER SIX

6. The lived experience of disadvantage: stories of identity, engagement and transition

Underpinned by a positivist epistemology, the two quantitative studies discussed in the preceding chapters explored the relationships between a selected range of school and socio-demographic factors identified as predictors of educational disadvantage, with participation and academic performance at the University of Liverpool (UoL) including: socio-economic background, school type, school performance, ethnic group, UCAS tariff points (school grades) and sex. These studies provided orientation that served to inform the phenomenological focus of the qualitative study that is comprised in this chapter by depicting socio-economic inequalities in participation and academic attainment at the UoL. Whilst these quantitative studies acknowledge the complexities surrounding the identification and meaning of disadvantage, using various measures to identify this, I argue that it is also important to understand the more subjective and intersectional nature of socio-economic disadvantage, in terms of how this is experienced by individuals (Reay, 2001).

In this chapter I use a qualitative phenomenological method of enquiry to explore factors that may influence differences in participation and attainment in greater depth and develop a more nuanced view of disadvantage based on the experiences described by socio-economically disadvantaged individuals of their trajectories to University. In doing so, I seek to demonstrate the value that students' narratives have as a means of understanding the complexities underpinning socio-economic differences in students' educational outcomes. In this chapter I also discuss how narratives could be used to inform future interventions. In particular, I draw on these narratives to provide insight into the barriers and facilitators' students perceive to be influential, illustrating the intricate array of issues that shape and define access and participation in HE and the need to look beyond knowledge deficit models of participation.

6.1. Abstract

Pervasive socio-economic differences in relation to participation in higher education (HE) in the United Kingdom (UK) are particularly prominent in the most prestigious institutions. Whilst these inequalities are well documented, few qualitative studies have explored the underlying mechanisms that may drive these differences. Underpinned by phenomenology, semi-structured interviews were carried out to investigate the challenges faced by a purposive sample of thirteen students from socio-economically disadvantaged backgrounds throughout their educational trajectories from primary school to a Russell group university. Two main themes emerged from the data: identity and educational engagement. Interpersonal, social and cultural factors were strongly linked to identity and students' perceptions of their own social class. Identity related factors influenced individuals' behaviours and levels of educational engagement positively, for example, in the motivation individuals described in wanting to prove others wrong about their abilities. Concomitantly, identity related constraints were also found to influence students' engagement with education, including how they weighed criteria when evaluating whether to attend school/college and HE. These issues require further investigation, and recognition by policymakers, schools and universities as these may prevent the widening of access to high achieving students from working class backgrounds.

6.2. Introduction

Differences in Higher Education (HE) participation between socio-economic groups in the United Kingdom (UK) have primarily been attributed to poorer school qualifications attained by a large proportion of students from socio-economically disadvantaged backgrounds (Croxford & Raffe, 2013; Haveman & Smeeding, 2006; Singleton, 2010b). Although research has demonstrated that academic qualifications alone are limited as predictors of academic potential, students' trajectories into HE are often uniquely dependent on them (Gorard, 2008; Chowdry et al., 2010; HEFCE, 2014; Mullen, 2011; Jerrim & Vignoles, 2012; The Sutton Trust 2010c). Various studies support this finding and provide evidence of how certain environments may prevent students from achieving grades

reflective of their 'true academic potential' (McNabb et al., 2002). Whilst, these factors contribute to the inequalities in HE participation, the underlying reasons for these differences are complex and largely associated with the pervasive effects of social and educational disadvantage (Blanden & Machin, 2004; Bowen et al., 2002; Chowdry et al., 2013b). These effects on students' educational trajectories have been widely documented, where parental wealth, independent of income, education, or occupation, has been found to predict both university enrolment and attainment (Bodovski, 2010; Delaney et al., 2011; Dermott & Pomati, 2015; Ganzach, 2000; McKnight, 2015). Furthermore, in addition to predicting negative educational outcomes, socio-economic deprivation is also associated with negative health and crime related outcomes, and other detrimental barriers that may prohibit students' future upward progression into HE at different points (Feinstein, 2003; Lynch et al., 2001; Lynch & O'riordan, 1998; Uphoff et al., 2013).

The underlying social reasons for widening access to prospective students from socio-economically disadvantaged backgrounds are frequently discussed in the context of social justice and social mobility. Increasing equality of opportunity is considered imperative for raising skill levels, contributing to national productivity, and alleviating the detrimental repercussions associated with inequality (Dorling, 2010; Feinstein, 2003; Lynch et al., 2001; Uphoff et al., 2013; Wilkinson & Pickett, 2009). Additionally, those who graduate from leading universities are more likely to have better jobs, better salaries, and better social networks (Davies, Mangan, Hughes, & Slack, 2013; McKnight, 2015; The Sutton Trust, 2004; 2015). To address these issues and ameliorate inequalities in HE participation, it is critical to understand the mechanisms that underlie and drive patterns in participation and the decision-making processes that lead students from disadvantaged backgrounds into university education. The present study aims to investigate this by exploring how students from socio-economically disadvantaged backgrounds perceived their educational trajectories from primary school into University. Concomitantly, this study seeks to provide insight into the obstacles and facilitators that these individuals perceived to be significant to their educational outcomes.

6.2.1. Inequalities and Interventions

In the UK, the under-representation of individuals from socio-economically disadvantaged backgrounds at universities is primarily addressed through outreach activities (Mattick & Knight, 2007; Mathers & Parry, 2009). The term 'Widening Participation' (WP) is used to describe these outreach activities, and interventions intended to widen access to disadvantaged groups in HE and hence achieve a diverse cross-section of social groups within HE (Boliver, 2013). WP interventions/activities aim to compensate for perceived deficiencies associated with non-traditional students' backgrounds and encourage them to apply to higher education (Lawler, 1999). However, concerns have been raised regarding the influence and nature of pre-university interventions (Byrom, 2009) and the capacity of these to enable opportunity (Schmidt, 2007). According to Ball (2003), little attention has been paid to the defining moments in individuals' trajectories, even though this could influence the relative merits (success/failure) of such programmes. Various studies corroborate this, highlighting that the amount of qualitative research that could inform these activities and address these questions is highly limited (Mcharg et al., 2007; Byrom 2009).

Recently, the implementation of contextual data alongside school grades has been encouraged as part of a broader WP policy agenda (BIS, 2011; Cable & Willets, 2011, Croxford & Raffe, 2013; Milburn, 2009). Contextual data refers to data that helps place academic attainment into the context in which the results were obtained (Bridger et al., 2012). This includes both comparative school and socio-economic data found to influence both educational disadvantage and differentiated academic performance (Mullen,2011). Research exploring associations between students' background characteristics and attainment at universities highlights the importance of using contextual data in admissions, and demonstrates how school grades are good, albeit imperfect predictors of academic attainment (e.g. Hoare & Johnston, 2010). For example, various studies have found that when all factors are held equal, for a given set of A-level results, compared to independent school students, the degree performance of students that attend state schools is higher (HEFCE, 2003; 2005; 2014; Hoare & Johnson, 2010; Naylor & Smith, 2005). However, whilst a growing body of literature describes important associations between these background

characteristics and differential performance, there is currently limited research on the factors underpinning these associations. Hence, research is needed to ensure that these associations are adequately understood and managed in an equitable way. This is critical to students, universities, and the UK government, given that such decisions could impact on students' life chances and opportunities.

Interventions aimed at increasing participation of non-traditional students should be grounded in empirical evidence of students' trajectories to HE. Byrom (2009) corroborated this in a qualitative study, which explored 16 students' experiences of applying to university and their first terms at university following their participation in a Sutton Trust Summer School. This study found that students were strongly influenced by their background contexts, the friendship groups they did or did not make and their interactions with educational systems and processes. The pull of a middle-class lifestyle was identified as a strong motivating factor that drove students to succeed. However, the extent to which the Sutton Trust intervention influenced students' educational trajectories and more specifically their decisions to attend university was considered questionable. These students were described as part of an intermediate or aspiring working class that had already decided to go to university by the time of the intervention. Hence, their Sutton Trust experience did not present a 'significant interruption' in the trajectories in which the students were already heading.

Inequalities in UK HE are most prominent in over-subscribed competitive programmes such as medicine, dentistry and veterinary studies (Gallagher et al., 2009; Mathers & Parry, 2009; Singleton, 2010a; Arulampalam et al., 2011). Interventions in medicine include programmes (graduate entry programmes and foundation) designed to widen access and increase diversity. However, a number of studies argue that these do not go far enough and have not led to significant changes in the socio-economic profile of UK medical student populations (Deakin, 2011; Garlick & Brown, 2008; Mathers et al., 2011; Powis et al., 2004; Rolfe et al., 2004). According to Mathers and Parry (2009), for such interventions to be effective they must be grounded in research examining the specific causes of the underrepresentation of disadvantaged students at medical schools. They addressed the dearth of research in this area and interviewed 12 mature working-class

students about their trajectories into three English medical schools, focusing on how socio-cultural, family and educational circumstances influenced their decisions to study medicine. They found a disjuncture between working class identity and the elite image that universities may maintain for certain groups within contemporary society. They argue that interventions which aim to increase participation rates should recognise this conflict, potentially re-orienting how subjects such as medicine are viewed by students from economically disadvantaged groups, as perceiving certain subjects to be elite can influence participation and represent a significant barrier to these students.

Further, research exploring students' experiences of transition into university, has found that identity may be susceptible to interference (Archer et al., 2005; Aries & Seider, 2005; Becker & Tausch, 2014; Reay et al., 2010). For example, Maunder, Cunliffe, Galvin, Mjali, and Rogers, (2012) discussed how the identities individuals adopt in their transition into university are not just about the self, but are imposed upon them by others such as family members and teachers. This study highlighted how social and cultural contexts are strongly linked to perceptions, each having differing norms and practices guiding behaviour (Diamond et al., 2012). Critically, contrasting differences were identified in how students perceived HE within their predicted life courses, and the extent to which they held images of this as high status and elite. Whilst this study did not focus specifically on socio-economic background, it was discussed in relation to the different ways that students perceived university. This requires further investigation as the extent to which students perceive university to be high status or elite, could represent a barrier that differentially influences their decisions to attend HE and further contribute to the disjuncture between working class identity and university.

Numerous studies depict ways that social class can influence decision-making processes, including subject and university choice (Archer & Francis, 2006; Diamond et al., 2012; Maunder, et al., 2012; Stevenson & Lang, 2010). The role of institutional cultures is frequently discussed as influential, as the perceived risks of not belonging have been found to affect the entry and retention of students into HE institutions (Archer & Francis, 2006; Bowes, 2013; Read et al., 2003; Reay, 2001). This factor in particular has contributed to the apparent polarisation between the types of university that attract working class and

minority ethnic students and inequalities in HE participation (Reay et al., 2009; Sutton Trust, 2004). Students from socio-economically disadvantaged backgrounds are less likely to apply to elite universities compared to students from affluent backgrounds and less likely to attend, despite obtaining appropriate qualifications (Reay et al., 2009; The Sutton Trust, 2004; 2010c). Whilst such findings have been considered as evidence that universities may be acting in favour of the independent education sector, they have also been related to confidence, ambition and expectations of low SES students (Filippin & Paccagnella, 2012; Ganzach, 2000; Greenhalgh et al., 2004; Thomas, 2001). Understanding these differences requires further investigation as these factors could represent a potential barrier to students from less affluent backgrounds applying to go to university and could also influence their experiences once at university (Crozier et al., 2008; Reay et al., 2010).

6.2.2. The Present Study

It is clear that further research and broader WP initiatives are required to mitigate the effects of socio-economic disadvantage, which influence differential levels of participation and attainment in HE. Interventions should be informed by research on students' trajectories and defining moments throughout these, as this can determine the relative merits of these efforts (Byrom, 2009) and the capacity they have to increase opportunity (Ball, 2003; Bowes et al., 2013). Providing students with adequate support requires acknowledging the complexity of human experience, and looking at the educational trajectories of students from a wide cross-section of subjects. It is also important to recognise that differences exist in socio-demographic composition of students even between elite universities, which may require specific attention.

The overall aim of this study, informed by a phenomenological approach, is to explore how socio-economically disadvantaged students perceive their experiences in their educational trajectories from primary school into a Russell Group University in the UK. Phenomenological research focuses on lived experience, and is comprised of the accounts of multiple individuals (Creswell, 2007; Moustakas, 1994). This study aims to identify commonalities and differences in how students perceived their own background characteristics, and the factors that acted as facilitators and/or barriers throughout their

educational trajectories to university. Consideration of the formative period between primary school and HE is necessary to inform WP interventions so that these are effective and capable of enabling opportunity (Crosnoe & Cooper, 2010). This is important to address the potential barriers that may prevent academically able students from attending university (Ball, 2003). To this end, students' narrative conceptions of phenomena are explored ensuring that attention is placed on putting forth participants' perspectives and contextual relevance, consistent with constructivist theoretical perspectives (Bradbury-Jones et al., 2011; Kvale, 1996).

6.3. Methodology

The methods discussed in the following sections, are described in greater detail in Chapter Three.

6.3.1. Epistemology and Theoretical Perspective

The epistemology inherent in the present study is social constructionism, as this recognises that meanings are constructed in different ways, depending on how people engage with the world (Berger & Luckmann, 2011; Creswell, 2013; Crotty, 1998; Gergen & Gergen, 2007). This is reflected in the objectives of the present study, which aims to understand phenomena from the perspective of those experiencing it, as opposed to an objective measurable reality. This epistemology is compatible with different approaches of qualitative research, including that of phenomenology (Creswell, 2013).

Phenomenology is an inductive qualitative research approach rooted in the 20th century philosophical traditions of Edmund Husserl (descriptive) and Martin Heidegger (interpretive) (Heidegger & Krell, 1978; Husserl & Kersten, 1983; Reiners, 2012; Van Manen, 2007). Husserl developed a descriptive approach to phenomenology, where every day conscious experiences were described by suspending all suppositions and preconceived opinions were set aside (Husserl & Kersten, 1983; Finlay, 2009). Interpretative phenomenologists such as Heidegger focus on interpretation to understand the meaning of phenomena, but argue that it is impossible to negate our experiences related to the phenomenon under investigation (Reiners, 2012).

Though the use of different approaches to phenomenology are debated, there is general agreement, that the central concern of phenomenological research is to return to experiential meaning, aiming for a complex, rich description of a phenomenon as it is lived (Finlay, 2009; Giorgi, 2012). Furthermore, some researchers prefer to see description and interpretation as a continuum where specific work may be more or less interpretive (Finlay, 2009; Giorgi, 2012; Van Manen, 2007). Landridge (2009) corroborated this, arguing that boundaries between descriptive and interpretive approaches would be antithetical to the spirit of the phenomenological tradition. The present study endorses this, drawing on both of these approaches to phenomenology. More specifically, this draws on descriptive approaches to phenomenology (e.g. Berger & Luckmann, 1991; Schutz, 1963; Schutz & Luckmann, 1973), by trying to examine subjective phenomena in more objective ways and not imposing an a priori analytic framework. However, going beyond describing subjective phenomena in more objective ways, the purpose of this study is to understand the meaning of phenomenological description, which according to Heidegger lies in interpretation (Finlay, 2009; Heidegger & Krell, 1978). Thus, in this sense, the present study follows an interpretative approach to phenomenology as this seeks to understand how individuals from disadvantaged backgrounds perceived their lived experiences in their trajectories from primary school to university.

6.3.2. Recruitment and Ethical Considerations

6.3.2.1. Ethical Considerations

During the process of ethical review, consideration was given to a number of issues surrounding confidentiality, informed consent, and the preservation of participants' anonymity. It was also recognised that this research explored potentially sensitive topics with participants who had been invited to take part specifically because they were members of socio-economically disadvantaged groups. Strategies were put in place to address this and ensure that participants did not feel under any pressure to take part in the study. Hence, the topics and aims of the research were explained to participants prior to interviews. Additionally, participants were reminded that they did not have to answer any questions that they did not want to and that they were free to withdraw from interviews at

any point. As such, the study adhered to the practice of "process consent" described by Ellis (2009) as a means of acknowledging changing research relationships. This can also be seen as a means of ensuring that participants did not feel obliged to participate in this study at any point, and recognizing that researchers can be seen to occupy positions of power (Denzin & Lincoln, 2011). To address this further, I also made conscious efforts to establish a reciprocal relationship based on good rapport, and openness, empowering participants as experts of their own experience (Bishop & Shepherd, 2011; Bradbury-Jones et al., 2011; Elliott, 2005; Josselson, 2007).

The ethical dilemmas surrounding this study were carefully scrutinized from the point of inception to maintain the moral integrity of this research at all times. Following this process of ethical review, in accordance with University guidelines, approval was obtained from the University of Liverpool research Ethics committee.

6.3.2.2. Recruitment and Sample

Participants were selected purposefully to include students who "had experiences relating to the phenomenon to be researched" and were all from socio-economically disadvantaged backgrounds (Kruger, 1988 p. 150; Groenwald, 2004). According to Welman and Kruger (1999) purposive sampling is the most important kind of non-probability sampling as this ensures that participants fit criteria with regards to their background characteristics and life experiences. This is critical as participants are the primary unit of analysis (Groenwald, 2004).

Participants in this study were drawn from a cohort of students that had taken part in access programmes offered by the Educational Opportunities team at the UoL (<https://www.liv.ac.uk/educational-opportunities/>). The Educational Opportunities team run a variety of projects and initiatives aimed at widening access to young people from disadvantaged backgrounds. The majority of students that took part in this study had completed a WP programme called the 'Scholar Scheme'. This is a programme that is offered to year 12 students at a number of local schools by the Educational Opportunities team at the UoL. This programme is only offered to students that fulfil a range of eligibility criteria, in terms of their attainment, socio-economic and educational background

characteristics (see Table 17). The 'Scholars' Scheme' includes a range of activities, lectures and academic assignments designed to prepare students for university. Students who successfully complete this programme are guaranteed a conditional offer at the UoL along with other benefits. Students that fulfilled the eligibility criteria required to take part in the Scholar Scheme, were also eligible to take part in the current study.

Participants were initially contacted via e-mail, sent to them by an Educational Opportunities officer at the UoL. The e-mail contained information about the study, its aims, objectives, and the principal investigator's contact details (see Appendix). It was specified that participation was voluntary; that participants would remain anonymous in all written reports, and that they could withdraw from the study at any point. Students who expressed an interest in participating in the study were asked to reply in order to register their interest.

For phenomenological studies, long interviews with two to 10 participants are typically considered sufficient to reach data saturation as this is considered to be the point when new information is said to produce little or no change to the codebook (Creswell, 2007; Moran, 2002). A total of 13 students took part in this study (4 male; 9 female), surpassing typical recommendations for phenomenological studies. However, this larger sample size allowed for the possibility of exploring the lived experiences of students across diverse programmes and potential differences between males and females. All participants had commenced their studies in September 2013 and 2014 and registered on full time programmes at different faculties of the UoL.

Table 17 Criteria for Eligibility in UoL Scholar Scheme

| Eligibility | Description |
|-----------------------------------|--|
| Academic | Year 12 student currently studying two year, level 3 qualifications E.G. AS levels, BTEC etc. Have at least 8 A*-C grades at GCSE (or equivalent e.g. GNVQ, BTEC etc.) including English and Maths, 5 of which must be at grade B or above. |
| Family history of HE | Be from a family with little or no experience of Higher Education. For example, neither parent has attended university and obtained an undergraduate degree or equivalent in the UK or abroad. If one parent is currently studying for their first degree or they graduated within the last five years, applications will still be considered. |
| Plus one of the following: | |
| Socio-economic Background | Be in receipt of or entitled to free school meals Be in receipt of or entitled to discretionary payments/16-19 bursary/Pupil Premium at school/college. Have a household income of less than £35,000. Be living in or have lived in, local authority care. |

(Criteria extracted from: <https://www.liv.ac.uk/educational-opportunities/post-sixteen/scholars/>)

6.4. Procedure

Interview dates and times were confirmed via e-mail with those students who had expressed an interest in taking part in the present study. This initial contact was seen as an opportunity for developing rapport with participants, making them feel able to communicate freely, and ask any questions they had. Participants were invited to attend face-to-face interviews at the School of Psychology at the University of Liverpool (UoL) at a time that was convenient for them. This setting was chosen purposefully as a convenient and familiar location to participants as they were all students at the UoL at the time that the study was carried out. Furthermore, as this study was carried out during term time, this made it possible for participants to attend interviews between or after lectures. However, it was acknowledged that conducting interviews within the university setting could affect the balance of power and perceived authority of the researcher. I addressed this potential power imbalance by adopting an empathic and understanding position, and sharing details

about my own background as a researcher and student. By sharing these details and consciously promoting openness and trust between us I hoped to minimise these risks and neutralise any power imbalances between us.

All interviews took place over a period of three weeks. As explained previously (Section 6.2.2.), the project was thoroughly explained to each participant before initiating the actual interview including the aims and objectives of the study, and they were also provided with participant information sheets (see Appendix). I fully and carefully discussed the consent process with each student, emphasising the openness of the interview process to minimise any nervousness they may have associated with the interview process. I explained that interviews could last between 60 and 90 minutes, and that they would be recorded, transcribed, and analysed with their permission. It was also explained that participants would not be identifiable in any reports. Participants were then asked to sign consent forms if they were happy to proceed with the interview.

6.4.1. Interview/Data gathering methods

Phenomenological studies primarily rely on in-depth interviews to collect data (Creswell, 1998). Hence, a semi-structured interview schedule was designed as means of eliciting individuals' personal stories and developing an understanding of lived experience (Punch, 1998). This method of interviewing represents part of a process of co-construction where researchers attempt to understand the world from the point of view of the subject, in order to unfold meaning of people's experiences (Kvale, 1996, P1-2). Allowing meaning to flow from the participants themselves, rather than imposing this as researchers is at the centre of phenomenological research (Koch, 1999; Moustakas, 1994; Schutz, 1972).

As such, phenomenological researchers frequently stress the importance of acknowledging, that what is viewed as common sense in everyday reality is surrounded by innumerable interpretations, which are often taken for granted (Schutz, 1972). One of the ways that this was taken into consideration in the present research, was by following the process of bracketing that is frequently used in phenomenological studies (Groenewald, 2004; Moustakas, 1994). From a practical perspective this involved consciously trying to set aside pre-judgments and personal experiences, and opening interviews in an unbiased and

receptive way (Dowling, 2007; McNamara, 2005; Moran, 2002). Before asking any questions, I explained that interviews were being carried out in this receptive non-judgmental way and that they could discuss their experiences as freely and openly as they wished. However, as explained in Chapter Three, bracketing is not only an initial first step but also an on-going process whereby researchers "bracket" previous understanding, and knowledge, looking at data with the attitude of relative openness (Finlay, 2009).

The interview protocol was structured chronologically around the key stages of students' educational trajectories, to help guide them through their experiences in a logical progression (Maunder et al., 2012). The interview schedule contained 10 open-ended questions and a number of probes to allow natural conversation to flow, whilst giving interviewees the opportunity to describe their own experiences as freely as possible (Kvale, 1996; Punch 1998) (See Appendix). In this method of interviewing, participants are invited to tell their 'stories' with relative freedom, allowing them to describe their experiences, and the meaning that they attribute to this (Elliott, 2005; Josselson, 2007). In this sense, the interview schedule acted as a guide, where attention was paid to the narratives told by students, and they were asked to expand on these where appropriate.

The first question of the interview schedule asked students to discuss their educational background in terms of the types of schools/colleges they went to from primary school and served to contextualise the way that subsequent questions were framed. Some of the topics covered throughout interviews included: academic and social successes and challenges at each stage, subject choices, decision making to attend university, and factors that helped or hindered entry into university. The interview process itself was iterative and involved going back and forth between topics to discern the implications these had for one another.

All transcripts were anonymised and transcribed verbatim to maintain participant confidentiality. During the process of data collection, notes were taken of key observations and potential coding schemes. In phenomenology this is referred to as memoing (Groenewald, 2004).

6.5. Data Analysis

Interviews transcripts were uploaded to QSR NVivo, a qualitative data management software programme. Thematic analysis was used as this can be used with different theoretical frameworks, including constructionist/phenomenological studies to explore the experiences of participants working to both reflect reality, and to unpick or unravel the surface of reality (Attride-Stirling, 2001; Fereday & Muir-Cochrane, 2008). Braun and Clark (2006) describe this as a flexible method for identifying re-occurring responses within qualitative datasets, where themes can be identified at two different levels of depth. This study identified themes at a latent or interpretative level, focussing on the significance of patterns, and their broader meanings and implications (Patton, 2002) as opposed to a semantic level which focuses on surface meanings of what is said (Braun & Clarke, 2006).

Specifically an inductive or 'bottom up' analytic approach to thematic analysis was used, whereby analysis was not guided by prior theoretical accounts, rather themes emerged free from the researcher's analytic preconceptions (Frith & Gleeson, 2004). Thus, as themes were not pre-defined, initial codes and sub-themes were generated systematically across the entire data set and assigned to each line or meaningful segment. Data relevant to each code were then collated into invariant segments at increasingly higher levels of abstraction. This is considered part of the process of phenomenological reduction from which codes are developed into sub-themes and their overarching themes. During this process, repetitious themes were removed and it was ensured that themes were all encompassing and applicable across the entire data set (Moustakas, 1994). The development of latent themes in itself involved extensive interpretative work, requiring a researcher's judgments as these themes represent underlying ideas and patterns of meaning and are not just descriptive (Braun & Clark, 2006). In this final stage of analysis, the names and characteristics of the themes were defined and extracts that were considered particularly representative were selected as examples. The themes and sub-themes identified in this study capture broad spectrums of meaning, reflecting contrasting differences within them (Patton 1990). For example, within the sub-theme 'class participation' some students described participating actively in class whilst others stated the opposite in not wishing to participate. Though this example reflects absolute

divergences in experiences, the themes and sub-themes that are discussed in the results section (6.4.) provide insight into the ways that experiences fall along a broad and dynamic continuum.

Finally, a peer-review process was used to verify the validity and reliability of codes and themes in terms of their applicability to the data. An independent researcher reviewed the coding procedures from initial codes to themes in more than half of randomly selective transcripts ($n= 7$). Through discussions, consensus was reached across all codes and themes, as there was full agreement, inter-rater reliability was equal to 1.00 (Spence et al., 2013).

6.6. Results

Thematic analysis was carried out and two latent themes, educational engagement and identity, were identified. Each of these themes and their constituent sub-themes are discussed in turn.

6.6.1. Educational Engagement

Educational engagement refers to the quality of students' involvement in education and the effort that they devote to educationally purposeful activities at school (Skinner & Pitzer, 2012; Trowler & Trowler, 2010). The complexity of this multi-dimensional construct is highlighted in numerous studies (Corno & Mandinach, 1983; Fredricks, Blumenfeld, & Paris, 2004; Trowler, 2010; Whitton & Moseley, 2014). In this study, sub-themes were divided into behavioural factors related to educational engagement as these can be evaluated more objectively than static traits such as enthusiasm and commitment, whilst providing insight into affective and cognitive dimensions of engagement. Three sub-themes of educational engagement were identified in the present study, namely: class participation, attendance and decision making behaviours. Each sub-theme is discussed by explaining the trends and contrasting the ways in which students described their behaviours, and the affective and cognitive factors related to them.

6.6.1.1. Class participation

The majority of students in this study described differences between themselves and students that they perceived displayed high levels of behavioural engagement in terms of participating actively in class. For example, six students described themselves as being people that were: "*really quiet*" or "*just did not like to speak*"; considering themselves to be more introverted than others when they explained their behaviour and interactions at school. Samantha described her awareness of this and the impact she perceived this had on how she was treated:

"There was very much favouritism towards the more upbeat chatty girls, the chatty girls in the class room and because I was quieter I didn't really have that rapport with the teachers, so I couldn't go and ask them questions and things and I think that's probably why I didn't do particularly well in certain areas of classes, particularly the ones that they would teach."

Samantha's account illustrates her perception of the potential disadvantages of being quieter as opposed to more 'upbeat' or 'chatty'. However, she also described being positively engaged with school in other ways, such as completing and handing in homework, even though she viewed that as detrimental to her popularity:

"Group classes would say like: "Oh has anyone done the homework, and let's not mention it", and I'd be like, "Well, I've done the homework so I'm going to hand it in cause I wanna know". I was quite stubborn, I was probably not particularly popular for that reason cause people weren't doing work and I was the irritating nerd that was handing in the work."

In this account Samantha describes her educational engagement in terms of preparing homework and wanting to submit it. However, the extent of her investment is not fully visible to teachers in terms of the responses of her peers and the social cost she perceived this activity to have. This is particularly relevant in environments where doing schoolwork, and being interested in education are perceived as stigmatised behaviours. However, not all students had problems with this. Five students described awareness of the ways that

greater levels of participation, for example answering questions, positively influenced how they felt others perceived them including Jenny who noted:

"I will always be the one to put my hand up and having answers, I think because of this people probably see me as quite confident or clever."

This statement suggests that she perceived her active participation in class as positive and consistent, as she would *"always be the one"*. However, other students described how behaviours associated with high engagement, like class participation sometimes changed as a result of difficulties they experienced, and how this subsequently changed how they felt others perceived them. The impact of adversity appears to affect all dimensions of engagement in different ways. This demonstrates how these dimensions are interlinked. For example, Peter describes awareness of changes in his own behaviour as influencing how he was perceived.

"In the past I was answering all the questions, I stood out from the crowd, when it came to A-levels I didn't. I stopped. I suppose the people in college were more motivated than the people in high school, so they would answer the questions. I was less. I became one of the other people."

Peter described how these changes in his participation coincided with him feeling *'disillusioned with everything'* after his mother suffered a stroke and heart attack and his father lost his job. He reflects on feeling disaffection with school and how this influenced his behaviour and the amount of effort he put in at school. This emphasises the importance of understanding experience in the context in which it is lived.

6.6.1.2. Attendance

Attendance and truancy are considered markers of engagement and school disaffection respectively. School disaffection has been described as the opposite of engagement (King, 2015; E. A. Skinner & Pitzer, 2012), and is associated with emotional and behavioural characteristics, such as withdrawal from learning opportunities, anger/rebellion towards teachers and classmates or even frustration at having to be in the

classroom (Skinner, Kindermann, & Furrer, 2009; Skinner, Furrer, Marchand, & Kindermann, 2008). Students repeatedly described problems with attendance in ways that reflect disaffection and provide insight into affective and cognitive factors, often in the context of challenges and adversity. For example, students like Kate described problems with attendance in the context of long-term problems with the school environment:

"There was always fights, and there was always trouble. There was always like gangs in our school waiting for people like my peers and stuff like that and it was just (..) and then I thought, I know it sounds quite strange but cause I done quite well in like my SATS exams and even in school through teachers, I'd read about it at home cause I'd done a lot at home, cause I was such a book worm, like I loved books. So when they were teaching us stuff I'd think –Why? I could be doing this at home. I'd probably get more done and less disruption at home so I'd just started staying off a lot. "

The combination of this difficult environment, and factors such as her low attendance, which she felt influenced teachers not believing in her, appear to have had an impact on her emotionally. This influenced her behavioural engagement further:

"I just think it made me angry (laughs) more like, I was already frustrated with the school and then it just made me more like, more like reluctant to go in but more determined to do well on my GCSE's so I'd just stay off and revise, like, all the time. I did do so much work."

The complex interaction between affective and behavioural factors is evident in this account where anger appears to increase her determination 'to do well' whilst making her more 'reluctant to go in'. Five other students described problems with attendance due to difficulties with family/friends. For example, Lisa described how she missed school for various reasons, including problems at home, depression, and unsettled living circumstances:

" There was, there was a few months where I was between living in like women's shelters and being homeless where there wasn't a school for me to go to and so then after that age it just didn't become a priority."

In this statement, Lisa describes one of various periods of instability in her educational trajectory, which contributed to her poor attendance. She also explains that teachers were aware of her absences but not the reasons for these. Despite the low expectations that she perceives others had for her future, partly as a result of her periods of absence from school, she describes getting recognition for her grades:

"I got like emm, like a little silver plaque for getting some 'A' stars in some of my exams and I remember throwing it in the bin because I was annoyed that they gave it to me because it had said on it : 'For continued achievement at 'And it had really annoyed me it said that, because I thought 'I never had continued achievement. I've never had continued support in this college. I don't want it.' So I've never kept any of my awards. "

I wanted to probe this point further and asked Lisa, " You got rid of your awards"? Lisa continued:

"Yeah, because it just annoyed me, because all of them said like: 'For enjoying your time at sixth form' things like that. I just hated it. I hated every minute I had to spend in sixth form when I wasn't in a lesson because when I was in a lesson it wasn't really like a social thing, we was always doing work and that's what I enjoyed, like I didn't want anything to do with the college."

The way Lisa describes discarding her awards illustrates disaffection and rejection of school. This provides further insight into how affective factors are related to behaviour, where the anger she expresses appears to be, in part, a product of unrecognised disruptions she faced in her educational trajectory. In particular, she emphasises that she never had 'continued achievement' or 'continued support'. In contrast to the disaffection she describes towards school, she describes enjoying the working side of college. Emotional

reactions are critical components of disaffection and engagement, which could help explain differences in behaviours such as attendance amongst students.

Four students described themselves as having good attendance. In some cases, this was despite difficult experiences. For example, David described having a difficult relationship with his parents, which he perceived had a strong negative impact on his social development. However, he emphasised that he felt this did not have an impact on his attendance as he *“never considered skiving school or anything like that”*. In addition to not interfering with his attendance he emphasises how he ‘did fine’ academically even during periods of great difficulty. For example, he described doing ‘fine’ academically after an exam which he sat after a fight involving him, his sister and his parents:

“Yeah they attacked her. That was the morning of the French exam. I think it was French... I arrived late, because of everything and she was a mess.... I did fine, I came out with a decent mark as well, I don’t know how I managed that.”

After this incident David and his younger siblings were taken into care. However, this account highlights how incidents like this- that affected his life, did not affect his attendance or his attainment. The contrasting ways that students describe their reactions to adversity could be underpinned by differences in affective and cognitive factors. Affective factors have been discussed previously in relation to engagement, and how students enjoyed, or disliked specific aspects of school. Cognitive factors play a critical role in decision-making processes and students' goals, and also appear to influence differences in engagement. For example, David often compared his own decisions and goals with those of other students: *“They didn't care, whereas I wanted to be the best”*.

6.6.1.3. Decision making processes

This sub-theme of engagement focuses on how students described their own decision-making processes, including their choice of subjects, their goals/aims and the inter-personal factors that influenced this.

All students described their interest in particular subjects, and how this influenced their choice of subjects at GCSE and/or A-level. The majority of students did not choose subjects with career goals in mind even at A-level. However, there were exceptions. Two students had specific ideas about what they wanted to achieve in their career, which they maintained from primary school. Two other students described their choice of subjects at GCSE level with specific careers in mind. One of these students, Samantha, described her subject choices at GCSE with this in mind and subsequently described the grades that she 'had' to achieve at A-level:

"I knew that cause I wanted to do dentistry I've got to get the AS and A stars if I want to go and get dentistry. At the point I wasn't doing the scholarship scheme, so I didn't know what the requirements were for that, so I was literally just trying it as best as you can."

This statement illustrates how her aims to get high grades formed part of her overall decision to study dentistry. Though the extent to which students' decisions were determined by specific careers varied largely between students, the desire to achieve high grades was ubiquitous and discussed by all students. Daniel discussed this along with four other students in the context of deliberately choosing challenging subjects:

"When I finished my GCSE's, I said 'I want to challenge myself, and do good subjects and do well. So I picked all the hardest subjects. "

In this statement, Daniel explains choosing 'good subjects', based on what he perceives to be '*the hardest subjects*'. This contrasts from other students like Samantha who based decisions and goals on specific careers or university related goals. He emphasised this when he explained not knowing what university was, until after starting year 12 (6th form).

"I didn't know anything about universities. The first time that I noticed there was universities was when I joined the university with the scholar scheme, so I was in year 12, then I registered."

Daniel's assertion that he did not know 'anything' about university until year 12 highlights differences in the amount of information students are exposed to with regard to universities, as well as the degree of awareness students have of their respective academic options and career possibilities. This is critical, as it clearly has an influence on decision-making processes, including subject choices and the goals/aspirations that students have. These decision-making processes, and the goals which sometimes guide them, represent an important part of cognitive engagement. Two important factors that appear to influence this are support and guidance from parents, teachers and external organisations (such as the Scholars scheme mentioned in Section 6.2.2). Differences were seen in the amount and type of support and guidance that students received, though every student described the role of some form of support as influential in decision-making processes, including the decision to go to university.

Ten students described receiving guidance and support when making plans for the future from at least one family member. Half of these students specifically emphasised the importance of their mothers. For example, Melissa described the influence of her sisters but highlights how her mother had 'a lot more' influence on her decision to go to university as opposed to into a job after college:

“Especially my mum and my sisters, but my mum a lot more. Obviously her other daughters had just finished school and then just gone into a job and she could see me thinking ‘I want to go to uni, I want to be the first person.’ I've got quite a big family, and she was pushing and saying, even she was saying: “Try and get out of this place.”

This account illustrates how others, including family members, can have an important influence on students' decision-making processes, in this case helping confirm Melissa's decision to go to university. Additionally, Melissa described being motivated to be the first person in her family to attend university. Five other students mentioned this as a motivational factor. However, students also discussed difficulties associated with being the first members of their families to attend university, with most students mentioning not having academic support at home. As Lauren describes:

"They're not really the type to sit me down and help me with my homework because most of the work I knew better than them. Sounds horrible to say."

In this statement, Lauren explains how her parents were limited in the extent to which they could help her with her homework. However, she later explained how she did get academic support from teachers if she needed it, emphasising the role they played in her decision to study physics:

"I've always known I am good at maths, but the actual physics motivation came from my two teachers at A-level."

Lauren's statement highlights the extent to which teachers can influence students and their decision-making processes. This is particularly important for students who do not have any available academic support or role models at home as five students also explained how their teachers were the only people they knew that had been to university. Furthermore, four students described how their parents and sometimes their peers' parents were unsupportive of education, and sometimes provided them with incorrect advice. For example, Kate described how her parents, especially her mother, were 'cynical' of post-16 education as they '*didn't really understand*' or '*didn't really see the benefits*' of this. She explained how the people she knew were not interested in investing in education, and/or attempted to dissuade her from attending university due to financial concerns:

"Think it's just like if you don't know, it's not your fault. Like 'cause if your parents are saying don't go, don't go, you are going to be in debt you're never going to get a mortgage and its cause they see it on the news, like student fees rising and then I think you know it should be in the schools like in my school they should have said."

Here, Kate justifies why she thinks people with parents who have similar views to her parents, do not go to university; emphasising the lack of guidance she received. Due to the difficulties she experienced at school, and resulting disaffection, she went on to paid employment despite achieving high grades after GCSEs. However, she described how the experiences she had whilst working motivated her to return to education:

" I can't do this, so I worked there for a few months, I thought I don't want to do this forever and then that was it, I thought 'no I need to go back', cause this isn't what I want to be doing really."

In this account Kate described how her motivation to study was influenced and reinforced by her experiences in paid employment. This can be seen as an example of how negative reinforcement can play a role as a determinant of students' goal related behaviours and subsequent engagement levels. Ten students described university in relation to improving their situation, sometimes to the extent that university represented a form of emancipation from their difficulties. For example, David's account describes this as the motivation behind his decision to go university and attend school even during difficult times:

"I had these ideas in my head of going to uni, getting a good job, being secure and moving away from my family... Which happened anyways. "

In this statement, David emphasises the extent to which he was compelled to leave home, this was something he discussed frequently even stating that this was 'all' he could think of. The strength of this motivation could represent one of the underlying factors that influenced his persistence to attend school and do well despite the adversity he experienced. Lauren was another student who experienced significant family problems and described similar motivations to go to university:

"University was my getaway plan because I really didn't enjoy it at home. I live in halls. That was always my plan, to just get out once I finish my A-levels and go to university. I didn't want to ever come back. My main influence was getting out my house."

In this account, she describes university specifically as a 'get away plan', which is similar to David and relates to the notion of improving their status quo. However, other students that did not have these types of problems also alluded to university as a way of improving their situation, including Louise:

"Because I'm from a lower income background, I sort of want to do a bit better, so like be able to get a good job and earn a good income. So I think like in my financial background, sort of motivated me to, want to go to university. Emm, But also like I just I just wanted to learn more stuff as well obviously. "

In this statement she highlights how her decision to go to university is based on both her financial background and interest in learning more. Along with Louise, four other students also described financial problems and discussed achievement from a utilitarian perspective. In particular, Rachael regarded her own academic success as a means of helping her whole family.

"I can help my little sister, and help my family and, I thought I need to get a good job in order to do that because you can't do anything without money."

In this account, Rachael highlights her awareness of the utilitarian importance of academic achievement *"you can't do anything without money"* and describes this as a motivation. This suggests that engagement is partly underpinned by a desire to overcome financial disadvantage. Though these students' motivations differ in part from those students who wanted to leave home, the ameliorating influence of education appears to be a common motivator for engagement for all participants.

6.6.2. Identity

The second theme, identity, is conceptualised both psychologically and philosophically as a key element of subjective reality, comprising both individual and collective dimensions (Aries & Seider, 2005; Berger & Luckmann, 2011; Bliuc, Ellis, Goodyear, & Hendres, 2011; Hunter et al., 2004; Tajfel, 1982; Tajfel & Turner, 1979). The descriptions students gave of their transitions from primary school to HE illustrates the dynamic nature of the concept of identity, and how different "identities" and aspects of identity can develop and become salient over time. This is depicted in three primary ways, firstly in relation to how students perceive/describe themselves both academically and socially (self-perception), secondly- how students felt that others perceived them (reaction of others) and thirdly in the comparisons students make between themselves and other

individuals. These sub-themes are interlinked with each other in the sense that how we perceive ourselves is influenced by how we think others perceive us and react to us, thus discussions of these are interlinked.

6.6.2.1. Self-evaluations- Academic Achievement and Hard Work

Self-evaluations of achievement are considered an important part of identity that individuals often consider themselves to be accountable for (Hogg, 2000; Hogg, Abrams, Otten, & Hinkle, 2004; Hunter et al., 2004; Terry, Hogg, & White, 1999). When describing their trajectories from primary school to University, all participants described and evaluated their academic outcomes and academic achievement in different exams with four students describing consistently high achievement from primary school. In self-evaluations, students primarily explain their own high attainment as a consequence of being hard working, and often discuss this in relation to how they were perceived and compared to others. For example, participant Daniel explained:

"Whereas they didn't care, I wanted to get a good grade. Erm (..) then because of that they called, (..) they nicknamed me, some of my friends they called me 'Extra'. Because I would do extra work."

Daniel's nickname 'Extra', suggests his hard working behaviour differentiated him from other students in his group and illustrates how this sense of difference, like academic achievement, is also a perceived marker of identity. The significance of academic attainment as a marker of identity is also reflected in how several students emphasised 'needing' or 'having' to be the 'best' students in their class (n=6). This can be evidenced in Jenny's account:

"I always felt that I had to be top of the class. That's what I wanted to be all the time (...) but as I moved through the different schools I sort of faded a bit."

Here, Jenny portrays identity as something that is changeable and context dependent. In this case, she suggests changes in her perceived identity as the 'top student' were associated with instability she experienced when moving schools. Though all students

highlight the importance of hard work at some point in their educational trajectories, some students also emphasised the value of being more 'naturally academic' from early stages as an important determinant of their perceived high academic achievement hard. For example, David described the importance of this in the following account:

"I was lucky to be, I was a natural academic, because if I wasn't then I wouldn't be in uni right now. I wouldn't have performed well and it would have been downhill from then."

6.6.2.2 Social Identity- Group Identification and Belonging

The ways in which all students discuss and emphasise the significance of grades and the academic aspects of schools in general, often contrasts with the ways that they describe social involvement with school as well as identification with peers, and teachers. David described this contrast:

"Easy, the academics, erm. In short really, the difficult part would be fitting in socially. Before then I'd never really been let outside the house to see friends in school. So it doesn't really make you comfortable with situations where you have a lot more people around you and at that age where they are a lot more judgmental. Mean I guess. Kids aren't nice people in general. Emm that's not fair to say but no, fitting in socially was one of the main troubles I had when in secondary school."

Most students described social difficulties in terms of their sense of belonging, and 'fitting in' based on self-evaluations, social comparisons and the influence of family members, teachers and peers. Kate's account provides an example of this, where she described wanting to go to grammar school after doing well in exams.

"My mum didn't want me to go really. She just thought I wouldn't fit in there because her, one of her friends' sons went, on a sports scholarship and got bullied there cause he was quite like, -he didn't fit in with the people and all that."

Kate's description of her mother's fear that she wouldn't fit in, illustrates her belief that like her 'friend's son,' her mother considers them members of a group with differences that are incompatible/incongruent with those of grammar school students. She describes this as the reason why she thinks her mother saw grammar school as a 'bad thing' rather than a 'good thing'.

Though most students describe having had the support of at least one carer, and emphasise the importance of their encouragement in education, four students described not having this kind of encouragement. These students spoke of barriers put forward by their own parents' sceptical views of education and the influence these views had on their subsequent integration and the sense that they did not or could not 'fit in'. Students' awareness of their own socio-economic backgrounds at school was also expressed with regard to receiving financial support for field trips, free school meals, and not having the 'right things' compared to others. This sense of difference that students described was expressed by Sophie:

"Like we didn't have the right, the right clothes, the right phones, the right channels on TV and just always felt like I was missing a little bit, but I never blamed anyone about it, like it's no-one's fault. They tried their best but it's kind of more embarrassing when you are a kid cause you can't really say like, "No it's because my parents don't make much money," cause they'd just take the piss out of you if you say that. So I kind of had to like say aww yeah I'm getting that soon or just lie."

How students described trying to hide differences to avoid being distinguished from others indicates how class is not an entirely invisible form of identity to children. However, students also express perceiving invisible class differences in the emotional and social difficulties they faced compared to others. Lauren summarises this as follows:

"Umm, their family problems seemed so menial. I was like why is that even a problem? They were generally happier as well".

Perceived differences in the kinds of problems students experienced largely result from comparisons they make between themselves and other students who appear to be

'happier' or have less problems. These comparisons underpin feelings of isolation and frustration expressed by students including Lisa:

"It annoyed me a little that everyone else had it so easy and took it for granted, but I'd have to like work for everything that I got."

6.6.2.3. Group Stereotypes and Identity Related Expectations

The emphasis students like Lisa placed on having to work harder 'for everything', including the attainment of high grades, supports the notion that grades have a personal significance to students. This added value appears to be tied to social identity and perceptions of themselves as members of a disadvantaged group. In turn, the importance that students attribute to their high grades may reflect the role that academic achievements have in narrowing the social differences they perceive between themselves and others. Many students allude to stereotypes associated with people 'like them' and wanting to prove people wrong about these perceptions or to dispel their stereotypical beliefs. This is another way in which attainment is seen to have additional personal value to students in this study. For example, Melissa explains her motivation to achieve high grades in terms of:

"Wanting to do better than what they thought. Cause there is a lot of stereotypes about like, people on benefits and stuff and I wanted to prove that, I wanted to prove that just because my parents were on them that I wouldn't necessarily be on them myself."

The way that students believe they are perceived is constructed by how others, including their peers, teachers and family members respond to them, what expectations they have of them, and how they support them. As explained previously, students describe the importance of grades as a marker of identity and something that can distinguish them from other members of groups that they are seen to belong to. For example, as Daniel explains:

"Yeah because, I thought that people would think that I would not do that, I will not do well. Because of my GCSEs and because of who I am so I said 'I know all of the students are better than me but I have to show I am just going to work hard and prove them wrong."

In this statement, Daniel emphasised his perception of not being expected to do well as part of his perceived identity as a member of a group that others do not believe will do well; something that he appears to have internalised when he says he knows 'all of the students are better'. However, despite this belief, his perceived identity appears to drive his motivation, to work hard, his motivation to prove people wrong and his motivation to achieve high grades in his academic qualifications.

Students' social identities and the groups that they belong to or identify with are often based on similarities and differences perceived between these and other groups. Students described difficulties they encountered due to being perceived as different to other students, in terms of caring about their studies, and having different aspirations and interests. Often they describe these differences as factors that alienate them from the other members of the class, where they are sometimes bullied or stigmatised for trying to work and caring about their studies. For example, Samantha expresses frustrations in the differences she perceives between herself and other students at her school:

"I was sick of MY SCHOOL, cause there were people there that just didn't care, were just in sixth form until they could get a job, didn't want to work that much and it was very like, you would have people in my year would just take the piss if you did try to do work, cause I wanted to. I didn't, I didn't feel confident that if I wanted to do dentistry, I didn't feel confident, that I'd be able to get there if I'd stayed on at THAT SCHOOL."

Stigmatizing ability is sometimes seen in groups where high academic achievement is negatively perceived (Gayles, 2005; Manor-Bullock, Look, & Dixon, 1995; Tyson, Darity, & Castellino, 2005). This is evidenced in the present study, in difficulties that participants like Samantha describe in relation to high achievement. However, sometimes students also explain behaving in ways that diminish the apparent importance of their academic

attainment. This could be a way of maintaining group membership and avoiding stigmatisation but maintaining a connection with high grades as a marker of identity. For example Kate describes a separation between her grades and school as follows *"I wasn't in school, I just done well academically"*. She also expresses awareness of how her behaviour and group membership influenced how she was perceived:

"I think the teachers thought, they had this vision of me like I dunno, like smokin' drugs or being out with my friends drinking. I dunno what they thought I was doing when I was staying off. But I wasn't, I was just like at home reading. But and even I had like my laptop and I had to look what we should be on track for learning for like biology and make sure, I had all the GCSE books and I just done it at home."

Like Kate, most students who felt they were being misjudged in terms of their efforts and academic potential described the frustration they felt towards others who did not believe in them, or had low expectations of them. However, these perceptions also appear to represent another way that identity - including beliefs about how they are perceived by others - is linked with motivation, and the desire to prove other people wrong. Lisa's desire to prove others wrong was her primary reason for wanting to gain a place at a prestigious university (in this instance the University of Liverpool), as she explained:

"I remember speaking to one of them, and telling them about the Scholars thing and saying that I want go to Liverpool Uni, and I remember them saying to me: "You, you won't get into University of Liverpool, you should just apply to John Moores" and I (pause) I just awww, I just thought- "No, I'm going to The University of Liverpool." Cause like, I think, I think it's not like that, like when I feel like the motivation for me coming to uni, and me doing well more so than having a good future- it's to prove everyone wrong. That I can do well. So people said to me, I can't do well. I wanted to prove them wrong. That I can do well and that's like the reason I want to do well. More so than for me."

6.7. Discussion

Underpinned by a phenomenological approach, semi-structured interviews were conducted to explore the educational trajectories from primary school into University of thirteen full-time students from socio-economically disadvantaged backgrounds. Two main themes emerged from the data; namely: educational engagement and identity. Understanding the role of these themes and how critical they are to participation of non-traditional students at university requires consideration of contextual variables including personal and familial circumstance. This is crucial as the influence and interactions of these variables and an individuals' identity and engagement was evidenced consistently throughout students' accounts of their trajectories into University. These themes, their constituent sub-themes and their interrelationship(s) are described in relation to the current evidence base as a means to exploring their significance to the issues under discussion.

6.7.1. Educational Engagement

Despite growing interest, the definition of educational engagement continues to be debated (Whitton & Mosseley, 2014; Trowler & Trowler, 2010). Engagement in this study refers to students' active involvement, commitment, and concentrated attention in learning, and is contrasted with disaffection from education (i.e. apathy, or lack of interest in learning) (Marks, 2000; Skinner et al., 2009; Skinner et al., 2008). Predominantly, indicators of engagement are fragmented into behavioural, affective and cognitive dimensions (Fredricks et al., 2004; Trowler, 2010). Factors of each of these dimensions were present in all three sub-themes: class participation, attendance and decision-making processes. Exploration of these sub-themes also depict the well-documented overlap that engagement has with motivation and the malleable influence this can have on students' trajectories into university (Skinner et al., 2008).

6.7.1.1. *Class participation*

With regards to class participation, students described the degree to which they were actively involved in their classes. Differences were often based on comparisons with

others (other class mates / peers) and discussed in relation to contrasting personality traits and their actions/behaviours at school (doing homework on time, attentive listening and participation in class). Students who felt they were more dynamically involved in class often considered themselves to be more outgoing and confident; and perceived this to have a positive impact on how others saw them. Jenny described this stating that: *"because of this people probably see me as quite confident or clever."*

Most of the students who took part in this study, felt that they did not participate actively in class, often describing themselves as being introverted and quiet. These students often discussed how students, who were more 'chatty' 'upbeat' or 'extroverted', were treated more favourably by teachers. Samantha explained how this affected her: *"because I was quieter I didn't really have that rapport with the teachers, so I couldn't go and ask them questions."* These findings are consistent with research conducted by Skinner et al. (2009) who found that teachers are less likely to provide support to students who demonstrate lower levels of class participation. They suggest that this is because students who do not participate actively in class are more likely to be perceived as being 'less engaged', apathetic and even bored by their teachers.

One of the challenges associated with measuring engagement, is that learning processes are often internal and may not necessarily be visible to others (Harper & Quaye, 2009; Lee & Reeve, 2012; Trowler, 2010; Whittone & Moseley, 2014). Factors related to the school environment and the peer groups that individuals associate with, can influence the degree to which students may wish to actively participate in class and openly manifest their interest in academic activities (Trowler, 2010). This is corroborated by a number of researchers, including Gayles (2005) who found that students are less likely to participate in environments where investing in education is stigmatised and perceived negatively by others. Indeed, though being less communicative/less extroverted than others appear to be important factors in themselves, a few students did not want to participate in class, or associate their achievements with school despite being interested in learning. For example, Kate emphasised enjoying reading and doing educational activities at home but emphasised her rejection of schooling various times: *"I'd read about it at home cause I'd done a lot at home, cause I was such a book worm, like I loved books"*. Such 'hidden engagement' may

represent a protective mechanism in environments where education is negatively perceived.

Research by Goffman (1963) could help explain these findings further. He suggested that deviance from prevalent norms or behaviours underpins the notion of stigma: an attribute that he describes as being 'deeply discrediting'. Furthermore, he argued that deviance is not an inherent characteristic, as a person is not considered deviant until their acts are perceived as negatively different. In this regard, it can be argued that participating in class in environments where the majority perceive this negatively can be seen as a form of behaviour that is deviant from the norm (Archer, Hollingworth, & Halsall, 2007; Jackson, 2002; Major & O'Brien, 2005; Manor-Bullock et al., 1995). This could explain why many students experienced negative social repercussions when avoiding other students' maladaptive behaviours by choosing to submit their work or participate actively in class (by answering questions, overtly showing interest in education). Samantha was one of the students that expressed her awareness of this: *"I was probably not particularly popular for that reason cause people weren't doing work and I was the irritating nerd that was handing in the work."*

This contrasts with the experiences of students like Jenny who outwardly appeared to reject schooling, and explained that she did not go to school, but in turn did not experience negative social repercussions and maintained her group membership. These findings also resonate with the research of Archer et al., (2007) and the notion that identity related constraints can influence educational engagement as working-class youths may appear to reject schooling to maintain group membership with other working-class youths who reject this as a way of resisting dominant definitions of success (Archer & Francis, 2006; Greenhalgh et al., 2004; Tyson et al., 2005). Hence, these group processes may also explain why some of the students who did not reject schooling and went against the group by submitting their work, like Samantha, experienced negative social repercussions. David also explained this, stating succinctly that: *"basically, the education side was easy but the social side was difficult"*.

6.7.1.2. Attendance

Students described their levels of attendance at school primarily in the context of difficulties, including adversity involving their families, mental health problems (including, for example; depression, anxiety, autism, dyslexia, dyspraxia), and social problems. The ways in which adversity and stress affected students and their levels of attendance differed in ways that provided insight into affective and cognitive factors related to engagement. Students who discussed problems with attendance often described school disaffection, including anger and rebellion towards teachers and classmates, and frustration towards the school. As found in previous studies, these problems often contributed to increased rates of truancy (Connell, Halpem-Felsher, Clifford, Crichlow, & Usinger, 1995; Skinner et al., 2008). For example, some students described preferring to work at home due to problems they experienced in their school environments. Lisa for example, explained how she had poor attendance throughout her educational trajectory due to on-going disruption, and family instability, including periods where she was homeless and lived in women's shelters with her mother: "*I was between living in like women's' shelters and being homeless where there wasn't a school for me to go to and so then after that age it just didn't become a priority.*" These findings are consistent with the work of Lynch and O'Riordan (1998) who found, that daily survival often takes priority over education for low-income families, where some students experience phases of withdrawal from learning opportunities as a result of family instability.

Understanding the factors that enable some students to maintain high attendance despite difficulties is central to the study of on-going engagement. At the same time it is also important to understand the reasons why students may not appear to engage at school, and have poor attendance as this may represent a protective mechanism for those that perceived their schools to be unsafe. This is critical, as truancy is one of the most serious concerns related to poor attainment, at school and at university (Balfanz, Herzog, & Mac Iver, 2007; Gottfried, 2009; Newman-Ford, Fitzgibbon, Lloyd, & Thomas, 2008). Skinner

and Pitzter (2009) suggest that the same factors that promote engagement may shape students' reactions to challenges and obstacles. In particular, they refer to students' ability to cope with adversity, or 'resilience'. Affective and cognitive factors that have been found to be influential in the context of resilience include: commitment, locus of control, and interest (Allan, McKenna, & Dominey, 2014; Gifford, Briceno-Perriott, & Mianzo, 2006; Lefcourt, Martin, & Saleh, 1984; Snibbe & Markus, 2005). This is corroborated by the findings from the present study, where students like David emphasised having good attendance and maintaining focus on his goals despite adversity, and family instability: *"Whereas they didn't care...I wanted to be the best"*.

The majority of participants in this study also described the role of inter-personal factors, such as family, teacher and peer support, as being particularly influential in relation to attendance and on-going engagement. These inter-personal factors have also been explored in the context of resilience where they indirectly appear to influence differences in engagement between students (Brewster & Bowen, 2004; Klem & Connell, 2004; McMillan & Reed, 1994). Ultimately, it is clear from these results that sensitivity to context is paramount, as levels of engagement are influenced by a multiplicity of factors and negotiated among students, school environment and/or home cultures (Ungar & Liebenberg, 2013; Whitton & Moseley, 2014).

6.7.1.3. Decision-making processes

The ways that students described decision-making processes reflect differences in engagement between students and provides further insight into deeper cognitive and affective levels of engagement (Corno & Mandinach, 1983). The decision-making processes that featured most prominently in interviews were those discussed in relation to subject choices, and overall goals/aims.

Knowledge of university and potential career opportunities differed greatly between participants. Prior to university, the majority of students did not choose subjects with careers in mind. However, David and Samantha described choosing GCSE subjects based on information relating to specific career goals. This was critical in their trajectories to University as they were both interested in studying Medicine, and Dentistry, which are

amongst the most selective/competitive programmes with high and specific entry requirements and also require specific GCSE's unlike many other subjects.

In contrast, Daniel and Lisa both said that they did not know about university until after they had taken their GCSEs. Lisa explained how she learned about Universities through the Scholar Scheme and was interested in Veterinary science but that by the point she knew about these options it was too late for her to pursue this, as she did not fulfil specific subject requirements. Such findings illustrate the importance of providing students with career related guidance in their decision-making processes early as this can influence the options that are available to them at later stages. Furthermore, as Archer et al (2005) discuss, the current findings contrast with the planned and knowledgeable experiences of young people from middle class backgrounds, who were more likely to take going to university for granted (Reay et al., 2004).

The students who described their awareness of university from early stages in their educational trajectories described the role of their parents, family members and teachers as influential in helping guide their decision-making processes. In particular, many students emphasised the importance of the influence of their teachers in deciding to go to university, sometimes because their teachers were the only people they knew who had been to university, and sometimes because they perceived their parents as unsupportive of their education. Other studies corroborate the importance of this, including Peart and Campbell (1999) who reported, "Some students identified such a teacher as the most important person in their lives" (p. 274).

Teachers played a particularly important role for those students who perceived their parents as unsupportive of education. However, not all students saw themselves as having support from their teachers, or family members, and sometimes described having conflicting views with parents on the values they held in relation to education. Despite this, they all described awareness of the potential ameliorating effects of education. They understood the value of their academic achievement, and described this in the context of escaping adversity, moving away, or just generally wanting to "do better." Lauren discussed this as a form of drive numerous times throughout her interview: "*University was my*

getaway plan because I really didn't enjoy it at home". According to Gayles (2005), this may reflect a utilitarian perception of achievement that represents a source of resilience, which allows students to thrive.

6.7.2. Identity

The second theme, identity is conceptualised from a psychological perspective, where it is theorized as both an individual and a collective construct, comprising both individual and collective dimensions (Ellemers, Spears, & Doosje, 2002; Terry et al., 1999; Thibodeau, 2011). It is also explored as an element of subjective reality, shaped and modified largely by social processes (Berger & Luckman, 1966). Three sub-themes reflective of the individual and collective sides of identity and the social processes which influence this are described: self-evaluations (academic achievement and hard work), comparisons with others (social identity and social comparison theory) and reactions of others (awareness of SES, belonging). These sub-themes are intertwined as the way in which people perceive themselves is often influenced by how they feel others perceive and react to them.

6.7.2.1. Self-evaluations

The experiences and characteristics students focus on in self-evaluations provide insight into what they perceive to be important (Hogg et al., 2004; Hunter et al., 2004). These are said to relate to their sense of self and who they are as unique individuals (Terry et al., 1999). The ways that students reflected on their academic achievement and hard work reflected differences in the individual meaning these represented to them. Some students described high academic achievement and hard work in ways that positively represented these as markers of identity. For example, Daniel described a nickname that classmates gave him as he always did 'extra' work ("*They called me extra*"). Whilst other students also related their achievement to hard work, they actively distanced their hard work and achievement from the school environment and attributed their success to their own abilities and determination. Students often disassociated their academic achievement from their schools when they perceived the school as unsupportive and prejudiced against them. Whilst this could reflect dis-identification with school it can also be understood as

logical in this context and could represent a source of resilience and even a coping strategy (Steele, 1997; Steele & Aronson 1995).

Some students dis-identified with social groups due partly to perceived differences in their interest and engagement in education, often describing this as resulting in isolation. Byrom (2009) discusses similar findings in relation to conflicts with social realignment experienced by students from intermediate or aspirational working class backgrounds. This is evidenced in other studies and describes when memberships with groups are problematic, uncomfortable and in some cases associated with stigma/low expectations (Becker & Tausch, 2014; Major & O'Brien, 2005; Manor-Bullock et al., 1995; Steele, Spencer, & Aronson, 2002).

Environments where ability and investment in education are perceived negatively and even stigmatised can induce the use of these coping strategies (Derks et al., 2007; Manor-Bullock et al., 1995; Quinn & Earnshaw, 2013; Tyson et al., 2005). This could also explain why some students described trying to hide or diminish their interest in learning and even their high achievement. This is consistent with the findings of Gayles (2005) who explored how high-achieving African male students from low-income backgrounds perceived their own academic achievement. Gayles (2005) found that students actively diminished the significance of their own academic achievement in ways that decreased the possibility of making their academic achievement a marker of identity. He argued that this phenomenon comes from the belief that success is socially cultivated and high academic achievement is not seen as success in certain cultures, but rather the opposite. Hence, diminishing the significance of grades can be seen as a way of maintaining group membership (Tyson et al., 2005). Although some students downplayed the significance of grades and education to others, in most cases students emphasised the importance of their academic achievement in ways that suggest they perceived this as a positive marker of identity for themselves, sometimes despite negative social repercussions. This could also suggest that school grades may mediate the extent to which students perceived differences between themselves and others.

6.7.2.2. Social-Identity Comparing oneself to others

Throughout the interviews, students made comparisons between themselves and other students. They often reflected on their socio-economic backgrounds including differences and disadvantages they perceived. These included receiving financial support for field trips, receiving free school meals, and more generally "not having the "right things". Some students described feeling embarrassed by these differences and trying to conceal them: *"I'd just pretend I would have one"*. Similar findings have been reported in other studies where people described trying to conceal social class, and/or other characteristics (disability, ethnic background) that could be stigmatised or negatively perceived (Aries & Seider, 2005; Buhs, Ladd, & Herald, 2006; Diamond et al., 2012; Goffman, 1963; Granfield, 1991). Efforts to hide potentially stigmatised attributes have been considered a way of coping with the well-documented negative stereotypes that people readily form on the basis of SES (Cozzarelli, 2000; Croizet & Claire, 1998; Croizet et al., 2001; Spencer & Castano, 2007).

Individuals do not solely derive a sense of self through self-evaluations of what makes them unique (Personal Identity). According to Social Identity Theory (SIT) (Tajfel & Turner, 1979, 2004) they also base identity and self-worth on social categories to which they belong, such as gender, socio-economic status, age and ethnicity. Social identities are based on memberships that people have with groups, based on the attributes of individual persons rather than attributes of social groups themselves (Ellemers et al., 2002; Hogg, 2000). Thus, just as it is important for individuals that their personal identities are valued, it is also important that the social categories on which they base their self-concept are valued (Derks et al., 2007; Ellemers, Kortekaas, & Ouwerkerk, 1999). Though the extent to which individuals perceive themselves as members of working class groups is difficult to discern, students often described situations that highlight the relevance of social class in their trajectories to HE.

6.7.2.3. Reactions of Others: Social Class Awareness

The wide-ranging impact that social class can have on individuals and their experiences are partly underpinned by differences in their conscious awareness of this, as

social class is not necessarily visible or salient (Abrams & Hogg, 2006; Hogg et al., 2004; Terry et al., 1999; Thibodeau, 2011). Salience is considered to have a powerful impact on the level of importance of a construct in the self-system (Abrams & Hogg, 2006; Derks et al., 2007). This is partly determined by the extent to which individuals perceive differences between themselves and others, where greater differences make characteristics more salient, and consequently more influential in relation to self-definition and behaviour (Thibodeau, 2011). Those who identify more with groups are seen as particularly vulnerable to the negative effects of discrimination and stigma on academic engagement (Derks, Laar, & Ellemers, 2006; Steele et al., 2002). Though the majority of students discussed awareness of not being affluent, and potentially in a "more dire" financial situation than other students, the majority did not consider this to have a significant impact as "*everyone was pretty much the same*"; "*everyone had shit clothes and old shoes.*"

The degree to which students perceive problems to be associated with social class may both reflect and influence how much they identify with this. Further, the extent to which individuals identify with their social-class may affect students' self-definitions and subsequently their overall trajectories to HE. This is highlighted in the current study in which we observed differences in the extent to which students regarded their social class to disadvantage their educational trajectory. Students' accounts depict the influence of their parents and their teachers on their awareness of social class differences between themselves and others. They described how their parents often did not support them going to grammar school or university due to fears that they would not 'fit in' in these environments. They also described how parents focussed on financial risks they perceived with going to college and university as opposed to going straight to paid employment. Such findings have been attributed to socio-economic differences in educational values, including how working-class people are less likely to believe that university has proven value than students from middle class backgrounds (Ball, 2003; Connor, Dewson, Tyers, Eccles, Regan, & Aston, 2001; McKnight, 2015; Reay et al., 2001; Thibodeau, 2011). However, at the same time, this may also represent a practical issue, as those going straight into paid employment can contribute to family expenses straightaway. Past studies have corroborated this, indicating that participation in HE, especially for those students without

a family history of participation in HE, is characterised by uncertainty which is one of the reasons why it may be easier for them to evaluate the potential benefits of directly entering the labour market rather than evaluating the long-term benefits of attending HE (Diamond et al., 2012). As such, these decisions are complex, and subject to the influence of a wide variety of personal, social and cultural factors (Reay et al., 2001). Thus, it is also important to recognise that these factors, and identity related constraints can influence the ways that students from socio-economically disadvantaged may weigh criteria, potential losses and gains, in evaluating whether to attend HE, and that these decision making processes are likely to differ to those from more affluent students (Byrom, 2009; Connor, et al., 2004; Diamond et al., 2012).

Several students described teachers' low expectations of them, their attempts to dissuade them from taking particular "challenging" subjects, going to college and HE. This suggests that they had awareness of teachers perceiving them as members of a group that was less likely to do well "*they thought I would not do well because of who I am*". They also discuss stereotypes associated with people like them, "*Cause there is a lot of stereotypes about like, people on benefits and stuff and I wanted to prove that, I wanted to prove that just because my parents were on them that I wouldn't necessarily be on them myself.*" According to SIT (Tajfel & Turner, 1989), these negative group associations can induce social identity threat and make students feel devalued which can negatively influence engagement. However in some accounts the opposite appears to be true as students discuss being strongly motivated to prove people wrong and succeed. Nevertheless, there are risks associated with being perceived as members of a devalued group, and it is important to keep in mind that these students represent those who were successful in attending university. Hence, low expectations and stereotypes may be internalised and negatively affect some of those who did not continue on into HE. Derks et al. (2007), discussed this in a study which exemplified how people that perceive themselves as members of groups that are socially devalued in educational domains (ethnic minorities, working class students) are more likely to withdraw from these settings as a protective mechanism because the threat of being devalued on the basis of social category is psychologically costly (Abrams & Hogg, 2006; Steele et al., 2002).

6.7.3. Strengths and Limitations

One of the strengths of conducting phenomenological research is that it facilitates rich and detailed descriptions of human experience. Findings from the current study are data driven and not derived from imposing *a priori* analytic frameworks. By focusing specifically on disadvantaged students' educational trajectories into HE, this study recognizes the complexities and importance of an individual's lived experiences through a critical time period and as such seeks to highlight the factors that students perceived as meaningful in their educational trajectories. In doing so, findings from the current study help to identify where support can be provided and according to Ball (2003) could influence the relative merits (success/failure) of intervention programmes. Another strength of phenomenological research is that the results emerged directly from the data.

Participants were selected purposefully to ensure that they all had experience relating to the phenomenon of interest and included students from a wide cross-section of subjects being studied at university level. This is important as socio-economic profiles vary between subjects and may reflect differences in subject choice behaviours among groups (Davies et al., 2013; Gallagher et al., 2009; Singleton, 2009; 2010a). Understanding the causes of disadvantaged students' under-representation in different subjects can help to refine recruitment activities and inform widening participation interventions. Hence, it is strength of this research that students from medicine and dentistry were also interviewed, as socio-economic inequalities are most prominent in subjects such as these, not least because these courses are over-subscribed and extremely competitive.

However, it should be borne in mind that the age range of the sample was narrow (between 18 and 20 years old), there was a lack of ethnic diversity among participants (all but one of the students were white) and all participants were drawn from a single university site in the Northwest of England. These factors are likely to have an impact on study outcomes. Thus, findings from this study may not be transferable to other student age groups or ethnicities, or to other geographic regions. Future research by individual universities should explore this to refine their own interventions (Bowes et al., 2013). Multiple case studies could be carried out across multiple geographical regions to explore

variability between these and/or between students from different ethnicities or age groups. This method could also be used to focus for instance on students' parents/carers and teachers providing alternative perspectives of the issues surrounding access to HE. Ultimately, the use of different approaches can help develop a better overview of the issues surrounding access and participation in HE and could be carried out on a much larger scale to include more diverse student cohorts in different geographical locations.

6.7.4. Policy/ Implications

The current findings have a number of implications for WP policy that go beyond outreach activities and knowledge deficit based models of underrepresentation as all students in this study discussed awareness of their own high achievement and the ameliorating potential of education. Students' narratives provide insight into some of the barriers and sources of disadvantage related to their own family background characteristics, schooling and neighbourhood/community that may influence well-documented socio-economic differences in attainment and participation in HE (e.g. HEFCE, 2003; Hoare & Johnston, 2010; OFFA, 2014).

One of the barriers that many students discussed throughout their narratives was the lack of guidance and conflicting advice that they received about university (including advice on university applications) from teachers and family members. These issues represent important barriers that must be addressed as they can influence the options that are available to these individuals and prevent them from attending university altogether (Ball, 2003; Byrom, 2009). Previous research corroborates this, indicating that socio-economically disadvantaged students tend to receive less help during application processes, and have less knowledge of the purposes and requirements of post-sixteen education (Ball, 2003; Connor, 2002). Furthermore, consistent with the current findings, past studies have also found that students from socio-economically disadvantaged backgrounds tend to have parents who are more pessimistic about their children's educational futures (Ganzach, 2000; Kim, Sherraden, & Clancy, 2013). This contrasts from the experiences of more affluent individuals, whose parents are more likely to prioritise education and draw on different types of capital (social, cultural and economic) to secure

the most privileged educational pathways for their children (Bourdieu & Passeron, 1990; McKnight, 2015; Reay et al., 1998). Indeed, while some individuals are protected from downward mobility due to their family background characteristics, the type of school they attend and conferred with advantages that maximise their chances of success throughout their educational trajectories, students' narratives illustrate the various disadvantages and obstacles they had to overcome before applying and being admitted to university (Sullivan, 2000).

To some degree, the barriers that may prevent socio-economically disadvantaged students from accessing HE can be addressed with support and better guidance. However, to effectively mitigate socio-economic inequalities in HE participation and attainment it is important to recognise the ways these inequalities are systematically generated and maintained by social arrangements that are unjust and do not provide all with the same chance of success (Evans & Peters, 2001; Sullivan, 2000). Additionally, the current findings highlight how socio-economic inequalities in HE participation also reflect the long-term negative effects of childhood disadvantage and require early intervention (Chowdry et al., 2013; Crosnoe & Cooper, 2010; Gorard & See, 2013). Such interventions must recognise the role of identity and engagement related factors and take into consideration how these are also influenced by context (Crozier, Reay, et al., 2008; Reay et al., 2009; Stuart, 2012)..

Access programmes, like the Scholar Scheme could play a role in this, by offering students an alternative group to identify with, all of whom seek to attend HE. Future interventions may benefit from understanding how school environment, and peer groups influence whether students outwardly manifest their engagement by wishing to participate in class. For example, one of the students recalled how her teacher privately took her outside of the classroom and told her she would be in a higher set without her classmates knowing about this. She emphasised her appreciation of this as a tacit understanding between them, where the teacher was aware that she was interested in education but did not want others to know about this. Raising awareness of the complexities of engagement, and why students may not show this despite being interested in learning is critical, as research suggests that low levels of class participation have a negative influence on

student-teacher interactions and can affect on-going engagement (Harper & Quaye, 2009; Skinner et al., 2009; Whitton & Moseley, 2014).

Increasingly more research is focusing on engagement, as this is considered to be malleable and highly susceptible to context and interventions (Trowler & Trowler, 2010). Simple changes, like the ways that students are praised, have been found to help buffer adversity, stressors and barriers associated with socio-economic disadvantage (Mueller & Dweck, 1998; Stephens, Brannon, Markus, & Nelson, 2015). There is also a need for interventions that seek to actively include the lived experiences of working-class young people by valuing their identities (Perry & Francis, 2014). Several students described their awareness of teachers perceiving them as members of groups that were less likely to do well or fit in. It is important that future interventions address this and empower disadvantaged students by taking into consideration the ways that these negative group associations make them feel devalued and can negatively influence engagement and act as barriers in their trajectories to university. Additionally, whilst the sample size of this study is limited compared to quantitative studies, it is important to note that two participants described not knowing about university until year 12 and that many of the students described having limited or no career guidance in their decision making processes throughout their educational trajectories. This lack of guidance, and information described by students represent important factors that require further investigation, and recognition by policymakers and HEIs, as it is factors like these, that prevent the widening of access to high achieving students from these groups and suggests that interventions may not be reaching them early enough.

Current interventions and programmes aim to address some of these issues and raise awareness of HE to young people from primary school onwards. As explained in Section 6.2, the Educational Opportunities team at the UoL run a number of these interventions and programmes in addition to the Scholar Scheme, in which the majority of students in this study had taken part and all found to be beneficial. For example, they organise visits to the university and deliver sessions in a university setting. These are described as 'taster sessions' aimed at motivating and inspiring young people to study at university. Student advocates take part in this work to act as positive role models to those

students taking part in these activities and to demystify some of their preconceptions of HE. It is clear that these interventions are essential, and that many of the students that took part in this study would have benefited from these. However, at the same time, the findings from the present study are consistent with previous research suggesting that current interventions aimed at widening access to disadvantaged groups do not go far enough and need to be carried out on a larger scale. Future research is required to inform these interventions. Critically, this is needed to explore the educational trajectories of socio-economically disadvantaged students who do not choose to attend HE, or those that opt to attend less competitive institutions despite attaining the high grades required by more selective universities.

6.8. Conclusion

The transition to HE and adulthood represents a highly formative phase of life, which is particularly influential to students' life chances and opportunities (Aronson, 2008). Exploration of students' trajectories into university suggests that differences in participation and performance in HE relate more to identity related factors (Mathers & Parry, 2009), which influence educational engagement, than low levels of factual knowledge. In particular, this study depicts the ways that environmental, structural factors and psychological constraints from identity can have a cumulative influence on engagement related behaviours. Crucially, psychological constraints related to identity, were largely underpinned by socio-cultural norms, and other peoples' expectations. The extent to which students discussed socio-economic issues varied substantially, even though they were all recruited purposefully based on specific factors related to their socio-economic backgrounds and opportunities. These variations may reflect differences in students' subjective perceptions of social status (Adler, Epel, Castellazzo, & Ickovics, 2000) which could be indicative of their identification or dis-identification with groups (Becker & Tausch, 2014; Ellemers et al., 2002). As such, it is clear from students' narratives, that their educational trajectories and their decisions to attend HE were subject to the influence of a wide variety of personal, social and cultural factors, and frequently fraught with adversity and risk. These findings highlight the importance of providing students with information and guidance about potential career opportunities early so as not to restrict their

aspirations and the opportunities available to them. In providing such guidance, it is critical to recognise that decision-making criteria may be weighted differently by students from disadvantaged backgrounds where attending university is not the 'norm', compared to those from more affluent backgrounds (Maras, 2007). Understanding these complexities, and providing students with support from early stages of their educational trajectories, may help to mitigate the impact of identity related psychological constraints on engagement and decision-making processes. Ultimately, it is critical that such evidence is used to inform practical interventions, as this may represent an antidote to promoting on-going engagement, and widening participation to disadvantaged students in HE (Fredericks, et al., 2004; Perry & Francis, 2014).

CHAPTER SEVEN

7. General Discussion

7.1. Introduction

My main aim in this thesis was to explore socio-economic differences in participation and academic attainment at the University of Liverpool (UoL). As previously discussed, this thesis follows a traditional sequential mixed methods design, where a qualitative phenomenological study (study 3/Chapter Six) was carried out after a quantitative phase of analyses (studies 1-2/Chapters Four and Five). The quantitative studies comprised in this thesis provided orientation that served to inform the phenomenological focus of the qualitative study by depicting existing socio-economic differences in participation and academic attainment at the UoL. However, while the time ordering of these studies is an important part of the mixed methods design, the studies complement one another in other ways too. A central purpose of this chapter is to illustrate the ways in which the use of two different methods is complementary and helps to understand socio-economic differences in participation and academic attainment in greater depth than could be achieved with one method in isolation.

Increasingly, researchers are recognising the benefits of expanding research designs that are rooted in one epistemology into designs that incorporate or interface with other traditions and epistemologies (Mayoh & Onwuegbuzie, 2013). Advocates of mixed methods research cite multiple motivations for mixing methods including: to gain a fuller picture of the phenomenon under study, complementarity, and to enhance the strengths and minimize the weakness of individual methods (Bryman, 1998; 2004). Further, if findings are corroborated across different approaches, then greater confidence can be held in a singular conclusion; if the findings conflict then the research has greater knowledge and can modify interpretation and conclusions accordingly. As such, previous studies recommend the use of mixed method approaches in educational research as a means of providing enhancement or clarification of the results from one method with the results from the other and ultimately conducting more effective research (Johnson & Onwuegbuzie, 2004). Whilst

individually, the quantitative (Chapters Four and Five) and qualitative studies (Chapter Six) comprised in this thesis were underpinned by different epistemological approaches, they are linked by an overarching pragmatic approach. A pragmatic approach was selected purposefully to integrate these mixed method studies, as this approach recognises epistemological differences between the paradigms but allows researchers to draw on the relative strengths of differing methods (Green, 2008).

To integrate the findings and interpretations of mixed method studies following a pragmatic approach, the ways in which the results of these studies converge, and/or diverge from each other is examined and discussed in this chapter and in relation to the objectives of this thesis (Bryman, 2008; Datta, 2008). Firstly, the results of quantitative studies 1 and 2 (Chapter Four and Chapter Five) are summarised alongside each other to facilitate comparison between findings (section 7.2.). By summarising these findings alongside each other and in relation to past research, I sought to address objective 3 of this thesis and depict how the associations between students' socio-demographic and educational background characteristics with participation and attainment vary between different programmes. I then provide an overview of study 3 (Chapter Six). These qualitative findings are recapitulated separately from the findings of the quantitative studies, because this followed an independent yet complementary line of inquiry. Hence, the ways these qualitative findings complement and/or diverge from the quantitative findings is discussed. However, going beyond this, I also discuss the unique information that the pragmatic mixed method findings produce over and above single methods. I finalise this chapter by reflecting on the strengths and weaknesses of this research, the overall implications of findings, and directions for future research.

7.2. Quantitative Differences in Participation and Attainment

In the following sections, I discuss the findings of Chapters Four and Five in relation to the objectives of the studies comprised within these. Overall, these two 'positivist' quantitative studies aimed to examine the associations between students' socio-demographic and educational background characteristics with participation and academic attainment (at school and university). These studies illustrate the use of large institutional

datasets to explore these differences and to guide the use of contextual data as a WP dimension in university admissions policy.

As explained in Chapter One, the use of contextual data has been recommended as a method of addressing the well-documented limitations associated with the predictive validity of school grades (Chowdry et al., 2013; Gorard, 2005; 2008). By placing academic attainment into the context in which grades were achieved, contextual data could be used to identify academic potential that is not reflected in students' grades and thus help to select students more fairly in university admissions processes (HEFCE, 2014; Mullen, 2011; The Sutton Trust, 2010c). However, though the use of contextual data in university admissions processes is increasingly encouraged, research on this and relationships between contextual background characteristics and achievement in general is highly limited (Bradshaw et al., 2007; Gorard, 2008; SPA, 2013; Zimdars, 2007). Studies 1 and 2 sought to provide insight into this by investigating the extent to which students' contextual background characteristics influence academic /degree performance. Further, to promote fair access to HE, it is also important to identify and address inequalities in participation. Hence, both studies also explore differences in the distribution of students at the UoL (based on their socio-demographic and educational background characteristics).

Study 1 (Chapter Four) focussed on students on three-year programmes to investigate differences in participation and attainment based on their socio-demographic and educational background characteristics. Moreover, whilst the potential to systemically mitigate socio-economic inequalities in access to HE using contextual data is greatest in selective programmes such as medicine, a dearth of research has explored this (Do et al., 2006; Garlick & Brown, 2008; Hilton & Lewis, 2004). Recognising these limitations, the trends in participation and attainment of medical students specifically based on their socio-economic and demographic characteristics were examined in study 2 (Chapter Five). Hence, these two studies address objective 1 of this thesis and provide insight into:

- The associations between UoL students' socio-demographic and educational background characteristics with participation and attainment (at school and university). (Objective 1)

In the current chapter, the results of these two quantitative studies are recapitulated alongside each other to depict the ways that their individual findings confirm and/or differ from one another. These summaries are also structured this way to help depict how a different level of disaggregation can help to understand differences in access and participation between programmes and refine the targeting of students with academic potential who are currently underrepresented at the university. Additionally, whilst studies 1 and 2 centred largely on attainment, this chapter describes differences in participation that were identified within and between these studies in greater detail and in relation to past research. Thus, in the following sections the commonalities and differences in the trends and associations identified in studies 1 and 2 with regard to school grades, IMD, POLAR 3, school type, school performance, sex, and ethnicity are summarised and discussed in relation to past research.

7.2.1. School Grades: UCAS Tariff Points

Objective 2 of this thesis was to investigate the extent to which school grades in isolation are representative of students' 'true academic potential' given the importance of these in determining entry into HEIs in the UK (Chowdry et al., 2013a; HEFCE, 2013a; Hoare & Johnston, 2010; Kirkup et al., 2010; McManus, 2003; 2008). This involved analysing whether school grades (based on UCAS tariff points) were individually associated with students' final attainment at university, and subsequently comparing group differences in students' attainment at school to group differences in students' university attainment. As explained previously, this is important to identify contextual effects on prior attainment and inform the use of contextual data as a WP dimension in university admissions processes. For this reason, students' school grades were used as both an outcome and predictor variable in both studies. This section focuses on entry-level differences in the academic attainment of students based on their contextual background characteristics. In subsequent sections the associations between each of the contextual background characteristics that were included in analyses in both chapters with regard to participation/attainment are discussed.

In three-year programmes, large entry-level differences in academic attainment were identified between students' from different school backgrounds, socio-economic backgrounds (IMD), neighbourhoods with different levels of participation in HE (POLAR 3), different ethnicities, and between males and females. With the exception of the IMD and POLAR 3, all of these variables were also found to be significantly associated with university attainment. However, whilst many of the associations between variables and school grades remained statistically significant by final year at university, the strength of these associations often weakened, and in some cases contrasted from the entry-level differences that were observed.

In the five-year medical programme, significant associations were identified between entry grades and three variables: school performance, school type and ethnicity. In contrast to the findings of study 1, sex, IMD and POLAR 3 were not associated with entry-level differences. However, as found in study 1, the differences that were observed between groups of medical students based on their background characteristics narrowed and the strength of associations between variables were weaker in HE attainment compared to entry-level differences.

The findings from both studies are consistent with previous research indicating that school grades are strong and significant predictors of future academic performance (e.g. Crawford 2014; HEFCE, 2013a; Hoare & Johnston, 2010). This research also corroborates previous studies that have identified correlations between school grades and various background variables, and found that even after controlling for school grades; background variables can continue to predict outcomes in attainment (McManus, Dewberry, et al., 2013). Additionally, compared to the group differences that were identified in relation to school grades (based on socio-economic and educational background characteristics), group differences in university attainment were generally narrower and in some cases contrasted to the trends that were observed at entry-level. Thus, considered altogether, these findings support the notion that school grades are good, albeit limited as predictors of HE attainment (Connor et al., 2004; HEFCE, 2013a; 2014; Kirkup et al., 2010; McKenzie & Schweitzer, 2001; McManus, Wood, et al., 2013).

Studies 1 and 2 (Chapter Four and Chapter Five) both revealed entry-level differences in attainment between groups, which narrowed at university. However, the background variables that predicted these differences varied between these studies. This was expected, as previous research indicates that associations between performance measures, attainment and progression vary by both subject and institution (Crawford, 2014; HEFCE, 2014; Singleton, 2009; Smith & Naylor, 2001). These associations may vary between three-year degree programmes and the medical programme, as these attract different student populations (Gallagher et al., 2009; Singleton, 2010a). Additionally, validation of school grades as predictors of future outcomes is more difficult to obtain when most students gain consistently high marks (McManus et al., 2008; McManus, Wood, et al., 2013). This appears to be the case with students at medical school, where it has been reported that nearly half of medical school applicants currently gain maximum marks at A-level, (compared to one in seven of all university applicants) (McManus, et al., 2008; Gallagher et al., 2009). Despite this, a number of studies have found strong support for using measures of educational attainment, particularly A-levels, in the selection of medical students (McManus Wood, et al., 2013; Tiffin et al., 2012). For example, McManus, Dewberry et al (2013) found that school grades were significantly associated with HE attainment of medical students, where those students with grades of AAB, ABB and BBB performed less well than those with AAA.

7.2.2 Area-Based Measures of Disadvantage

No other case studies have been identified that investigate the use of postcode-based indicators of disadvantage, along with other contextual background characteristics for discerning inequalities in participation and attainment between groups of students at an English Russell Group University. These differences were explored using two indicators of locational context the Index of Multiple Deprivation (IMD) and Participation of Local Areas (POLAR 3).

The POLAR 3 classification was devised by the Higher Education Funding Council for England (HEFCE) to estimate how likely young people are to go into HE according to where they live at the age of 15 (HEFCE, 2010; 2014; 2015). Whilst the primary purpose of

this measure is to capture educational advantage (HEFCE, 2014), the IMD is a composite measure of deprivation, which identifies multiple facets of total deprivation in addition to education. This covers data pertaining to seven different dimensions of disadvantage, namely: Income, Employment, Health and Disability, Education, Skills and Training, Barriers to Housing and Services, Living Environment and Crime (Flouri et al., 2013). Thus, socio-economic inequalities in school/university attainment were identified based on these two indicators, as were inequalities in the distribution of students.

In three-year degree programmes, the proportion of students from the most socio-economically deprived backgrounds (IMD quintile 1) was 2.17 times lower than the proportion of students that came from backgrounds that were least deprived (quintile 5). With regard to POLAR 3, there were approximately 3 times less students from neighbourhoods with low levels of participation (LPN) than those from neighbourhoods with high participation (HPN). Positive associations were identified between both indicators (POLAR 3 /IMD quintile) and UCAS tariff points. Hence, students from the least deprived areas and HPN entered university with the highest UCAS tariff points and students from LPN, and the most deprived areas entered with the lowest UCAS tariff points. Though, differences in attainment between groups narrowed by final year at university, and were not significant based on the POLAR 3 classification, students from the most deprived areas (IMD quintile 1) were still slightly more likely to achieve degree classifications of 2:2 or below (significant compared to quintile 4).

The inequalities in participation among medical students were greater than those observed between students on three-year degree programmes. In terms of deprivation, there were 3.27 times less medical students from the most deprived areas (quintile 1), compared to those students coming from the least deprived areas (quintile 5) (compared to 2.17 in three year programme). In turn, there were 4.7 times more students from HPN compared to students from LPN. Though students from the most disadvantaged areas entered university with the lowest UCAS tariff points, the relationships between IMD/POLAR 3 and UCAS tariff points were not significant. These differences in entry-level achievement decreased further by fourth year and were not significant by the final year of the medical programme.

The findings from both of these studies provide further evidence of the on-going socio-economic inequalities in HE participation (e.g. Crawford et al., 2014; HEFCE, 2014). Consistent with previous research, socio-economic inequalities in participation were much greater between medical students than students on three-year programmes. Indeed, a number of studies indicate that socio-economic differences in participation are more prominent between medical students compared to other UCAS programmes (Deakin, 2011; Garlick & Brown, 2008; Mathers & Parry, 2009). According to Gallagher et al, (2009) in 2006, 34.4% of those accepted into medical school were from higher managerial and professional backgrounds, compared to the 10% of students that came from lower socio-economic backgrounds (from NS-SEC 4-7). In part, this is because the medical programme attracts a greater proportion of applications from more affluent backgrounds (applicants= 25.8%) compared to the proportion of affluent applicants to other UCAS programmes (applicants=16.5%) (Gallagher et al., 2009). Notwithstanding, previous studies have found that even when other factors are controlled, the odds of being accepted at medical school appear to be lower for applicants from lower social classes compared to more affluent applicants (along with ethnic minority groups and those that had attended a further/higher education college) (Arulampalam et al.,2011; Garrud, 2011; Mathers & Parry, 2009; Tiffin et al., 2012).

Socio-economic differences in attainment are well documented, where the poorer academic qualifications obtained by a large proportion of students from disadvantaged backgrounds is widely viewed as the main cause of their lower representation in HE (Chowdry et al., 2013b; Feinstein, 2003; Stevenson & Lang, 2010; Strand, 2014). These differences were evident in the entry-level differences of students on the three-year programmes, consistent with previous studies (e.g. Hoare & Johnson 2010; Smith & Naylor, HEFCE, 2013a). However, this was not the case in the five-year medical programme, where there were no significant entry-level differences based on IMD or POLAR 3. Similarly, Tiffin et al. (2012) did not detect significant socio-economic differences in entry-level attainment between medical students. They indicated that only 4.5% of entrants had reported being from lower socio-economic groups across 22 medical schools in the UK. However, because of these small numbers, they suggested that the study might have lacked power to detect

statistically significant differences between categories. Whilst, this could play a role in the present research, overall findings can also be attributed to the fact that there is consistently less variability between the school grades of students on the medical programme, as this is highly oversubscribed and competitive, attracting a high proportion of students with top marks (McManus et al., 2008; McManus, et al., 2013; McManus, Woolf, et al., 2013). Furthermore, these factors could also partly explain why there are fewer entrants to medical schools from less affluent socio-economic backgrounds, as lower school grades are considered the main barrier at entrance to these students (Chowdry et al., 2013a; Gorard & See, 2013).

McManus, Wood, et al., (2013) conceptualized prior attainment and knowledge within medicine and medical science as an 'academic backbone'. They argued that medical students' understandings of diseases are built upon their understanding of basic biological knowledge acquired in Advanced level (A-level) and GCSE level Biology and Chemistry. Furthermore, they suggest that knowledge acquired at these higher levels of education is dependent upon prior understanding of more basic scientific principles and arithmetic. Based on this theory, it could be argued that the absence of entry-level differences identified between medical students from different socio-economic backgrounds could explain why there were no significant differences between them at university and be indicative of these students having a strong 'academic backbone'.

In contrast, a number of studies focussing on three-year programmes have documented similar socio-economic differences in attainment, at entry and at university to those differences identified in Chapter Four. For example, Crawford (2014) found that students from the most deprived backgrounds were 3.4% less likely to graduate with a first or 2:1 than those from the least deprived backgrounds. In addition, students from the most deprived socio-economic quintile were also more likely to drop out of university and complete their degrees. Such findings have been attributed to differences in a range of factors including: family support, family history in HE (Archer et al., 2012; Delaney et al., 2011; Filippin & Paccagnella, 2012; McIntosh & Munk, 2009; Schildberg-Hoerisch, 2011) term time working (Dolado & Morales, 2007; Moreau & Leathwood, 2006a; Salamonson et al., 2012) , social, cultural and economic capital (Archer et al., 2012; Bourdieu,

1984; Crawford, 2014; HEFCE, 2015) and differences in expectations (Pampaka et al., 2012; Thomas, 2001). In turn, these associations are frequently interpreted in relation to psychosocial and identity factors (Crozier & Reay, 2008; Stuart, 2012). For example, the extent to which students feel supported, and feel they belong at university have been identified as key determinants of students' educational outcomes (HEFCE, 2015).

POLAR 3 did not predict significant differences in final year attainment in either study, even though students from high participation neighbourhoods (HPN) entered three year programmes with significantly higher UCAS tariff points than students from low participation neighbourhoods (LPN). HEFCE (2014) also found little variation in academic performance when POLAR quintiles were examined together and entry grades were taken into account. However, they also found that in particular students from the areas with lowest participation rates (POLAR quintile 1) performed less well and achieved lower proportions of high degree classifications (HEFCE, 2014).

Though the IMD and POLAR 3 depict similar trends in both studies, differences in findings were anticipated as these measures capture different forms of disadvantage (Broecke & Nicholls, 2007; Feinstein, 2003; Harrison, 2011; Lupton, 2004). Whilst the POLAR3 classification has been found to correlate with other measures of disadvantage (HEFCE, 2010; 2014), correlations vary between wards in the degree to which they are classed as being disadvantaged. This is attributed to the notion that, unlike other measures of disadvantage, the primary purpose of POLAR3 is to capture educational disadvantage in the form of a young person's likelihood of progressing into HE based upon where they live. Findings from these studies support the use of POLAR 3 in conjunction with other measures of disadvantage. HEFCE (2014) recommends this, highlighting that the POLAR classification is not necessarily an appropriate substitute for other measures of disadvantage, and users of the classification should bear this in mind.

7.2.3. Educational Background

Chapters Four and Five examined how students' educational background characteristics were associated with participation and academic achievement. Specifically, the educational background characteristics that were included in analyses were the type of

school students attended prior to University and the average performance of students at that school. School types were divided into five categories: independent schools, state grammar schools, state comprehensives, sixth form colleges and a category labelled state other (includes voluntary aided schools, voluntary controlled schools, technical colleges and adults colleges). School performance was represented in both studies by the overall percentage of students gaining 5A*-E or more at A-levels or their equivalent at students' schools. Based on this, a binary classification was created where "high" performing schools, represented those schools where 82.5% of students and above achieved 5A*-E or more at A-level or their equivalent. This threshold was assigned based on the national averages reported in Department for Education (DfE) performance tables (www.education.gov.uk/schools/performance/). School type and school performance measures are frequently used to identify educational disadvantage (Connelly et al., 2014; Crawford, 2014; HEFCE, 2014; McNab, et al., 2002; Smithers & Robinson, 2005; Smithers & Tracey, 2003; Stevenson & Lang, 2010).

7.2.3.1. School Type

The majority of students on three-year degree programmes had previously attended comprehensive schools and sixth form colleges. The type of school that students attended was found to have a significant and differential impact on school achievement compared to university achievement. Students who attended grammar schools and sixth form colleges came into university with the highest grades (UCAS tariff points). However, these findings were not reflected in university attainment, as students from comprehensive schools achieved the highest average final year grades. Conversely, students from independent schools and students from the category of schools labelled 'state other' achieved the lowest average grades at university compared to students from other school types. The difference was greatest between students from comprehensive schools and students from independent schools who were found to be 40% less likely to achieve a good degree (OR= 0.60; 95% CI=0.48-0.77).

Inequalities in the distribution and academic attainment of students based on school type differed substantially between the three-year degree programme and the

medical programme. Approximately 50% of medical students had previously attended comprehensive schools and sixth form colleges, 25% less than in three year programmes. This difference was largely due to a higher proportion of medical students who had previously attended independent schools (21%) compared to the proportion of independent school students that undertook one of the three-year programmes (12%). Though the proportion of students from independent schools in the medical programme is high, this is comparatively lower than the national average across medical schools in the UK (26.8%) (Gallagher et al., 2009). In part, this is because the greatest proportion of applications to medical schools across the UK comes from independent school students (Gallagher et al., 2009). However, past research suggests that even after controlling for other variables, attending fee-paying schools raises the probability of being accepted onto medical degree programmes by between 1-3 percentage points compared to attending a comprehensive school (Arulampalam et al., 2011; McManus et al., 1995; Powis et al., 2004).

Similar to the findings observed in three-year degree programmes, students from comprehensive schools and sixth form colleges entered medical school with the highest grades. School type differences persisted between students in the fourth year of medical school where independent school students were more likely to achieve lower averages compared to students from all the other school types. However, this association was not significant when all variables were incorporated into the model. Interestingly, whilst students from the category 'State (other)' had entered university with the lowest grades, they achieved the highest grades out of all the medical students in the data cohort.

The findings from these studies contrast with previous research (HEFCE, 2003; 2013a; Hoare & Johnston, 2010; Smith & Naylor, 2005), where students from independent schools typically enter with higher grades. This was not the case at UoL as these students did not have the highest entry grades. However, consistent with past research, once at university, students from independent schools achieved lower results than comprehensive school students (though differences were not significant between medical students once all variables were incorporated into the model) (Crawford, 2014; Hoare & Johnston, 2010). School type differences were particularly prominent in three-year programmes, where

independent school students were more likely to perform less well than comprehensive school students despite entering university with higher grades.

A number of studies have found that for a given set of A-Level results, the degree performance of students who attended state schools was higher compared to those who attended private schools, when other factors were held equal (HEFCE, 2003, 2005; 2014; Hoare & Johnston, 2010; Smith & Naylor, 2005; The Sutton Trust, 2010c). For example, Crawford (2014) found that differences in university outcomes that remained after accounting for background characteristics and prior attainment were largest between state and private school students. Specifically, those from independent schools were 2.6% more likely to drop out, 6.4% less likely to complete their degree and 10.3% less likely to graduate with a first or a 2:1 than pupils from non-selective community schools.

Researchers have postulated a number of reasons for this so called 'school type effect', focussing primarily on the advantages of attending independent and grammar schools (Ogg et al., 2009; Smith & Naylor, 2001). These advantages are said to influence differential attainment, and to a large degree differences in HE participation. Advantages include: the quality of education students receive, better resourcing, the type of subjects on offer and the teachers' qualifications (Darling-Hammond, 2000; Ehrenberg & Brewer, 1994; Smithers & Robinson, 2003). Ogg et al., (2009) emphasise the importance of teachers' qualifications as a key factor, indicating that the greater the qualifications of a teacher, the greater the value added to students' test scores. They refer to this 'teaching effect' as a primary driver of differences in degree class by school type at the University of Oxford. Additionally, according to Hoare & Johnson (2010) teachers at private schools place a greater focus on preparing students for university. Crawford (2014) offered two alternative arguments. Firstly, suggesting that whilst independent school might be more successful at preparing students for GCSE and A-level exams, they may be less effective at preparing students for the methods of study required at university. Secondly, that unlike pupils from independent school, those attending state schools, may not have reached their potential at school. Hence, once the playing fields are levelled at university, when comparing students with the same prior attainment, pupils from non-selective community schools are able to overtake their independent school counterparts. However, it is

important to note that those state school students from disadvantaged backgrounds achieving the grades to enter university that are included in these cohorts are still proportionally a minority and that many never reach their potential at school (HEFCE, 2013a; 2013b;2014; OFFA, 2014; The Sutton Trust, 2004; 2015).

Though school type differences are well documented, the advantages/disadvantages of attending independent schools were not reflected in the attainment of medical students, at entry level or at university. This may also be attributed to the fact that there is comparatively little variability between students on this programme, and it is therefore difficult to measure differences in HE achievement based on this. Indeed, the effect of school type on academic performance at the most selective HE Institutions is unclear and this may also be the same for the most selective programmes (HEFCE, 2003; HEFCE, 2013a). For example, in a study at the University of Cambridge, Parkes (2011) compared the distribution of students' final results by school type and did not identify any significant differences.

7.2.3.2. School Performance

With regards to school performance, most students on three-year programmes had previously attended schools that were classified as 'high performing ' according to the DfE national averages (83%). Students from low-performing schools entered three-year programmes with lower grades than students from high performing schools. However, once at University students from low performing school achieved slightly higher final averages than their counterparts from high-performing schools.

In comparison to the three-year programmes, the proportion of students who had previously attended high performing schools in the data cohort of medical students was higher (89%). Students from high performing schools entered medical school with higher grades than students from low performing schools. Additionally, though differences were not significant, these students achieved slightly higher averages at university too.

Despite the overlap between school type and school performance and the fact that both have similar benefits in relation to school attainment, results relating to school

performance are more difficult to reconcile with past research, given that findings have been largely inconsistent (HEFCE, 2003; 2013a; 2014; Hoare & Johnston, 2010; McManus, Dewberry et al., 2013; Smith & Naylor, 2005). Indeed, though there is evidence that both students on classified degree programmes, and medical students from schools with higher average prior achievement perform less well than students from low performing schools once at university despite entering with higher marks (Garlick & Brown, 2008; Jonathan Mathers & Parry, 2009; Kieran Seyan et al., 2004) other studies have found that school performance has no significant impact on HE achievement (HEFCE, 2003; 2014). Researchers have attributed these disparities to differences in A-level points and subject area (HEFCE, 2003; Peers & Johnston, 1994; Singleton, 2010a). Recent studies confirm this, indicating that the association between school performance and university attainment is conditional on prior attainment (HEFCE, 2014; Crawford, 2014). For example, Crawford (2014) found that students from the worst performing schools were likely to outperform those from the best-performing schools, but only when prior attainment was taken into consideration (HEFCE, 2014; Crawford, 2014).

7.2.4. Socio-demographics

Significant differences in academic attainment and participation have been documented between ethnic groups and between males and females. Though these characteristics were not the central focus of this research, these were included because they are considered to be influential and are frequently discussed with regards to widening participation (McManus et al., 1995; McManus, Woolf, et al., 2013). These demographic characteristics were self-reported by students during the UCAS university application process. Students' ethnicities were categorised as either: White, Asian, Black, Chinese, Mixed and Other.

7.2.4.1. Sex

The data cohort of students on three-year programmes had a higher proportion of female students than male students (59% versus 41%). Female students had significantly higher entry grades than male students. Sex differences in attainment persisted at

University, where female students were approximately 50% more likely to achieve a good degree than male students.

Female students also significantly outnumbered male students on the medical programme, representing 65.6% of the data cohort. In contrast to the entry-level differences identified between males and females in three-year programmes, females had slightly higher school grades than males but these differences were not significant. However, once at University, males achieved slightly (but significantly) lower averages. These differences in HE attainment between males and females on the medical programmes were not as great as the differences between males and females on three-year degree programmes.

Though women have historically been under-represented in HE, both studies are consistent with previous studies indicating that rates of participation are now greater for females than males (Broecke & Hamed, 2008; Goldthorpe, 2000; Gallagher et al., 2009). The widening of this gap is associated with differences in attainment between males and females. These differences are well documented from early stages of students' educational trajectories, with females consistently achieving higher grades than males (Richardson, 2008). For example, in 2007, 65% of girls achieved 5 + A*-C GCSEs or equivalent compared to 55.8% of males. Furthermore, females are more likely to sit A-levels, and are more likely to pass and achieve higher A-level grades than males (Broecke & Hamed, 2008). This explains why females typically enter university with higher grades than males. However, whilst entry-level differences were evident in three-year programmes, with females entering with higher grades, this was not the case in the medical programme. In part, this could explain why sex inequalities in participation were greater in the medical programmes, as this may suggest that the proportion of male applicants achieving the necessary entry requirements was lower. However, a higher proportion of applicants to medicine are female compared with other UCAS programmes, (Gallagher et al., 2009). The relative over-representation of females at medical schools is considered a contentious issue, particularly as sex inequalities in participation appear to be widening further (Tiffin et al., 2012). According to McKinstry (2008) in the UK, most of all doctors are forecast to be women by 2017. Some have argued that this disparity could be problematic to future work force

planning, as women tend to take up posts in specialties perceived as more family friendly, and are more likely to work part time (Tiffin et al., 2012).

In both studies, females performed significantly better than males at university. This is consistent with a number of studies, indicating that even when entry grades are held equal, females outperform males in their academic achievement in HE (Dayioğlu & Türüt-Aşik, 2007; Sheard, 2009). This was not always the case, and contrasts from past studies where males were up to 50 more likely to achieve first class degrees (e.g. McCrum, 1996; Mellanby et al., 2000). The underperformance of males compared to females and their differential rates of participation in HE require further investigation, particularly as these inequalities appear to be widening. Additionally, it is important to acknowledge and further explore how differences in participation and attainment in HE between males and females also appear to vary by age, and between subjects, as these also have differential effects on labour market outcomes (Hu & Wolniak; 2013; Richardson & Woodley, 2003).

7.2.4.2. Ethnicity

The data cohort on the three-year programmes consisted predominantly of students that had self-classified themselves as White (91.5%). There were significant differences in the entry- level grades of students from different ethnic groups and at university. However, trends in entry-level attainment and university attainment varied between ethnic groups. For example, Black students entered university with the lowest school grades and achieved the second lowest average marks at university after Asian students, even though Asian students had entered university with the second highest average attainment from any ethnic groups. Compared to White students, Asian students and Black students were significantly less likely to achieve good degrees.

A higher proportion of medical students were from ethnic minority groups in comparison to the proportion of students from ethnic minorities in three-year programmes, though the majority were also White (78.5%). In particular, this data cohort had a higher proportion of Asian Students (13.1%). Whilst there were no significant differences in the entry grades of students from varying ethnic groups, significant

differences were identified between ethnic groups in their attainment at university. Overall, students who classified themselves as White were more likely to achieve a higher average at fourth year than students of other ethnicities, though they did not enter university with the highest grades.

Though ethnic inequalities in HE participation have improved, ethnicity continues to be discussed in the context of WP, particularly as non-white students perform less well in classified degree programmes, at medical school, and in post-graduate examinations (Gorard et al., 2006; Richardson, 2010; McManus, Woolf, et al., 2013). Differences in the academic attainment of students from different ethnic groups have been identified at various stages of their educational trajectories. For example, these differences have been identified in the results students obtain in their GCSEs taken at the end of compulsory schooling when they are 16 years old (Strand, 2014). Attainment in these examinations has been found to be highest for students of Indian origin followed by White British students. Students from Bangladeshi, Pakistani or Black backgrounds have been found to perform significantly less well in different school examinations (Broecke, 2007; Richardson, 2008; Strand, 2014). Such differences in entry-level achievement between ethnic groups were significant in the three-year programme, where Black students entered with the lowest grades. However, this was not the case in the medical programme.

According to McManus, Woolf, et al (2013), ethnic, and sex differences in performance of medical students show some similarities. They found that males and ethnic minorities underperformed at GCSE/O-level relative to A-levels and at subsequent clinical assessment. These findings could help explain why in the medical programme there were no significant differences in entry-level attainment between males and females or ethnic groups as UCAS tariff points are based on A-levels. Further, this could also explain why attainment differences between males and females and different ethnic groups were significant at university, though they explain that ethnic minority underperformance is more widespread in medicine. Similarly, in the three-year programmes, students from some ethnic minority groups were significantly less likely to achieve 'good degrees' than white students. Such findings have been documented in numerous studies comparing 'degree attainment' or the odds students have of achieving 'good degrees' (Broecke &

Nicholls, 2007). For example, according to Richardson (2010), the odds that a White student has of being awarded good degree (a 2.1 or first class) are twice that of an Asian student and three times that of a Black student. Indeed, with regards to degree performance, White British students on average have been found to achieve higher grades than students from other ethnicities, even when entry level grades are held constant (Broecke & Nicholls, 2007; HEFCE, 2014; Richardson, 2011; Jacobs, 2008).

7.3. Connecting Divergent Methods

The findings of the quantitative studies discussed in the preceding sections depict associations between students' socio-demographic/educational background characteristics with both participation and academic performance at the UoL. While these studies were needed to quantify differences in participation and attainment based on individual and structural factors, they do not provide insight into the factors that underpin these differences. A further caveat associated with these quantitative studies and the positivist epistemology underpinning them is that they do not recognise the subjectivity of lived experience, or provide insight into the reasons why individual and structural factors may be associated with socio-economic differences in participation and performance (Crotty, 1998). Conversely, one of the strengths of qualitative studies lie in the knowledge these provide of the dynamics of social processes, social context, and in their ability to answer 'how' and 'why' questions in these domains (Mason, 2006). Study 3, comprised in Chapter Six, followed a qualitative approach to address these 'why' questions, and thus gain a more in-depth and nuanced understanding of the factors that may underpin differences in the educational outcomes of socio-economically disadvantaged students at the UoL.

Whilst understanding the factors that affect students from disadvantaged backgrounds and their attainment once at university is undeniably important and requires further exploration, a very limited number of studies were found that focussed specifically on the educational trajectories of students from disadvantaged backgrounds at Russell Group Universities (Crozier et al., 2010; Forsythe & Furlong, 2003). Various studies corroborate this and discuss the need for qualitative research focussing on individual's educational trajectories to university (Byrom 2009; Mathers & Parry, 2008 ; Mcharg et al.,

2007). Further, centring on students experiences' during the formative period between primary school and HE is important to identify sources of educational disadvantage that may affect socio-economic differences in participation and attainment. This is also critical as a means of informing WP outreach activities aimed at levelling these playing fields (Ball, 2003). Thus, underpinned by phenomenology, the qualitative study comprised in this thesis (Chapter Six) sought to explore the ways in which disadvantage is experienced, and may affect individuals throughout a formative time period from primary school to HE. More specifically, this focussed on the factors that students themselves perceived to be influential, differentiating factors functioning as barriers and facilitators, that affected them in their educational trajectories. Overall, this qualitative study addressed the three objectives of this thesis that are listed below by providing insight into:

- Factors that may underpin socio-economic differences in participation and attainment (objective four)
- Commonalities and differences in the factors that students from socio-economically disadvantaged backgrounds perceive to be influential throughout their educational trajectories (objective five)
- Barriers and facilitators that emerge throughout the educational trajectories of students from socio-economically disadvantaged backgrounds from primary school to HE (objective six)

In the following paragraphs, I provide an overview of this final study (Chapter Six). This is recapitulated separately from the first two studies, because as explained previously, this followed an independent yet complementary line of inquiry to the quantitative studies that were discussed in the preceding sections. Following a pragmatic approach to integrate these mixed method studies, I highlight the ways that the individual findings of this qualitative study complement, and/or diverge from quantitative studies 1 -2.

7.4. Qualitative Findings

The theoretical perspective inherent in the final study comprised in this thesis was phenomenology, as this was considered to be the most appropriate method for clarifying the knowledge and subjective experiences of students' throughout their trajectories to

university. Phenomenology contrasts from the positivist epistemology underpinning the studies in Chapters Four and Five, which focus on objective measurable associations between variables. In particular, this approach refrains from identifying a causal hypothesis, and helps question reality without taking 'knowledge' for granted (Berger & Luckmann, 2011; Moustakas, 1994; Schutz & Luckmann, 1973). Following this approach, I carried out semi-structured interviews with thirteen full-time students from socio-economically disadvantaged backgrounds, to identify commonalities and differences in their stories, and in the factors that they perceived to be influential throughout their educational trajectories.

In examining students' narratives, and trying to identify commonalities as well as differences, two main themes emerged from the data, namely: educational engagement and identity. These themes did not arise in students' accounts as fixed characteristics but rather as, fluid, multi-dimensional constructs that were influenced by a number of external factors, including students' personal and familial circumstances. Throughout the following sections, I discuss these themes, delineating these complexities in relation to the social and cultural contexts in which experiences are embedded (Bliuc et al., 2011; Hogg & Smith, 2007; Jackson, Dempster, & Pollard, 2015). This is critical, as context must be considered in order to understand the role of identity and engagement throughout students' trajectories to University. These themes, their constituent sub-themes and their interrelationships are described in relation to the current evidence base as a means of exploring their significance to the issues under discussion. In describing these findings, I highlight how they are complementary or contrast from the findings of the quantitative studies.

7.4.1. Educational Engagement

Despite growing interest, there is on-going debate around the definition of educational engagement (Trowler & Trowler, 2010; Whitton & Mosseley, 2014). This is frequently defined in terms of the time and effort that students devote to educationally purposeful activities (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008), placing the onus on the individual learners themselves as "agents in discussions of engagement" (Coates, 2005, p.26). In this study, educational engagement is seen as being more than just involvement or

effort in educational activities, and also including affective and cognitive dimensions. The importance of these dimensions was emphasised by Harper and Quaye (2009) who argue that engagement requires feeling and sense-making as acting or participating without feeling engaged is just compliance. Hence based on this, and drawing from the literature educational, engagement was theorised as being a multi-dimensional construct that included cognitive, affective and behavioural dimensions (Fredricks et al., 2004; Harper & Quaye, 2009). These different dimensions were reflected within the three sub-themes of engagement that were identified in students' narratives: class participation, attendance and decision-making processes.

According to Trowler (2010), each of the three dimensions of engagement has a 'positive' and 'negative' pole with non-engagement/disengagement (apathy/withdrawal) in the middle. They clarify that the terms 'positive' and 'negative' do not denote value judgments, but rather reflect compliance with expectations and norms that are widely perceived as being productive, and contrasts from behaviour that challenges, confronts or rejects, which is perceived in the literature as being counterproductive. These polarities are captured in the three sub-themes identified across students' narratives, where individual students in some cases discuss being positively engaged in some regards, and/or negatively engaged or disengaged (withdrawn, apathetic) in others.

7.4.1.1. Class Participation

Most students described differences between themselves and students who they perceived displayed high levels of behavioural engagement in terms of participating actively in class. These students often described being interested in learning despite this and attributed low class participation to being more quiet or introverted, in contrast to the more 'chatty' 'upbeat' or 'extroverted' students that they perceived were treated more favourably by teachers. In turn, students that participated actively in class, by answering questions and engaging in different activities, described an awareness of how teachers perceived this positively, and suggested that as a result, others saw them as 'intelligent'. These findings are consistent with research conducted by Skinner et al. (2009) who found that teachers are more likely to provide support to students who demonstrate higher levels

of class participation. They suggest that this is because students who do not participate actively in class are more likely to be perceived as being 'less engaged', apathetic and even bored. Additionally, teachers are more likely to rate those students that they have closer/more positive relationships with as demonstrating increased academic skills (Lee & Reeve, 2012; Pianta & Stuhlman, 2004). Thus, even though students may be interested in learning, these processes are often internal, meaning that the degree to which they are perceived as being engaged may not be recognised by others and influence how they are treated and judged in potentially negative ways (Harper & Quaye, 2009; Trowler, 2010; Whitton & Moseley, 2014). Recognising these challenges is critical, particularly, as student teacher relationships are said to have an influence on long-term student achievement and behaviour outcomes (Gietz & McIntosh, 2014). A study by HEFCE (2015) highlights the effects of these relationships (with institutions and educators) on students' educational outcomes at university, indicating that if students do not have a good relationship with their institution and academics, this can lead to disengagement, dissatisfaction, lack of motivation, lack of productivity and possible withdrawal. These issues require attention as they may mediate socio-economic differences in students' educational outcomes, including differences in academic attainment like those observed in the quantitative studies comprised in this thesis (Bowes et al., 2013; Trowler, 2010).

A number of studies document the influence of the social behavioural context on educational engagement and academic achievement (Archer et al., 2012; Brewster & Bowen, 2004; Fredricks et al., 2004; Furrer & Skinner, 2003; Klem & Connell, 2004; Trowler, 2010). This was evident from students' narratives, and frequently discussed in the context of their school environments and the peer groups that they associated with as this influenced their educational engagement in various ways, including the degree to which individuals participated actively in class. The difficulties students discussed in relation to their school environment/peer groups reflect some of the disadvantages that may contribute to the lower average attainment of students from socio-economically disadvantaged backgrounds. Past research corroborates this, indicating that educational disadvantage can arise from attendance at schools that lack not just material resources, but also enthusiasm, experience and advice to support university applications (Breen &

Jonsson, 2005; Hoare & Johnston, 2010). The lack of collective valuing of academic achievement from student peers described by most individuals in their narratives is also said to be associated with schooling and has been previously described as an educational disadvantage (Bradshaw et al., 2007). Conversely, as discussed throughout this thesis, attendance at fee-paying schools in particular, is associated with various advantages that can contribute to students' higher average attainment (Ogg et al., 2009). Hence, these qualitative findings are complementary to the quantitative studies because they illustrate some of the factors related to schooling that may influence differences in final attainment at school and subsequently participation in HE. However, in a way these findings also contrast from quantitative findings, because despite the barriers and disadvantages that were described by students in relation to their schools and background, they all achieved high grades and were successfully admitted to the UoL.

Students' narratives provide insight into some of the factors that helped them overcome barriers and beat the odds against them before applying and being admitted to university (Sullivan, 2000). For example, though students are less likely to participate in environments where investing in education is stigmatised and perceived negatively by others, which can in turn negatively affect their educational outcomes (Gayles, 2005), students like Kate described trying to hide their engagement and interest in education by working from home. This 'hidden engagement' may represent a protective mechanism in environments where engagement in education is negatively perceived (Foley, 2004; Jackson, 2002; Ogbu & Simons, 1998). However, whilst some students hid their engagement in education, and thus maintained group membership, other students' experienced negative treatment from peers, including victimization, bullying and isolation as a result of their active engagement at school (Bradshaw, Sawyer, & O'Brennan, 2007; Buhs, 2005; Buhs et al., 2006). Further, whilst some individuals appeared to cope with these difficulties, frequently by downplaying the importance of socialising at school and focussing more on the educational aspects of school, others described school disaffection, periods of not engaging at school, and even temporarily withdrawing from school as a result of these problems. Consistent with previous research, these findings highlight how social context and intergroup processes influence educational engagement and disengagement and must

be taken into consideration (Bliuc et al., 2011; Buhs et al., 2006; Klem & Connell, 2004; Wentzel, Barry, & Caldwell, 2004).

7.4.1.2. Attendance

The majority of participants discussed having difficulties with attendance, describing these problems in the context of adversity, despondency and distress. These were often related to family problems, mental health (including, for example; depression, anxiety, autism, dyslexia, dyspraxia), and social problems. The impact of adversity and stress factors on students' levels of attendance varied in ways that provided insight into affective and cognitive factors related to engagement. The causes of truancy and periods of withdrawal from school varied between students, but were consistently due to extenuating circumstances. Lisa for example, explained how she had poor attendance throughout her educational trajectory due to on-going disruption and family instability, including periods where she was homeless and lived in women's shelters with her mother. Lisa was amongst a number of students who discussed problems with attendance and felt that her circumstances were not known or considered at the schools she attended or by her teachers. These students often described school disaffection, including feelings of anger and rebellion towards teachers and classmates, and frustration towards the school. In part, this could be because they felt that their teachers had failed to understand them, support them, engage them effectively, or consider their difficulties.

Though the circumstances that led to periods of withdrawal and truancy varied between students, their stories depict how they attempted to cope and maintain some level of control over their educational trajectories, even where it was not always fully possible. Past studies have identified similar findings with regards to withdrawal from education, explaining that withdrawal can serve as a form of coping, where daily survival often takes priority over education for low-income students (Archer et al., 2007; Connell et al., 1995; Lynch & O'riordan, 1998). The evolution of engagement has its roots in the dropout prevention literature, where low levels of engagement or disengagement are frequently discussed in relation to negative educational outcomes (Archambault, Janosz, Fallu, & Pagani, 2009). Whilst the quantitative studies comprised in this thesis do not

include students' that dropped out of university or provide insight on their attendance, students' narratives highlight that these issues require consideration as they may also affect the outcomes of WP students at university (e.g. Reay, 1998).

Understanding the factors that enable some students to maintain high attendance despite difficulties is central to the study of on-going engagement (Furrer & Skinner, 2003; Newman-Ford et al., 2008). Skinner and Pitzter (2009) suggest that the same factors that promote engagement may shape students' reactions to challenges and obstacles. In particular, they refer to students' ability to cope with adversity, or 'resilience'. Affective and cognitive factors that have been found to be influential in the context of resilience include: commitment, locus of control, and interest (Allan et al., 2014; Gifford et al., 2006; Ungar & Liebenberg, 2013). The majority of participants in this study also described the role of inter-personal factors, such as family, teacher and peer support, as being particularly influential in relation to attendance and on-going engagement (Brewster & Bowen, 2004; Campbell-Sills, Forde, & Stein, 2009; McMillan & Reed, 1994). These inter-personal factors have also been explored in the context of resilience where they indirectly appear to influence differences in engagement between students (Archambault et al., 2009; Archer et al., 2012; Balfanz et al., 2007; Klem & Connell, 2004). However, it is clear that the factors that determine on-going engagement between participants varied, as students like David described having little support from anyone, and despite his difficulties which resulted in him being taken into care, he emphasised that he never contemplated missing school. Ultimately, it is clear from these results that sensitivity to context is paramount, as levels of engagement are influenced by a multiplicity of factors and negotiated among students, school environment and/or home cultures.

7.3.1.3. Decision- Making

The stories told by students portray differences in their decision-making processes throughout their educational trajectories, and provide insight into the cognitive and affective dimensions of engagement (Corno & Mandinach, 1983; Harper & Quaye, 2009). In particular, it was clear that there were significant and contrasting differences between students in the information about university and potential career opportunities to which

they had been exposed. With few exceptions, participants did not choose subjects with careers in mind prior to university. David, and Samantha described choosing GCSE subjects based on information relating to specific career goals. This was critical in their trajectories to University as they were interested in studying Medicine, and Dentistry, which are amongst the most selective/competitive programmes with high and specific entry requirements and also require specific GCSE's unlike many other subjects. This contrasts with other students who said they did not know about university until after they had completed their GCSEs. Lisa explained how she learned about Universities through the Scholar Scheme and was interested in Veterinary science but that by the point she knew about these options it was too late for her to pursue this, as she did not fulfil specific subject requirements. These narratives demonstrate the importance of providing students with career related guidance in their decision-making processes early as this can influence the options that are available to them at later stages. These findings contrast with the planned and knowledgeable experiences of young people from middle class backgrounds, who were more likely to take going to university for granted (Reay et al., 2004).

Most participants described an appreciation of the importance and value of information as a resource in helping them understand their options and in guiding their education related decisions. Those individuals who described an awareness of university from early stages in their educational trajectories, described the role of their parents, family members and teachers as influential in helping guide their decision-making processes. In particular, many students emphasised the importance of their teachers in them deciding to go to university, sometimes because their teachers were the only people they knew who had been to university, and sometimes because they perceived their parents as unsupportive of their education.

Teachers played a particularly important role for those students who perceived their parents as unsupportive of education. However, not all students perceived having support from their teachers, family members, or others in general. This contrasts from how teachers at fee-paying schools place a greater focus on preparing students for top universities (Ogg et al., 2009; Hoare & Johnson, 2010). Some participants described having conflicting views with others on the values held in relation to education and found they had

to come to terms with the limitations of knowledge and conflicting advice they received. These findings depict further barriers that may influence the differential attainment, and participation in HE of students from working-class backgrounds (McKnight, 2015). However, despite barriers like these and limited guidance, all students described their awareness of the potentially ameliorating effects of education. They understood the value of their academic achievement, and frequently described this in the context of escaping adversity, moving away, or just generally wanting to "do better." Maras (2007), described similar findings in a study exploring socio-economically disadvantaged students' attitudes to HE. The two predominant themes that Maras found were the desires held by the students 'to better themselves' and to have 'increased opportunities' both of which were related to a third theme of 'earning higher salaries'. This was considered a 'surprising finding', as it was seen to indicate that students were focussed more on 'earning' rather than learning. However, according to Gayles (2005), this may reflect a utilitarian perception of achievement that may represent a source of resilience, which allows students to thrive. These findings are complementary to the quantitative studies, as they provide insight on decision-making processes and factors that influence whether or not students choose to attend university.

7.3.2. Identity

Within the present study, the second theme, identity, is conceptualised from a psychological perspective where it is theorised as both an individual and a collective construct, comprising of both individual and collective dimensions (Ellemers et al., 2002; Tajfel & Turner, 2004; Thibodeau, 2011). This is critical as different contexts and interpersonal interactions highlight different identities, and can make different aspects of identity, or sets of traits and characteristics salient (Archer & Francis, 2006; Oyserman, Bybee, & Terry, 2006). Three sub-themes reflective of the individual and collective sides of identity and the social processes which influence this were identified, namely in students': self-evaluations (e.g. on academic achievement and hard work), comparisons with others and reactions of others (e.g. on social class awareness, belonging). These sub-themes are intertwined as the way in which people perceive themselves is often influenced by how

they feel others perceive and react to them (Derks et al., 2007; Granfield, 1991; Hogg et al., 2004; Read et al., 2003).

7.3.2.1. Self-Evaluations

The experiences, beliefs and characteristics that students focused on in their self-evaluations, provide insight into what they perceived to be important. These are said to relate to their sense of self and who they are as unique individuals (Ellemers et al., 1999; Hunter et al., 2004). Students frequently reflected on their own capabilities, academic attainment and hard work in ways that reflected the individual meaning that these had to them. Some students described their high achievement, as a positive and intrinsic marker of identity, which distinguished them from others. Though some students were also proud of their high achievement, they frequently contrasted their behaviour from other students: "*I'm not like them*"; "*whereas they didn't care I wanted to be the best*". This may suggest that these students dis-identified with their peers, based on these perceived differences (Ellemers et al., 1999; Stephens et al., 2015). Often, these students described social problems and even isolation as a result of differences. Though individuals experienced these social problems at school, other studies have discussed similar findings in relation to the conflicts experienced by university students from intermediate or aspirational working class backgrounds due to their memberships with groups that are problematic, uncomfortable and in some cases associated with stigma/low expectations (Becker & Tausch, 2014; Byrom, 2009; Major & O'Brien, 2005). These factors have been found to affect students' educational outcomes and subsequently may also help to explain socio-economic differences in academic attainment at school and university (Manor-Bullock et al., 1995; Steele et al., 2002).

Though all students discussed the importance of their high grades for themselves, some students detached their high achievement from the school environment, attributing their success to their own abilities. In particular, this was evidenced in accounts where students had perceived schools as being unsupportive and prejudiced against them. Whilst this could reflect dis-identification with school it can also be understood as logical in this context and could represent a source of resilience, self-esteem and even a coping strategy

(Jackson, 2002; Quinn & Earnshaw, 2013; Steele et al., 2002). This could also explain why some students described trying to hide or diminish their interest in learning and even their high achievement. Goffman (1963) referred to this type of concealment as 'passing', an adaptation strategy that in this case may have assisted participants in maintaining their group identity.

Environments where ability and investment in education are perceived negatively and even stigmatised can induce the use of these coping strategies (Connor et al., 2001; Derks et al., 2007; Johnson, Finkel, & Richeson, 2011; Tyson et al., 2005). For example, Gayles (2009) found that African American students from low-income backgrounds actively diminished the significance of their own academic achievement in ways that decreased the possibility of making their academic achievement a marker of identity. He argued that this phenomenon comes from the belief that success is socially cultivated and high academic achievement is not seen as success in certain cultures, but rather the opposite. Hence, diminishing the significance of grades can be seen as a way of maintaining group membership and 'passing'. However, although some students downplayed the significance of grades and education to others, in most cases students emphasised the importance of their academic achievement in ways that suggest they perceived this as a positive marker of identity to themselves, sometimes despite negative social repercussions.

7.3.2.2. Social Identity

Individuals do not solely derive a sense of self through self-evaluations of what makes them unique (Personal Identity), but come to know who they are through interactions with others in different social contexts (Hogg & Smith, 2007; Leary & Tangney, 2012). According to Social Identity Theory (SIT) (Tajfel, 1982; Tajfel & Turner, 1979), individuals also base identity and self-worth on social categories to which they belong, such as gender, socio-economic status, age and ethnicity. Social identities are based on memberships that people have with groups, based on the attributes of individual persons rather than attributes of social groups themselves (Ellemers et al., 2002; Hogg et al., 2004). Thus, just as it is important for individuals that their personal identities are valued, it is also important that the social categories on which they base their self-concept are valued

(Croizet & Claire, 1998; Derks et al., 2007; Spencer & Castano, 2007; Steele et al., 2002). Though the extent to which individuals perceive themselves as members of working class groups is difficult to discern, students often described situations that highlight the relevance of social class in their trajectories to HE.

Based on social comparisons, individuals reflected on differences that they perceived between themselves and others, frequently in relation to disadvantage. Students discussed having an awareness of being different in many ways, including: receiving Free School meals, financial support for field trips and more generally in not having the "right things". Some students described feeling embarrassed by these differences and trying to conceal them. Similar findings have been reported in other studies where people described trying to conceal social class, and/or other characteristics (disability, ethnic background) that could be stigmatised or negatively perceived (Archer & Francis, 2006; Croizet & Claire, 1998; Croizet et al., 2001; Goffman, 1963; Stephens et al., 2015). Efforts to hide potentially stigmatised attributes have been considered a way of coping with the well-documented negative stereotypes that people readily form on the basis of socio-economic background (Buhs, 2005; Cozzarelli, 2000; Granfield, 1991; Quinn & Earnshaw, 2013; Steele et al., 2002). Crozier and Reay (2008) provide insight on this, highlighting the importance of identity in relation to working class students, contrasting their lack of self-confidence, compared to the sense of entitlement, and self-assuredness expressed by middle class students.

As suggested in past research, identity related factors might contribute to the pervasive under-representation of working class students in HE compared to their more affluent counterparts, which is particularly notorious at 'elite universities' and more selective programmes as evidenced in Chapter Five. The research of Mathers and Parry (2009) corroborates this, depicting a disjuncture between working class identity and the elite image that universities may maintain for certain groups within contemporary society. They suggest that interventions which aim to increase participation rates should recognise this conflict, potentially re-orienting how subjects such as medicine are viewed by students from economically disadvantaged groups, as perceiving certain subjects to be elite can influence participation and represent a significant barrier to these students.

How students described trying to hide differences to avoid being distinguished from others, indicates how class is not an entirely invisible form of identity to children. However, most students also expressed perceiving differences in the emotional and social difficulties they faced compared to others. Conversely, a couple of students emphasised that though they were from socio-economically disadvantaged backgrounds, they did not feel disadvantaged and felt that this did not affect them in particular. These differences highlight the heterogeneity of disadvantage, and may reflect the notion that people can be aschematic for social group memberships (including, race, ethnicity, gender as well as social class)(Oyserman & Destin, 2010). Hence, though individuals may be given a social label, these labels and the traits these are associated with may not be salient or included in the identity elements that individuals associate themselves with (Oyserman et al., 2006; Reay, 1998; Schwartz, Luyckx, & Vignoles, 2011).

7.3.2.3. Reaction of others

Individuals vary in what groups they identify with, and in the aspects of group membership that they internalise and associate with (Abrams & Hogg, 2006; Altschul, Oyserman, & Bybee, 2006; Schwartz et al., 2011). Salience is considered to have a powerful impact on the level of importance of a construct in the self-system (Hogg & Turner, 1985; Hunter et al., 2004; Quinn & Earnshaw, 2013). This is partly determined by the extent to which individuals perceive differences between themselves and others, where greater differences make characteristics more salient, and consequently more influential in relation to self-definition and behaviour(Archer & Francis, 2006; Aries & Seider, 2005). Those who identify more with groups are seen as particularly vulnerable to the negative effects of discrimination and stigma on academic engagement (Becker & Tausch, 2014; Crocker & Major, 1989; Ellemers et al., 2002; Oyserman et al., 2006).

The degree to which students perceive problems to be associated with social class may both reflect and influence how much they identify with this. This could in part explain the wide-ranging impact that social class had on individuals in the present study and in their varying experiences of '*being disadvantaged*'. Hence, whilst social class, and social class differences are not necessarily visible or salient, individuals' accounts depict a number of

factors that influenced their conscious awareness of this, in positive and negative ways. For example, some students described how their parents did not support them going to grammar school or university due to fears that they would not 'fit in' in these environments. Additionally, several students described teachers' low expectations of them, their attempts to dissuade them from taking particular "challenging" subjects, and going on to college and HE. This suggests that they were aware of teachers perceiving them as members of a group that was less likely to do well. Moreover, these qualitative findings depict how teachers' low expectations, which may be at least in part be based on negative group associations, can have important practical and psychological repercussions on students' educational outcomes and opportunities.

The low expectations students describe are not atypical and may be reflected in the underestimated predicted grades that working class students from less successful state schools tend to receive compared to their independent school counterparts and in turn affect whether they are offered a place at universities (BIS, 2013; Everett & Papageorgiou, 2011). Hence, these findings help explain those of the quantitative studies as they depict factors that may contribute to the underrepresentation of working-class students at the UoL. As such, they provide insight into possible reasons why students from underrepresented backgrounds are less likely to apply to elite universities compared to students from affluent backgrounds (Heath & Zimdars, 2005; The Sutton Trust, 2004; 2010a, 2010b, 2010c) even when they have obtained appropriate qualifications (Reay, et al., 2010; Reay, et al., 2001; Sutton Trust, 2004).

According to SIT (Tajfel & Turner, 1979), negative group associations can induce social identity threat and make students feel devalued which can negatively influence engagement and students' educational outcomes. However in some accounts the opposite appears to be true, as some students discussed being strongly motivated to prove people wrong and succeed. Nevertheless, there are risks associated with being perceived as members of a devalued group. Derks et al. (2007) exemplified this in a study, where people who perceived themselves as members of groups that were socially devalued in educational domains (ethnic minorities, working class students) were more likely to withdraw from these settings. This was described as a protective mechanism as the threat

of being devalued on the basis of social category is psychologically costly (Abrams & Hogg, 2006; Crocker & Major, 1989; Ellemers et al., 1999). In the same vein, Stereotype Threat theory predicts a decrement in performance in members of any group about whom a negative stereotype exists (Croizet et al., 2001; Spencer & Castano, 2007; Steele et al., 2002). Evidence of this exists across a variety of social groups (gender, social class, and ethnicity) and across a number of tasks (for a review see Wheeler & Petty, 2001). These studies depict how negative group associations can influence students' educational outcomes, including their attainment at school and university. Hence, it is possible that negative group associations may in part also underpin the socio-economic differences in academic attainment that were observed in the quantitative studies. However, according to Oyserman and Destin (2010) this depends on membership in such groups being salient. They argued that stereotypes may not necessarily be threatening if a given identity includes a refutation of the stereotype (for school-focused content, see Oyserman et al., 2006; for health- focused content, see Oyserman, Fryberg, & Yoder, 2007). Understanding these complexities, and providing students with support from early stages of their educational trajectories, may help to mitigate the impact of identity related psychological constraints on engagement and decision-making processes.

7.5. Contributions of a Pragmatic Mixed Methods Design

As explained previously, individually, the quantitative (Chapters Four and Five) and qualitative studies (Chapter Six) comprised in this thesis are underpinned by different epistemological approaches but linked by an overarching pragmatic approach. To integrate the findings and interpretations of mixed method studies following a pragmatic approach, the ways in which the findings of the quantitative and qualitative studies comprised in this thesis converge and diverge from each other is discussed in this Chapter (Datta, 2008; Patton, 1985). So far, the findings of the two quantitative studies have been discussed alongside each other, illustrating the ways that their individual findings are similar and/or differ from one another. The aims and findings of the phenomenological study comprised in Chapter Six were then discussed; highlighting how findings converged, or diverged from the findings of the quantitative studies. However, according to Bryman (2007), when it comes to the integration of mixed method studies, a key issue is whether the end product is more

than the sum of the individual quantitative and qualitative parts. Hence, while showing the ways that the findings of the qualitative study are complementary and/or differ from the quantitative studies is an important part of integrating these studies, the purpose of this section is to outline how the pragmatic mixed methods design contributes to the interpretation of findings beyond that of a single method study. This section addresses objective 8 of this thesis and describes:

- What the mixed methods design contribute to the interpretation of findings over and above that of single methods. (Objective 8)

The two quantitative studies comprised in this thesis provide insight into the differences in participation and academic attainment between students based on their educational and socio-demographic background characteristics. Though quantitative studies such as these are needed to identify factors that appear to be significantly associated with differences in participation and attainment in HE, and could be used to make predictions in future studies, they do not provide insight into the possible reasons for these differences. For instance, while differences in attainment and participation were identified between students from different school types in both quantitative studies, these do not help to explain why these differences occur. In turn, students' narratives help understand how factors related to their own background characteristics, schooling and neighbourhood/community may underpin the differences in attainment and participation in HE evidenced in the quantitative studies. As such, the barriers and sources of disadvantage students discussed in their narratives often related to their schooling, neighbourhood and their own family backgrounds. In this way, these qualitative findings provide insight that is complementary to the quantitative findings helping to strengthen the overall conclusions, and to provide interpretations with a deeper level of complexity that could not otherwise be gained. This will be summarised in the following paragraphs as this is one of the primary ways in which the pragmatic mixed methods design contributes to the interpretation of findings beyond that of a single method study.

To begin with, the difficulties many students discussed in relation to their schools reflect some of the disadvantages that may contribute to the underrepresentation of state

school students from socio-economically disadvantaged backgrounds within HE as well as differences in their academic attainment. One of these disadvantages was the lack of guidance and advice that many received about university (including university applications) from teachers and family members. This lack of guidance represents an important barrier that should be addressed as it can influence the options that are available to these individuals and can prevent them from attending university altogether (Ball, 2003; Byrom, 2009). These findings can be interpreted in relation to theories of cultural and social capital as they depict how students' were disadvantaged by having access to lower levels of capital due to their educational background/schooling, familial/social experiences, and economic circumstances (Aronson, 2008). However, knowledge of university and potential career opportunities differed greatly between participants, as those students who described their awareness of university from early stages in their educational trajectories emphasised the importance of the influence of their teachers in deciding to go to university. Though the extent to which students' felt their teachers had high/low expectations of them also varied, when discussing others' expectations, students frequently focussed on the challenges and obstacles associated with low expectations in particular.

Several students described having an awareness of themselves as members of a group that was less likely to do well due to teachers' low expectations of them, their attempts to dissuade them from taking particular "challenging" subjects, or going on to college and HE. Similarly, some students also described barriers put forward by their own parents' sceptical views of education, the lack of value they placed on their education and the influence these views had on their subsequent experience of integration and the sense that they did not or could not 'fit in'. Hence, though social class is not necessarily visible, relevant or salient in relation to identity and self-definition, these low expectations and negative group associations represent factors that can influence individuals' conscious awareness of their 'social class identity'. Various studies corroborate this and depict the ways that identity related processes can affect students' engagement with education as well as their educational outcomes in positive and negative ways (Becker & Tausch, 2014; Reay et al., 2010; Spencer & Castano, 2007). Indeed, whilst negative group associations were a source of motivation to some students who described wanting to prove others

wrong, these may also negatively influence others' educational outcomes or affect their long-term educational engagement (Derks et al., 2007; Tyson et al., 2005). Thus, it is important to keep in mind that the students who took part in the qualitative study represent a minority of students from disadvantaged backgrounds who are successful in attending university and that negative group associations may represent important barriers that deter other WP students from attending university or achieving to their maximum ability.

While both quantitative studies provide further evidence of the 'school type effect' and the notion that school grades do not fully capture students' 'true academic potential', students' narratives provide insight into some of the disadvantages associated with their schooling and family backgrounds that may prevent them from achieving grades that reflect their full potential. These disadvantages contrast from the well-documented advantages associated with attending private schools, as these tend to be more successful at preparing students for GCSE/A-level exams, and university in general (e.g. Crawford, 2014). Thus, in a way, these qualitative findings also support the use of contextual data in university admissions processes to identify potential that may not be reflected in the academic attainment of students from disadvantaged backgrounds as a result of the circumstances in which these were achieved.

In addition to factors related to schooling and family background, students' narratives also provide insight into some of the factors related to neighbourhood and local environment that may in particular underpin differences in participation that were evidenced in both quantitative studies using area-based measures of disadvantage (IMD and POLAR 3). For example, several individuals described barriers related to their neighbourhoods/local environment in the lack of collective valuing of academic achievement, and the peer-group status accorded to education and academic attainment. Though these students discussed their attempts of coping with this in different ways (i.e. by hiding engagement, downplaying social aspects of schooling; *disidentifying* with social groups), environments where ability and investment in education are perceived negatively and even stigmatised can be detrimental to their educational outcomes (Derks et al., 2007; Manor-Bullock et al., 1995; Quinn & Earnshaw, 2013; Tyson et al., 2005). This exemplifies

how educational disadvantage can be also linked with factors related to neighbourhoods/local environments and may indirectly influence socio-economic differences in students' educational outcomes. Overall, these findings are consistent with previous research that shows how different types of disadvantage arising from access to lower levels of social, cultural and economic capital tend to co-occur and affect students' educational outcomes in different ways (Greenman et al., 2011; Leithwood et al., 2010; Lupton, 2004; OFFA, 2014a; OFSTED, 2015). In turn, a number of studies discuss how this can have a cumulative impact on students' educational outcomes and underpin pervasive socio-economic inequalities in participation in HE (Crosnoe & Cooper, 2010; Lupton, 2004; Powis et al., 2007).

While the quantitative studies comprised in this thesis play a crucial role in measuring socio-economic differences in participation and attainment, they do not provide insight into the perspective of those individuals who experience disadvantage in these domains or how some individuals successfully enter university despite all the odds against them. In turn, qualitative study 3 is important and complementary in this way, as it focuses on those students from disadvantaged backgrounds who in many ways beat the odds against them by being accepted into university. Though the thirteen individuals that took part in study 3 shared similar background characteristics, their narratives varied widely in content, reflecting the subjectivity and heterogeneity of what it means to be 'disadvantaged and how this may impact on educational outcomes in different ways. This corroborates a further reason for mixing methodologies, as social experience and lived realities are multi-dimensional and enacted on a macro and micro scales, so by viewing phenomena along a single dimension our understandings are impoverished and may be inadequate (Mayoh & Onwuegbuzie, 2013). Subsequently, by mixing methodologies using a pragmatic approach, it is possible to transcend this macro-micro divide, and expose a more nuanced evaluation of 'disadvantage' highlighting factors that are influential at a group and individual level. This represents another principal way in which the pragmatic mixed methods design is important, and helps to convey different perspectives, and forms of knowledge providing a greater understanding of disadvantage in terms of how this relates to contextual background characteristics than could be possible with one method alone (

du Toit, 2003). Finally, as will be discussed in Section 7.5. these two methods of enquiry also raise different implications for policy makers and HEIs.

7.4. Strengths and Limitations

The strengths and limitations of each study were discussed individually in Chapters 4-6. The following paragraphs provide a summary of these, whilst also highlighting ways in which the overall pragmatic mixed method design achieves complementary strengths.

Much of the research on socio-economic inequalities in HE participation has focussed on the quantification and measurement of differences between individuals based on their socio-demographic and educational background characteristics using large data-sets (HEFCE 2014; Crawford, 2014; Stevenson & Lange, 2010). Such studies include the first two quantitative studies discussed in this chapter. To my knowledge, these are the only case studies that used both post-code based measures of disadvantage along with educational background and demographic information to examine differences between groups at an English Russell Group University.

The findings from studies 1 and 2 provide insight into factors that appear to be significantly associated with inequalities in participation and attainment between students at the UoL. Though both studies investigate inequalities in the distribution of students based on their socio-demographic and educational background characteristics, they primarily focus on differences in academic attainment. Thus, socio-economic inequalities in participation require further investigation to adequately discern whether the distribution of students from under-represented backgrounds within HEIs is fair based on their socio-demographic and educational background characteristics. Critically, analyses should be expanded to compare sub-groups and include other universities taking more sophisticated approaches to modelling using path analysis or other forms of causal modelling. However, whilst differences in HE participation must be examined to promote fair access to HE, numerous studies have explored these, in the UK and globally (Crawford, 2014; Gallagher et al., 2009; Hannum & Buchmann, 2005; Holsinger & Jacob, 2009; Soo-yong Byun & Kyung-keun Kim, 2010). In contrast, research examining the relationships between contextual background characteristics and achievement in general was found to be highly limited

(Bradshaw et al., 2007; Gorard, 2008; SPA, 2013; Zimdars, 2007). As studies 1 and 2 sought to address this lack of evidence to help guide the use of contextual data in admissions processes, these studies centred largely on socio-economic differences in academic attainment.

The findings of studies 1 and 2 support the notion that school grades, due to the environments in which they are achieved, are limited as predictors of future attainment as they do not fully capture students' true academic potential (Crawford 2014; Smith & Naylor, 2001). Subsequently, a recommendation from analyses of these studies is that the implementation of contextual data, alongside school grades, during the admissions process could provide a more detailed and relevant assessment of candidates, and help to identify those that may not meet entry grade criteria but have the academic potential to succeed (Garlick & Brown, 2008; McNabb et al., 2002). This may be particularly beneficial in highly competitive programmes such as medicine, where a large proportion of applicants achieve top marks, making it especially difficult to select between them (Cleland et al., 2012; Gallagher et al., 2009). Further, these studies also highlight how the uses and importance of contextual information extend beyond the point of admissions (e.g. Selecting for Excellence Group, 2014). By providing insight into the associations between contextual background characteristics and academic attainment, a key strength of these quantitative studies is that these depict how contextual information could help identify students that may require additional support once at university. Similarly, prior to the point of admissions, contextual data could also be used to ensure that those who are targeted and benefit from WP interventions are those who suffer most from hardship or disadvantage but have the academic potential to succeed (Stevenson & Lang, 2010; HEFCE, 2015).

Whilst a case study approach was used purposively as a means of monitoring current admissions arrangements at the UoL, the generalizability of the findings from these studies may be somewhat limited. The geographic location and socio-demographic composition of student cohorts at the UoL must be acknowledged when interpreting the trends identified in these studies. This is critical as these trends differ in some ways to previous research and case studies carried out at other universities. For example, though there is substantial evidence of the school type effect, typically students from independent

schools have been found to come in with the highest grades. This wasn't the case at the UoL, where students from independent schools did not enter with the highest grades. Individual universities should explore these differences in their own cohorts, to guide their decision-making processes and ensure that they are targeting accurately.

The studies in Chapters Four and Five, attempt to make objective and unbiased assertions based on the trends these identified, however, it is not possible to control for all factors that affect university attainment. Some prominent factors that were not controlled for include: working during term time (Moreau & Leathwood, 2006a, 2006b; Salamonson et al., 2012) living at home (Holdsworth, 2006). family history in HE (Allardice & Blicharski, 2000; Delaney et al., 2011), and individual characteristics including intelligence (Farsides & Woodfield, 2003; Haworth et al., 2013; Mega, Ronconi, & De Beni, 2014). Further, it is also important to note that some variance also relates to chance and other factors that are unpredictable, including life events and illness.

Another limitation of studies 1 and 2 is that these did not include students that did not have a comparable UK home postcode, part-time students, students that repeated a year, or students that did not complete their studies. Hence, it is important to take into account that these findings are not representative of all undergraduate students at the UoL either. Another limitation of these studies is that both the IMD and POLAR 3 are based on aggregate data. Consequently, it should be noted that trends relating to both IMD and POLAR 3 do not necessarily relate to individuals themselves but rather to the areas in which they are based (Gorard & See, 2009; Hoare & Johnston, 2010; Smith & Naylor, 2001). An alternative approach to IMD/POLAR 3 could be to utilise NS-SEC. However, as explained previously, this has limitations, and for the majority of undergraduate admissions, NS-SEC is also not an individual measure, as this relates to parental occupation (Harrison & Hatt, 2009; 2010). Hence, though postcode measures of disadvantage have weaknesses, there is less uncertainty attached to these measures, and it is unlikely that a student would manipulate their postcode as they have the imperative that they actually want contact from UCAS or the university, which is where the postcodes are sourced.

A further and important limitation relevant to studies 1 and 2 lies in the proportion of missing data these have, as this could significantly bias analyses and results, and is something that must be taken into account (Gorard, 2008; 2012). This is particularly problematic for study 1, where a greater proportion of data were missing for key variables. That said, school type, and school performance information were missing in both studies, mainly where this was unobtainable from the Department for Education (DfE) website. Secondly, socio-economic information was also missing for both studies as not all postcodes were valid and could be matched to IMD and for study 1 POLAR 3 scores too. Thirdly, a proportion of UCAS tariff point data were also missing in both studies, but particularly in study 1.

Critically, for study 1, missing UCAS tariff data and school background information was related to deprivation, as data were primarily missing for students from IMD quintile 1 (most deprived). At least in part, this may be attributed to the fact that UCAS tariff point data were primarily missing for students with 'non-standard' qualifications (e.g. b-techs) who were largely from the most deprived socio-economic quintile. This limitation was not anticipated as total UCAS tariff point were used in study 1 because this measure is said to enable comparisons between applicants with different types of qualifications. However, for an unknown reason UCAS tariff data were missing for the majority of students with 'non-standard' qualifications. This is a limitation in itself, but in addition the use of total UCAS tariff points does not control for the number of qualifications that a student has. This means that students with more qualifications generally have higher total UCAS points, which may not be equivalent to the grades of students with fewer qualifications (Taylor et al., 2013). Previous studies have addressed this limitation using UCAS tariff points to calculate students' three highest A-level points and excluding those students with non-standard qualifications (e.g. Hoare & Johnston, 2010). However, students with non-standard qualifications were not excluded from the dataset as this was considered to be counter to the focus of the current research. That said, to ensure consistency between these studies and make comparisons between students as fair as possible, analyses for study 1 were repeated using top three A-level points as a measure of prior attainment (see appendix for results).

For the most part, missing data were evenly distributed across groups in study 2. Though this is reassuring, school type and school performance information were also primarily missing for students from the most socio-economically deprived areas (quintile 1) compared to their more affluent counterparts. This too represents a limitation that should be recognised when interpreting findings. A complete-case analysis was used in both studies to deal with missing data, whereby individuals with missing data on any variable were excluded from analyses (list-wise deletion). Though this technique is frequently used for dealing with missing data, it is important to take into account that this can be problematic, reduce power and introduce biases when those individuals that are excluded are not a random sample of the population (Altman & Bland, 2007; Schafer & Graham, 2002). Thus, it is acknowledged that alternative approaches for dealing with missing data such as multiple imputation (MI) which pools estimates across several imputed data sets are more appropriate than complete case analysis as this leads to more precise, less biased parameter estimates and inferences (Allison, 2001).

More generally, the findings from these quantitative studies do not provide insight into the factors that underpin differences between students, and in a sense ignore the subjectivity of human experience and the individual consciousness of actors within society (Gergen & Gergen, 2007; Teddlie & Tashakkori, 2008). Hence, though they depict broad patterns and trends, these studies do not tell us about the individual, or explain individual differences in participation or attainment. These are some of the caveats associated with quantitative studies and the positivist epistemology underpinning these (Crotty, 1998). Conversely, one of the strengths of qualitative studies lies in the knowledge that they provide of the dynamics of social processes, social context, and in their ability to answer 'how' and 'why' questions in these domains (Mason, 2006). Thus, one of the strengths of the current research lies in its use of a mixed methods design to address both types of questions and therefore provide a deeper understanding of the differences in participation and attainment than that which could be gained using one method in isolation.

Whilst the quantitative studies comprised in this thesis play a crucial role in measuring socio-economic differences in participation and attainment, they also do not provide insight on the perspective of those individuals that experience disadvantage in

these domains or how some individuals successfully enter university despite all the odds against them. In turn, Chapter Six provides insight into this, as this focuses on those students from socio-economically disadvantaged backgrounds that in many ways beat the odds against them by even being accepted into university. By focussing specifically on these individuals, using a phenomenological approach, I recognised the subjectivity and importance of individuals' lived experiences through a critical time. This required I use small-scale, in-depth, semi-structured interviews; using open questions to follow participants' experiential paths (Creswell, 2007). While recognising such narratives are inevitably co-constructed between participants and interviewers (Riessman, 2007), one of the strengths of conducting phenomenological research is that it facilitates rich and detailed descriptions of human experience and provides tools for exploring subjective experiences in more objective ways (Moustakas,1994). A further strength of this study is that the results emerged directly from the data, and were not derived from imposing *a priori* analytic framework.

Phenomenology, contrasts from the positivist epistemology underpinning the studies in Chapters Four and Five in its emphasis on the subjectivity of experience and the individual as opposed to focussing on objective associations between variables (Berger & Luckmann, 2011; Moran, 2002; Moustakas, 1994; van Manen, 1997). These epistemological differences were inherent in the objectives, methods, and findings of these studies and in a sense divide these into two separate lines of investigation. However, though these approaches differ, in many ways these also complement one another and together, they expose different perspectives, forms of knowledge and raise different implications (du Toit, 2003). Hence, whilst the first two studies depict differences in participation and attainment between groups from university entry-level, the narratives told by students from disadvantaged backgrounds in the final study provide insight into some of the factors that may underpin these differences. As previously discussed, the barriers and sources of disadvantage students discussed in their narratives often related to their schooling, neighbourhood and their own family backgrounds. In this way, these qualitative findings provide insight that is complementary to the quantitative findings helping to strengthen the

overall conclusions, and providing interpretations with a deeper level of complexity that could not otherwise be gained.

The thirteen participants who took part in the final study were selected purposefully, to ensure that they all had experiences relating to the phenomenon of interest. The sample size of thirteen students surpasses typical recommendations for phenomenological studies (Creswell, 2007). This larger sample size allowed for the possibility of exploring the experiences across different subjects. This is one of the strengths of this research as socio-economic profiles vary between subjects and may reflect differences in subject choice behaviours among groups (Gallagher et al., 2009; Singleton, 2009). However, it should be borne in mind that the age range of the sample was narrow (between 18 and 20 years old), there was a lack of ethnic diversity among participants (all but one of the students were white) and all participants were drawn from a single university in the Northwest of England. These factors are likely to have had an impact on study outcomes. Thus, while these interviews yielded rich descriptions, a larger number of interviews, with students from more heterogeneous backgrounds might have highlighted greater variation in students' experiences. As such, these stories may not reflect the generality of experiences and findings from this study may not be transferable to other student age groups, ethnic groups, or to other geographic regions. That said, the multiple commonalities and differences identified across students narratives do much to enhance our understanding of socio-economic and educational disadvantage, and how this is subjectively experienced by individuals that objectively would be considered disadvantaged based on their background characteristics. Indeed, though participants shared similar background characteristics, their narratives varied widely in content, reflecting the subjectivity and heterogeneity of what it means to be disadvantaged and how this may impact on their educational outcomes in different ways. Hence, though based on objective measures an individual may be categorised as being "working class", they may perceive themselves as being "middle class". Recognising these complexities is important as the extent to which an individual feels disadvantaged or identifies as being from a certain social class may mediate the effect this has on their educational outcomes and engagement with education (Ashmore et al., 2004; Brown, 2000).

The use of a pragmatic mixed methods design in the current thesis provides a comprehensive framework that could be used in other studies to understand and address pervasive socio-economic inequalities in students' educational outcomes. Indeed, while identifying the negative impact of disadvantage and the inequalities in participation and attainment that is important for managing it, individuals' narratives also depict their adaptation to disadvantage, and bring to the fore a more complete view of the complex impact that disadvantage can have on their lives. Further, as discussed previously, the pragmatic mixed methods approach also contributes to the interpretation of socio-economic differences in participation and attainment, in terms of what these are, and what factors may underpin them. These insights, produced as a result of the mixed methods design are a key strength of the current research.

7.5. Implications and Directions for Future Research

In this section I consider the implications of my findings, directions for future research and interventions needed in this field. Though in many ways the findings from the quantitative and qualitative studies comprised in this thesis are complementary and have overlapping implications, they also raise a number of different implications and highlight different directions for future research.

7.5.1. For higher education institutions and Policy Makers

The findings from studies 1 and 2 (Chapters Four and Five) raise a number of important implications for HEIs and policymakers in general. These studies provide insight for universities interested in using contextual background information to inform their decision-making processes and admissions policies, highlighting variables that appear to be significantly associated with inequalities in participation and attainment between students at the UoL. Both quantitative studies provide further evidence indicating that school type and school performance information in particular, could help to identify the academic potential of students where it is not necessarily reflected in their grades (Bowes et al., 2013; Crawford, 2014; Gayle et al., 2002; HEFCE, 2013a; McNabb et al., 2002; Smith & Naylor, 2005). Though the potential to make a difference using contextual data may vary

between institutions, and subject types, this could be particularly useful to help guide decision making process in the selection of students in highly competitive, oversubscribed programmes, such as medicine, given that a large proportion of students have high entry grades making it difficult to discriminate between them (Tiffin et al., 2012). Using other measures alongside school grades could help identify potential that is not captured by academic qualifications alone and be related to other attributes required for academic success, like independent study skills and other behavioural/non-cognitive attributes.

Based on similar findings, Crawford (2014) argued that if universities were to account for students school performance/school type information in making admissions offers they would, on average, get it right most of the time, but that the same is not true of using individual, or neighbourhood measures of socio-economic background. Indeed, the findings from this study corroborate this. Hence, whilst socio-economic background characteristics like POLAR 3 and IMD depicted varying entry-level differences between groups, and these differences narrowed at university in both studies, students from lower socio-economic background did not, on average, outperform their more affluent counterparts. Overall, these findings contribute to a growing body of evidence, indicating the limitations of school grades as predictors of future attainment and delineating the need for the implementation of contextual data alongside school qualifications in the admissions process (Kirkup et al., 2010; HEFCE, 2013a; Hoare & Johnston, 2010; Smith & Naylor, 2001; The Sutton Trust, 2010a). This could enable a more sophisticated interpretation of exam grades and help to refine the targeting of students from disadvantaged backgrounds.

Similar findings documented at other universities have been considered to make a 'strong case' for making reduced offers to students from particularly disadvantaged backgrounds (Kirkup et al; 2010; HEFCE, 2014; Henry, 2013; Hoare & Johnston, 2010; Naylor & Smith, 2002; Smith & Naylor, 2001; The Sutton Trust, 2010a). In effect, a number of universities have already started giving state school students lower entry offers than private school students for exactly these reasons (Crawford, 2014). However, critics argue that making reduced offers to students from socio-economically/educationally disadvantaged backgrounds discriminates against students from affluent backgrounds/independent schools and may reduce academic excellence at HE institutions

(HEA, 2010). The findings of these studies represent a powerful riposte to such arguments, providing additional support for the 'school type effect' and the notion that school grades do not fully capture 'true academic potential'. Nonetheless, there is currently no standardised or universal approach to the use of contextual data and very limited guidance on best practice (Cleland et al., 2012; Selecting for Excellence Group, 2015). Additionally, there are various questions and practical issues surrounding the implementation of policies relating to school type/school level performance including questions of how to 'equate' between nations, how to treat applicants who have changed school, how to identify able applicants who obtained scholarships to attend a fee-paying school and how to ensure that applicants report their educational establishment correctly/truthfully (Cleland et al., 2012; Selecting for Excellence Group, 2015). Further research is required to address these issues and guide institutional policy in respect of contextual data (Bowes et al., 2013).

As discussed in the preceding section, the results of the qualitative study comprised in this thesis complement the findings of the quantitative studies in multiple ways but also raise different implications. Firstly, study 3 provides insight into individual differences that are not captured by quantitative studies, facilitating greater social understanding and increasing options for action. In particular, students' narratives highlight the multi-faceted nature of experience by reflecting the heterogeneity of what it means to be disadvantaged in how this is perceived by individuals themselves, and the different forms of adversity this is associated with in everyday life. In this sense, qualitative research may be seen as a powerful tool for uncovering the subtleties and complexities of how individuals experience disadvantage. Further, whilst studies 1 and 2 focus on differences in participation and attainment from the point of admissions, drawing from students' narratives it was possible to identify significant obstacles, including financial pressures, social exclusion and stereotype of low intellectual ability that affected individuals from early stages of their educational trajectories.

The disadvantages students described with regard to their schooling reflect some of the factors that may prevent these individuals from fulfilling their academic potential and help explain the 'school type effect'. Thus, as explained previously these findings indirectly also support the use of contextual data in university admissions processes to identify

potential that may not be reflected in the academic attainment of students from disadvantaged backgrounds as a result of the circumstances in which these were attained. Furthermore, this information could be used to help educators and HEIs address some of the issues and consequences that are associated with being perceived as members of socio-economically disadvantaged groups, particularly as these factors have been found to affect students' chances of attending university, as well as their educational outcomes at university and beyond (Ashley et al., 2015; McIntosh & Munk, 2009; McKnight, 2015;).

The findings of the study 3 demonstrate the importance of exploring students educational trajectories leading to university, corroborating previous research indicating that socio-economic disadvantage can have a detrimental impact on the educational outcomes of children from very early ages (Coley, 2002; Feinstein, 2003; Leithwood et al., 2010; Lupton, 2004; OFSTED, 2011). By exploring this critical period, the findings from this study could help to identify where and when support can be provided. According to Ball (2003) timing is critical as it could influence the relative merits (success/failure) of intervention programmes. Consequently, though HEIs are often blamed for 'failing poorer students', and barriers within admissions processes do affect the widening of access amongst these groups, the findings from this final study highlight the importance of recognising the cumulative long-term negative effects of childhood disadvantage (Benson & Borman, 2010; Crosnoe & Cooper, 2010; Maunder et al., 2012). Indeed, school processes and practices that exacerbate socio-economic inequalities must also be addressed (Ogg, Zimdars, & Heath, 2009b; The Sutton Trust, 2009). For instance, according to McKnight (2014) improvements are needed in the processes for allocating places at outstanding schools and for selecting children who attend the remaining Grammar schools in England.

This research has important implications for educators and HEIs as their responsibilities do not end at the point of entry to university. Critically, it is insufficient to identify those students who are 'at risk' of underachieving or dropping out from university if nothing is to be done to support these individuals. Indeed, whilst identifying the barriers and adversity that affects 'disadvantaged' students throughout their educational trajectories to HE is important; these barriers must be addressed by supporting students

and providing them with adequate guidance and information about their educational options from early stages.

7.5.2. For future research

Future research focusing on individual universities, is necessary to explore differences in their own cohorts, as the socio-economic/demographic profiles vary between different institutional types and the subjects/faculties within these (Callender, 2011; Croxford & Raffe, 2013; Gallagher et al., 2009; Mathers & Parry, 2009). It is important to disaggregate inequalities in HE participation to address and understand these complexities (Singleton, 2010a). The findings from Chapters Four and Five highlight this, as the differences in participation and attainment that were identified, not only varied between them, but also differed from previous studies. Indeed, the type of institution students attend varies significantly by social class and the geographic location of the institutions (Callender, 2011; Gibbons & Vignoles, 2012; Singleton, 2010b). Additionally, studies have identified socio-economic differences in degree outcomes between different types of institution (Chowdry, et al., 2013; Crawford, 2014). Individual universities should explore these differences in their own cohorts, to guide their decision-making processes and to ensure that they are targeting support accurately. Hence, if the aim of WP and Affirmative Action is to help the disadvantaged, it is critical that Universities have a clear understanding of what this means and how this relates to access and attainment of their students.

Multiple case studies could be carried out with Universities across multiple geographical regions to explore variability between these. This method could also be used to qualitatively explore differences between disadvantaged students from universities in different regions and to include students from heterogeneous backgrounds, including different ethnicities and/or age groups. Future studies may also explore alternative perspectives of the issues surround access to HE by focussing for instance on students' parents/carers and teachers. Some participants in Chapter Six felt that others, including educational professionals had failed to engage them effectively, or recognise the difficulties they faced. Indeed, if I had examined the perspectives of these individuals, teachers and parents/carers they may have viewed participants' stories and their consequences

differently, raising different implications and highlighting different issues surrounding access to HE. For instance, this could be used to gain insight into teachers' and educators' understandings of the ways that peer groups and school environments affect student engagement, and whether individuals openly participate at school and show that they are engaged. This could be used to inform interventions, and raise awareness of 'hidden engagement', as students may be perceived as being uninterested in education or even apathetic when this is not necessarily the case. Ultimately, the use of different approaches can help develop a better overview of the issues surrounding access and participation in HE and should be carried out on a larger scale to include more diverse student cohorts in different geographical locations.

The studies comprised in this thesis included only students who were successfully admitted to the UoL. Future research is required to explore the educational trajectories of socio-economically disadvantaged students who do not choose to attend HE, or those that opt to attend less competitive institutions despite attaining the high grades required by more selective universities. In Chapter Six, some participants described situations where they had been advised not to apply to University or in particular the UoL. In some instances, they were told that they would not be accepted, or they would not fit in, and had to deal with conflicting views regarding the values of education from others. Such advice could be preventing disadvantaged students from applying to, or attending University, and particularly those HE institutions that are perceived as more 'elite'. This is an important barrier that requires further exploration, and could be investigated by interviewing those students who do not go on to attend university despite getting high grades, and/or their parents/carers and teachers.

The incongruence some students described between their group norms and engagement with education requires further investigation. Participants frequently described how class participation, submitting work, wanting to achieve high grades, or even being interested in education was not generally viewed positively by other students. They responded to this in different ways, which affected how their peers treated them or whether their peer groups accepted or rejected them. Hence, whilst some students hid their engagement in education and in this way appeared to maintain group membership or

simply did not engage actively in school to prevent negative social consequences; others did not hide their educational engagement and chose to participate actively at school, experiencing negative treatment from their peers as a result, including isolation, bullying and exclusion. These findings resonate with the research of Archer et al., (2007) and the notion that identity related constraints can influence educational engagement as working-class youths may appear to reject schooling to maintain group membership with other working-class youths who reject this as a way of resisting dominant definitions of success (Becker & Tausch, 2014; Granfield, 1991; Manor-Bullock et al., 1995; Oyserman et al., 2006). This represents an important issue that requires further investigation, as it could be a critical factor preventing students from 'non-traditional' backgrounds from engaging at school, and attending HE. Whilst the notion that academic success is socially cultivated, and seen negatively by some groups has been investigated substantially with ethnic minority students (Gayles, 2005; Ogbu & Simons, 1998; Tyson et al., 2005), further research into this area is necessary, focussing specifically on socio-economically disadvantaged students.

In addition, it is important to note that the studies in Chapter Four and Five included only students who were successfully admitted and completed their degree. Hence, these studies do not provide insight into students who failed or dropped out, thereby restricting the extent to which findings are representative of all students. This should be explored in future studies, to understand when and why students fail and drop out of programmes, particularly as interactions have been documented between students' background characteristics, educational disadvantage and the likelihood of dropping out (Archambault et al., 2009; Crawford, 2014). Such information is necessary to ensure that 'at risk' students are successfully identified and supported. The students interviewed in Chapter Six could represent some of those individuals who would be considered to be at 'risk' of dropping out. The difficulties they described throughout their educational trajectories and lack of advice or guidance they experienced prior to university are likely to represent on-going challenges to many of these students. Future research is necessary to explore this, and to identify on-going barriers and difficulties that may affect them at university, as well as factors that help them to cope with this.

7.6. Conclusions

Despite increased interest in WP and fair access, the lack of published academic research exploring the factors that contribute to pervasive socio-economic inequalities in HE participation and attainment is problematic. The current thesis endorses the use of a pragmatic approach, which combines quantitative and qualitative methods, as a valuable tool for examining and addressing these inequalities, providing insight that could not be gleaned by following a single approach in isolation.

To summarise here, quantitative studies 1 and 2 (Chapters Four and Five) provide insight into associations between students' contextual background characteristics with participation and academic attainment at the UoL. These studies provide additional evidence of the on-going socio-economic inequalities in HE participation and illustrate how the demographic profile and patterns of participation differ between programmes at the UoL and other HE institutions (HEFCE, 2003; Hoare & Johnston, 2010; OFFA, 2014). Such differences should be recognised by HE institutions and policy makers for guiding their decision-making processes and selecting students more fairly. Hence, though the findings of studies 1 and 2 suggest that educational attainment at school is a good, albeit imperfect, predictor of degree attainment, and support the use of contextual data in the UoL's admissions processes, analyses must be expanded to include other universities.

Whilst quantitative studies 1 and 2 depict inequalities in HE participation and attainment, qualitative study 3 contributes to the interpretation of these inequalities. This final study brought to the fore a more complex view of disadvantage by focussing on the experiences of socio-economically disadvantaged students between primary school and HE. Two main themes were derived from students' narratives; 'identity' and 'engagement'. These themes emerged in the types of disruption, and instability that individuals discussed in relation to their schools, neighbourhoods, families and peer groups and in the ways that they attempted to cope and/or adapt to disadvantage. The integration of these findings with the findings of quantitative studies 1 and 2 produced a more nuanced evaluation of the individual and group level factors that may perpetuate socio-economic inequalities in HE participation and academic attainment. Further evidence using mixed methods is

needed to explore associations between students' background characteristics, the tensions between social class identity(s) and engagement in education. These issues require greater attention if inequalities in participation are to be effectively addressed. Critically, it is also important to recognise that the long-term negative effects of disadvantage do not end when students enter university and neither should the responsibilities of HE Institutions.

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LIST OF APPENDICES

- Appendix 1:** Interview Guide (Chapter Six)
- Appendix 2:** Participant Letter of Introduction (Chapter Six)
- Appendix 3:** Participant Information Sheet (Chapter Six)
- Appendix 4:** Participant Consent Form (Chapter Six)
- Appendix 5:** Strobe Checklist (Chapter Four)
- Appendix 6:** Strobe Checklist (Chapter Five)

Appendix 1- Interview Guide

Introductory statement:

Though we hear a lot about educational disadvantage, and about socio-economic differences in participation in HE far less is known about how different forms of educational and socio-economic disadvantage affect the lives of individuals from (educationally/socio-economically) disadvantaged backgrounds from the point of view of those individuals. This is why I am interested in hearing about *your* story and your *experiences in your educational trajectory from primary school to university*.

1. Primary school questions:

I would like to begin our conversation by asking you to tell me about what you can remember from when you were in primary school.

Probes:

- *Can you remember what kind of aspirations you had?*
- *What did you foresee in your future?*
- *What kind of things motivated you?*

Can you remember what you wanted to be as an adult when you were in primary school?

Probes:

- *At this stage of your life did you parents or people that were close to you motivate you to study?*
- *Did anyone encourage you to consider a particular profession?*
- *Why did you want to become a X*
- *Friends aspiring to be the same? Following in parents' footsteps?*
- *Were you motivated to study? If yes what motivated you? If no, why?*

Was there anyone in your family that went to university (including siblings, and extended family)?

Was there anyone in your family that wanted to go to university but wasn't able to (general questions)?

Please tell me about your experiences in terms of the social aspects.

Probes:

- *What was your friend circle like?(e.g. How many friends did you have?)*
- *Did you enjoy playing with other kids?*

Probe:

- - Was it somewhere that you thought you might want to go at that time or not?

2. Secondary school questions

How did you find your time at secondary school?

Probes:

- *What did you find easy?*
- *What did you find hard?*

What were your expectations about your future or what you wanted to be in secondary school?

Probes:

- *If these changed from when you were in primary then how did they change?*
- *When do you think these changed what factors do you think influenced this?*

Did you find anything at school particularly interesting?

Probe:

- *Was there any subject/topic that you were particularly interested in?*

Can you remember experiencing any academic challenges when you were in secondary school?

Probe:

- Were you able to keep up with the pace?

Did you have any difficulties with any subjects?

Probe:

- *How did you overcome these?*

What about social challenges?

Can you remember deciding to go to University?

Did you have any difficulties with any subjects?

Probe:

- *Or that you were at least interested in university? When did you decide this?*

Was there anyone that supported you academically?

Probe:

- *Were they encouraging?*
- *Did they motivate you to study etc?*

Did you have role models in secondary school?

Probe:

- *Was it the same role models as those in primary school?*

What subjects did you choose for your GCSEs?

Why?

What influenced you to choose those subjects?

Probe:

- *Interest? Teachers? Did you have certain profession in mind?*

How did you perceive your academic ability?

Probe:

- *How do you think other people perceived your academic ability?*
- *Do you think other people considered you intelligent? How did this affect you?*

What did you think you would be doing in your future? In terms of your career?

What were your aspirations in secondary school?

Probe:

- *What about your friends?*
- *What kinds of aspirations did they have?*

3. College/ Further Education/ Sixth Form

Now, I would like you to please tell me about the time when you were in College/ Further Education/ Sixth Form.

What A-levels did you choose to do?

Probe:

- *Why did you choose these?*

At this stage of your life what kind of people did you look up to?

What professions were you considering at this point?

Probe:

- *Did you consider any other professions/ subjects to study ?*

What did you think you needed to do in order to fulfil this aspiration?

Did you feel that you had support / people encouraged you to achieve your goals?

What kind of aspirations did your friends have?

Were you ahead of your friends academically at school? How did you compare to your friend group - (academically and in terms of your behaviour?)

Probe:

- *Why do you think this?*

Did your friends have similar career aspirations to you?

Probes:

- *How was your friend group in FE/6th form?*
- *If it changed, how did your friend group change between school and secondary?*
- *How do you think your goals compared to these people what about in comparison to the people that were close to you in general?*
- *For example, did your friends/brothers and sisters have similar goals/ aspirations?*

Closing Statements:

Is there anything else you would like to tell me about your educational trajectory, and/or your experiences in getting to University?

Are there any questions you would like to ask me in general or about this interview?

Thank you so much for your time.

Appendix 2- Participant Letter of Introduction

Dear Scholars,

My name is Tammy Thiele and I am a PhD student currently studying at the University of Liverpool. I am conducting research that can help inform Widening Participation (WP) activities and the admissions process at the University. This study aims to promote a fairer admission system and could help academically able students from disadvantaged backgrounds access University as they are currently underrepresented compared to other groups. This involves working with Educational Opportunities and the Health and Life Sciences Faculty director of WP. As you participated in the University Scholars' Scheme we are interested in learning about your journey into Higher Education (HE) and the experiences you have had that led you to this point.

So far, our research has explored the academic achievements of students whilst at University. It is clear from the first stage of this study, that further research is required to reduce the effect of different types of disadvantage. In this phase of the research we are interested in understanding more about your experiences in your transition to University and the factors that you believe influenced this. You are therefore invited to participate in a 60 to 90 minute interview focussing on your journey into university.

I would be very grateful if you felt able to take part, since the more people who participate, the more we can learn about the views of students themselves and this will enable us to put appropriate support in place as required. Furthermore, it is an opportunity for you to take part in qualitative research and gain some insight in this. There is also an opportunity to be entered into a prize draw for an Amazon voucher for your participation and refreshments will be provided at the interview. (An alternative voucher of the same value can be provided to the winner of the prize draw should they request this.)

There is further information about the study attached to this e-mail. All participation is voluntary, confidential, and personal information will not be linked with the study data.

If you are willing to participate in this study please get in touch by e-mailing me at t.thiele@liverpool.ac.uk or call me on 07540252905. Please do not hesitate to ask if you have any questions.

Many thanks,

Tammy Thiele

Appendix 3- Participant Information Sheet



Participant Information Sheet

Study Title: Educational Trajectory into Higher Education

You are being invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. We would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.

What is the purpose of the study?

This study is designed to explore your views and perceptions on the experiences you have had in your trajectory from primary school to HE.

Why have I been invited to take part?

Students that took part in the University of Liverpool scholar scheme have been invited to participate in the present study in order to explore their transition to HE.

Do I have to take part?

You are NOT required to participate in this research; it is completely your choice. You are free to leave at any time should you wish to do so, without giving a reason, without incurring a disadvantage. Educationally you will not be disadvantaged or penalised in any way should you decide to withdraw at any stage.

What will happen if I take part?

You will be asked to complete a short questionnaire with questions about your background (educational, family, and demographic characteristics). You will then be asked to take part in a one-to-one semi-structured interview. You will be asked questions relating to your experiences in your transition to University and the factors that you believe influenced this. Because we are interested in your family background and your school experience, we will also ask you about these and how they affected your transition from primary school to now. Specifically, how these factors influenced your

decision to attend university as well as your choice of programme will be investigated. Interviews will last between 60 and 90 minutes and will involve the use of an audio device for recording.

If you choose to participate you will be contributing to an important programme of research. This involvement may help provide insight on the kind of support that students from background that are currently underrepresented in HE may need.

Expenses and / or payments

You will be provided with refreshments and will be given the option of taking part in a prize draw for a £20 amazon voucher.

Are there any risks in taking part?

There are no anticipated risks to you if you take part in the study, nor are there likely to be any adverse effects. Sensitive issues could be uncovered that may have occurred in your journey to university, however, you should only share experiences that you wish to share. Please inform the researcher immediately if you do not wish to discuss a specific topic or question as you are only encouraged to discuss what you are comfortable discussing.

Are there any benefits in taking part?

Though participating in this study has no direct benefit to those who choose to take part in it, this research is highly beneficial to anyone with an interest in improving access to HE. It will highlight what factors influenced participants' transition into HE. It could also help to identify where participants may currently require additional support in the process of considering, applying to universities and at university.

What if I am unhappy or if there is a problem?

If you are unhappy, or if there is a problem, please feel free to let us know by contacting [Dr. Debbi Stanistreet. (phone:0151 7945583; email D.L.Stanistreet@liverpool.ac.uk.)] and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer at ethics@liv.ac.uk. When contacting the Research

Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.”

Will my participation be kept confidential and what will happen to results?

You will be given a unique identifier code at the beginning of your interview to ensure your anonymity after this point. Hence, all data is entirely anonymous and will be referred to only via this participant code that you will be provided with. Your participation will be fully confidential throughout the course of the research. All data will be stored securely. The overall results will be published in peer review journals.

Will my taking part be covered by an insurance scheme?

All participants taking part in a University of Liverpool study are covered for negligent and non-negligent harm by the University’s Insurance policy.

What will happen if I want to stop taking part?

You are free to withdraw from this study at anytime, without explanation or obligation. Results up to the period of withdrawal may be used, if you are happy for this to be done. Otherwise you may request that they are destroyed and no further use is made of them. As results are anonymised, these may only be withdrawn prior to anonymisation.

Who can I contact if I have further questions?

If you have any further questions please contact the student investigator carrying out this research:

Tammy Thiele,

School of Psychology,

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We hope that this sheet provides you with sufficient information and you are happy to take part in this important study.

Appendix 4- Consent Form

Committee on Research Ethics

PARTICIPANT CONSENT FORM

Title of Research Project: Educational Trajectory into Higher Education

Researcher(s): Dr Debbi Stanistreet, Tamara Thiele

**Please
initial box**

1. I confirm that I have read and have understood the information sheet dated [DATE] for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline.
3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish.
4. I agree to take part in the above study.
5. I understand and agree that my participation will be audio recorded and I am aware of and consent to your use of these recordings in order to make qualitative report(s) about students' transition to university.

Participant Name

Date

Signature

| | | |
|-------------------------------|------|-----------|
| | | |
| Name of Person taking consent | Date | Signature |
| | | |
| Researcher | Date | Signature |

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[Version 2.1 August 2014]

Appendix 5 (Pertaining to Chapter Four)

Since study 1 (Chapter Four) has been published, further information was added to the dataset with regards to school types and school performance. As explained in Chapter 3, I also re-ran analyses using students' top three A-level points as a measure of prior attainment for entry to HE (for consistency with Study 2/Chapter Five). The results of analyses are presented here and discussed to highlight differences that were identified as a result of these changes.

Firstly, Table 18 presents a descriptive summary of the association between each of the contextual background characteristics and academic performance at school and at final year of university (using top three A-levels as a measure of school attainment). This depicts differences in the distribution of students based on their contextual background characteristics. The proportion of missing data for each item in the dataset is described at the bottom of Table 18. In total, there were 1,308 (24.4%) missing cases. Hence, though the dataset includes 5,369 students multi-variable analysis only includes 4,061 students for whom data were complete.

The trends observed in this table, are similar to those observed in Table 9 of the published study. In summary, both Table 18 and Table 9 depict significant differences in the entry-level attainment of students from different ethnic groups, school backgrounds, quintiles of socio-economic deprivation, neighbourhoods with different levels of participation in HE and between males and females. Though the overall patterns remained the same, group differences were substantially narrower than those evidenced using students' total UCAS tariff points. This is because in the findings presented here, UCAS tariff points were used to calculate students' three highest A-level points and thus control for the number of qualifications a student has to make comparisons between students fairer. This is also why UCAS data are missing for 470 students whom did not have three A-levels (compared to 353 when total UCAS tariff points were used).

Table 18: Descriptive Breakdown of Characteristics of Students in three-year programmes (using top three A-Levels)

| Indicator variable | | Indicator of Student Performance | | | |
|---------------------------|--|----------------------------------|-------|----------------|------|
| Variable | N (%) | Top 3 A-Level Points | | Term 3 Average | |
| | | Mean | sd | Mean | sd |
| School type: | | | | | |
| Independent | 567 (10.6) | 300.72 | 47.37 | 61.65 | 6.59 |
| Grammar | 605(11.9) | 310.54 | 43.12 | 62.50 | 6.44 |
| Comprehensive | 2640(51.9) | 297.34 | 47.96 | 62.70 | 6.64 |
| Sixth form | 1205(23.7) | 304.49 | 49.33 | 62.16 | 6.72 |
| State (other) | 68(1.3) | 284.77 | 48.58 | 61.65 | 6.53 |
| | p<0.005 | p<0.005 | | p<0.05 | |
| School performance | | | | | |
| High | 3865 (81.8) | 303.73 | 45.38 | 62.35 | 6.44 |
| Low | 861(18.2) | 289.06 | 50.86 | 62.58 | 7.04 |
| | p<0.005 | p<0.005 | | p=0.40 | |
| Deprivation*: | | | | | |
| 1 | 655(13.5) | 292.80 | 52.86 | 61.48 | 7.75 |
| 2 | 687(14.2) | 296.98 | 50.27 | 62.50 | 6.54 |
| 3 | 916(18.9) | 300.49 | 47.82 | 62.51 | 6.51 |
| 4 | 1153(23.9) | 302.06 | 44.84 | 62.83 | 6.21 |
| 5 | 1423(29.4) | 303.19 | 46.52 | 62.50 | 6.42 |
| | p<0.005 | p<0.005 | | p<0.01 | |
| POLAR 3:# | | | | | |
| High | 4010(76.7) | 301.61 | 46.56 | 62.46 | 6.37 |
| Low | 1220(23.3) | 297.16 | 51.65 | 62.13 | 7.22 |
| | p<0.005 | p<0.05 | | p<0.05 | |
| Sex: | | | | | |
| Males | 2221(41.4) | 292.88 | 70.19 | 61.77 | 7.15 |
| Females | 3148(58.6) | 305.57 | 46.76 | 62.93 | 6.11 |
| | p<0.005 | p<0.0005 | | p<0.01 | |
| Ethnicity | | | | | |
| White | 4913 (91.5) | 300.77 | 47.21 | 62.63 | 6.14 |
| Asian | 127 (2.4) | 301.04 | 53.69 | 60.03 | 6.55 |
| Black | 65(1.2) | 276.49 | 54.20 | 60.76 | 5.87 |
| Chinese | 48 (0.9) | 298.41 | 64.52 | 62.60 | 9.07 |
| Mixed | 111 (2.1) | 301.65 | 49.63 | 62.67 | 7.13 |
| Other | 105 (2.0) | 296.74 | 51.45 | 63.21 | 6.53 |
| | p<0.005 | p<0.0005 | | p<0.0005 | |
| Item Missingness: | School Type 284; School Performance 643; IMD 535; POLAR 3 139; Top 3 A-Level Points 470. | | | | |

Table 14 summarises the results for contextual background factors in relation to final degree classification. The trends this depicts are also consistent with those observed in Table 10 of Chapter Four. Namely, compared to students from the most deprived quintile (IMD), students from all of the other IMD quintiles were slightly more likely to obtain a good degree; however, this association was only statistically significant for IMD quintiles 4 and 5. Secondly, compared to students who had attended comprehensive schools, students from the four other types of school were less likely to obtain a good degree, but this association was only statistically significant for students from independent schools. Finally, sex and top three A-level points were both found to predict significant differences in the probability of getting a good degree.

There were no significant differences in the likelihood of achieving a good degree at university between groups of students who came from neighbourhoods with low/high participation and between those students that attended schools with low/high levels of performance

Table 19: Unconditional Bivariate Logistic Regression Models for Student Characteristics with Final Degree Performance (2.1 and 1st versus lower classification)

| Indicator variable | | Odds Ratio 'Good Degree' | | | |
|--|------|--------------------------|------|------------|---------|
| Variable | No. | % | OR | 95% CI | p-value |
| School Type | | | | | |
| State Comprehensive (reference) | 2605 | 51.9 | 1 | | |
| Sixth Form College | 1186 | 23.6 | 0.89 | 0.76-1.05 | .17 |
| State Other | 67 | 1.3 | 0.74 | 0.43-1.28 | .28 |
| State Grammar | 602 | 12.0 | 0.86 | 0.70-1.06 | .17 |
| Independent School | 558 | 11.1 | 0.69 | 0.56-0.85 | <.0005 |
| School performance: | | | | | |
| High (reference) | 3669 | 81.0 | 1 | | |
| Low | 864 | 19.0 | 0.96 | 0.80-1.14 | .61 |
| Deprivation*: | | | | | |
| 1(reference) | 642 | 13.5 | 1 | | |
| 2 | 678 | 14.2 | 1.31 | 0.99-1.64 | .06 |
| 3 | 907 | 19.0 | 1.09 | 0.90-1.43 | .28 |
| 4 | 1145 | 24.0 | 1.33 | 1.09-1.71 | .01 |
| 5 | 1401 | 29.4 | 1.33 | 1.07-1.65 | .01 |
| POLAR 3:# | | | | | |
| High (reference) | 3964 | 76.8 | | | |
| Low | 1198 | 23.2 | 0.97 | .83-1.13 | .65 |
| Sex: | | | | | |
| Males (reference) | 2179 | 41.1 | 1 | | |
| Females | 3119 | 58.9 | 1.58 | 1.39-1.80 | <.0005 |
| Ethnicity | | | | | |
| White (reference) | 4855 | 91.6 | 1 | | |
| Asian | 122 | 2.3 | 0.43 | 0.30-0.62 | <.0005 |
| Black | 64 | 1.2 | 0.45 | 0.27-0.75 | <.01 |
| Chinese | 47 | 0.9 | 1.07 | 0.53- 2.15 | .86 |
| Mixed | 109 | 2.1 | 1.02 | 0.65-1.61 | .93 |
| Other | 101 | 1.9 | 0.75 | 0.48-1.17 | .20 |
| Top 3 A-level Points (continuous) | | | | | |
| | 4738 | 88.2 | 1.01 | 1.01-1.01 | <.0005 |

*Defined by quintiles of Index of Multiple Deprivation (1 = Most deprived.... 5 = Least deprived)

#Neighbourhood HE participation

Table 15 presents the results of the multivariable logistic regression that was carried out to estimate how students' background characteristics including top 3 A-level points, neighbourhood participation (POLAR 3), deprivation, educational background, and personal characteristics influenced their odds of getting a good degree (1st and 2.1 versus all others).

In summary, students' top three A-level points (entry-level performance) were significantly associated with university performance in the multivariable analysis (OR = 1.01; 95% CI= 1.01- 1.01). Students' sex also remained a significant predictor in multivariable analysis. Compared to males, females were almost 40% more likely to achieve a good degree (OR =1.39; 95% CI=1.19- 1.62). Associations between neighbourhood participation (POLAR 3) and degree classification remained non-significant in multivariable analysis using both top three A-level points and total UCAS tariff points. However, though findings were largely consistent, a few differences were observed in the multivariable analysis.

Firstly, when total UCAS tariff points were included in the model, socio-economic differences in final year performance at university were statistically significant between students from the most deprived areas and those from the second least deprived group (quintile four), who were more likely to achieve a good degree (OR= 1.44; 95%CI =1.07- 1.95). However, when top three A-level points were used as a measure of prior attainment this association only approached statistical significance in the multivariable analysis (OR= 1.33; 95%CI =0.99-1.78).

Secondly, compared to comprehensive school students, multivariable analyses in the published study revealed that students from all but one other types of school (state other) had significantly lower odds of achieving a good degree. Though this overall trend was similar when top three A-level points were used as a measure of prior attainment, these associations were only statistically significant between students from comprehensive schools and students from both sixth form colleges and independent schools. The difference was still greatest between students from comprehensive schools and students from independent schools who were found to be 38% less likely to achieve a good degree (OR= 0.62; 95% CI=0.49-0.78).

Third, performance of school did significantly predict differences in educational performance in the multivariable analysis when total tariff points were used. However, when top three A-levels were used in multivariable analysis, this associated only approached statistical significance. Consistent with the findings of the published study, it was found that students from schools that were high performing were less likely to achieve a good degree than those from low performing schools (OR=0.81; 95% CI=0.65-1.02).

Table 20: Multiple Logistic Regression Model for Student Characteristics (N=4061) with Final Degree Performance (2.1 and 1st versus lower classification)

| Indicator variable | | Odds Ratio 'Good Degree (1 st or 2i)' | | |
|--|------|--|---------|--|
| Variable | OR | 95% CI | p-value | |
| School Type | | | | |
| State Comprehensive (reference) | 1 | | | |
| Sixth Form College | 0.81 | 0.67-0.98 | <.05 | |
| State Other | 0.63 | 0.33- 1.17 | .14 | |
| State Grammar | 0.82 | 0.63-1.06 | .13 | |
| Independent School | 0.62 | 0.49-0.78 | <.0005 | |
| School performance: | | | | |
| Low (reference) | | | | |
| High | 0.81 | 0.65-1.01 | .07 | |
| Deprivation*: | | | | |
| 1(reference) | 1 | | | |
| 2 | 1.31 | 0.97-1.77 | .08 | |
| 3 | 1.09 | 0.82-1.46 | .55 | |
| 4 | 1.33 | 0.99-1.78 | .06 | |
| 5 | 1.27 | 0.92-1.64 | .17 | |
| POLAR 3:# | | | | |
| Low (reference) | 1 | | | |
| High | 1.03 | 0.83-1.28 | .82 | |
| Sex: | | | | |
| Males (reference) | 1 | | | |
| Females | 1.39 | 1.19-1.62 | <.0005 | |
| Ethnicity | | | | |
| White (reference) | 1 | | | |
| Asian | 0.39 | 0.25-0.59 | <.0005 | |
| Black | 0.61 | 0.32-1.15 | 0.12 | |
| Chinese | 1.29 | 0.50- 3.30 | .60 | |
| Mixed | 1.20 | 0.68-2.10 | .53 | |
| Other | 0.93 | 0.53-1.62 | .80 | |
| Top 3 A-level Points (continuous) | 1.01 | 1.01-1.01 | <.0005 | |

*Defined by quintiles of Index of Multiple Deprivation (1 = Most deprived.... 5 = Least deprived)

#Neighbourhood HE participation

Table 21: Strobe Checklist for Study 1

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

| Section/Topic | Item # | Recommendation | Reported on page # |
|------------------------------|--------|--|--------------------|
| Title and abstract | 1 | (a) Indicate the study's design with a commonly used term in the title or the abstract | 80 |
| | | (b) Provide in the abstract an informative and balanced summary of what was done and what was found | 80 |
| Introduction | | | |
| Background/rationale | 2 | Explain the scientific background and rationale for the investigation being reported | 80-86 |
| Objectives | 3 | State specific objectives, including any prespecified hypotheses | 86 |
| Methods | | | |
| Study design | 4 | Present key elements of study design early in the paper | 87 |
| Setting | 5 | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection | 87 |
| Participants | 6 | (a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up | 87,89 |
| | | (b) For matched studies, give matching criteria and number of exposed and unexposed | N/A |
| Variables | 7 | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | 88 |
| Data sources/ measurement | 8* | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group | 88,89 |
| Bias | 9 | Describe any efforts to address potential sources of bias | 89,91 |
| Study size | 10 | Explain how the study size was arrived at | 87 |
| Quantitative variables | 11 | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why | 89-90 |
| Statistical methods | 12 | (a) Describe all statistical methods, including those used to control for confounding | 89-90 |
| | | (b) Describe any methods used to examine subgroups and interactions | 90 |
| | | (c) Explain how missing data were addressed | 105-106 |
| | | (d) If applicable, explain how loss to follow-up was addressed | N/A |
| | | (e) Describe any sensitivity analyses | N/A |
| Results | | | |

Table 21: Strobe Checklist for Study 1 (continued)

STROBE 2007 (v4) Statement— Checklist of items that should be included in reports of cohort studies

| | | | |
|-------------------|-----|--|-----------------|
| Participants | 13* | (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed | 92 |
| | | (b) Give reasons for non-participation at each stage | N/A |
| | | (c) Consider use of flow diagram | N/A |
| Descriptive data | 14* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders | 87 |
| | | (b) Indicate number of participants with missing data for each variable of interest | 92 |
| | | (c) Summarise follow-up time (eg, average and total amount) | N/A |
| Outcome data | 15* | Report numbers of outcome events or summary measures over time | N/A |
| Main results | 16 | (a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included | N/A |
| | | (b) Report category boundaries when continuous variables were categorized | N/A |
| | | (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | N/A |
| Other analyses | 17 | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses | 90,99 |
| Discussion | | | |
| Key results | 18 | Summarise key results with reference to study objectives | 101 |
| Limitations | | | |
| Interpretation | 20 | Give cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence | 101-102,105-106 |
| Generalisability | 21 | Discuss the generalisability (external validity) of the study results | 105 |
| Other information | | | |
| Funding | 22 | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based | N/A |

* Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An explanation and elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>. Information on the STROBE initiative is available at [www.strobe-statement.org.](http://www.strobe-statement.org/)

Appendix 6 (Pertaining to Chapter Five)

Table 22: Strobe Checklist for Study 2

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cohort studies*

| Section/Topic | Item # | Recommendation | Reported on page # |
|------------------------------|--------|--|--------------------|
| Title and abstract | 1 | (a) Indicate the study's design with a commonly used term in the title or the abstract | 110 |
| | | (b) Provide in the abstract an informative and balanced summary of what was done and what was found | 110 |
| Introduction | | | |
| Background/rationale | 2 | Explain the scientific background and rationale for the investigation being reported | 111-112 |
| Objectives | 3 | State specific objectives, including any prespecified hypotheses | 113 |
| Methods | | | |
| Study design | 4 | Present key elements of study design early in the paper | 113 |
| Setting | 5 | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection | 114-115 |
| Participants | 6 | (a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up | 113 |
| | | (b) For matched studies, give matching criteria and number of exposed and unexposed | N/A |
| Variables | 7 | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | 114 |
| Data sources/ measurement | 8* | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group | 114 |
| Bias | 9 | Describe any efforts to address potential sources of bias | 115 |
| Study size | 10 | Explain how the study size was arrived at | 113 |
| Quantitative variables | 11 | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why | 114-115 |
| Statistical methods | 12 | (a) Describe all statistical methods, including those used to control for confounding | 115-116 |
| | | (b) Describe any methods used to examine subgroups and interactions | 116 |
| | | (c) Explain how missing data were addressed | N/A |
| | | (d) If applicable, explain how loss to follow-up was addressed | N/A |
| | | (e) Describe any sensitivity analyses | N/A |
| Results | | | |

Table 22: Strobe Checklist for Study 2(continued)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of cohort studies

| | | | |
|-------------------|-----|---|------------------------|
| Participants | 13* | (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram | N/A N/A N/A |
| Descriptive data | 14* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest (c) Summarise follow-up time (eg, average and total amount) | 117 116,-117 N/A |
| Outcome data | 15* | Report numbers of outcome events or summary measures over time | 115,120,122,124 |
| Main results | 16 | (a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | N/A N/A N/A |
| Other analyses | 17 | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses | 123 |
| Discussion | | | |
| Key results | 18 | Summarise key results with reference to study objectives | 125 |
| Limitations | | | |
| Interpretation | 20 | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence | 125-128 |
| Generalisability | 21 | Discuss the generalisability (external validity) of the study results | 129,131 |
| Other information | | | |
| Funding | 22 | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based | 3 |

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.