



What Motivates A-level Students to Achieve? The Role of Expectations and Values

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Doctor of Philosophy in Education

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This thesis is about expectations, values, identity and achievement

It is dedicated with much love & sincere gratitude to Carol Blake

Thank you for helping me understand what these concepts mean to me and for all of
your support, encouragement, wisdom and infinite patience.

This DPhil, amongst many other things, would not have been possible without you.

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Abstract

What Motivates A-level Students to Achieve? The Role of Expectations and Values

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Eccles' expectancy-value model of achievement motivation suggests that beliefs about ability and expectations for success are a strong predictor of grades and differences in task value underlie differences in motivation and achievement. This model has not been previously investigated in the context of high stakes examinations in the UK and this study therefore explores the relationships between expectations, values and A-level achievement in 930 students. This is important given the significance of these qualifications for future life pathways. Furthermore, studies examining the subjective task value (STV) patterns across school subjects, rather than domain specific ones, are rare, highlighting the additional importance of this work.

A mixed methods design was used. A questionnaire collected information on a student's background (SES, gender, ethnicity), the expectations and STV attached to A-levels, and their future and general life expectations and values. Some of these relationships were also explored using 20 semi-structured interviews. The qualitative data illustrated that studying A-levels confirmed aspects of students' identity but also facilitated changes to their goals and academic skills, having positive effects, contrary to the argument that high stakes assessment has a negative impact on individuals. Unsurprisingly parents and teachers were perceived to be influential.

As predicted, expectations and values were related to A-level achievement. As there is a lack of research into the effects of these variables on A-level outcomes these findings are valuable. Eccles' original three factor model of STV could not, however, be supported. In this research the utility construct was removed. Further exploration of the STV construct is warranted. Socio-economic status was positively related to both achievement and expectations about achievement. Girls had lower expectations but placed higher value on their A-levels. There were, however, no gender differences in achievement. Employing the expectancy-value model in this UK context has been useful in explaining the motivational patterns underlying A-level qualifications and the findings have implications for enhancing outcomes and narrowing educational gaps in this student population.

Chapter 1 Investigating What Motivates A-level Students to Achieve

The relationships between motivation and A-level achievement were the focus of this thesis. The grades achieved at A-level influence individuals' life chances, their entry into higher education and determine the options that are subsequently available to them. It is therefore critical to understand the motivational factors that contribute to A-level achievement. Whilst there is a wide ranging literature on student engagement (for example, Becker & Luthar, 2002; Duffy & Elwood, 2013; Martin & Dowson, 2009; Lumby, 2012), less research focuses on the role played by the expectations and values that students attach to examinations. This thesis aimed to address this gap in the literature by exploring how expectations and task value affect A-level performance. It is important to explore these relationships as previous research suggested that students' beliefs about their abilities and expectations for success are a strong predictor of grades (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo, Parker, Marsh, & Morin, 2015; Trautwein et al., 2012) and adolescents value activities they are good at (Eccles & Wigfield, 1995). Differences in task value were argued to underlie differences in motivation and achievement (Eccles, 1987; Eccles et al., 1983; Eccles, Adler, & Meece, 1984).

There are a wide range of definitions of motivation in the literature which include a focus on needs, drives, goals, aspirations, interest and affect (Lazowski & Hulleman, 2016). These definitions include Pintrich's notion that generally theories of motivation are concerned with the energisation and direction of behaviour (Pintrich, 2003). Motivation has also been referred to very simply as 'the reasons underlying behaviour' (Guay et al., 2010, p.712). Within the educational field the focus tends to be on socio-cognitive theories of motivation rather than those that are biologically driven (Lazowski & Hulleman, 2016). This is also the case within this research. However even within the

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socio-cognitive perspective there are a range of theories that may be considered including theories that focus on needs (D. C. McClelland, Atkinson, Clark, & Lowell, 1953), achievement goals (Ames & Archer, 1988; Dweck, 1986; Elliot, 1999; Elliot & Harackiewicz, 1996; Elliot, Murayama, & Pekrun, 2011), attributions for success or fail (Weiner, 1985, 1992), emotions (Pekrun, 2006) and self-determination (Deci & Ryan, 2008). Many of these are briefly highlighted in chapter 2. As Eccles' expectancy-value model is the theoretical framework used in this research (Eccles et al, 1984; Eccles et al, 2005) a learner's motivation is defined as behaviour determined by an individual's beliefs about whether they expect to succeed and the extent to which they value a task. Thus, motivation is a function of an individual's beliefs and values and these are linked to a broad array of psychological and socio-cultural determinants.

Theoretical Framework

Although there are a number of theories of achievement motivation Eccles' expectancy-value model provided the theoretical framework for this research. The expectancy-value model was chosen because it offers a multidimensional approach to understanding student motivation within educational contexts (Hulleman, Barron, Kosovich, & Lazowski, 2016). This framework has the advantage of addressing the role of both psychological and social influences on achievement behaviour and also benefitted from being grounded in the theoretical and empirical work associated with many of the theories in the field. This is further discussed in Chapter 2. These include those concerned with achievement motivation (Ames & Archer, 1988; Dweck, 1986; Elliot, 1999; Elliot & Harackiewicz, 1996; Elliot & McGregor, 2001), attribution theory (Weiner, 1985) and self-determination theory (Deci & Ryan, 1985, 2008).

Introduction

Eccles' *theoretical model* is represented in Figure 1. This figure indicates that expectations (I) and values (J) directly influence achievement choices and performance (K). The model specified a number of factors that might impact on these expectations and values including cultural milieu (A), socialiser's beliefs and behaviours (B), stable child characteristics (C), previous achievement-related experiences (D), individual perceptions of socialiser's beliefs, roles and task demands (E), individual's interpretations of experiences (F), goals and general self-schemas (G) and affective memories (H). As suggested by Figure 1 Eccles' model therefore linked achievement-related choices and performance to two broad sets of influences; a set of psychological factors and a set of social factors (Eccles, Vida, & Barbie, 2004). These psychological and social factors may therefore underlie the motivation of A-level students.

The psychological component was the key focus of this current research as it was 'characterised by the interactions of various cognitive factors in one time point' (Eccles et al., 1983); in this case the relationships between cognitive factors (expectancies and values) and A-level achievement. It is also the focus of the vast majority of empirical research on achievement motivation, especially expectancy-value perspectives including for example, Eccles et al (1984), Eccles et al (2005), Eccles & Wigfield (1995), Hood et al (2012), Meece et al (1990), Nagengast et al (2013), Phan (2014), Trautwein & Ludkte (2007), Wigfield (1997), Wigfield & Cambria (2010), Wigfield & Eccles (2000), Guo et al (2015). The influences of other psychological factors such as aspects of the individual's goals and general self-schema, perceived task demands, and perception of socialiser's beliefs, expectations and attitudes are also explored. Within the time constraints of the current work the developmental aspect was not looked at within the research questions, although the qualitative aspect of the design provided some insight into the role of these.

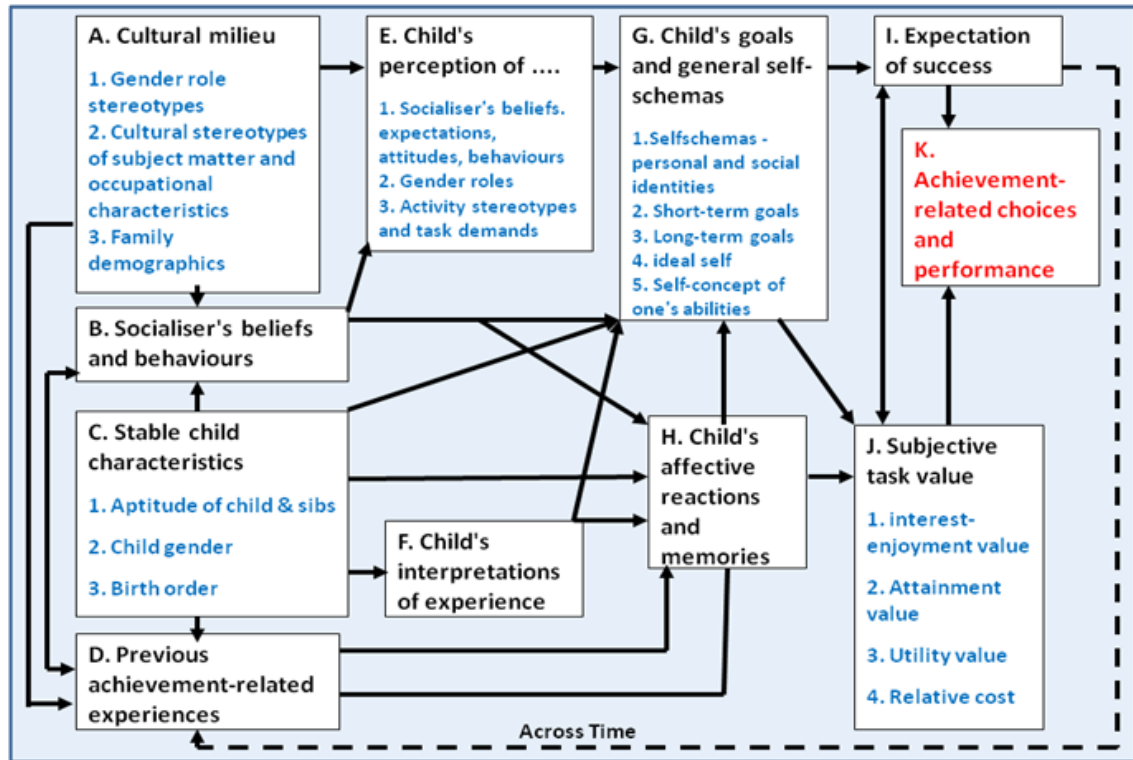


Figure 1 Eccles Expectancy-Value Model (adapted from Eccles, 2007b)

The social factors included individual characteristics such as gender and social class (Eccles et al., 2004) and were variables therefore considered in this research. There is also a well-established literature to suggest relationships between gender, ethnicity, socio-economic status (SES) and educational achievement including some meta-analyses (Demack, Drew, & Grimsley, 2000; Gillborn & Mizra, 2000; Sirin, 2005; White, 1982), further justifying their inclusion in this study. The psychological and social influences on A-level achievement are useful to understand because they help identify the motivational factors that contribute to educational outcomes.

Whilst the overall *theoretical* expectancy-value model was presented in Figure 1 to provide context and a sense of scope of this perspective much of the *empirical* work investigates only specific parts of it (see Chapter 2). Similarly, the current research focuses on only a portion of the model. An adapted diagrammatic representation of the psychological and social factors studied in this thesis is provided in Figure 2. The model

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proposed in this study suggested that expectations (IV), values (V) and student background (I) will directly affect A-level performance (VI). A relationship between expectations and values is also predicted. A number of factors are thought to influence these expectations and values including a student's goals and general self-schema (identities) and their perception of the task demands (III). These in turn are influenced by perceived socialisation influences (II) and a student's family demographics, gender and ethnicity (I). In this revised model task demands are placed in III investigating students' self-schema, rather than in the one exploring students' perceptions as shown in Eccles model, as has been the case in some representations of Eccles work (see Wigfield & Eccles, 2000). Thus III focuses on *internal* mental processes whereas II focuses on perceptions of *external* (socialisers) influences in this revised model.

Within this research expectancy of success, referred to as expectations in this study, is composed of a single (five item) construct (see Appendix C and Chapter 6) measuring both ability beliefs, defined as the perceptions of an individual's current competence at an activity, and expectations for success in the future, in line with empirical work (Eccles & Wigfield, 1995; Wigfield & Eccles, 2000). Although ability beliefs can be distinguished *conceptually* from expectations for success, *empirically* the constructs are highly related and have been found to load onto the same factor (see Eccles & Wigfield, 1995). Students were surveyed about their expectancy beliefs for their A-levels.

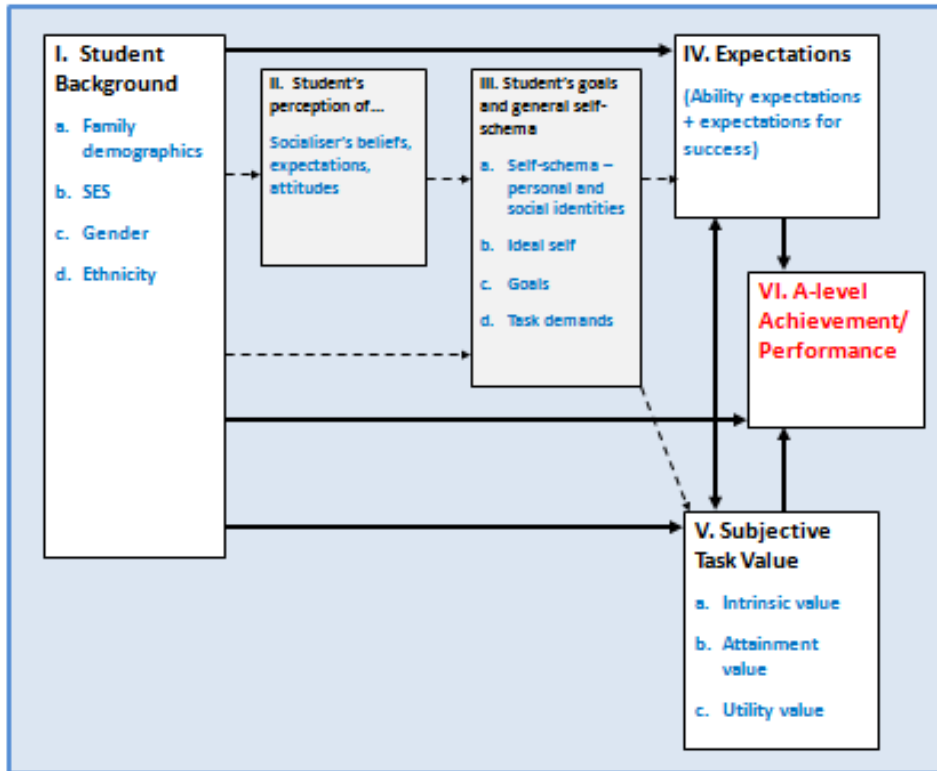


Figure 2 Theoretical Framework: An Expectancy-Value Model of A-level Achievement

Subjective task value (STV) is defined as a quality of the task that contributes to the increasing or decreasing probability that an individual would choose to engage in it (Eccles, 1987; Eccles et al., 1983; Wigfield & Eccles, 1992). The value of a specific task is the function of the attainment value, intrinsic value, utility value and perceived cost (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995). STV was therefore originally made up of (1) *Intrinsic value* – the anticipated enjoyment of the engaging activity (2) *Attainment value* – the personal importance attached to doing well on a task (3) *Utility value* – the value a task had because it fulfils a current or future goal (4) *Perceived cost* - the cost of participating in an activity such as anticipated anxiety, fear of failure, fear of social consequences and loss of energy for other activities that were more central to one's personal or collective identities. Interestingly however the cost subscale was not included when the expectancy value scale was refined in 1995 (Eccles & Wigfield,

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1995) where only one item on cost was included and this was within the attainment value subscale.

Subsequently most of the empirical work on the expectancy-value model has focused only on the first three components, rather than cost (Wigfield & Eccles, 2000), and as such this approach was adopted in this study. This is discussed further in the following chapter. In this research the students were therefore asked to what extent they; enjoyed studying A-levels, thought it was important to do well in them and perceived them as useful for their goals. Based upon Eccles' theoretical framework the key terms applied throughout this thesis are also presented in Table 1 for reference.

Table 1 *Glossary of Key Terms in this Study*

<i>Key Term</i>	<i>Definition</i>
<i>Expectations</i>	A student's belief about their ability and how well they will do on their A-levels
<i>Attainment Value</i>	The personal importance attached to doing well on A-levels
<i>Expectancy-Value Theory of Achievement Motivation</i>	Theory of achievement motivation in which it is suggested that a learner's motivation is determined by how much they value the goal and whether they expect to succeed
<i>Expectancy-Value Theory of Identity</i>	If specific identities are important to the individual then the activities, behaviours and tasks associated with them will take on high subjective value and the individual will be motivated to act them out
<i>Intrinsic Value</i>	The anticipated enjoyment/interest in A-levels
<i>Perceived Cost</i>	The cost of participating in A-levels such as anticipated anxiety, fear of failure, fear of social consequences and loss of energy for other activities
<i>Subjective Task Value</i>	Quality of the task that contributes to the increasing or decreasing probability that an individual selected it
<i>Task Difficulty</i>	Perceived difficulty of A-levels
<i>Utility Value</i>	The value A-levels had because they fulfilled a personally central or future goal/ how useful A-levels are perceived to be

Contributions

The expectancy-value model originated from, and has been predominantly tested in the US, although some recent studies have been conducted in other countries such as Germany (Trautwein et al., 2012) and Australia (Guo et al., 2015; Hood, Creed, & Neuman, 2012). This current research is significant because it investigates if expectations and subjective task value can explain achievement in high stakes assessment, in a UK context, which has not been previously explored. The expectancy-value model has been typically investigated in relation to specific school subjects, such as maths, and studies examining STV patterns across school subjects are rare. This makes the current study a valuable one. This research draws important links between Eccles' theory of achievement motivation and A-levels by investigating the relationships between expectations, values and A-level achievement, which have not been studied. The focus on their role in high stakes qualifications is particularly important given the significance of such examinations for future life pathways (see section on A-levels). As well as investigating the psychological variables involved in A-level achievement the study also contributes knowledge of some of the social factors that may be relevant. It is argued that the expectancy-value model has the benefit of offering a multidimensional approach to understanding student motivation in educational contexts (Hulleman et al., 2016).

Eccles believed that social factors contributed to the expectations of success and subjective task values of students (see Figure 1). She suggested that when identities are important then individuals attach high subjective value to the tasks associated with them and so will be motivated to achieve (Eccles, 2009). There is well established literature to suggest relationships between gender, ethnicity, SES and educational achievement (Demack, Drew, & Grimsley, 2000; Gillborn & Mizra, 2000; Sirin, 2005; White, 1982), where family provides an indirect link between SES and educational outcomes (Coleman,

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1988; Duncan, Brooks-Gunn, & Klebanov, 1994; Eccles, 1992; Entwistle & Astone, 1994; Guo & Harris, 2000). There is however a lack of research into the effects of these on the educational outcomes of A-level students because, more commonly, research has focused upon GCSE outcomes, at the age of 16 years, as this marked the end of compulsory education. Data is not readily available on post-16 outcomes. Given the importance of A-levels for future life pathways this gap in the literature is surprising. This research therefore makes another important contribution by further exploring the socio-cultural factors that might underlie differential achievement in A-level outcomes, contributing to this currently narrow field.

This study explores whether students will be motivated to engage and achieve in A-levels if they expect to do well and if they value them. Understanding the motivational beliefs of (A-level) students has important implications. It can drive pathways for practitioners and parents to enhance student motivation (Hulleman et al., 2016). It is known that intervention programmes targeted at both students and parents, and which aim to increase expectations and values, do improve student achievement (e.g., Eccles, 2006; Harackiewicz, Rozek, Hulleman, & Hyde, 2012; Hulleman, Godes, Hendricks, & Harackiewicz, 2010; Patall, Cooper, & Wynn, 2010). Thus, the results of this study may therefore have implications for both practitioners and policy makers who are concerned with A-level achievement. An understanding of the role played by these motivational factors may direct interventions aimed at enhancing student outcomes by boosting students' expectations and values (Hulleman et al., 2016). In doing so there may also be a narrowing of any educational gaps.

GCSEs and A-levels

GCSE qualifications (General Certificate in Secondary Education) are the main qualifications taken by 14-16 year olds, although can be taken at any age. They are available in more than 50 subjects (Office of Qualifications and Examinations Regulator, 2009). Recent reforms to these qualifications were implemented, initially for English and maths in 2015. In the reformed GCSEs courses will have a new grading scale of 1-9, be largely examined by linear examinations, with more demanding content and reduced resit opportunities (Office of Qualifications and Examinations Regulator, 2015a).

The students who participated in this research completed their GCSEs prior to such reforms however and their GCSEs would, therefore, been assessed in a number of ways including coursework, controlled assessment, end of module examinations and linear examinations. They would have been awarded a grade on a scale from A*- G with a U ('unclassified') grade awarded if the student failed to achieve the minimum pass mark. In some subjects (e.g. English, science, languages, maths) they may have been entered for either a higher tier where they could be awarded an A*-D grade or a foundation tier where they could be awarded a C-G grade. Ordinarily the students would have studied these as a two year course, although short courses may have been available for some subjects (e.g. RE or citizenship). Each course will have typically led to the award of one GCSE although for some courses students may have been awarded half a GCSE or two GCSEs for instance art and design or health and social care (Office of Qualifications and Examinations Regulator, 2009). They are relevant to this current study as the grades achieved at GCSE determine progression to post-16 study, widening or limiting the choice of A-level courses and can also influence entry to higher education and future career options (Baird, Ahmed, Hopfenbeck, Brown, & Elliott, 2013).

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GCE advanced levels (A-levels) are an important focus for this thesis as these are the main form of high stakes examinations taken for university entrance in England and approximately 50% of 16-18 year olds study for A-level qualifications (Department for Education, 2013b). Recent educational reforms (stemming from the Education and Skills Act, 2008) mean that students in the UK are now required to remain in education or training until they are 18 years old and the number of students studying A-levels may consequently increase. The relationships between A-levels and motivation are therefore important to investigate.

A-levels were introduced in 1951 and are available in over 45 subjects, were taken by 269, 942 students in 2014-15 (Department for Education, 2015b) and included 801,510 individual examination entries (Office of Qualifications and Examinations Regulator, 2015b). AS level examination papers do not exceed a maximum examining time of three hours and A-level papers a maximum time of four hours (Office of Qualifications and Examinations Regulator, 2011). Internal assessment is used 'only where it is the soundest method of assessing specific skills within the assessment objective' (Office of Qualifications and Examinations Regulator, 2011). Typically, internal assessment may be part of practical subjects such as art or drama.

In the year this research was conducted students would have ordinarily studied four AS level subjects in year 12 and then go to study three of these further at A-level in year 13 (Russell Group, 2014) although there was no limit on the number of subjects taken. There is a free choice of subjects that can be studied although in practice students may select from any subject options that are offered by the establishment in which they are studying. A-level examinations are high stakes examinations used for university entry. University courses have different entry requirements but usually require a mix of qualifications, subjects or exam grades and high grades in the subjects relevant to the

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course being studied are generally required (UCAS, 2015). Some course providers use UCAS tariff points as entry requirements where a points total is achieved by converting A-level (and other) qualifications into points (UCAS, 2015). AS level qualifications are awarded on a five grade scale, A-E, where A is the highest grade. A-levels are alternatively awarded on a six point scale, A*-E, where A* is the highest grade (Office of Qualifications and Examinations Regulator, 2011). An A* is awarded when a student achieves a 90% average, or more, on the A-level examination papers. An unclassified grade is given when attainment is insufficient to lead to the award of an AS or A-level certificate.

Following the 2014 summer examination series each participating school provided the researcher with a spreadsheet of the grades each student achieved in that year (so the AS grades for each year 12 student or the A-level grades of each year 13 student). In this study the achievement of each student was measured by calculating the *total point score* per student achieved in that academic year using the points allocated in the calculations used by the DfE (see Table 2).

Table 2 *Point Score Allocations for A-level and AS level qualifications (Department for Education, 2014a)*

Grade	Size	Points	Grade	Size	Points
GCE/Applied A level			GCE/Applied AS level		
A*	1	300	A	0.5	135
A	1	270	B	0.5	120
B	1	240	C	0.5	105
C	1	210	D	0.5	90
D	1	180	E	0.5	75
E	1	150			

The overall attainment of a student therefore accounted for *the number of subjects/ qualifications a student studied in that year and the grades achieved* in them. For example, an A-level student in year 13 who studied three subjects where they gained two B grades

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and a C grade would have an achievement score of 690 ($2 \times 240 + 210$), whilst an AS level student in year 12 who had gained four D grades would have a total point score of 360 (4×90). Schools did not provide the AS grades achieved by a year 13 student in their previous year so these were not included within the calculations. As this research investigates a student's motivation, specifically their expectations and values for A-levels including variables such as attainment value, intrinsic value, utility value, effort and task difficulty, an achievement measure which accounts for both the number of subjects studied and the grades achieved was considered important. For example, the effort required is higher the more subjects being studied.

According to Connelly, Gayle, and Lambert (2016) it is good practice to avoid constructing arbitrary or ad hoc measures of school-level attainment and wherever possible for data analysts to stick with established measures which are transparent, documented and replicable. These criteria are met by using the total point score for A-level attainment. In deciding which measure to use it is pertinent to consider that rather than viewing one measure as superior to another, it is argued that their mode of calculation and the subsequent analysis they produce offer different types of effects, each of which may offer distinct benefits (Putwain, 2007). For the current study the total point score was considered the most beneficial given the focus on motivation and based on the data available from the schools in the sample (e.g. only the grades for each student for the qualification being studied in that particular year, either the A-level or AS grades) and for the analyses undertaken.

Research Questions

This thesis presents a mixed methods study exploring the relationships between expectations, values and A-level achievement. In this study the overarching research question considered is;

What are the relationships between expectations, subjective task value and A-level achievement?

A number of further subsidiary questions are studied including;

1. What is the relationship between expectations and A-level achievement?
2. What are the relationships between expectations and STV for an A-level student sample?
3. What is the relationship between STV and A-level achievement?
4. How does SES, gender and ethnicity affect the expectations and STV attached to A-level achievement?
 - 4(a) How does SES, gender and ethnicity affect the expectations attached to A-level achievement?
 - 4(b) How does SES, gender and ethnicity affect the STV attached to A-level achievement?
 - 4(c) How are SES, gender and ethnicity associated with A-level achievement?
5. What are students' perceptions regarding the relationship between their general self-schema (identities), goals, task demands and expectations and values for A-levels?
6. What are students' perceived influences upon their expectations and values?

Summary of Chapter 1

The theoretical framework for this study has been outlined in this chapter. The literature relating to achievement motivation, the expectancy-value model and educational outcomes is discussed in more detail in the following chapter. An overview of A-levels has also been provided in this section. A-level outcomes based on gender, school sector and ethnicity will be discussed in Chapter 3. The importance of these qualifications as the main form of high stakes examinations for 16-18 year olds in the UK underlies the rationale for this investigation. The contributions of this research have been discussed. The overarching research question in this thesis is; what are the relationships between expectations, subjective task value and A-level achievement? A number of subsidiary questions are also considered. This thesis specifically explored the relationships between; expectations and A-level achievement, expectations and subjective task value, subjective task value and achievement. The relationships between gender, ethnicity, socio-economic status (SES) expectations, subjective task value and achievement were also examined, as well students' perceived influences upon their expectations and values and how these relate to their goals and self-schemas/ identities.

Chapter 2 Literature Review on Achievement Motivation and the Expectancy-Value Model

In this chapter, the theoretical background is presented including explanation and critical evaluation of relevant theories and how they contribute to the rationale and research questions. The literature review starts by exploring theories that could be used to explain the patterns in the motivational factors that contribute to A-level achievement and identify differences in behavioural patterns and differential achievement in this student population. It therefore begins by discussing literature on achievement motivation, attribution theories and self determination to provide a context for the research. Thus the work of Dweck (1986, 2007, 2012) and then the revised models of achievement motivation by Ames and Archer (1987,1988), Elliot and Harackiewicz (1996), Elliot (1999) and Elliot et al. (2011) are discussed. Weiner's attribution theory (Weiner, 1985, 1992) underpins some of Eccles' expectancy-value model and so the role of causal attributions are examined in relation to differences in motivation, expectations and achievements at A-level. A summary of self-determination theory and the similarities and differences between this and Eccles' theory are outlined.

Expectancy-value models of achievement are then focused on in the literature review, highlighting the core assumptions of Eccles model, justifying this choice of model and the empirical work upon which the framework is based including the reliability of the data. Eccles' theory was extended to include a perspective on identity (2009) and this is also explored as she believes that individuals will attribute more subjective task value and therefore motivation to tasks (in this case A-levels) which fit with specific identities that are important to them. The critique of this model is addressed and the ways in which the current study seeks to overcome these. A brief presentation of alternate expectancy-value theories is also given.

Perspectives on Achievement Motivation

As discussed in Chapter 1 Eccles' expectancy-value model of achievement motivation forms the theoretical basis for this thesis (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984) examining the relationships between expectations, subjective task value (STV) and A-level achievement. Achievement motivation has a long history within psychology and research has focused on need achievement, attribution and goal achievement theories as well as expectancy-value theories. These theories will therefore be briefly introduced in this chapter to provide a contextual background to Eccles' model.

Need achievement theory (D. C. McClelland et al., 1953) focused on the idea that individuals have a recurrent need to improve one's skills and do well according to a standard of excellence. This research was amongst the first to distinguish between implicit and explicit motives.

Attribution theory (Weiner, 1985, 1992) emphasised the individual's interpretations of their achievement outcomes rather than motivational dispositions or actual outcomes. Weiner suggested that the individual's causal attributions for achievement outcomes determine subsequent achievement behaviours and were therefore key to motivational beliefs, an assumption also underlying the expectancy-value model (Eccles & Wigfield, 2002). Attributions are therefore important in the current study as they may contribute to the behaviours and beliefs of A-level students. Weiner identified ability, effort, task difficulty and luck as the most important achievement attributions and classified these in three causal dimensions; locus of causality, stability and controllability. The assumption was that people interpret their environment in a way that maintains a positive self-image (Weiner, 1992). In motivational terms an individual's perceptions for success or failure determined the amount of effort applied to an activity in the future; success was attributed to internal factors such as ability and effort whilst failure was attributed to external factors

such as task difficulty or luck. This theory was an important one as it contributed to some of the theoretical assumptions underlying Eccles' model (Eccles, 2007b; Eccles et al., 1983) and thus the theoretical assumptions applied to the relationships between expectations, values and A-level achievement explored in this thesis. It directly relates to the perceived task demands of students, that is their perceptions of the task difficulty and the effort required in A-levels.

Although goal achievement theory does not provide the framework for this study it is important to consider as it has played a predominant role in the thinking about achievement motivation and was also influenced by the causal attribution tradition (Murayama, Elliot, & Friedman, 2012). Initially dichotomous models distinguished two types of achievement goals. Nicholls (1976, 1978) views on ability led him to distinguish between task and ego involvement whilst Dweck's works (1986, 2007, 2012) identified how performance goals led to helpless response patterns and learning goals led to mastery response patterns with opportunities to learn and increase competence (Elliot, 2007).

Ames (1987, 1988) then developed these theories and proposed an integrated, unified approach that distinguished between mastery and performance goals. Research throughout this time indicated that generally mastery goals lead to positive processes and adaptive outcomes, but evidence concerning performance goals was more mixed (Murayama et al., 2012).

The trichotomous framework (Elliot & Harackiewicz, 1996) comprised of mastery and performance approach goals focused on positive outcomes (improvement/ mastery and normative competence) and performance avoidance goals focused on negative outcomes (maladaptive learning behaviours and outcomes, normative incompetence). Achievement goals adoption was not only based on perceived competence however but also implicit theories of abilities and characteristics of the task and setting (Elliot, 1997). Elliot (1999)

subsequently developed a '2x2 framework' that added mastery-avoidance goals to the trichotomous model. These mastery avoidance goals were expected to produce less optimal consequences than those for mastery-approach and the framework also sought to explicitly establish competence (differentiated in terms of definition and valence) as the conceptual core of the achievement goal construct (Elliot, 1999; Elliot & McGregor, 2001). Revised goal theorists (Harackiewicz, Barron, & Elliot, 1998; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002) later developed a multiple goal perspective that assumed that performance and mastery goals both had unique contributions to make, can be adopted simultaneously and be combined to optimize motivation (Senko, Hulleman, & Harackiewicz, 2011). Later Elliot et al. (2011) proposed a '3x2 model' that was rooted in the definition and valence components of competence, and encompassed six goal constructs: task-approach, task-avoidance, self-approach, self-avoidance, other-approach, and other-avoidance. Most recently the model has been developed and applied to the sport domain (Mascret, Elliot, & Cury, 2015).

Elliot (2007) questioned whether achievement goal theory should actually be reconceptualised as a set of goal *theories* as one of the greatest difficulties for goal achievement theorists is that there is no one agreed definition of achievement, or of goals, which would have been problematic had it been the theoretical framework chosen for this thesis. The lack of agreed definition has implications for both empirical testing and theory development as it is difficult to operationalise constructs and build theoretical models without this solid conceptual foundations (Elliot, 2007).

Self-determination theory (Deci & Ryan, 2008) proposes that social environments affect the levels of motivation in relation to how they fulfil the need for competence, autonomy and relatedness. A-level classrooms may therefore be one such important social environment. Deci and Ryan (2008) distinguished between intrinsic motivation (where

individuals engage in activities out of interest and for their own sake) and extrinsic motivation (where activities are done for external rewards). Intrinsic motivation is seen as optimal as it meets these basic needs and results in increased well-being, higher levels of interest and perseverance with activities (Deci & Ryan, 2008). Extrinsic motivation alternatively fails to support needs, leads to disaffection and other negative effects. Deci and Ryan (2008) also distinguish between autonomy and controlled environments arguing that better levels of well-being and drive results from conditions of autonomy. According to Deci and Ryan (2008) aspirations are therefore acquired as a function of the degree to which the basic needs for competence, relatedness and autonomy have been satisfied or thwarted over time. Self-determination theory has widespread applications and has been applied to not only education but other domains including relationships, parenting, work, sport, well-being and mental health (Deci & Ryan, 2008).

Deci and Ryan (2008) used developmental theories to explain the process of internalisation. They argue that a basic need for interpersonal relatedness explains why people turn external regulation into internal regulation and that this process of internalisation takes place through a series of steps; external regulation, introjected regulatory processes associated with feelings of how one should behave, identified regulatory processes associated with the utility of the behaviour in meeting internalised goals and lastly, integrated regulatory processes associated with what the individual thinks is valuable and important to the self. Deci and Ryan's assumption is that individuals can be motivated by all aspects of regulation at the same time, an assumption that Eccles' expectancy-value model, and therefore this research, shares (Eccles, 2007b). According to Eccles this is a notable similarity between the models as she sees Deci and Ryan's forms of behavioural regulation as comparable to aspects of her subjective task value. For example,

she argues that integrated regulation is similar to attainment value, internalisation is similar to intrinsic value and identified regulation is close to utility value.

There are however differences in the emphasis of these approaches (Eccles, 2007b) which make the expectancy-value model the one of choice in this research. Importantly Eccles' theory has the advantage of stressing how the same activity can have multiple sources of subjective task value (STV) simultaneously, with more sources leading to higher levels of STV, and that it is this cumulative STV that is the key to predicting behaviours (Eccles, 2007b). Eccles also avoids prioritising internal regulation over other forms of task value and does not conceptualise the developmental sequence in such a linear way as Deci and Ryan (Eccles, 2007b). This has the advantage of offering a broader and more flexible theory of motivation in an A-level context because although some aspects of behavioural regulation may follow the type of internalisation process Deci and Ryan (2008) propose Eccles believes that other behaviours do not follow this linear sequence. Instead it is suggested that many of the dynamics underlying attainment value are discovered through the process of self-socialisation and identity formation rather than the processes associated with internalisation (Eccles, 2007b) and thus Eccles' theory offers a broader, more flexible conceptualisation for this study. This is an important distinction between the theories and an extremely important one in determining the investigation of the expectancy-value model rather than self-determination theory in this thesis. It allows exploration of how students come to see themselves as certain kinds of educational achievers and links to their identities.

Attribution theory, goal achievement theory and self-determination theory have been presented in this section and provide explanations for different motivational factors that contribute to achievement. These are important to consider as they provide a historical and contextual understanding of the concepts underlying Eccles' expectancy value model,

which forms the theoretical framework for this thesis and is outlined in the following section.

An Overview of Expectancy-Value Models of Achievement Motivation

Eccles' expectancy-value model provided the theoretical framework for this research and was introduced in the previous chapter. The earliest theories in this tradition (J. Atkinson, 1957) focused only on the expectancy component and used predominantly experimental studies however subsequent theories also focused on the role played by value and offered a broader definition of both the expectancy and value components (Trautwein et al., 2012). These are therefore important components to include in this research.

Modern expectancy-value models of achievement argue that an individual's choice, persistence and performance can be explained by their beliefs about how well they will do and the extent to which they value an activity (Eccles et al., 1983; Wigfield & Eccles, 1992; Wigfield & Eccles, 2000). The model was initially used to explain performance and choices in the maths domain, specifically in relation to gender differences (Eccles et al., 1983). The focus in this research is on investigating the motivational factors that explain A-level performance. Previous research suggested that students' beliefs about their abilities, expectations for success and their task values predicted achievement outcomes in studies conducted in the US, Australia and Germany (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012). The empirical research on the expectancy-value model is discussed more fully in the next section of this review.

An overview of Eccles' theoretical model was presented in chapter 1 (see Figure 1). In summary, the model proposes that expectations and values directly influence achievement choices and performance but are themselves influenced by a number of other

social and psychological factors (see Chapter 1). In this current chapter, the literature on psychological factors is further considered and in chapter 3 the focus is on social factors including how family demographics, SES, gender and ethnicity relate to expectations, values and educational achievement. A key aim of this work, as previously discussed, is to investigate how these factors explain the complex picture of A-level achievement with the purpose of extending previous work on this model in a new domain.

Importantly expectations is operationalised as a construct measuring both ability beliefs and expectations for success (Eccles & Wigfield, 1995; Wigfield & Eccles, 2000). A general definition of subjective task value (STV) was given in chapter 1, however based on the expectancy-value model in this research STV comprises of (1) *Intrinsic value* – the anticipated enjoyment of A-levels (2) *Attainment value* – the importance attached to doing well in A-levels (3) *Utility value* – the value A-levels have because they fulfil a personally central or future goal (see Chapter 1 for further discussion). Renninger and Hidi (2011) suggested that when an academic task is perceived as intrinsically valuable and interesting it leads to focused attention, deeper information processing and then increased learning outcomes. This may therefore be a valuable component of STV with regards to A-level achievement.

There has also been research which has conceptualised utility value into different subtypes including the perceived utility of tasks for school (Conley, 2012), daily life (Hulleman & Harackiewicz, 2009), career (Hulleman, Durik, Schweigert, & Harackiewicz, 2008) and perceived instrumentality orientated towards future goals (De Volder & Lens, 1982). In this study, the utility value of A-levels was examined in the quantitative phase where students were asked how useful they are perceived to be for daily life outside of school and for university or work. It was also explored in the qualitative phase where students are asked if A-levels are helping them to become who they want to be in the

future. Thus, within this study utility value implicitly addressed many of these subtypes in order to explore its role in the motivation of A-level students.

Overall expectancy beliefs have been found to be more closely linked to actual performance in cross sectional and longitudinal studies whilst STV has been found to predict choice, effort and persistence (Eccles et al., 1984; Fredricks & Eccles, 2002; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Marsh, Trautwein, Ludtke, Koller, & Baumert, 2005; Meece, Wigfield, & Eccles, 1990; Nagengast et al., 2011; Wigfield & Eccles, 1992). These are however not the focus of this investigation; performance is the focus. Recent research does suggest an association between STV and academic results (Cole, Bergin, & Whittaker, 2008; Guo et al., 2015; Hulleman, Godes, Hendricks, & Harackiewicz, 2008; Phan, 2014; Trautwein et al., 2012). These findings will therefore be investigated in this research to examine whether A-level performance is more closely related to expectations or values.

Eccles postulated that developmental and causal links exist among cultural factors, historical events and one's expectations, values and achievement behaviours. The model assumed that it was not reality itself that determined children's expectations, values and behaviours but the *interpretation* of that reality; mediated by the causal attribution patterns for success and failure, input of socialisers, perceptions of one's own needs, values and sex-role identity as well as characteristics of the task itself. Within the time constraints of the current work the developmental aspect was not measured within the research questions, although the qualitative aspect of the design provided some insight into the role of these, for example the role of socialisers in the expectations and values of A-level students. Many of these variables are explored in both the quantitative and qualitative phases of this study to investigate how students' interpretation of expectancies and values relate to

achievement behaviours, and how they perceive their needs and the input of important socialisers to influence these.

An advantage of using Eccles' model was that it had the benefit of being built upon, and closely associated with, much previous empirical work and theories associated with the field, some of which were outlined in the previous section. This included, for example, work on decision making (Crandall, 1969), attribution theory (Weiner, 1992), self-efficacy (Bandura, 1997) and self-determination (Deci & Ryan, 1985). The advantage of Eccles' expectancy-value model, which contributed to its choice for the current work, was that it therefore stressed the relationship of this perspective to other related motivational theories to develop a convergent perspective based on a comprehensive and predicatively powerful set of principles of behavioural choice and motivation (Elliot, 2007). It also encompasses psychological and social components and, as previously mentioned, according to Hulleman et al. (2016) offers a multidimensional approach to understanding student motivation.

Eccles' model was additionally selected for this research because of the power of the subjective task value perspective to analyse the socio-cultural processes underlying group differences in motivational behaviours, which is a further advantage (Elliot, 2007). As such STV was a critical aspect to investigate in the current work, including differences in STV on the basis of socio-economic status, gender and ethnicity as discussed in the following chapter. Furthermore this theoretical framework not only offered an explanation for achievement motivation, but has also been extended to offer an explanation of identity (Eccles, 2009). Here Eccles linked her classic expectancy-value model specifically to the concepts of personal and collective identities, particularly focusing on their interaction with educational settings, choices and achievements. This focus is an important reason for choosing Eccles' model for this current research.

Eccles (2009) believed that identity comprises three components; a *value component* made up of the importance a person attaches to specific individual characteristics and groups to which they belong; a *content component* including beliefs about the activities and behaviours which allow successful enactment of identity and an *efficacy, or expectancy, component* which includes beliefs about the ability to enact these behaviours. These components may be important in relation to A-levels and whether students' attached value to them, believe they fit with their identity and will be successful in them.

Furthermore Eccles (2009) suggested that identity involved two basic sets of perceptions; perceptions related to skills, characteristics and competencies (the 'Me' self) and perceptions related to personal values and goals (the 'We' self). She assumed people have both personal identities which serve the psychological function of making one feel unique and collective identities which serve to strengthen ties to highly valued groups, e.g. on basis of gender, race, religion, social class, culture and family. Eccles' model therefore has the benefit of trying to explain both the individual, as well as social, processes involved in identity since these selves are made up of social and individual experiences, interpretations of these experiences and the perceived values attached to them by cultural norms and important others. Identity may therefore have a role to play in their interaction with A-levels. Critically Eccles believed that these aspects developed over the lifespan based on; the social and psychological experiences individuals have as they grow up and move through adulthood; their own agency in interpreting and creating social roles and experiences that reinforce, redefine or undermine identities; the co-construction of the content, meaning and importance of various personal and social identities by the individuals themselves in conjunction with the people with whom they interact each day, and over time. The process of forming these selves is therefore fluid and dynamic.

Maturation results in exposure to different situations which provide information that the individual uses to shape new views of themselves, and as they mature individuals will select social contexts and experiences that enable them to shape their own set of beliefs (Eccles, 2009). A-levels may be one such situation or context in which such selves therefore begin to form or develop.

Most importantly in relation to this research Eccles suggested that these self-perceptions and identities play a role in motivation by influencing expectations for success, and the importance people attach to a range of tasks and choices. This justifies the investigation of the relationships between SES, gender, ethnicity and expectations, values and A-level achievement in this study, as well as exploration of the relationships between self-schemas, goals and A-levels. Attainment value and cost are seen as the most important aspects of STV in terms of identity, although intrinsic value is also important in terms of personal identity if an individual is to have sufficient motivation in challenging situations (Eccles, 2009). Eccles argued that personal and collective identities decrease the probability of engaging in inconsistent activities and increase the probability of engaging in ones central to identity. This has implications for the achievement of A-level students since the assumption of Eccles' model of identity is that individuals seek to confirm possession of characteristics central to their self-image and place more value on tasks that provide the opportunity to fulfil their identity, or are consistent with their identity and goals. Essentially if specific identities are important to the individual then the activities, behaviours and tasks associated with them will take on high subjective value and the individual will be motivated to act them out (Eccles, 2009) and this was examined in relation to A-level assessment in the current thesis. A central premise is that the extent to which individuals' have different self-images and identities, activities (in this case A-levels) will have different subjective task value. This is an issue that is returned to in the

following chapter. In addition to the measures of SES, gender and ethnicity in the quantitative phase of this study the qualitative phase therefore sought to obtain more information on the perceived relationships between A-levels, expectations, values and students' identities (goals and self-schemas).

In this section the main premise of the expectancy-value model has been outlined. Psychological and social factors are thought to be important. The main focus of this study are the psychological factors including the individual's beliefs about ability and likelihood of success, and the STV attached to A-levels. Components of STV include intrinsic value, attainment value and utility value; so whether A-level students are interested in their A-levels, attach importance to doing well in them and perceive them as useful. Social factors such as SES, gender and the role of socialisers are also explored. It is argued that if specific identities are important to the individual then the value and motivation attached to A-levels will be affected. Since it is predicted that expectations and STV will relate to achievement (in the case of this study A-level achievement) empirical research on these links will now therefore be outlined.

Empirical Research on Expectations and Values

Eccles originally investigated the contribution of the psychological variables in her model to measures of actual behaviour in a series of studies based on the Michigan Study of Adult Life Transitions (Eccles et al., 1983; Eccles & Wigfield, 1995; Meece et al., 1990). This was a large-scale, longitudinal study which regularly followed up students from the 6th grade into adulthood and is important for this research because it used a number of student, teacher, school and parental measures, which contributed to the methods employed in this current research (the student measures). As discussed in chapter 1, in Eccles' model it is suggested that expectancies and values are determined by the

individual's goals and self-schemas, interpretations of the reasons for past performance, perceptions of task difficulty and their perceptions of parents' and teachers' expectations which may lead to the socialisation effects of role modelling, communication of expectancies and provision of differential experiences.

Initially Eccles and Wigfield (1995) found support for the model's predictions as children's beliefs about their abilities and expectations for success were the strongest predictors of subsequent grades (in maths). Also, adolescents valued activities they thought they were good at and were less likely to believe they were good at something, and therefore devalued it, if they thought it was difficult. A positive relationship was established between components of STV; between attainment value, intrinsic value and utility value, and between task difficulty factors, including perceptions of task difficulty and required effort (Eccles & Wigfield, 1995), making them important to re-examine in this current study. Only a moderate positive relationship was found between expectations and STV, with the weakest association between utility and expectations. Again, these associations are investigated here. Alternatively, a strong negative relationship was established between task difficulty and ability and also between difficulty and STV, mediated by the impact of difficulty on expectancy constructs (Eccles, O'Neill, & Wigfield, 2005; Eccles & Wigfield, 1995). Eccles' focus was upon subject-specific tasks rather than upon high stakes assessments and this thesis aimed to test these theoretical claims by providing an understanding of these relationships in high stakes, A-level contexts in England. As discussed in chapter one this is particularly important given that they play a role in subsequent life pathway and may therefore result in different motivational patterns than was the case for subject-specific tasks in the original research. Subsequently the model's predictions have been tested extensively and it is argued that a substantial body of research has supported many of the original claims of the expectancy

value model for example, see Eccles et al (1984), Eccles et al (2005), Eccles and Wigfield (1995), Hood et al (2012), Meece et al (1990), Nagengast et al (2013), Phan (2014), Trautwein and Ludkte (2007), Wigfield (1997), Wigfield and Cambria (2010), Wigfield and Eccles (2000). These studies have not however been conducted in the UK.

More recently Guo et al. (2015) conducted a longitudinal study with a nationally representative sample of 15 year old Australian youths, which they describe as ‘one of the most comprehensive tests of Eccles’ (2009, 2011) model’ (p.1172). They simultaneously tested the effect of achievement and expectancy-value interactions, finding support for the idea that academic self-concepts related to achievement, and task value to choices, replicating these well-established findings (Eccles, 2007b; Eccles et al., 1983; Eccles, Barber, & Jozefowicz, 1999; Marsh et al., 2013). Here self-concept items were based on the Academic Self-Description Questionnaire II (Marsh, 1990, 1993) and utility and intrinsic value based on items associated with Eccles’ work. They found that self-concept, or expectations, and intrinsic value interacted in predicting course selection in maths, the results students achieved, entrance to university and STEM fields of study. This further justifies the exploration of the relationship between expectations and values and A-level outcomes in this current study as does work by Phan (2014) who also recently supported the prediction that expectations and values influence achievement. Using structural equation modelling, he found that academic achievement in maths was influenced by prior academic achievement, self-efficacy, expectations and achievement values. These variables, directly and indirectly, accounted for approximately 60% of the variability in maths achievement in his study.

As previously stated, in this study STV comprises of intrinsic, attainment and utility value. Further empirical support for the task values employed in this study comes from the work of Trautwein et al. (2012) who supported the conceptual differentiation of

task value into several components when conducting research on 2,508 students at the end of their secondary education in academic track schools in Germany. Expectancy beliefs in maths and English were assessed with four items based on a German adaptation of the Self-Description Questionnaire III (Marsh & O'Neill, 1984) and a German self-concept inventory (see Trautwein, Ludkte, Marsh, Koller, & Baumert, 2006). Value beliefs were assessed using 12 items based on Eccles' theory. In line with Eccles' model they found a high association between expectations and values, evidence for the domain specificity of expectation and value beliefs, these beliefs positively predicted achievement, and expectations were a stronger predictor of achievement than values. Some of the associations between value components were however weaker than the associations between expectancy-value components. Their findings will be reinvestigated in this study. Trautwein et al. (2012) argued that their results provided strong support for the assumed multidimensional and domain specificity of value beliefs but that greater exploration is desirable since some values were more closely associated with expectancy beliefs than others, e.g., utility, and these avenues will therefore be further explored in the current research.

Understanding the role of task values, especially utility, in relation to A-level outcomes is of further importance because in a recent experimental study Durik, Schechter, Noh, Rozek, and Harackiewicz (2015) found that direct communication of utility value information was effective at stimulating self-generated utility value in tasks and promoted the interests and performance of learners. College students in the US learned a new technique for mentally solving multiple problems with instructions containing task utility value information. It was found that the effect of utility value information was positive for individuals with high success expectations but negative for individuals with low success expectancies. Thus, if communication of utility value has the potential to

increase performance this has implications for those working with A-level students and exploring the relationship between ability values and performance is therefore important in this thesis.

Based on Eccles' framework Hood et al. (2012) tested a model to help understand the relationship between student attitudes and achievement in statistics using 149 2nd year Australian psychology students on a statistics course. Using path analysis they collected demographic data, information on past performance, attitudes and expectancies in week two, attendance records (effort) and course marks (achievement) at end of semester. Their measures were not based on those used in Eccles' work but an extended version of a survey of attitudes towards statistics (SATS-28) developed by (Schau, 1992, 2003b; Schau, Stevens, Dauphinee, & Del Vecchio, 1995). They justify this choice on the basis that this survey has been congruently used in conjunction with the expectancy-value model (for example, Ramirez et al 2010; Sorge and Schau, 2002) to examine statistical achievement. The use of such measures may therefore make any direct comparison to the results in this current study difficult however their model fitted well, explaining 40% of variance in achievement. Past performance (22%), effort (8%) and expectations (2%) made significant direct contributions to achievement. In Hood et al's study however the role of past performance was not consistent with the expectancy-value model. It was only indirectly related to achievement through affective reactions and interpretations. Furthermore, they did not find a relationship between value and achievement as value was only weakly, indirectly related to achievement via its relationship with expectations. This is not consistent with the predictions of the model but the authors argue that this finding may be because the course was compulsory, and therefore the extent to which students' place value in the course was not important to their achievement. They also suggest that it may have been due to the way in which value was measured with the focus on utility rather

than attainment value. Studying the relationship between different components of STV and achievement may therefore be important in this current research.

Many of Eccles' original claims have been more recently tested and several of the empirical research has been detailed in this section. These studies are important because some form the basis for the expectancy-value scales employed in this research (see Chapter 6) and indicate what associations have been found between expectations, values and achievement. These findings inform the analyses carried out between the variables in this study (see Chapters 6 to 12). Overall the research presented here lends further support to the hypotheses that there will be a relationship between; expectations, values and achievement, expectations and values and between STV components, all of which are investigated in this study. It also suggests that STV is a function of intrinsic, attainment and utility value, or the value students' attach to their A-levels because they are interested in them, want to do well and believe they are useful for their future. It is however known that there are group differences (e.g. gender differences) in the STV attached to tasks and therefore research in this area is considered in the following chapter where social factors relating to expectations and values are discussed.

Limitations of Eccles Expectancy-Value Model

An extensive literature search found relatively little direct critique of Eccles model. Instead, researchers postulated their views on achievement motivation (goal achievement, SDT). Clearly the model theoretically identifies several key achievement related constructs, a developmental framework of individual differences and has considerable empirical support (Eccles et al., 1984; Eccles et al., 2005; Hood et al., 2012; Meece et al., 1990; Nagengast, Trautwein, Kelava, & Lüdtke, 2013; Phan, 2014; Trautwein & Lüdtke, 2007; Wigfield, 1997; Wigfield & Eccles, 2000). One of the main difficulties highlighted

in Eccles' work is the cultural validity of the model; more work is needed to look at the strength of the relations proposed in the model to see how it varies across cultures (Wigfield & Cambria, 2010; Wigfield, Tonks, & Eccles, 2004). There is some limited recent work starting to emerge in this area (Chow, Eccles, & Salmela-Aro, 2012; Guo et al., 2015).

The model can also be criticised because *how* students' long term and short term goals relate to expectations of success and *how* they influence cognitive and behavioural outcomes is not yet clear (Fan, 2011). Eccles' studies also indicated little about the direction of causality of the relationships between expectations, values and achievement, so for example, whether an adolescent decides that they are good at something and then attaches values accordingly, or if the opposite pattern occurs. Fan (2011) also argued that the findings pertaining to the relation between ability beliefs and task values have not been completely consistent, something that is reflected in the literature throughout this chapter.

Pintrich (2003) critiqued expectancy-value models by arguing that they focus on the role of individuals' success and task value, and their relation to future performance and achievement related choices, but have not examined how these relate to goals. This is a valid criticism and something the current work seeks to explore to a limited extent, for example, by examining students' future goals in both the quantitative and qualitative phases of the research. Indeed goals may be mediators of expectancy-value variables in that goals could derive from individuals' expectancies (Elliot, 1999; Elliot & Trash, 2001) and be a predictor of their STV (Hulleman, Godes, et al., 2008).

Studies examining the association between STV patterns across school subjects and subsequent aspirations are rare (Chow & Salmela-Aro, 2011); thus studies focusing on the value attached more generally to a range of subjects rather than one specific subject, such as maths, is lacking. This current research is therefore important as the literature

predominantly focuses on subject specific motivation and it is interesting to investigate if a more generalised motivational pattern exists. A further limitation of previous work on the expectancy-value model is that investigations commonly focus on task values whilst excluding expectancies for success (e.g., Chow & Salmela-Aro, 2011; Viljaranta et al., 2009) and this research addresses this limitation by investigating both components of the model in relation to A-level achievement.

An emerging field of criticism is that Eccles expectancy-value theory is missing an important element as it does not account for a multiplicative relationship between expectations and values, which was alternatively the case in original theories of achievement motivation (Hulleman et al., 2016; Nagengast et al., 2013). This is considered problematic because Eccles' theory did not explicitly address the interaction between expectations and values and provided no rationale for its omission which is a major shortcoming (Nagengast et al., 2013). However it was acknowledged that this probably occurred because of a change in research, from experimental work where interaction effects could be manipulated and analysed, to the use of questionnaires, where the detection of interaction effects are more difficult (Busemeyer & Jones, 1983; G. H. McClelland & Judd, 1993). A change in research paradigm and insufficient statistical methodology were argued to contribute to the lack of investigation into the multiplicative relationship between expectations and values (Nagengast et al., 2011; Trautwein et al., 2012). Recent studies testing multiplicative relationships have however substantiated the core assumptions of Eccles' model for example, Guo et al (2015) and Nagengast et al (2013). Nagengast et al. (2013) applied the expectancy value model to homework motivation in 511 grade 8 and 9 secondary school students in Germany and found synergistic effects between domain-specific homework expectations and values in predicting homework engagement in six subjects using a within person perspective.

A further topical area of criticism is that although perceived cost remains an important theoretical concept within Eccles' model it has rarely been examined empirically (S. Chen & Chen, 2012; Flake, Barron, Hulleman, & McCoach, 2015; Wigfield & Cambria, 2010). Although some studies are emerging (Barron & Hulleman, 2015; A. Chen & Lui, 2009; Perez, Cromley, & Kaplan, 2014) there is no clear consensus on its operationalisation and measurement (Flake et al., 2015). Such an omission is a potential limitation because when tested it has been found that cost was salient to students, separate from expectancy-value components, contained multiple dimensions including task effort cost, outside effort cost, loss of valued alternatives, emotional cost and was related to student outcomes (Flake et al., 2015).

Furthermore, the expectancy-value model has met with criticism as it lacked affective constructs contained in Atkinson's original model. An adapted version of the expectancy-value model that incorporates affective constructs has been developed and includes affect alongside cognitive competence, difficulty and STV (for example Schau, 2003) but this model is not widely advocated. It was not therefore considered relevant to pursue this addition in the context of the current research, especially as the motivation for it is specifically cited as being evidence of affective factors of learning in the maths-related domain (Tempelaar, Gijssels, Van der Loeff, & H., 2007), which was not the focus of this research.

It should also be noted however that Eccles' expectancy-value model is not the only one in this field. For example Feather (1988, 1992) argued that values are one class of motives that lead individuals to perform acts they think should be done and these values influence the attractiveness of different goal objects and the consequent motivation to attain these goals. He also found that values and ability perceptions are positively rather than inversely related suggesting that values are determined by influences other than task

difficulty (Eccles & Wigfield, 2002). Heckhausen's model (1991) integrated a number of different approaches to motivation and distinguished between four different types of expectancies; situation-outcome, action-outcome, action-by-situation-outcome, outcome-consequence where outcomes are the result of one's actions and where the motivation to act depends on the value attached to the consequences of one's behaviour (Eccles & Wigfield, 2002). These theories have not however been grounded in the same empirical roots as Eccles' model and her work is the most prominent in the expectancy-value field therefore justifying its basis for this work.

Within Eccles' theoretical model she acknowledged that previous achievement-related experiences may impact upon expectations and values. According to Eccles (2005), self-concept is a general view about oneself across various sets of specific domains and perceptions based on self-knowledge and values formed through experiences in relation to one's environment. The model acknowledges the role of self-concept of abilities, and ability expectations alongside those for success. Empirically they have been found to be indistinguishable and thus are a measure of what may be considered academic self-concept, although her original conceptualisations do not however specifically refer to this and it is encompassed within 'expectations'. In more recent expectancy-value studies (such as those by Nagengast et al., 2011; Trautwein et al., 2006) the term academic self-concept (ASC) is used, with definitions suggesting it is a measure of self-concept, or self-evaluation about specific academic domains, schoolwork, abilities and how they feel about themselves as learners (Guay, Marsh, & Boivin, 2003; Trautwein et al., 2006). There is a large field of literature and academic investigation surrounding this concept. ASC is not the focus of this research and therefore a full review of the literature on ASC will not be given. It is however important to acknowledge the reciprocal affects between academic self-concept and achievement established by previous work which may have some

implications for the results of this study. In the reciprocal effects model (Marsh & Craven, 2006) a multidimensional perspective is advocated where ASC has consistent reciprocal effects with achievement and educational attainment. Critical pathways include those leading from prior school grades to subsequent ASC and those leading from prior ASC to subsequent school grades (even when SES, ability and prior grades are controlled for). Marsh, Trautwein, Ludtke, and Köller (2008) have produced a structural equation model of the reciprocal relations between ASC, global self-esteem, achievement and educational attainment. The big-fish-little-pond effects (BFLPE) has become a well-known concept where students compare their own academic ability with that of their classmates in order to use the information as a basis for forming their own ASC (Marsh, 1991; Marsh & Craven, 2002; Marsh & Hau, 2003). Acknowledgement of these pathways and reciprocal effects is important and may indeed play a role in the relationship between expectations, values and A-level achievement using Eccles' theoretical model.

Seemingly a number of limitations are associated with the expectancy-value model which this work seeks to address. This includes the fact that it has not been previously applied within a UK, high-stakes context, has measured relationships between expectations, values and specific subject domains, but rarely the motivational patterns across subjects, and has focused more on STV than expectations and then in relation to performance and choices rather than goals. Until very recently research has generally failed to test the interaction between expectations and values. This issue will be further discussed in chapters 8 and 11.

Summary of Chapter 2

In this chapter the focus has been on theories of achievement motivation, most specifically upon the expectancy-value model, in order to provide a rationale for how this model might be uniquely applied in a UK context to contribute an understanding to the complex picture of A-level achievement. The theoretical background considered important in this investigation of the relationships between expectations, values and A-level achievement has been presented. Theories of achievement motivation were highlighted to provide a contextual background and Eccles' expectancy-value model was presented as the key theoretical framework, underpinning the methodological design and analyses conducted. As the expectations and values of students are predicted to relate to A-level achievement the literature linking expectations and values to educational outcomes was presented (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012). The subjective value of tasks is assumed to be a function of intrinsic value, attainment value and utility value in this study, in line with the empirical work on this construct (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995; Trautwein et al, 2012; Wigfield & Eccles, 2000), which is also therefore addressed in this chapter. The main limitations of the expectancy-value model have been outlined in this section and the extent to which this research may overcome these has been discussed. In the following chapter the focus is upon literature indicating how expectations, values and educational achievement vary according to (social) factors associated with a student's background including SES and gender.

Chapter 3 Literature Review on the Social Factors Affecting Expectations, Values and A-level Achievement

In the previous chapters the expectancy-value model was introduced, including the idea that expectations, values and achievement are related to a number of psychological and social factors. The focus was upon the psychological component of the model (see Chapter 2). The social factors in the model included individual characteristics such as gender and social class (Eccles et al., 2004) and were variables therefore considered in this research. It was argued that expectations and values are influenced by (social) factors associated with a student's background including family demographics, cultural milieu and socialiser's. These factors also influence the individual's self-schemas. It is known that there are group differences (for example on the basis of gender) in both expectations and values (Eccles et al., 1983). Furthermore, as highlighted in the previous chapter Eccles (2009) extended her expectancy-value model and proposed that individuals will attribute more subjective task value and therefore motivation to tasks which fit with specific identities that are important to students. This chapter therefore focuses initially on literature relating social factors such as SES, gender and ethnicity to the expectations and values of students. Subsequently the focus is on the relationship between social factors and educational outcomes. There is a well-established field of literature suggesting relationships between gender, ethnicity, SES and educational achievement (Sirin, 2005; White, 1982), further justifying their inclusion in this study. The relationships between socio-economic status, ethnicity and gender are associated with some of the most prevailing inequalities in educational achievement in England (Demack, Drew, & Grimsley, 2000; Gillborn & Mizra, 2000; Strand, 2014), and are therefore a focus in this review. The role of family characteristics and home environment are discussed as these

play a well-established role in educational achievements (Bradley & Corwyn, 1999; Eccles & Davis-Kean, 2005; Guo & Harris, 2000; See & Gorard, 2015; White, 1982).

Socio-Cultural Differences in Expectations and Values

Gender was a particularly important variable to explore in this research as Eccles' model was originally designed to test the premise that gender differences in task value may underlie many of the gender differences in role-choice behaviour, and in differential maths achievement, where girls achieved less well (Eccles, 1987; Eccles et al., 1983; Eccles et al., 1984). Much of the research in this domain found that females had lower expectations and achieved less well in maths because they attached less importance to this subject, perceived it to be less useful and less enjoyable (Eccles et al., 1984; Meece et al., 1990; Simpkins, Davis-Kean, & Eccles, 2006; Updegraff, Eccles, Barber, & O'Brien, 1996)

Most commonly, studies have continued to explore maths and science domains. For example, as introduced in the section on empirical research in the previous chapter, a recent longitudinal study was conducted by Guo et al (2015). In this research it was found that gender differences in maths were mediated by achievement-related behaviours and gender differences in prior academic achievement and motivational beliefs, although the processes underlying choice of pathway were similar across genders. Watt et al. (2012) used the expectancy-value model to assess the high school maths participation, educational aspirations and career plans cross-culturally using longitudinal data across three countries (Australia, Canada and the United States). They found stereotypical differences in educational and occupational outcomes, but interestingly only among the Australian group. In this sample males typically showed higher intrinsic value for maths whereas ability expectations were an important predictor in the other samples. In general, a combined

attainment utility value played an important role in females' educational aspirations and math choices, except in the Australian sample. Therefore although gender differences in motivational patterns and outcomes emerged the extent to which Eccles' framework was supported depended upon the country in which it was applied and according to Watt et al. (2012) this may reflect the structural differences of the education system in which the model is tested. For example Watt et al. (2012) highlight how American students who are planning for college are encouraged to take maths courses beyond the level that is mandatory in high school, from an early age. This is not the case in the Australian sample where students can select courses later and accounting for why intrinsic value may be greater in this sample. They also highlight differences in the testing regimes of the countries which they believe might focus attention on ability rather than intrinsic value, for example in the North American sample.

In summary it is generally accepted that gender differences in students' decisions to enrol in courses, their achievement outcomes and occupational aspirations are mediated primarily by gender differences in the value the students' attached to the specific domain (Eccles, 1994, 2007b, 2011; Eccles et al., 1999; Guo et al., 2015; Watt, Eccles, & Durik, 2006; Watt et al., 2012). It may therefore be possible to explain gender differences in A-level achievement and motivational behaviours using this model, although there is some contradictory evidence that STVs for math and science are not significantly different between boys and girls (Jacobs et al., 2002; Simpkins, Fredricks, & Eccles, 2012), suggesting a possible narrowing of the gender gap over time (Chow & Salmela-Aro, 2011). As this study of A-level students is conducted in contemporary Britain, it will therefore be interesting to explore whether gender differences in STV do exist in this sample of A-level students, and whether, or not, this model might still be used to account for any differences in achievement. It will be especially interesting to explore since the

model is tested across A-level subjects as a whole, rather than in relation to a specific (maths or science) domain. Similarly, underlying differences in STV have implications for explaining differences in the motivation and achievement of varying ethnic groups (Graham & Taylor, 2002; Wigfield & Wagner, 2007). Some analyses on the relationship between ethnicity, expectations, values and A-level achievement will therefore be provided in this current study.

More importantly family demographic and socio-economic variables were also explored in this research as Eccles found that these aspects of her model additionally related indirectly to achievement outcomes. Eccles and Davis-Kean (2005) proposed a parent socialisation model, which is discussed in the section on SES, family characteristics and achievement later in this chapter. In this model family characteristics such as genetics, education, ethnicity, cultural background, occupation and income influenced parents' beliefs and behaviours, which in turn, influenced the child's perception of their own ability, the value he/she attached to various achievement related tasks and his/her educational outcomes.

More recently Simpkins et al. (2012) investigated the premises that parents' beliefs influenced parents' behaviour, which in turn predicted youths' motivational beliefs, which then predicted their behaviour. Carried out in the US, questionnaires were administered to mothers, their children and teachers (n=723) over a 12-year period to investigate sport, music, maths and reading. Mothers' beliefs predicted behaviour one year later, which in turn predicted youths' self-concepts of ability and values. Subsequently the child's motivational beliefs predicted time spent in these activities four years later. These results are important in the context of the current study since they suggest that mothers' beliefs during childhood can predict values and actions of their offspring in adolescence. Mothers' may therefore be a key influence in the choices, behaviours and outcomes of A-level

students, justifying the exploration of these relationships in both the quantitative and qualitative phases of the design.

The extent to which there are socio-cultural differences in expectations and STV, and whether these can explain differential A-level outcomes is investigated in this thesis. Based on the research presented in this section the premise is that differences in task value underlie differences in role choice behaviour and achievement. Eccles' model was originally postulated to explain how gender differences in maths achievement could be explained by gender differences in STV (Eccles et al., 1983; Eccles et al., 1984), a finding that has been replicated since (Guo et al., 2015; Watt et al., 2012), justifying the analysis of this variable in relation to A-level achievement. Family demographic and socio-economic variables were also explored in this research since these aspects of Eccles' model additionally related to expectations, values and achievement outcomes (Eccles & Davis-Kean, 2005; Simpkins et al., 2012) and thus the extent to which this is the case in A-level students will also be investigated.

Socio-Cultural Differences in Achievement

As highlighted in the introduction to this chapter the relationships between socio-economic status, ethnicity and gender are associated with some of the greatest inequalities in educational achievement in England (Demack et al., 2000; Gillborn & Mizra, 2000; Strand, 2014) and are therefore an important focus for this research. In order to investigate the educational gaps in A-level achievement one of the aims of the current study was to therefore explore the relationship between these factors and A-level outcomes. As discussed in chapter 1 this is an area that is under-researched and critically important given the significance of A-levels for future life pathways. More commonly research has focused

on outcomes at GCSE, which previously marked the end of compulsory schooling but there is a more limited field of research on A-level outcomes and most literature focuses on subject choices, which is not the focus of this thesis. This lack of research is surprising since A-level outcomes are critical in terms of life chances and entry into higher education (Elwood, 1999) and this study may therefore contribute to this currently narrow field. The need to focus on A-levels will also become a significant concern because the implementation of more recent educational reforms (stemming from the Education and Skills Act, 2008) now require students in the UK to remain in education or training until they are 18 years old. It is therefore increasingly important to understand more about the relationships between SES, gender, ethnicity and achievement in A-level students and this current study is thus a significant one. In this thesis the key focus is upon socio-economic status and gender as it is anticipated that the sample size for non-White will be too small to allow substantial analyses (see Chapters 7 and 9) although it is recognised that ethnic gaps in educational attainment persist even when social class is taken into account (Connolly, 2006; Demack et al., 2000; Rotheron, 2007).

Defining Socio-Economic Status

SES is highly associated with educational attainment at all levels in England and Wales (Goodman & Gregg, 2010; Hobbs, 2016; Rotheron, 2007). The focus of this thesis is particularly upon a UK context because it examines A-level achievement, and these qualifications are the main form of high stakes examinations taken for university entrance in England, as outlined in chapter 1, with approximately 50% of 16-18 year olds studying for A-level qualifications (Department for Education, 2013b). Although the focus on the UK context is therefore considered appropriate it is acknowledged that the relationship between SES and educational outcomes is a widespread problem across many countries

(OECD, 2010; Sirin, 2005; White, 1982). Before presenting literature on the links between SES and achievement the focus is firstly on defining SES. This is also returned to later in chapter 6 where its operationalisation in this thesis is specified based on these definitions.

Socio-economic status (SES) describes an individual's or a family's ranking on a hierarchy according to access to, or control over, some combination of valued commodities such as wealth, power, and social status (Mueller & Parcel, 1981). Typically, parental income, parental education, and parental occupation are used as indicators of SES (Gottfried, 1985; Hauser, 1994; Mueller & Parcel, 1981). Parental income reflects the potential for social and economic resources that are available to the student and parental education is considered one of the most stable aspects of SES because it is typically established at an early age, tends to remain stable over time (Sirin, 2005) and is correlated with income (Hauser & Warren, 1997). Parents with higher levels of education may invest more of their time and energy into educating their children or guide daily interactions that help them succeed at school (OECD, 2010). Occupation classifications are traditionally ranked on the basis of the education and income required to hold a particular occupation (Hauser, 1994). Eligibility for lunch programs is also one of the most commonly used SES measures in the current literature on academic achievement (Sirin, 2005). Parental education and occupation are therefore measures of SES used in this current study (see Chapters 6, 7, 10) and data was also collected on free school meal entitlement.

The idea of capital (Coleman, 1988), based on sociological theory, is central to the meaning of SES (Entwisle & Astone, 1994; Guo & Harris, 2000) and refers to resources achieved through social connections. Differences in access to material and social resources are known to impact on well-being, including academic achievement (Bradley & Corwyn, 2002). Family SES is therefore an important determinant of academic achievement because it provides home resources and the social capital necessary to succeed in school

(Bradley & Corwyn, 2002; Coleman, 1988). Since home resources are commonly used indicators of SES background (Coleman, 1988; Entwisle & Astone, 1994) this data was collected for the A-level students in this study, and included the typically identified household possessions such as books, computers and a study room (Eccles, Lord, & Midgley, 1991; Entwisle & Astone, 1994; McLoyd, 1998). SES is therefore thought to have both a direct effect on development in terms of material resources, health and developmental problems (McLoyd, 1998; Spencer, 1996) and an indirect one through parental education, expectations and aspirations (e.g. Eccles, 1992).

It is known that the effects of SES on academic achievement emerge early in life, and have lasting consequences on adult's educational and labour opportunities (Alexander, Entwisle, & Olson, 2001; Cabrera & La Nasa, 2001; Kerckhoff, Raudenbush, & Glennie, 2001). Income inequality has been linked to lower levels of intergenerational mobility (the Great Gatsby Curve, Jerri & MacMillan, 2015). Here income inequality has been associated with several aspects of the transmission process such as access to higher education, financial returns on education and the effect of parental education on labour market earning. Thus educational attainment was an important factor linking mobility and inequality (Jerrim & MacMillan, 2015). The research presented in this section emphasises the importance of examining SES in relation to student's expectations, values and achievements at A-level and has introduced the way in which SES may be operationalised. The specific effects of SES on achievement will now therefore be discussed.

SES and Achievement

The relationship between socio-economic status (SES) and educational achievement is widely documented, and shows that students from lower socioeconomic backgrounds tend to perform worse than their peers from more affluent families (Sirin,

2005; White, 1982); a finding that will be reinvestigated in this current study. White's (1982) meta-analysis of over 200 studies linking SES and academic achievement, before the 1980s, found frequently obtained correlations ranging from .1 to .8, the higher correlations being found when aggregated measures (combining two or more indicators) were used. Interestingly in the context of the current research which uses 16-18 year olds, White's (1982) review found, however, that the relationship between SES and achievement diminishes as students get older. This occurs largely because students from lower SES backgrounds drop out of school, reducing the magnitude of the correlation, but also because schools provide equalizing experiences such that the impact of SES diminishes with age. More recent studies have contradicted this older study which may be out of date, for example, longitudinal studies carried out in the US demonstrated that the achievement gaps remain the same (Duncan et al., 1994) or widen (Pungello, Kupersmidt, Burchinal, & Patterson, 1996). There is evidence in the UK that gaps tend to increase as children grow older, especially during their secondary schooling (House of Commons Education Committee, 2014; The Sutton Trust, 2011). Further to White's work Sirin (2005) conducted a meta-analysis reviewing studies from the 1990s, again concluding that a medium to strong SES achievement relationship existed. The magnitude of the relationship was however found to be dependent on several factors including the type of SES measure and student characteristics such as the student's grade, minority status and school location.

The conclusion from a recent inquiry into educational underachievement was that persistent achievement gaps remain with regards to SES in England, with trends over time indicating that White British children eligible for free school meals are consistently the lowest performing group of children from low income households at all ages (House of Commons Education Committee, 2014). Using data from the final statistics published by

the Department for Education OFSTED produced an evidence report on access and underachievement in the last 20 years which reflected these trends (OFSTED., 2013). For example, taking the data from the last five years they reported, the percentage of students eligible for free school meals who achieved 5 A*-C GCSE grades including English and maths was twenty four percent in 2008, twenty seven percent in 2009, thirty one percent in 2010, thirty five in 2011 and thirty six in 2012. This was compared to 52%, 54%, 59%, 62% and 63% in the respective years for those students not eligible for free school meals. It is clearly a persistent problem within the UK. Research has also found that socio-economic disadvantages are likely to have an impact up to A-levels and children from disadvantaged backgrounds are less likely to enrol in higher education even if they are high achievers (Sammons, Toth, & Sylva, 2015). Sammons et al (2015) used data from the EPPSE study to examine the attainment of children from disadvantaged backgrounds, where disadvantage was measured using a combination of measures including free school meals, family SES and parental income. It was found that high achieving but disadvantaged students in the UK were less likely to attain 4 or more AS levels compared to their advantaged counterparts (36% versus 61%). They were also less likely to take facilitating subjects. These are subjects that are commonly required or preferred by universities because they leave open a 'wide range of opportunities for university study', (Russell Group, 2016). In this study only 20% of disadvantaged students got an A*, A or B in these subjects compared to 42% of advantaged students. Similarly, high achieving but disadvantaged students were less likely to achieve 3 or more A-levels (35% versus 60%). Only 32% took one or more facilitating subjects compared to 58% of advantaged students and here 18% of disadvantaged students attained an A*, A or B rather than 41%.

There is a distinction between the primary effects of SES on academic performance and secondary effects, where class background determines the range of choices that

previous performance allows students to make (Boudon, 1974; Jackson, Erikson, Goldthorpe, & Yaish, 2007). Students from disadvantaged backgrounds have been found to have less ambitious educational options than those from higher social classes, even when prior attainment is controlled for (Goldthorpe, 2007; Jackson et al., 2007) and this may apply to the population of students who choose to study A-levels. In a large scale study by Cambridge Assessment (Rodeiro & Bell, 2007) involving 6, 597 students, from varying social backgrounds and abilities, studying in 60 sixth form centres (from comprehensive, grammar, independent schools and FE, tertiary and 6th form colleges) it was found that social class made a difference to the choices A-level students made, as expected. In Roderio & Bell's study (2007) children of higher professionals were more likely to take maths and science-based subjects than any other social class group, for example, whereas children of lower managers and professionals selected more humanities based subjects than any other social class group and any other subject area. These findings are useful in the context of the current research because they provide further support for the assumption that children are influenced by traditional SES factors. Importantly the students in this study rated advice received from their parents as the most critical factor in their decision-making, further justifying the exploration of this relationship to A-levels in the current research.

The effect of SES on achievement is not just a problem specific to the English context (OECD, 2010; Sirin, 2005; White, 1982) as previously highlighted. The findings of the current study may have implications for researchers and policy makers interested in the links between SES and achievement in high stakes examinations beyond its UK context. Causal conclusions about the relationships between parents' education and their child's academic achievement should also be treated with caution because as Eccles and Davis-Kean (2005) argued these relationships are only one aspect of a complex system of

parent and child interactions. They believe there is still much to understand about the system before research can make any statements or conclusions regarding parental influence on children's attainment. For example, what aspects of parents' beliefs and behaviours are likely to be influenced by specific educational experiences, and how these specific parental beliefs and behaviours might actually influence children's educational attainments. This needs to be considered when drawing any causal conclusions about influences upon A-level students in this current research. According to Sirin (2005) a further problem when looking at the relationships between SES and achievement occurs depending on the method of data collection. When students provided data about their family's SES, the magnitude of the relationship between SES and academic achievement was small but when the SES data were collected from parents the results were likely to be much higher as parents are the ultimate authority on their SES. Sirin (2005) therefore argued that students are likely to overestimate their family background, which would artificially limit the variability of the SES measure by pushing it upward and that it is also possible that they overestimate their family resources, because they might be reluctant to admit having limited resources. This is an issue discussed in relation to the current study in chapter 13.

SES, Family Characteristics and Achievement

The literature in the previous sections suggests that cultural capital in the family mediates the relationship between family SES and academic achievement. However, Tramonte and Willms (2010) distinguished between a static form of cultural capital related principally to the possession of cultural resources at home, as discussed above, and a dynamic form of cultural capital emanating mainly from cultural interactions and communication between parents and children. The focus of the literature is now therefore

upon the relationships between family characteristics, interactions, communications and achievement. These were particularly important to explore in this current study as family characteristics, SES and socialiser's beliefs, expectations and values, were believed to contribute to the expectations, values and achievement of students in the theoretical model underpinning this thesis.

Relationships between family characteristics and educational outcomes were considered important in the current research as links between SES, stimulating interactions or experiences, and children's cognitive functioning is well established (Bradley & Corwyn, 1999; Brooks-Gunn & Duncan, 1997; McLoyd, 1998) and differences in parenting practices are strongly implicated in the relation between SES and children's intellectual and academic performance (Hoff-Ginsberg & Tardif, 1995; Walberg & Marjoribanks, 1976). Large scale studies have found a strong association between parental involvement and school outcomes across all ages (Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010; Desforges & Abouchaar, 2003; Hango, 2007). Part of the observed connection between SES, cognitively stimulating experiences, and child well-being probably reflects parental attitudes, expectations, and styles of interacting (Bradley & Corwyn, 2002; See & Gorard, 2015). Stimulating experiences provide both direct and indirect learning opportunities for children, serve as a motivational base for continued learning (Saegert & Winkel, 1990) and research has shown that adolescents may benefit from a stimulating family environment as much as younger children (Walberg & Marjoribanks, 1976). In White's study (1982) home atmosphere, correlated much more highly with academic achievement than did any single or combined group of the traditional indicators of SES ($r = .55$) highlighting the importance of this variable and justifying its inclusion in this current study. Data from the National Longitudinal Survey of Youth and the National Household Education Survey (see Bradley and Corwyn, 2002) indicated that

children from poor families not only have less access to learning resources but also have less access to a wide variety of different recreational activities. They are for example less likely to go on trips, visit a library or museum, attend a theatrical performance, or be given lessons directed at enhancing their skills. Low-SES parents are less likely to take their children to educational and cultural events, and less likely to regulate the amount of TV their children watch (e.g. Hess et al. 1982).

In order to explain the relationships between SES, family background and outcomes Eccles and Davis-Kean (2005) proposed their own parent socialisation model (see Figure 3). This was based on a combination of family process models (Conger et al., 2002; Linver, Brooks-Gunn, & Kohen, 2002; Mistry, Vandewater, Huston, & McLoyd, 2002) and socialisation models of achievement that focus on the role of parents' beliefs and behaviours as indirect links between SES and child outcomes (Eccles, 1992; Guo & Harris, 2000). Whereas previous research had only looked at a limited set of hypotheses to explain the links between parental education and educational attainment of children, this parent socialisation model was important because it developed a more comprehensive picture on children's development, including children's engagement in educational activities (Eccles & Davis-Kean, 2005). According to this model, family characteristics such as genetics, education, ethnicity, cultural background, occupation and income influence parents' beliefs and behaviours. It was proposed that, in turn, these influence the child's skills, perceptions of their own ability, the value they attach to various achievement related tasks, their motivation, self-concept and engagement, which subsequently determine their educational outcomes.

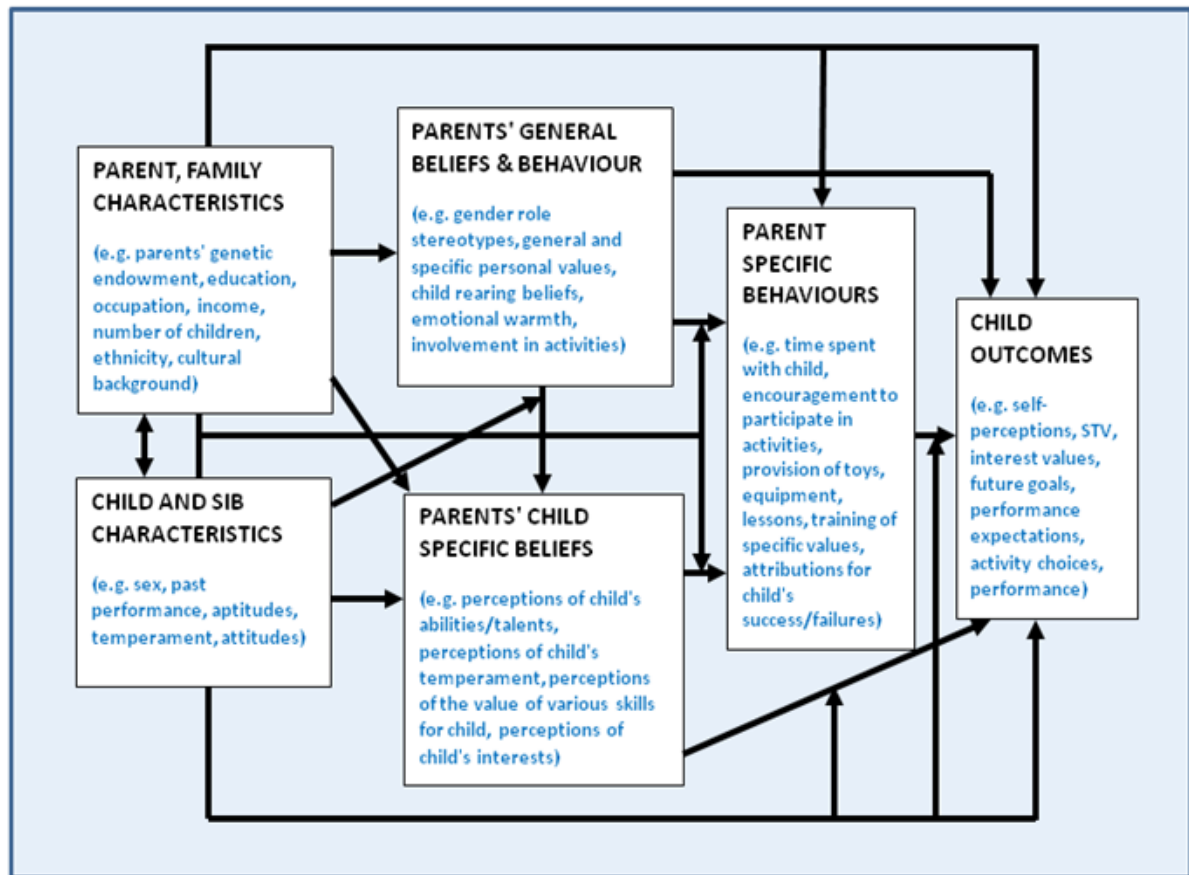


Figure 3 *Parent Socialisation Model* adapted from Eccles and Davis-Kean (2005)

Research by Davis-Kean (2005) confirmed this model. Their data from a national cross-sectional study of 868 students in the US was analysed using structural equation modelling and found that parents' education predicted children's school achievement and the relationship was mediated by parental expectations, the degree of intellectual stimulation they provided and through its direct and indirect influence on their children's academic ability self-concepts ($p < 0.001$). Eccles' work also found that family SES was a significant predictor of college planning and aspiration and that these kinds of family characteristics influence children's educational and occupational aspirations, in part, through their impact on the values parents attach to their children's school achievements and college attendance (Eccles et al., 2004).

Eccles et al. (2004) collected data from 681 sixth grade adolescents, and their mothers, as part of the MSALT study. Students completed questionnaires in their classrooms and the mothers' questionnaires were sent home. School record data was also collected at the schools. Hierarchical logistic regressions revealed that youth's grade point averages ($p < 0.001$), youth's plans for college ($p < 0.001$), resiliency ($p < 0.05$), family income ($p < 0.1$), mother's education ($p < 0.001$) and mother's college value ($p < 0.001$) were predictors of later college attendance. There is therefore some empirical justification for the theoretical model used in this research and thus relationships between family demographic, or SES variables and A-level achievement may be partly explained by Eccles' expectancy-value and parent socialisation model, as well as the substantial body of research outlined in this chapter.

A recent systematic review on the impact of attitudes, expectations and behaviour on attainment (See & Gorard, 2015) yielded 1,008 studies of which 77 were directly about the impact of parental involvement. Overall findings confirmed that parental involvement and higher educational attainment were linked. Two kinds of parental behaviour were shown to have positive associations with children's school outcomes for school aged children, most notably the home-school partnership and parental interest in children's academic activities, manifested in the way they support their children's achievement during their schooling. This review therefore confirmed the association between children's expectations, aspirations, attitudes, motivation and behaviour and their attainment, justifying the exploration of such associations in this thesis.

Again, although focused on a younger age group (GCSE) than the students in this study the results of the EPPSE study (Sylva, 2014) also offers interesting findings that are relevant for an understanding of the relationships between SES, family characteristics and interactions, and achievement. This project was a longitudinal, mixed-method research

study that followed the progress of over 3000 children from 3 to 18 years old in the UK. As expected Sylva found that parents' education was the strongest predictor of students' academic performance at the end of compulsory schooling. She found, for example, that students whose parents had university degrees earned 141 total GCSE points more than students whose parents had no qualifications. Although parental education was the strongest predictor of total GCSE scores, it was followed by 'academic enrichment activities' during the teenage years, including visits to the theatre or science museum. So, home environment was critically important. The traditional measures of SES and family income, showed weaker effects than parental education or enrichment activities. Family, yet again, was reported as the most influential source of information and advice about future education and employment, potentially influencing outcomes and aspirations, as would be predicted by the previous literature and investigated in this thesis. As highlighted the expectancy-value model predicts that socialiser's behaviours and beliefs potentially shape a student's goals and self-schemas including their identities. Clearly parents shape the learning experiences of their child through their socialisation practices and direct engagement with the child, and influence children's learning by managing and regulating their access to practices in other learning contexts (Mayo & Siraj, 2015). Early parental involvement can minimise the role of SES, for example. W. Johnson, McGue, and Iacono (2007), using a sample of adopted children, found that although the association between SES and outcomes was largely explained by prior IQ, differences in parental involvement explained approximately 13% of the remaining variation.

Based on the assumption that family provide an indirect link between socio-economic status (SES) and educational outcomes (Eccles, 1992; Guo & Harris, 2000) the A-level students in this research were asked about the influences on their A-levels and life choices. They were also asked about their support for their learning (for example how

often do your parents discuss your progress at school) and parental involvement (for example, in the last academic year has your parent discussed your progress with a teacher), to examine their relationship to the achievement outcomes of A-level students. Any interpretation of the contribution of home atmosphere to students' academic achievement is however difficult as there are concerns about directionality, for example the problem of whether home atmosphere results in the child's academic success, or whether a child's academic success create a certain kind of home atmosphere (White, 1982).

It is also worth noting that although there is a wide range of literature suggesting a clear relationship between social disadvantage and educational outcomes there is also an indication that a number of factors improve attainment in disadvantaged groups. These are highlighted in many of the studies presented previously and were reinforced in relation to the outcomes of A-level students in Sammons et al's recent study (2015) discussed above. So, for example, increased attainment in A-level students was likely if they had mothers with higher levels of education, a home environment that encouraged learning (e.g. visits), attended good quality pre-school, a school rated as outstanding by OFSTED and participated in extra-curricular activities. Positive school experiences and good relationships with teachers were also factors in encouraging better attainment. Some of these factors were therefore measured in relation to the A-level outcomes achieved by students in this study. Furthermore contrary to the literature on the educational disadvantages of SES, Baker et al. (2014) found that the vast majority of students in the UK, including those from highly disadvantaged backgrounds, hold high aspirations for pursuing further academic qualifications. In fact, their analyses suggested that students from the lowest income group had the highest aspirations out of any other group, with the exception of students in the top income bracket. This is interesting given the literature on the interplay between achievement, expectations and educational and occupational

aspirations (Simpkins et al., 2006; Watt et al., 2006). Typically, Baker et al (2014) found that levels of attainment, gender and higher levels of maternal education all predicted holding high aspirations and that teachers and parents played an important role in the choices students make. Such factors will be explored in the current research since the theoretical model suggested that factors relating to a student's background (including gender and SES), socialiser's and goals and self-schemas relate to the expectations, values and achievements of A-level students.

These last sections of the literature review focuses on the concept of SES, providing definitions that informed the measures in this study and also the pathways that were hypothesised with regards to A-level achievement (see Chapter 10). On the basis of the research presented it is predicted that SES will be related to the expectations, values and achievement of A-level students. However, this research not only investigates the relationship between SES and A-level achievement but also focuses on gender and ethnicity since the literature indicates a complex interaction effect between these factors in relation to achievement. Research in this area will now therefore be discussed.

Gender and Achievement

Although initial concerns about gender differences in attainment focused on the underachievement of girls, since the mid-1980s levels of achievement in girls has significantly increased (Arnot, David, & Weiner, 1999) and the concern over recent years has been the underachievement of boys at the end of compulsory schooling (for example, Arnot et al, 1998; Elwood and Gibbs, 1999, Gorard, Rees, and Salisbury, 2001). A-level outcomes have been found to vary by gender (Table 3) with boys achieving a higher percentage of the top and bottom grades (A*, D, E, U) whilst girls were awarded a higher

percentage of A, B and C grades (Department for Education, 2015b). Gender differences in the achievement of A-level students are also therefore investigated in this current study.

Table 3 *Percentage of A-level Results of Students by Gender and Grade (Department for Education, 2015b)*

Grade	Overall %	Male %	Female %
A*	8.5	9.0	8.1
A	17.9	17.3	18.4
B	26.8	24.9	28.5
C	24.6	23.9	25.1
D	14.8	16.0	13.8
E	6.1	7.3	5.1
U	1.3	1.6	1.0

Recently Emery (2011) looked at students awarded three A* grades (or better), two A* grades and an A grade (or better), one A* grade and two A grades or three A grades (or better). She reported that although females make up around 55% of both the A-level candidature and those who achieve three or more grades, males make up over half of the candidate numbers with three A* grades or better. Females however did better in the remaining categories. Interestingly where subject choices are made against the predominant gender pattern, the performance of the minority group is higher than that of the majority (Elwood, 1999; Gorard, Rees, and Salisbury, 2001). Acquah (2013), for example, found that 12% of girls achieved an A* in physics compared to 11% of boys whilst 13.5% of boys achieved an A* in English Literature compared to 11% of girls.

Many reviews have focused on the gender differentials in education but at A-level the focus has been on the bias in papers, according to Elwood (1999), or the gendered subject choices (for example, Francis, 2000; Whitehead, 1996). Overall research has failed to look at actual performance at A-level (Elwood, 1999), and although Elwood's paper is 16 years old this lack of research is still the case, which is surprising. Elwood (1999) argued that A-level examinations cannot be excluded from considerations of differential performance if a complete and concrete picture of male and female achievement is to be

formed. It is further argued that gendered achievement at A-level is a complex area that involves the experiences and expectations of males and females, teachers' perceptions of their capabilities and the way examiners chose to assess and examine the subjects (Elwood, 1999, 2005). Although expectations and values are an important component investigated in this thesis, not all of these other aspects are considered and this may potentially affect any conclusions drawn on the relationships between gender and A-level achievement in this study. On the basis of the research presented thus far the relationship between gender and A-level achievement is examined as well as the effect gender has on expectations and STV, as discussed in the section outlining socio-cultural differences in expectations and values above.

Ethnicity and Achievement

Although ethnicity is not the key focus of this thesis, as previously mentioned, it is important to acknowledge that ethnicity gaps persist even when gender and social class are taken into account (Connolly, 2006; Demack et al., 2000; Jackson, 2012; Rothern, 2007). Data from the National Pupil Database (NPD), a pupil level database that matches pupil and school characteristics to pupil level data, was examined and it was found that persistent ethnic differences were reported. For example Black Caribbean students, at age 16, showed lower attainment than White British students even after gender, SES, age, special educational needs and neighbourhood deprivation were accounted for (D. Wilson, Burgess, & Briggs, 2011). The Department for Education (2011) also indicated differences in attainment between ethnic groups; Black Caribbean, Pakistan and Black African groups achieved less well than White British students but Bangladeshi and Indian students did better. Recent research suggests, however, that the achievement gaps between ethnic

groups have narrowed with greater improvement in attainment at age 16 compared with White British pupils (Strand, 2015). The current study therefore presents some descriptive statistics on ethnic differences in the attainment of A-level students in this study (see Chapter 7) to explore and compare attainment patterns.

Several factors possibly explain lower achievement of minority groups including the fact that they are more likely to live in low-income households or single parent families, have less well educated parents and may attend underfunded school (Sirin, 2005). Since, as has been seen above, income and education are also linked to social capital and access to home resources, minority groups potentially suffer from several disadvantages. However, Jackson (2012) found that although controlling for social class reduced the 'penalty associated with membership of some ethnic groups', especially Pakistani and Bangladeshi groups, the effect of membership on other ethnic groups was unchanged, or even strengthened, by controlling for class background. She argued that differences in academic performance due to social class background do not therefore explain differences in achievement of varying ethnic groups. An additional problem, according to Jackson (2012), is that there is some mixed and limited data on the A-level achievement of ethnic groups. This is because she found that although some ethnic minority groups have lower transition rates to A-levels than the white majority, other minority groups have equivalent, or higher, transition rates. The most disadvantaged students appear to be those of Black Caribbean origin; only 36% of Black Caribbean students made the transition to A-level whereas the transition rate for Chinese students was 26 percentage points higher than that of the white majority population. Thus, any data on ethnicity and A-level achievement may be obscured by such variant transition rates.

The Role of Schooling in Achievement

The results of students by institution and grade are shown in Table 4 (Department for Education, 2015b). A higher percentage of students in independent schools achieve an A* (17.9%) compared to those in state schools (7.4%), and they also achieved a higher percentage of A grades (30.4% compared to 16.6%). State school pupils achieved a higher percentage of B, C, D and E grades. State school pupils were also more likely to fail to gain a grade in their A-levels (1.2%) compared to those in independent schools (0.8%). The results in Table 4 therefore reflect the differences in outcomes between these types of educational establishments.

Table 4 *Percentage of A-level Results of Students by Institution and Grade (Department for Education, 2015b)*

Grade	Overall %	State%	Independent %
A*	8.5	7.4	17.9
A	17.9	16.6	30.4
B	26.8	27.1	26.5
C	24.6	25.8	14.8
D	14.8	15.7	6.8
E	6.1	6.4	2.8
U	1.3	1.2	0.8

A further factor related to A-level achievement, and indeed the expectations for, and values attributed to such achievement, is that of schooling. Although this is not a specific focus of the research questions in this thesis it is an important variable and therefore results of students attending different school types will be presented. This is because it is well known that SES indirectly relates to achievement through multiple interacting systems (Sirin, 2005) and links between SES and achievement in this study may not only reflect the effect of resources at home but may also reflect the effect of social capital on academic achievement through choice of school (Sirin, 2005). There is evidence to suggest that family SES influences student outcomes not only at the individual level but

also at the school level. So, the A-level students in this current research may differ in their achievement because the independent schools SES composition, typically measured by the average student SES, may potentially have an effect on achievement outcomes over and above the student SES (Caro & Lenkeit, 2012). At age 16, for example, private and grammar pupils achieve significantly higher exam results than those at comprehensives, while students at secondary modern schools perform less well (Sullivan & Heath, 2003).

A similar effect is also found at A-level where approximately 83% of grammar schools and 89% of independent schools are in the highest attaining groups, compared to the 10% of comprehensive schools or the 17% of sixth form colleges (Rodeiro & Bell, 2007). Even after accounting for prior attainment school effects proved significant, in particular the average performance of the students in a school was a significant predictor of individual success (Rodeiro & Bell, 2007). While comprehensive or secondary modern school candidates make up almost 50% of the A-level candidature they account for only around 25% of those with three A* grades or better and around 30% of those with three A grades or better. In comparison, independent school students account for around 13% of the A-level candidature but account for almost 40% of those with three A* grades or better and around 32% of those with three A grades or better. Thus independent and selective school candidates are over-represented in terms of high attainment at A-level (Emery, 2011). The effects of school therefore needed to be accounted for in this research.

Seemingly schools influence achievement related beliefs, behaviours and choices in a number of ways including school, teacher and classroom influences (Eccles, 2007a). It is claimed that elite schools, or in the context of this research study independent schools, provide more challenging and engaging educational experiences for academically able students which lead to increased learning, performance and motivational engagement (Eccles & Roeser, 2011). It is of course possible, however, that these factors may

alternatively result from factors outside of the school environment, such as SES or family characteristics as previously discussed, rather than purely being a product of schooling. Clearly a complex set of relationships therefore exist between A-level achievement and the various aspects of a student's background.

The Complex Picture of Achievement

It is evident from the literature presented that achievement is affected by a number of different factors in various ways. SES is not only directly linked to academic achievement but also indirectly linked to it through multiple interacting systems, including students' racial and ethnic background (Bronfenbrenner & Morris, 1998; Brooks-Gunn & Duncan, 1997; Eccles et al., 1991; Lerer, 1991). A focus on the various interactions between SES, ethnicity and gender has been found in the literature with regards to achievement (Arnot et al., 1999; Connolly, 2006; Demack et al., 2000; Gillborn & Gibbs, 1996; Gillborn & Mizra, 2000).

Sammons et al. (2015), for example, found that some groups of disadvantaged students do better than others and in their study girls and ethnic minority students in the bright but disadvantaged group showed better attainment in public examinations at GCSE, AS and A-levels than boys and those from white UK backgrounds. Conducted in two yearly intervals since 1985, the Youth Cohort Study (YCS) is a large-scale study of 13,000-15,000 students, which is used extensively to monitor the educational achievement of 16 year olds in relation to social class, ethnicity and gender in England. Overall analyses from the YCS found social class differences in attainment to be greater than ethnic differences, and these were greater than gender differences (Demack et al., 2000; Gillborn & Mizra, 2000). Similar patterns were found when the achievement of over 15, 000

students aged 11, 14 & 16 years was analysed using data from the longitudinal study of young people (Strand, 2014). He found that the achievement associated with social class was twice as large as the biggest ethnic group and six times as large as the gender gap but concluded that the picture of attainment was complex because of the interaction between these factors, especially between gender and ethnicity and between SES and ethnicity. Seemingly the effect of gender or SES may not be the same across ethnic groups. For example, some ethnic groups from low SES backgrounds did better than others with factors such as aspirations, self-concept, homework, attendance and exclusion contributing to their achievement. Strand (2014) suggested evidence for the ‘immigrant paradigm’ (Kao & Thompson, 2003) where some immigrants place greater emphasis on education because they lack financial capital of their native peers and see it as a way out of poverty, although it may simply be that they value education more. The literature in this section suggests that the interactions between ethnicity, gender, social class and achievement are complex and the large dataset in the current study will be analysed to see what patterns emerge in the educational achievements of students.

Conclusion for Chapter 3

Eccles’ expectancy-value theory predicts that there will be socio-cultural differences in expectations and values. These may be influenced by self-schemas and socialisation influences. It is argued that when specific identities are important to an individual then the tasks associated with them will take on high subjective value and the individual will be motivated to act them out (Eccles, 2009). Gender differences have been found, for example, in STV (Eccles, 1984; Eccles et al., 1983; Guo et al., 2015; Watt et al., 2012). Furthermore, it is known that the relationships between SES, gender and ethnicity

are associated with some of the most prevailing inequalities in educational achievement in England (for example, Goodman & Gregg, 2010; Hobbs, 2016; Rothon, 2007) and were also the focus of this chapter. The most recent national results on A-level outcomes by gender and institution were also presented and showed that boys achieved a higher percentage of the top and bottom grades (A*, D, E, U) whilst girls were awarded a higher percentage of A, B and C grades (Table 4). A higher percentage of students in independent schools achieved an A* or A grade compared to those in state schools. State school pupils achieved a higher percentage of B, C, D and E grades and were also more likely to fail to gain a grade in their A-levels compared to those in independent schools.

The effect of SES and gender on expectations, values and achievement were therefore investigated in the quantitative phase of this study, based on the research covered in this literature review. It is known, from the literature presented, that family characteristics and home environment play a well-established role in achievement (Bradley & Corwyn, 2002; Brooks-Gunn & Duncan, 1997; Eccles, 1992; See & Gorard, 2015; Sylva, 2014; White, 1982). As socialisers were found to play an important role in the literature on achievement, expectations and values (Eccles, 1992; Eccles & Davis-Kean, 2005; Guo & Harris, 2000) students' perceived influences upon their A-levels were also explored in both the quantitative and qualitative phases of the study. The aim of such investigations was to contribute to an understanding of the effects of SES, gender and ethnicity on expectations, values and educational outcomes at A-level. Thus, gain knowledge of the social factors that are linked to motivation and achievement in this student population. The methodological design and measures employed in this research are based on some of the research presented in this chapter, including the SES, expectation and value scales used in the questionnaire and the schedule employed in the interviews.

Literature Review II

The overall methodological design in this research is therefore considered in the following chapter and the specific scales are also discussed in chapters 6, 9 and 10.

Chapter 4 Research Design: Using a Mixed Methodology to Explore the Relationships between Expectations, Values and Achievement

The methodology presented in this chapter was designed to explore the extent to which students' beliefs about their abilities, expectations for success and STV relate to their performance at A-level. As previously discussed it was based upon the theoretical framework of Eccles' expectancy value model (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995; Wigfield & Eccles, 2000). The methodology specifically aimed to understand and explore the relationships between; expectations and A-level achievement, expectations and subjective task value, subjective task value and achievement, SES, gender, ethnicity, expectations and values. Since it is also known that these demographic variables impact upon educational achievement outcomes (for example, see Sirin, 2005; Strand, 2014; White, 1982) the relationships between SES, gender, ethnicity and A-level achievement were also explored. The model used in this thesis suggested that expectations and values may be influenced by a student's goals and self-schemas relating to their identities, their perceived task demands and their perception of their socialiser's beliefs, expectations and attitudes (see Chapter 1). The methodology was therefore further designed to examine these influences.

The relationships between expectations, values and achievement were explored using a convergent parallel mixed methods design involving both large-scale questionnaires and semi-structured interviews. In the previous chapters the model used in this research was displayed and linked to the research questions. This model is replicated in Figure 4 below but now also indicates the *methods* used to investigate each of the research questions to provide an overview. The overall design and methods employed are then outlined in more detail in this chapter. Descriptions of the population from which the sample is drawn and the recruitment strategy used in this study are also summarised.

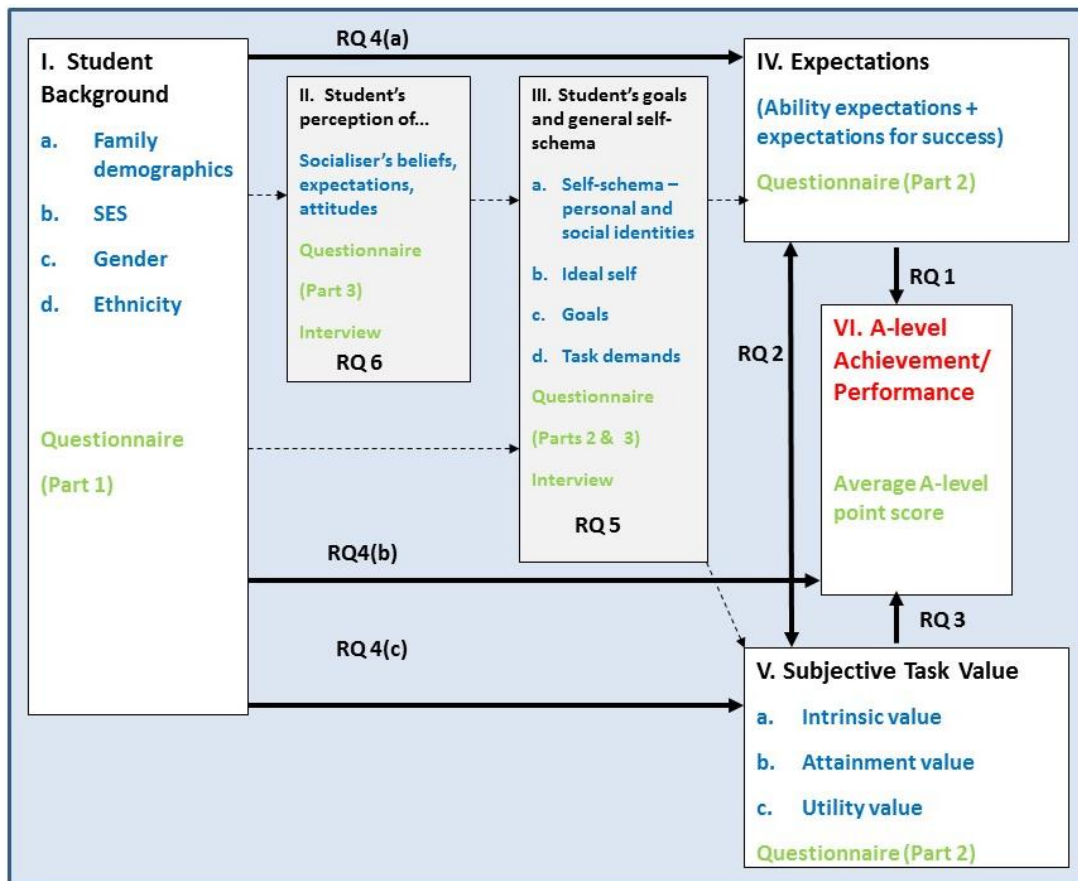


Figure 4 Mixed Methodology used to Investigate an Expectancy-Value Model of A-level Achievement

Design

The Convergent Parallel Mixed Methods Design

A convergent parallel mixed methods design was employed in this study (Creswell & Clark, 2011; Tashakkori & Teddlie, 1998) and is shown in Figure 5. Although more recent conceptualisations of mixed method discussions separate concurrent and parallel designs (Onwuegbuzie & Leech, 2004; Teddlie & Tashakkori, 2009) for the purposes of this research it is assumed that traditional definitions which view them as the same typology are applicable. Indeed one of the criticisms of mixed methods is the over-reliance on typologies (Tashakkori & Teddlie, 2010). In this research concurrent timing was used to implement the quantitative and qualitative strands in parallel, during the same phase of the research process, and were planned and implemented to answer related aspects of the research question (Creswell &

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Clark, 2011; Teddlie & Tashakkori, 2009). The strands were kept independent during analysis and then mixed during the overall interpretation (Creswell & Clark, 2011; Teddlie & Tashakkori, 2009).

A dominant status design was used (Leech & Onwuegbuzie, 2009) with more emphasis placed upon the quantitative method and data (QUANT + qual) due both to the theoretical basis of this research (see theory-methods link below) and the differing sample sizes in the quantitative and qualitative phases. Thus, in the quantitative phase students completed questionnaires on their gender, ethnicity and socio-economic status, the value they attach to A-levels and their general life expectations, values and plans for the future. These were then analysed using descriptive and inferential statistics (see Chapters 7, 9, 10 and 11). In the qualitative phase student interviews were conducted, and were coded thematically (see Chapter 12).

Concurrent implementation had the potential advantage of providing triangulation, completeness, expansion and complementarity (Collins, Onwuegbuzie, & Sutton, 2006; Tashakkori & Teddlie, 2008). Thus, the findings from the questionnaire and interviews were compared to identify common areas and the interviews provided further elaboration, enhancement and clarification of some aspects of the data and research questions (see Chapter 12). The interviews were therefore used to understand more about the students' perspectives on the links between motivation and A-levels, their perceived influences upon their expectations and values, and their own goals and self-schemas. They expand and complement the results obtained in the questionnaires and provided a more complete picture of these complex relationships. Further advantages of using the convergent parallel design were that it was an efficient design in which both types of data were collected during one phase of the research, each type could be collected and analysed separately, and interpreted using techniques traditionally associated with quantitative and qualitative data (Creswell & Clark, 2011).

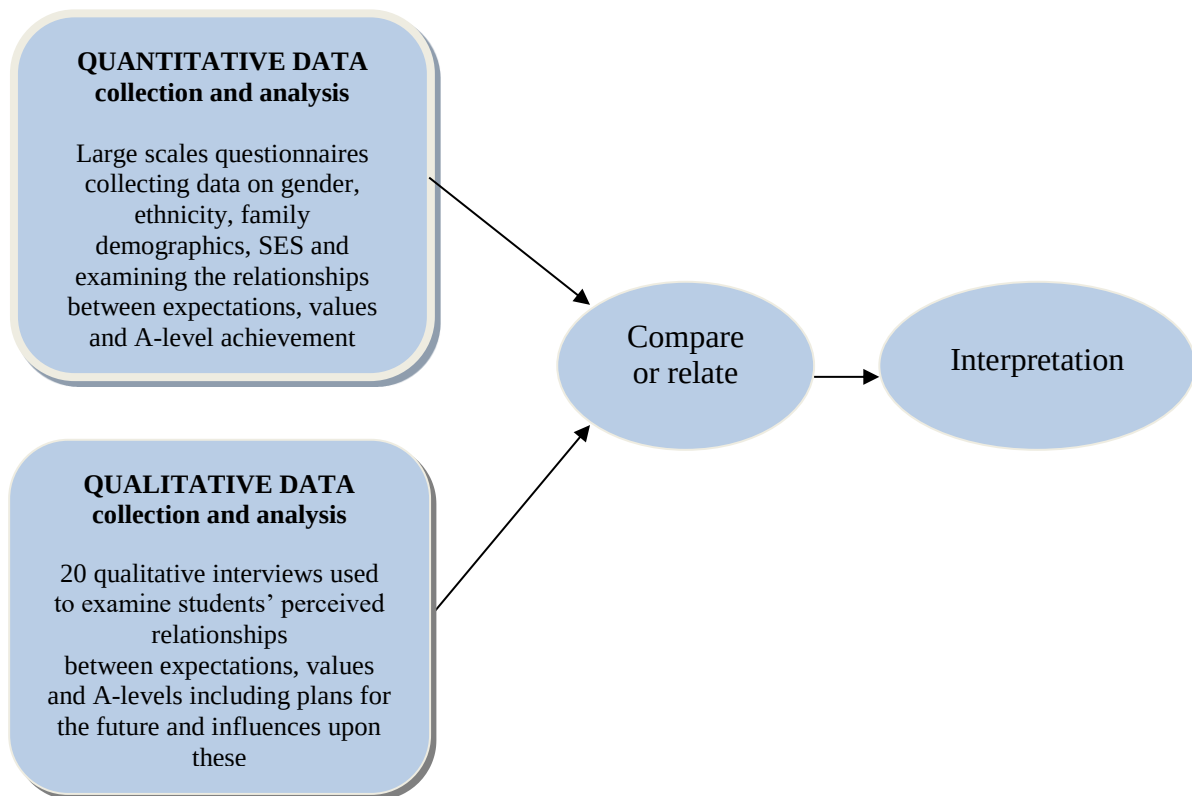


Figure 5 *The Convergent Parallel Design (adapted from Mixed Methods Designs by Creswell and Clark, 2011)*

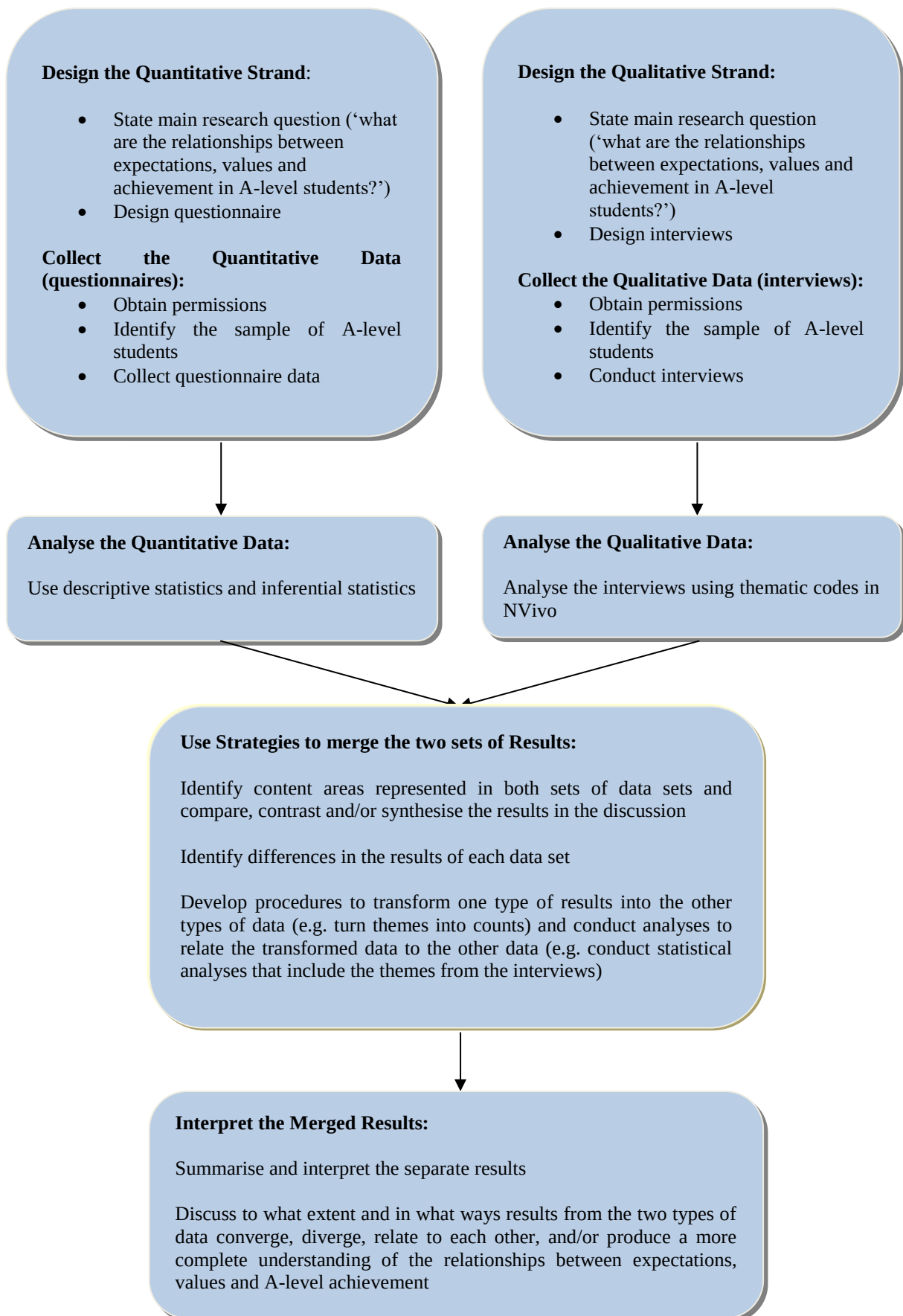


Figure 6 Flowchart of the Basic Procedures in Implementing the Convergent Parallel Design in this Research (Adapted from Creswell & Clark, 2011 p84)

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The procedures used in the design of this study are indicated in Figure 6. This figure shows that, firstly, the questionnaires and interviews were collected separately. It is also acknowledged that an iterative reciprocal approach may have been more fruitful (Sammons, 2010) where the quantitative and qualitative methods might have occurred in a dynamic, changing or evolving manner over the course of the research (Nastasi, Hitchcock, & Brown, 2010). Thus, emerging findings from the questionnaires could have been more specifically explored from the student perspective and themes from the interviews investigated statistically in order to provide a more comprehensive and complete picture of the relationships between motivation and A-levels for this group of students and this is an issue that will be further discussed in Chapter 13. According to Creswell & Clark (2011) the convergent parallel design is typically used when the researcher has limited time for data collection and must collect both types of data in one short field visit as was the case in this study. Students were participating in the research in the term leading up to their A-level examinations when teaching time was an understandable priority and schools were therefore more willing to grant access if the fieldwork was conducted in one visit and within a short, specified time period; a tutor or assembly period or a lunch break. As these students were sitting their A-levels examinations a few weeks later and, for many, then leaving school it was not practical for the researcher to conduct the interviews following analysis of the quantitative data. Thus, the strands were kept concurrent and separate because of practicalities and time did not allow the researcher to conduct a design that might have been more iterative in nature. This is a limitation of the study that will be further discussed in Chapter 13.

Following the data collection, the data were analysed separately using typical quantitative statistical procedures or qualitative analytical procedures (see Figure 6). Strategies were also employed to merge the two sets of results. These included identifying the content areas represented in both sets of data (e.g. issues related to expectation and values for A-levels) and comparing them, as well as identifying the differences in the results of each.

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Lastly these results were summarised and interpreted to explain what they show about the overall relationships between expectations, values and achievement in a sample of A-level students. The final discussion of this thesis is concerned with the extent and the ways in which the results from the two types of data converge, diverge and relate to each other to produce an understanding of the complex relationships between motivation and achievement.

The Theory-Methods Link

The central premise of this design was that the combined use of quantitative and qualitative approaches provides a better understanding of research problems than either approach alone (Creswell & Clark, 2011; Tashakkori & Teddlie, 2010; Teddlie & Tashakkori, 2009). It was used to obtain different but complementary data on the same topic to best understand the problem (Morse, 1991); that is to understand the complex relationships between expectations, values and achievement. The expectancy-value model of achievement motivation provided the theoretical basis for this research (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995; Guo et al., 2015; Hood et al., 2012; Trautwein et al., 2012; Wigfield & Eccles, 2000). The core component (quantitative analysis) forms the theoretical base for the results, with the findings from the supplementary core (qualitative analysis) embellishing this, adding important detail (Tashakkori & Teddlie, 2010). This mixed methods design provided multiple ways of seeing, hearing, and making sense of the social world (Greene, 2007) and provided an opportunity for presenting a greater range of divergent views (Teddlie & Tashakkori, 2002) which was considered especially important in this study.

The researcher believed there was value in analysing both quantitative and qualitative data to understand the relationships between expectations, values and achievement. Indeed mixed methods designs are known to offer a richer evidence base and therefore be more likely to prove fruitful in producing new understandings and contributions to knowledge than the implementation of only one core paradigm (Sammons, 2010). The use of only questionnaires,

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for instance, would have resulted in closed responses whilst the additional use of semi-structured interviews instead allowed a more open-ended discussion about the relationships between expectations, values and achievement and how these meanings or realities are constructed. The mixed methods design combined the strengths and non-overlapping weaknesses of quantitative methods (including large sample size, trends, generalisation) with those of qualitative methods (for example, small sample size, details). Results from the questionnaires and interviews were merged and compared to obtain a more complete understanding of the relationships between motivation and achievement (Creswell & Clark, 2011) and aimed to produce more robust and interesting findings than either approach could do in isolation (Sammons, 2010). As previously discussed another advantage of this design was that it therefore enabled the triangulation of the findings (Bryman, 2006; Greene, Caracelli, & Graham, 1989) and indeed was initially conceptualised as a triangulation design where two different methods are used to obtain triangulated results about a single topic (Creswell & Clark, 2011).

Philosophical Assumptions

The design assumes a pragmatic perspective, rooted in the early ideas of Charles Pierce (1839-1914), William James (1842-1910) and John Dewey (1859-1952). There is a broad consensus within the field of mixed methods research that the rationale is a pragmatic one (Biesta, 2010; Greene & Hall, 2010; R. B. Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2010). This is largely due to its epistemological and methodological flexibility (Greene, 2008) and because this pragmatic stance advocates mixing multiple sources of evidence to attain and modify knowledge (Tashakkori & Teddlie, 2010). Thus, pragmatism was advantageous in this study to explore and understand more about the relationships between expectations, values and A-level achievement. Furthermore a pragmatic philosophy underpins this current study because of its emphasis on the practical aspects of research and

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upon the context (Tashakkori & Teddlie, 2010). So, a concurrent parallel design using questionnaires and interviews was employed because these worked best when answering the research questions and was the most appropriate design given the contextual constraints of the research in terms of the sampling and time frame available when testing A-level students in the period approaching their examinations.

Whilst qualitative methods are traditionally based within a constructivist, narrative and socio-cultural framework, a positivist perspective is generally assumed when quantitative methods are used to further identify and measure variables and statistical trends. In the quantitative phase of this research a positivist perspective was assumed as Eccles' expectancy-value model of achievement motivation was used to inform the study's variables and empirical measures. This included scales which tested the relationships between expectations and task value in A-level students including the relationship between attainment value, intrinsic value, utility value and achievement. Information was collected on gender, ethnicity and SES. The interviews alternatively assumed a more constructivist, narrative, socio-cultural approach. They were used to understand more about student's self-schemas and goals and provided individual student perspectives on the relationships between motivation and A-levels. This included asking students whether they felt A-levels had changed or confirmed the way they see themselves, their goals for the future and perceived influences on their choices. Multiple paradigms were therefore usefully employed in this study because they were compatible with the study's theoretical underpinnings, design and research methods (Creswell & Clark, 2011; Tashakkori & Teddlie, 2010). One of the key advantages in implementing a mixed methods design in this study therefore lay in the fact that it encouraged the use of multiple paradigms and was 'practical' because it allowed various forms of data to be collected in relation to the relationships between motivation and assessment.

Challenges in Using the Convergent Parallel Design

Bryman (2012) suggested that one of the key problems in a mixed methods design is the ‘genuine integration’ of the components and how they relate to each other. Potential challenges thus arise in employing a convergent parallel design as it can be difficult to merge the two sets of data in a meaningful way, although this can be overcome if the data addresses the same concepts (Creswell & Clark, 2011). Genuine integration should therefore be less problematic in this study because the questionnaires and interviews examined the same concepts and were focused on the relationships between A-levels, expectations, values and achievement.

Further issues may arise with this design if the results from the questionnaires and interviews do not agree, and whilst contradictions may provide new insights, difficulties may be challenging to resolve (Creswell & Clark, 2011). Consideration also needs to be given to the consequences of having very different sample sizes for the quantitative and qualitative strands when merging the data sets and drawing conclusions (Creswell & Clark, 2011). This is an issue that will therefore be addressed further in the discussion (see Chapter 13). It may be problematic if the varying sample sizes do not both ensure sufficient representation of relevant characteristics, and a range of viewpoints, to reflect the sample.

Several critiques of mixed methods research are offered with some of the most frequently cited criticisms relating to the costs of conducting it, the required competence of the researcher in both quantitative and qualitative methods and the challenges of examining issues from different perspectives (Tashakkori & Teddlie, 2010). Some of these issues will be further addressed in relation to the current research later in the discussion (see Chapter 13). There are additional quality issues that may also be considered. A number of scholars have proposed a framework consisting of eight quality domains including planning, data collection, interpretation and application (see O’Cathain, 2010). It is obvious, however that it is both

difficult and time consuming to be able to meet the requirements of all these criteria (O'Cathain, 2010).

Quantitative Strand: Questionnaires

Questionnaires were used to collect data on student background (family demographics, gender, ethnicity and SES) and to explore the relationships between expectations, values and achievement. The questionnaire was designed to explore the assumptions that there will be relationships between SES, gender, ethnicity and A-level achievement outcomes as such factors are known to affect educational outcomes (e.g., Demack, Drew & Grimsley, 2000; Gillborn & Mizra, 2000; Sirin, 2005; White, 1982). Furthermore it is argued that when specific identities are important to the individual then the activities, behaviours and tasks associated with them will take on high subjective value and the individual will be motivated to act them out (Eccles, 2009). It also investigated the assumptions that an individual's decisions, persistence and performance can be explained by their beliefs about how well they will do and the value they attach to tasks (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012). Differences in task value (for example on the basis of gender) were argued to underlie differences in motivation and achievement (Eccles, 1987; Eccles et al., 1983; Eccles et al., 1984).

The questionnaire therefore comprised of three parts relating to the research questions (see Chapter 6); part one collected information about the student's background (family, demographics, gender, ethnicity, SES), part two contained items relating to their expectations and values about their A-levels and part three included items about their general life expectations and values (see Figure 4 and Appendices C & D). A mixture of open and closed questions were used and in designing the questionnaire the researcher was careful to avoid

ambiguous terms, long or double-barrelled questions, leading questions, negatives and technical terms as these can be problematic for participants (Bryman, 2012).

Strengths of using Questionnaires

There are a number of strengths in employing questionnaires; they ensure a standardised procedure, are quick to administer in order to gather large amounts of data are replicable and easy to score (Bryman, 2012; Coolican, 2009). Thus, in this study each of the students received the same questionnaire which included a set of standardised instructions and questions about the relationships between their expectations, values and A-levels (see Appendix D and Chapter 6). The use of closed questions easily facilitated statistical analysis and comparability of answers as coding naturally followed the fixed answer format (for example, no = 0, yes = 1). The questionnaires were used to gather large scale data across 12 Oxfordshire schools within nine school weeks (12th March and 23rd April 2014; 27th June and 9th July 2014, see Chapter 6), supporting the claim that they are quick and easy to administer in order to gather a large data set. A further advantage of using questionnaires is that it reduces potential bias errors caused by researcher characteristics (Phellas, Bloch, & Seale, 2011) as completion of the questionnaire did not require interpersonal interactions between participant and researcher when answering the questions.

Challenges of using Questionnaires

The use of questionnaires does however present some difficulties as closed ended questions only allow for simple responses; students are unable to expand upon their answers and the researcher is unable to prompt or probe to gain further information (Bryman, 2012; Coolican, 2009). It is also possible that students misinterpret instructions. Low return rates are

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also typically problematic in questionnaire designs and some of these issues will be addressed in the discussion of the overall thesis with regards to the current study (see Chapter 13).

Method variance (i.e., variance that is attributable to the measurement method rather than to the constructs the measures represent) is also one of the greatest potential problems (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and include response biases such as acquiescence bias and social desirability bias (Bagozzi & Yi, 1991). Thus participants may have a tendency to consistently agree or disagree with a set of questions, or attempt to provide answers that conform to a socially acceptable belief or behaviour (Bryman, 2012). Such method biases are a problem because they are one of the main sources of measurement error and this threatens the validity of the conclusions about the relationships between measures (Bagozzi & Yi, 1991; Spector, 1987). However, whilst these limitations may arise in this study they will be addressed by ensuring both randomisation and reverse items in the implemented scales (see Chapter 6) and by looking for statistical patterns in responses (e.g. students' rating all items using the same response).

Qualitative Strand: Semi-Structured Interviews

Interviews are the most popular method of generating data in the social sciences (Madill, 2011) and *the* central resource through which contemporary social science (and society) engages with issues that concern it (P. Atkinson & Silverman, 1997). Importantly they were a suitable choice for exploring the relationships between, and influences upon, expectations, subjective task value (STV) and A-level achievement because their very purpose is to understand themes of the daily world from the subject's own perspective and to debate the goals and values that are important in their lives (Tanggaard, 2009). So, in this case they were used to explore how students perceive the relationship between A-levels and the

goals and values they see as important, and their perceived influences by socialisers upon these (see Chapter 12).

Strengths of using Interviews

Tanggaard's (2009) position is that interviews are dialogical social events based on repertoires of socially and culturally embedded and constantly changing words and discourses. It is therefore a particularly useful tool in this thesis as the key research questions focus on the links between achievement and the perceived values and expectations of A-level students, how those meanings and realities are constructed.

The students' perspectives were therefore gathered in these interviews to explore and understand the perceived relationships between student's expectancies, values and A-level achievement, their perceived influences upon them and how they relate to their own goals and identities. Interviews thus had the benefit of both being able to identify general themes or discursive repertoires but also allowed each participant to talk with different voices 'because narratives are dialogical and multivoiced' (Tanggaard, 2009). This was especially important because students often face a lack of recognition for who they are and researchers need to give them a voice and demonstrate how students' insight into their own lives and learning in school can enhance the understanding of their learning, hopes and aspirations (O'Boyle, 2013). The use of student voice in this study was therefore particularly important because actively listening to what students say about their educational experiences, in this case the links between their expectations, values and A-levels, has potentially improving and empowering effects such as an increase in self-worth, self-respect and learning as well as a greater sense of agency (O'Boyle, 2013).

The inclusion of student voice is thus associated with a 'cultural shift' with its insistence on altering dominant power imbalances between adults and young people that sees students as knower's and actors in determining their own goals (Cook-Sather, 2006).

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Therefore listening to what students' have to say about the links between their expectations, values and A-level achievement is critically important, especially because there is traditionally a lack of engagement with students about issues specifically concerning assessment; something which is surprising given the significant role assessment plays in students' educational experiences and the amount of political and academic concern about its adverse consequences on students' overall experiences of schooling (Elwood & Lundy, 2010). The methodological design of this study therefore sought to address this gap between student engagement and assessment (A-levels) and enabled exploration of the ways in which motivation and achievement might be linked.

Challenges of using Interviews

Roulston, deMarrais, and Lewis (2003) suggested that for novice researchers learning about interviewing and doing interviews are different tasks. Similarly Potter and Hepburn (2005) agreed that although qualitative interviews are seen as relatively easy to perform they are very hard to do well and even harder to analyse well. These challenges were considered when using this technique in this research. Roulston et al. (2003) recommended that; students keep the interview flow focused on the research topic and questioning; focus on constructing open-ended questions and recognising the characteristics of speech that are natural to conversation within their own talk. Reflecting upon how interview data is co-constructed encourages novice interviewers to gain a fuller understanding of the different kinds of data that might be produced; develop high levels of rapport and ensure detailed transcriptions in keeping with the theoretical assumptions underpinning their study (Roulston et al., 2003). In the interviews careful attention was paid to these recommendations to ensure the interviews were not a challenge but instead become what Roulston et al. (2003) call 'emerging strengths in the academic journey' and this will be addressed further in the discussion chapter of this thesis (see Chapter 13).

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Overall this qualitative aspect of the mixed methods design has helped an understanding of the pattern that emerged in the relationships between expectations, values and educational achievements and the influences upon these. These data triangulated the questionnaire data and allowed exploration of the relationships by focusing on the use of student voice.

Ethical Issues

This study complied with the British Psychological Society's Ethical Principles for Conducting Research with Human Participants (1990), Code of Ethics and Conduct (2009) and the Code of Human Research Ethics (British Psychological Society, 2014). It also met the ethical principles for educational research published by the British Educational Research Association (Hammersley & Traianou, 2012). The study received ethical clearance from the University of Oxford's ethics committee. Before completing the questionnaire all participating students and schools received information sheets and consent forms which introduced the researcher and the study; informing them it was being conducted at the Oxford University Centre for Educational Assessment and aimed to explore the relationship between their expectations, values and their achievement at A-level (Appendix E). They were informed that the data would remain anonymous, be stored securely and later destroyed. Both the students and schools were also advised that they were free to withdraw from the study at any time without giving a reason for doing so. Schools were further asked to consent to providing the examination results of the participants and students were made aware that in agreeing to the study these would be made available to the researcher. Contact details for the researcher and supervisor were provided should the participants wish to address any issues arising from involvement in the study.

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Students who were participating in the interviews received the information sheet and an additional consent form (Appendix E5), again introducing the researcher and the study. Students were assured they were entitled to withdraw at any time and did not have to answer any questions they felt uncomfortable about, or found difficult. They were also asked to consent to the interview being recorded.

The use of interviews raised some further potential ethical issues because whilst they are invaluable for producing knowledge of the human situation and offer an opportunity to establish a rapport, bonding and empathy (Gemignani, 2011; Mallozzi, 2009) not all researchers believe these are strengths, instead believing that a focus on empathetic relations limits research and blurs ethical boundaries (Tanggaard, 2007). As I was a former sixth form teacher prior to the doctorate I was used to establishing relationships with students and was able to build rapport. Interviews, however, inevitably involve a hierarchical relationship with an asymmetrical power distribution, a one-way dialogue, an instrumental and indirect conversation where the interviewer upheld a monopoly of interpretation (Kvale, 2006). It was therefore still nevertheless vital to reflect on the use of rapport and empathy and ensure an awareness of the specific power dynamics to reduce these conceptual, methodological and ethical concerns when interviewing A-level students about their goals, expectations and values in this study.

A-level Population in Oxfordshire

The samples used in each phase of this research are specifically addressed in Chapter 5 (for the pilot study), Chapter 6 (for the quantitative study) and Chapter 12 (for the qualitative study). In this current section the key demographic data about Oxfordshire are presented to provide the context for this study, as this was the area from which the sample was drawn, and it is important to understand how this data compares with national statistics

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and the characteristics of students studying A-levels. Therefore, in this section population estimates and the statistics on occupational classifications, ethnicity and number of students studying A-levels at the end of key stage 5 or in full time education are discussed. The national curriculum is organised into ‘blocks of years’ called key stages and at the end of each stage a child is formally assessed (Department for Education, 2014c). A-levels are the high stakes examinations students take at the end of key stage 5.

The number of state and independent school pupils studying A-levels at the end of key stage 5 is indicated in Table 5, however these figures excluded those studying in further education colleges as no students from these institutions participated in this research study. It should also be noted that the study sample included those at the start of key stage 5 (year 12) as well as those at the end (key stage 5). Numbers in full time education aged 16-19 presented in Table 5 would also include those studying other qualifications, not all of which were included in the study sample as the focus was on A-levels. The percentages of students from state and independent schools in the study sample (78.8% of state school pupils and 21.2% independent school pupils) lie between the Oxfordshire and national statistics. It should be noted that the higher number of students from independent schools in this study makes generalising any findings problematic (see Chapter 13).

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Table 5 *National and Local Pupils Studying A-Levels and in Full Time Education aged 16-18 (Department for Education, 2014d),*

	Number of A-level students at the end of Year 13		Number of students aged 16-18 in full time education at the start of the academic year	
	n	%	n	%
Oxfordshire: State	2,158	63%	5,740	67%
Oxfordshire: Independent	1,268	37%	2,788	33%
National: State	153,814	82%	425,706	84%
National: Independent	33,828	18%	82,199	16%
Oxfordshire: Total	3,426	100%	8,528	100%
National: Total	187,642	100%	507,905	100%

Oxfordshire is the most rural county in the South East. It has a population of around 635,500, over half of which lives in towns or villages of less than 10,000 people (Oxfordshire County Council, 2013). The demographic data on occupational status and ethnicity in Oxfordshire, compared to England, are shown in Table 6 and Table 7. The figures indicate that Oxfordshire has a slightly larger percentage of people in higher socio-economic occupations and fewer ethnic minorities (83.6% White British in Oxfordshire, 79.8% in England). The sample was compared to Oxfordshire on several variables including ethnicity, languages spoken at home, country of birth, age of entry to the UK and socio-economic status (see Chapter 7).

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Table 6 *Standard Occupation Classification in Oxfordshire compared to the UK (Office of National Statistics, 2011)*

Standard Occupation Classification (SOC)	Oxfordshire	England
1. Managers, Directors and Senior Officials	12.0%	10.9%
2. Professional Occupations	22.7%	17.5%
3. Associate Professional and Technical Occupations	13.6%	12.8%
4. Administrative and Secretarial Occupations	10.3%	11.5%
5. Skilled Trades Occupations	10.7%	11.4%
6. Caring, Leisure and Other Service Occupations	8.3%	9.3%
7. Sales and Customer Service Occupations	6.9%	8.4%
8. Process, Plant and Machine Operatives	5.7%	7.2%
9. Elementary Occupations	9.7%	11.1%

Table 7 *Ethnicity in Oxfordshire and England*

Ethnicity	Oxfordshire	England
White British	83.6%	79.8%
White Irish	1.0%	1.0%
White Other	6.3%	4.7%
Mixed White & Black Caribbean	0.6%	0.8%
Mixed White & Black African	0.2%	0.3%
White & Asian	0.7%	0.6%
Mixed other	0.5%	0.5%
Asian Indian	1.2%	2.6%
Asian Pakistani	1.2%	2.1%
Asian Bangladeshi	0.4%	0.8%
Asian Other	2.1%	2.2%
Black African	1.7%	3.4%
Other	0.50%	1.0%

In the current study convenience sampling was used to recruit 930 Sixth form students as participants from the 29 state schools 16 independent schools and three FE colleges in Oxfordshire (see Chapter 6).

Table 8 indicates that 12 local schools took part; eight state co-educational schools (27.5% of those in Oxfordshire) and four independent schools (25% of those in Oxfordshire). The sample included 733 pupils from state schools (78.8%) and 197 (21.2%) from independent schools, 445 boys (47.8%) and 482 girls (51.8%) of which 534 pupils (57.4%) were in year

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12, while 396 pupils (41.9%) were in year 13. Not all figures add up to the sample size of 930 due to missing variables.

Table 8 *Description of Questionnaire Sample by School, Gender and Year Group*

	State (n=8) (Mixed)	Independent (n=4) Girls (day)	Independent (n=4) Boys (Boarding)	Independent (n=4) Mixed (Day)	Total *
<i>School Sector</i>	8	1	1	2	12
<i>Number of pupils</i>	733	38	63	96	930
<i>Gender</i>					
Male	313	0	63	69	445
Female	417	37	0	28	482
<i>Year group</i>					
12	488	1	0	45	534
13	245	37	63	51	396

*Total may not equal 930 due to missing variables

Recruitment Strategy

This section details the approach used to select participants for the quantitative and qualitative phases of the main study. The three FE colleges, 29 state, and 16 independent schools in Oxfordshire received an email inviting them to participate in the study. This was addressed personally to each Head of Sixth form by locating their contact details online or telephoning the school. In two independent schools the emails were alternatively sent to the deputy head teacher at the request of the school. After two weeks another email was sent to those teachers who had not responded, setting a cut-off date for participation two weeks later. One school also requested a meeting with the researcher, deputy head and head of sixth form before consent was agreed.

In return for participation all schools were offered a set of A-level psychology teaching resources (lesson plans, presentations etc.) and a series of psychology revision sessions by the researcher in the month prior to the A-level examinations. This was taken up by four schools. Alternatively, in one school the researcher delivered a psychology society

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talk on memory and in another delivered a session on scientific research process as part of the general studies programme.

Summary of Chapter 4

In this chapter the methodological assumptions, paradigms and framework underlying this research on expectations, values and achievement have been discussed. The convergent mixed methods design has been outlined including the procedures used to implement it in the current study and the strengths and challenges associated with its implementation. A general introduction to employing questionnaires and interviews has been provided, although their specific design within this study is discussed later in this thesis (see Chapters 6 and 12). Lastly the demographic data for Oxfordshire has been presented to give an indication of the area from which the sample for this study has been drawn, and the recruitment strategy used to obtain this sample has been outlined. In the following chapter the quantitative pilot study is discussed.

Chapter 5 Pilot Study: Testing a Questionnaire on Expectations and Values in a UK

Context

In this chapter the pilot study of the quantitative phase investigating the relationships between expectations, values and A-level achievement is presented. The questionnaire is outlined in detail in the quantitative methodology (see Chapter 6) and in Appendix C where a manual detailing the questionnaire development, administration and technical information can be found. One of the challenges of testing the relationships between expectations, values and achievement in post-16 settings in the UK was the adaptation and application of Eccles' expectancy value scales in this context. The questionnaire employed in this current research not only used Eccles' scales but also collected background information from students using items derived from those employed in the Programme for International Student Assessment (PISA) student and parental questionnaires (2009, 2011). The design of the questionnaire and scales are discussed in chapters 6, 9, 10 and 11 where the main study and structural equation models are presented. A pilot study was conducted to establish if the survey items, from both Eccles' work and PISA, could be adequately interpreted and to also investigate the reliability of Eccles' scales when tested on a sample of A-level students.

The procedures and findings of the pilot study are therefore outlined in this chapter. This pilot study tested the questionnaire on a sample of 134 students from two schools within Oxfordshire. The characteristics of the sample used in this piloting phase are described and are compared to local and national data. The reliability statistics of questionnaire items are also presented in this chapter. Implications for the design of the main questionnaire are discussed in light of the pilot study.

Procedure

Phase One

Initially three participants were selected to complete the pilot questionnaire using opportunity sampling. This resulted in amending the questionnaire in two ways. Firstly, it was necessary to make the item relating to 'online chat' more specific such that it asked 'is Facebook chat/ twitter/ MSN available to you in your home?' Secondly the sections were reordered so that in the event of boredom or fatigue effects the participants completed the most important sections on their background, expectations and values for A-levels, and general life expectations first, as not all students finished answering these items in the allocated time when they were placed later in the survey. Additionally, a non-participating school reviewed the instrument as part of a senior leadership team meeting providing feedback that the questionnaire was too long, suggesting that this would make access difficult. They also indicated that students may not know their parents' qualifications. On the basis of this feedback subscales on job characteristics, job efficacy and parents' values were removed from the pilot questionnaire to reduce the length and ensure it could be completed in 20 rather than 30 minutes.

Phase Two

Students from two Oxfordshire schools, a city comprehensive (n=81) and a town comprehensive (n=53), completed these revised questionnaires in the second phase of piloting (n=134). In each school the researcher piloted the questionnaire with students as a sixth form group within an allocated assembly period and was present to provide instructions, consent forms and clarification as necessary (see Appendix A). This resulted in a 93% return rate. Trialling signified that a number of revisions would benefit the main study and focused on

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issues concerning length, confidentiality, reordering of sections and additional answering categories.

Revision to Length

The pilot study indicated that the questionnaire was too long and could not fit adequately into the allocated time, potentially raising difficulties with access and analyses in the main study. It was therefore necessary to remove several items from the first part of the questionnaire focused on student background. Firstly, the section requesting GCSE grades was removed as it was apparent that entering all GCSE subjects and grades was time consuming and students could not accurately recall any of this information; just over 10% of students did not complete this section at all (14/134) and a further three students reported only some of their GCSE grades, which was considered a high percentage in a sample of this size. Discussion with teachers in the pilot schools revealed that they believed the reliability of self-report data for this item would be low and alternatively suggested that if this information was required schools could alternatively provide the GCSE scores directly alongside the students AS and A-level grades when participating in the study. They also however raised the issue that this would be problematic as there was a significant degree of movement of pupils between schools at sixth form. Therefore, not all schools would be able to provide such data for those students who had not been prior attendees of the establishment in which they were studying their A-levels. As such it was decided not to collect data on the GCSE results of participants in the main study due to these practical difficulties, although it is acknowledged that this was subsequently a significant limitation of the study as it is known that academic self-concept has consistent reciprocal effects with both achievement and educational attainment (Marsh & Craven, 2006; Marsh & O'Mara, 2008).

Questions relating to parental qualifications were also removed as there was a high level of missing variables for these questions (46% for mother's qualifications and 53% for

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father's) and feedback suggested this was a culturally inappropriate question for students whose parents had studied outside of the UK. Due to the degree of clarification required by students when asked about the possession of educational software or a guest room these socio-economic measures were not included in the final questionnaire. Lastly items asking students about their alternative (second and third) job choices was also removed from the last section measuring life expectations as it did not directly relate to the research questions and resulted in several students submitting inappropriate answers (e.g. stripper), reflecting the fact that this item was not taken seriously.

Confidentiality

In the pilot phase students were asked to place their questionnaire in an envelope and write their names on it so that their background information, expectancies and values could be matched to their A-level grades (achievement). As some students provided false names on their envelopes which were then removed by teachers and therefore excluded from analysis, the main study alternatively asked students to provide their candidate examination number. Some students (n=14) also questioned the anonymity of the study when asked to provide their names and informal discussion with this group suggested that using candidate numbers would be more ethically acceptable to participants and assure them that their expectations and values would remain anonymous.

Reordering Items

It was necessary to reorder the item asking students which language was spoken at home as 30% of them failed to answer this. It was not an ambiguous question but followed one that students were asked to leave out if they were born in England. As a result, it was likely that some participants also assumed the item on language could be omitted. The item on

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language was therefore alternatively placed before the question asking them where they and their parents were born to ensure its completion and analyses in the main study.

Additional Response Categories

Completion of the pilot questionnaire showed difficulties with the available response categories on some of the items; firstly, the questionnaire only offered subject options for AS, A-level and GCSE's and not BTEC's such that an 'other' option was subsequently added in the main questionnaire. Secondly it was also necessary to add a 'don't know' category to several questions, including those asking about parental occupations, what their mother or father was currently doing and student's future job choices.

These revisions aimed to ensure that the main questionnaire adequately tested the relationships between student background, expectations, values and achievement. It was interesting to note that many of the revisions to the pilot questionnaire were focused on the PISA test items measuring socio-economic status and socio-cultural variables rather than the scales relating to Eccles' expectancy value model which was the theoretical framework tested in this thesis.

Data Analysis

Descriptive Statistics

The focus of this pilot study was on the relationships between expectations, values and A-level achievement and also the ways in which gender, ethnicity and SES affect STV and achievement. Table 9 provides a sample description for the pilot study of students preparing for these high stakes, A-level examinations. It included two Oxfordshire schools; a city comprehensive (n=81) and a town comprehensive (n=53) and therefore 134 students took part

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in the study. In this sample 54% was female and 46% was male. 74% of the sample resided at home with parents, 23% with single parent families and 2% with no parents (see Table 9).

Research indicates a link between gender, ethnicity, socio-economic status (SES) and educational achievement in Eccles et al's expectancy-value model (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995; Wigfield & Eccles, 2000) it is proposed that cultural milieu and stable child characteristics contribute indirectly to the expectations and values students have. The descriptive statistics from the pilot study indicated that further exploration of the relationship of these variables to A-level achievement was indeed warranted in this study. There were, for example, between school differences on some of the descriptive statistics (percentages) in this sample including on ethnicity, students and parents' country of birth (see Table 9).

Whilst White British were the dominant ethnic group only 43% of students in the city comprehensive were White British compared to 85% of the town comprehensive students (see Table 9). Over twice as many ethnic groups were represented in the city school (13) compared to only six in the town school (see Table B8 in Appendix B). In Table 9 it is also indicated that English was the main language of students in both schools (79%). Sixteen different languages were however spoken by students in the city school compared to five in the town (Table B10 in Appendix B). The majority of students were born in the UK but again there were between school differences with a higher percentage born in the UK in the town sample (90%) compared to city sample (66%) (see Table B12 in Appendix B). Fifty-eight percent of fathers a 60% of mothers were born in the UK but a lower percentage of mothers (44%) and fathers (42.5%) were born in the UK in the city sample than the mothers (83%) and fathers (79%) in the town sample (see Table 9).

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Table 9 Sample Description for the Pilot Study of Students Preparing for High-Stakes, A-Level Examinations

Measure	City School		Town School		Total	
	N	%	n	%	N	%
<i>Gender</i>	79		53		132	
Male	29	36.7%	32	60.4%	61	46.2%
Female	50	63.3%	21	39.6%	71	53.8%
<i>Reside</i>	77		52		129	
2 parents	57	74.0%	39	75.0%	96	74.4%
1 parent	18	23.4%	12	23.1%	30	23.3%
No parent	2	2.6%	1	1.9%	3	2.3%
<i>Free school meals</i>	78		50		128	
Yes	7	9.0%	5	10.0%	12	9.4%
No	71	91%	45	90.0%	116	90.6%
<i>Ethnicity</i>	79		53		132	
White British	34	43.0%	45	84.9%	79	59.8%
White Irish	2	2.5%	0	0.0%	2	1.5%
White Other	8	10.1%	4	7.5%	12	9.1%
Mixed White & Black Caribbean	0	0.0%	1	1.9%	1	0.8%
Mixed White & Black African	1	1.3%	0	0.0%	1	0.8%
White & Asian	1	1.3%	1	1.9%	2	1.5%
Mixed other	2	2.5%	0	0.0%	2	1.5%
Asian Indian	4	5.1%	0	0.0%	4	3.0%
Asian Pakistani	8	10.1%	0	0.0%	8	6.1%
Asian Bangladeshi	5	6.3%	0	0.0%	5	3.8%
Asian Other	3	3.8%	1	1.9%	4	3.0%
Black African	10	12.7%	0	0.0%	10	7.6%
Chinese	0	0.0%	0	0.0%	0	0.0%
Other	1	1.3%	1	1.9%	2	1.5%
<i>Language</i>	59		35		94	
English	43	72.9%	31	88.6%	74	78.7%
Arabic	2	3.4%	0	0.0%	2	2.1%
German	1	1.7%	1	2.9%	2	2.1%
Other	13	22.0%	3	8.6%	16	17%
<i>Student's country of birth</i>	76		51		127	
Born in UK	50	65.8%	46	90.2%	96	75.6%
Born outside UK	26	34.2%	5	9.8%	31	24.4%
<i>Age of entry to UK</i>	75		51		126	
Born in UK	50	66.7%	46	90.2%	96	76.2%
<5 years	12	16.0%	3	5.9%	15	11.9%
6-12 years	11	14.7%	0	0.0%	11	8.7%
12+ years	2	2.7%	2	3.9%	4	3.2%
<i>Mother's country of birth</i>	76		51		127	
Born in UK	34	44.0%	44	83.0%	78	60.0%
Born outside UK	43	55.9%	9	17.0%	52	40.0%
<i>Father's country of birth</i>	73		53		126	
Born in UK	31	42.5%	42	79.2%	73	57.9%
Born outside UK	42	57.5%	11	20.8%	53	42.1%
<i>Mother's level of education</i>	74		52		126	
Did not go	2	2.7%	0	0.0%	2	1.6%
Primary	1	1.4%	1	1.9%	2	1.6%
Secondary	19	25.7%	21	40.4%	40	31.7%
6th form	10	13.5%	13	25.0%	23	18.3%
Tertiary	42	56.8%	17	32.7%	59	46.8%
<i>Father's level of education</i>	63		51		114	
Did not go	2	3.2%	1	2.0%	3	2.6%
Primary	1	1.6%	1	2.0%	2	1.8%
Secondary	19	30.2%	25	49.0%	44	38.6%
6th form	10	15.9%	9	17.6%	19	16.7%
Tertiary	31	49.2%	15	29.4%	46	40.4%
<i>Mother's current employment</i>	77		52		129	
Working full time	45	58.4%	29	55.8%	74	57.4%
Working part time	16	20.8%	12	23.1%	28	21.7%
Not working but looking for a job	3	3.9%	3	5.8%	6	4.7%
Other duties	13	16.9%	8	15.4%	21	16.3%
<i>Father's current employment</i>	66		50		116	
Working full time	51	77.3%	43	86.0%	94	81%
Working part time	7	10.6%	3	6.0%	10	8.6%
Not working but looking for a job	2	3.0%	1	2.0%	3	2.6%
Other duties	6	9.1%	3	6.0%	9	7.8%

Percentages may not equal 100% due to rounding

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Using only two schools in the pilot sample did not result in a representative sample and Table 10 indicates that this pilot sample was unrepresentative of the Oxfordshire or England ethnicity data. This may be because the two schools represented in the pilot were predominately urban in nature and did not reflect the many rural areas within Oxfordshire, further suggesting that a larger and more diverse sample was required for the main phase of the study. These comparisons further highlighted the limitations of employing a convenience sample as discussed in the Chapter 13, particularly issues of representativeness and generalisability (Bryman, 2012). Differences may also be due to the fact that Table 10 compares the ethnicity of students in the pilot study with the whole population in Oxfordshire and England and the differences may therefore be accounted for, in part, by the varying international migration patterns across different age groups.

Future Goals

The goals identified as most important by students were being able to support themselves/ being financially independent (35%) and being successful in their work (24%) (see Table B27, Appendix B). The goals identified as being the second most important were again being independent (22%) and then being a successful parent (22%) (see Table B28, Appendix B). The main phase of the study will explore how these goals relate to the expectations for, and values placed upon, A-level achievement.

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Table 10 A Comparison of the Ethnicity of Students Participating in the Pilot Sample with Ethnicity of the Overall Population of Oxfordshire and England

Measure	City School (n=79)	Town School (n=35)	Total (n=114)	Oxfordshire	England
<i>Ethnicity</i>					
White British	43.0%	84.9%	59.8%	83.6%	79.8%
White Irish	2.5%	0.0%	1.5%	1.0%	1.0%
White Other	10.1%	7.5%	9.1%	6.3%	4.7%
Mixed White & Black Caribbean	0.0%	1.9%	0.8%	0.6%	0.8%
Mixed White & Black African	1.3%	0.0%	0.8%	0.2%	0.3%
White & Asian	1.3%	1.9%	1.5%	0.7%	0.6%
Mixed other	2.5%	0.0%	1.5%	0.5%	0.5%
Asian Indian	5.1%	0.0%	3.0%	1.2%	2.6%
Asian Pakistani	10.1%	0.0%	6.1%	1.2%	2.1%
Asian Bangladeshi	6.3%	0.0%	3.8%	0.4%	0.8%
Asian Other	6.3%	1.9%	3.0%	1.2%	1.5%
Black Caribbean	0.0%	0.0%	0.0%	0.5%	1.1%
Black African	12.7%	0.0%	7.5%	1.7%	3.4%
Chinese	0.0%	0.0%	0.0%	0.9%	0.7%
Other	1.3%	1.9%	1.5%	0.5%	1.0%
<i>Main language spoken at home</i>					
English	72.9%	88.6%	78.7%	93.1%	92.0%
Other	17.1%	11.4%	21.3%	16.9%	18.0%
<i>Country of birth</i>					
Born in UK	65.8%	90.2%	75.6%	85.9%	86.2%
Born outside UK	34.2%	9.8%	24.4%	14.1%	13.8%
<i>Age of entry to UK</i>					
<5 years	16.0%	5.9%	11.9%	4.3%	3.4%
6-12 years	14.7%	0.0%	8.7%	3.7%	3.6%
12+ years	2.7%	3.9%	3.2%	6.1%	6.9%

Role of Socialisers

Positive influences on the job choices of students were reported in 55% of students.

Mothers and fathers were reported as being the most positive influences (22% and 20%), then teachers (12%). Only 30% of students believed they had been discouraged in their job choices; again by their fathers (19%), parents (19%) and mothers (14%). These statistics align with Eccles' expectancy value model and parent socialisation models (Bronfenbrenner & Morris, 1998; Eccles & Davis-Kean, 2005; Goodnow & Collins, 1990; Grolnick &

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Slowiaczek, 1994; Marjoribanks, 2002) which suggested these socialisers would be the key influences upon a student's motivational choices and behaviours and again were further explored in the main study.

Reliability in the Pilot Study

Cronbach's alpha statistic is used to measure the internal consistency of survey items that the researcher believes all measure the same construct, are therefore correlated with each other and could thus be formed into some types of scale (Trobia, 2008). Table 11 shows the Cronbach's alpha scores for the expectancy-value items in the pilot study and indicates reliability of scales with the exception of items relating to utility value and expectations about a harder future life. As removing a question in these scales would however leave a single item the main study still included both statements.

Table 11 Cronbach Alpha's of Items in the Self and Task Perception Questionnaire and General Life Values and Expectations Scale

	Cronbach alpha's (Eccles, Adler and Meece, 1984)	Cronbach alpha's pilot study	Number of items in scale
<i>Self and Task Perceptions</i>			
Expectations	.92	.91	5
Attainment value	.70	.86	3
Required effort	.78	.84	3
Intrinsic value	.76	.72	2
Task difficulty	.80	.71	2
Utility value	.62	.37	2
<i>General and Future Life Values</i>			
Future family importance	.81	.86	3
Future work importance	.75	.76	3
High status/ competitiveness	.76	.72	6
Need achievement	.67	.69	6
Extrinsic motivation	.53	.64	4
Material Wealth	.49	.60	2
<i>Future Expectations</i>			
Positive future occupational expectations	.76	.74	5
Likely future education	.64	.73	2
Negative economic expectations	.58	.61	2
Expectations about a harder future life	.51	.39	2
<i>Job Identity</i>			
Job identity formation	.82	.77	4

Conclusion for Chapter 5

This pilot questionnaire was, firstly, piloted on three A-level students, and subsequently on 134 students from two schools in Oxfordshire. The aim was to test items related to the student's background and their expectations and values concerning both their A-levels and their general life. Results of the pilot study indicated that the convenience sample used was not representative of local and national data and suggested that a larger sample of students from a wider selection of Oxfordshire schools was required in the main study.

Being financially independent, successful in their line of work and a successful parent were seen as important goals for these students and this finding was re-examined in the main study. Whilst two of the expectancy-value subscales indicated low reliability in the pilot study a decision was made to keep these in the main questionnaire as it would otherwise leave a single item in these subscales and both items were kept to examine the reliability in a larger sample.

In summary, a number of revisions were made to the pilot questionnaire including revisions to length and elimination of GCSE results, recoding of candidate numbers rather than names to ensure greater confidentiality, reordering of categories and addition of some response categories. With the implementation of these minor changes the questionnaire was judged to be viable for use within the main study. The main questionnaire therefore used large scale analyses to examine the relationships between expectations, values and A-level achievement (grades) more extensively. In the following chapter the methodology for the main quantitative study is described in detail.

Chapter 6 Quantitative Methodology

This chapter gives a detailed description of the materials and procedures used to investigate the relationships between expectations, values and achievement in the quantitative phase of the research. Firstly, the sampling technique is outlined. Sample descriptors are provided in the following chapter. The questionnaire, designed to collect information on students' background, expectations and values for both A-levels and general life, is then described in this chapter. This is linked to the theoretical and methodological assumptions upon which this thesis is based (see Chapters 1, 2 and 3). The three parts of the questionnaire are outlined in detail and indicate how each one addresses the research questions. A manual containing specific information about the questionnaire development, administrative procedures and technical information relating to this methodology is also provided in Appendix C.

Sampling Technique

This study aimed to ensure a representative sample which would allow the findings to be generalised. Convenience sampling was used to recruit 930 Sixth form students from the 29 state schools 16 independent schools and three FE colleges in Oxfordshire. This resulted in 12 schools participating in the study; eight state and four independent schools (see Chapter 4). In the year 13 sample (n=396) all 12 schools participated but in the year 12 sample (n=534) participants were recruited from only 11 of these schools.

Convenience sampling was chosen for this research because it was 'available to the researcher by virtue of its accessibility' (Bryman, 2012, p.201). Additionally, it has been extensively used by both other researchers and within Eccles' work (for example Eccles et al., 1983; Eccles & Wigfield, 1995; Meece, Wigfield & Eccles, 1990). This sampling method

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raises issues of generalisability as it does not always ensure a representative sample, although Bryman (2012) acknowledges that social research frequently employs this technique. The representativeness of this study's sample was examined in relation to local and national trends on a number of variables including ethnicity, languages spoken at home, country of birth, age of entry to the UK and socio-economic status (see Chapter 7). The large sample size in this study (n=930, year 12 n=534, year 13 n=396) was beneficial for analyses in this research as structural equation modelling requires it (Tabachnick & Fidell, 2013) and it is also necessary to obtain adequate power for a model test (Lee, Cai, & MacCallum, 2012). Furthermore this sample size was large enough for random errors to cancel each other out, ensured that the sample was normally distributed, or knowable (Tashakkori & Teddlie, 1998) and therefore provided a good estimate of the population when investigating the relationships between expectations, values and A-level achievement.

Questionnaire

The main purpose of the questionnaire was to investigate the relationships between expectations, values and A-level achievement including differences in performance on the basis of gender, ethnicity and socio-economic status (SES). The perceived influence of socialiser's and a student's goals and self-schemas, as well as perceived task demands were also explored as these are believed to influence expectations and values (see Chapter 1). As shown in Table 12 the questionnaire therefore comprised of three parts relating to the research questions; part one collected information about the student's background (family demographics, SES, gender, ethnicity), part two contained items relating to their expectations and values about their A-levels and part three included items about their general life expectations, values and goals (see Appendix C and Appendix D). There were 86 items in total. The item pool on which they are based is shown in Table 12 (also see Appendix C) and

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are further discussed in this section. Figure 7 then indicates how each part of the questionnaire fits the theoretical framework and research questions in this study.

Table 12 *Overview of Main Questionnaire*

Questionnaire	Focus	Basis for Item Pool
Part One	Student background (Subjects studied, demographics, SES, gender, ethnicity)	Student and Parent Questionnaires Programme for International Student Assessment (2009, 2012)
Part Two	Expectations and values about A- levels, task perceptions	Self and Task Perception Questionnaire Eccles and Wigfield (1995)
Part Three	General life expectations, values and goals, influences	Items collected in the main survey given to 12 th grade students in wave 6 (1990) of Michigan Study of Adolescent and Adult Life Transitions (MSALT)

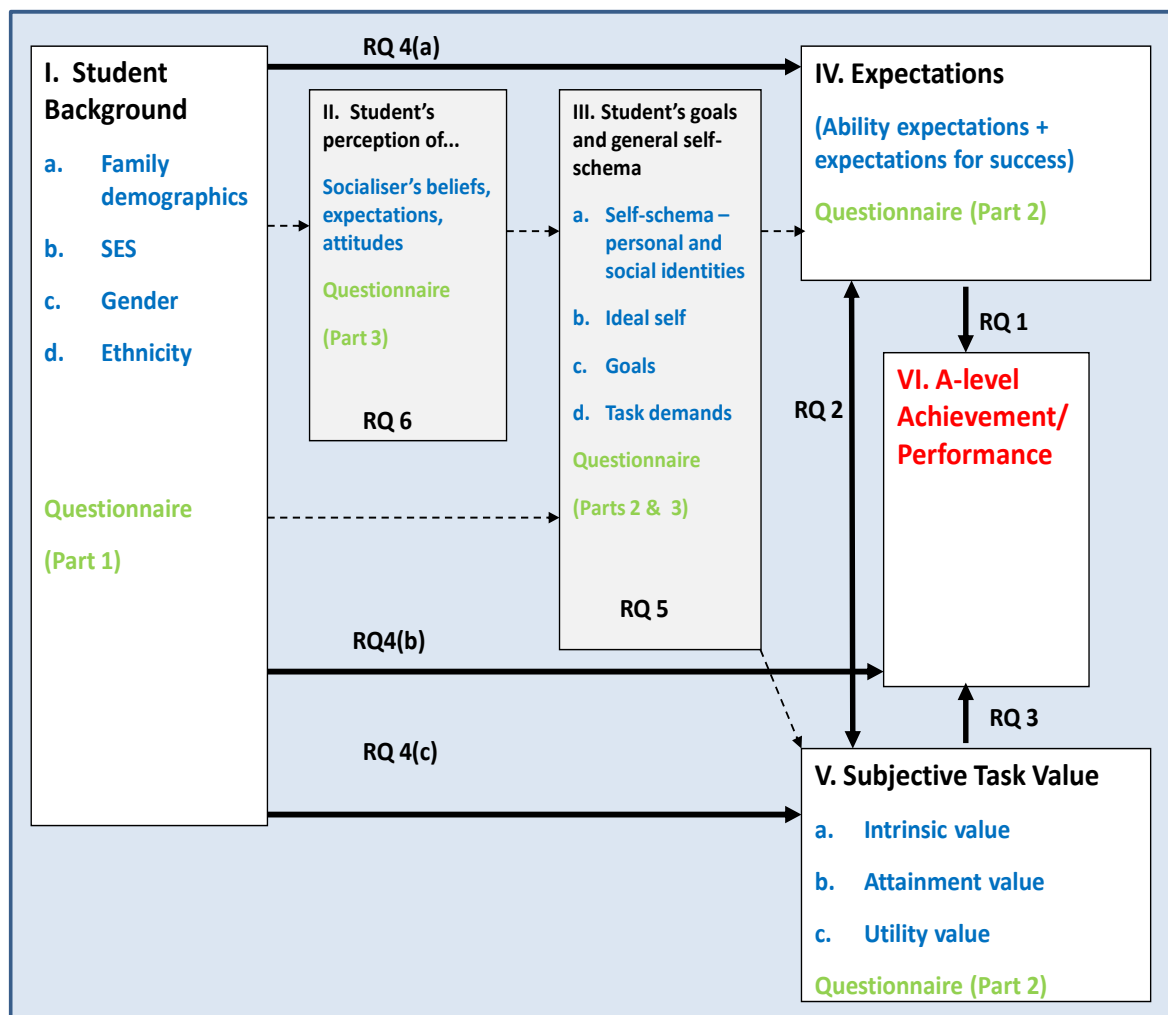


Figure 7 Quantitative Methodology: Using a Questionnaire to Investigate an Expectancy-Value Model of A-level Achievement

The introductory section of the questionnaire informed students that it was part of a research study. They were advised that the questions enquired about their personal attitudes and beliefs, so there were no right or wrong answers, and that they should take approximately 20 minutes to complete the questionnaire. Students were also asked to enter their examination candidate number on the front page so that their responses could be matched to their A-level examination results, as this was used as the measure of achievement in this study.

Part One: Student Background

Part one of the questionnaire focused on items relating to students' backgrounds; collecting data that helped address research question four investigating relationships between SES, gender, ethnicity, expectations, values and A-level achievement. On the basis of previous literature it was predicted that when specific identities (including those related to class, gender and ethnicity) are important to the individual then the activities, behaviours and tasks associated with them will take on high subjective value and the individual will be motivated to act them out (Eccles, 2009). They relate to both expectations and values (see Chapters 1, 2 and 3). For example gender differences in task value underlie gender differences in role choice behaviour and achievement (Eccles, 1994, 2007b, 2011; Eccles et al., 1999; Guo et al., 2015; Watt et al., 2006; Watt et al., 2012). Furthermore, as discussed in Chapter 3, the relationship between SES and achievement is well established and shows that students from lower socio-economic backgrounds tend to perform more poorly (Sirin, 2005; White, 1982). However, SES is not only directly linked to achievement but also indirectly linked to it through multiple interacting systems, including students' racial and ethnic background (Brooks-Gunn & Duncan, 1997; Bronfenbrenner & Morris, 1998; Eccles, Lord, & Midgley, 1991; Lerner 1991). Cultural, or social, capital is also considered an important determinant of academic achievement linked to family SES (Coleman, 1988; Duncan et al., 1994; Entwisle & Astone, 1994), and home atmosphere has been found to correlate more highly with academic achievement than did any single or combined group of the traditional indicators of SES (White, 1982).

The items in part one of the questionnaire derive from those used to collect information on a students' background in the PISA student and parental questionnaires (2009, 2012). As shown in Appendices C & D they included items on the student's year group, gender, ethnicity, family structure, their socio-economic background including social capital,

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home language and immigrant status, parental involvement and parental support for learning. Both closed and open ended questions were used in this section of the questionnaire. Open ended answers were required on items enquiring about subjects studied, parental occupations, language spoken at home, age of entry to UK if not born here. In order to ensure items were relevant to a UK context adaption of response choices were made for questions concerning parental education, country of birth and languages spoken at home (see Appendices C & D). Information concerning ethnic origin derived from the categories used by the Office of National Statistics (2011) rather than PISA items. In addition, students were asked if they were entitled to free school meals, which subjects they studied, the level and any grades already achieved. These were not items contained in the PISA questionnaires.

Operationalisation of SES.

As discussed above items relating to socioeconomic status formed part of this first section of the questionnaire. SES is traditionally operationalised through measures of parental educational levels, parental occupations, and family wealth (Caro & Cortés, 2012; Gottfried, 1985; Hauser, 1994). Typical definitions incorporate parental income, parental education and parental occupation as the three main indicators of SES (Gottfried, 1985; Hauser, 1994; Mueller & Parcel, 1981). Eligibility for lunch programmes is also commonly used (Sirin, 2005), justifying the measurement of these variables within the current study where data was collected on free school meals, mothers' and fathers' educational background and occupation, employment, home possessions and number of books in the home.

Traditional SES indices presuppose a hierarchical order that allow an unlimited number of SES groups to be captured in a single status dimension with a continuous scale (Ganzeboom, DeGraff, & Treiman, 1992; Mueller & Parcel, 1981) and students were therefore asked to give their parents' occupations using an open ended question. Using a

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continuous scale is advantageous in this study, compared to a categorical approach (where students are asked about parental occupations using multiple choice questions) as it captures variability within occupational categories, allows for multivariate analysis and does not neglect significant information from other occupational dimensions (Ganzeboom et al., 1992). Ganzeboom's socio-economic index of occupational status is used in PISA. As outlined in section 4 of the questionnaire manual (see Appendix C) parents' occupational status in this study was therefore coded as follows (OECD, 2010); father's and mother's occupational status was obtained by asking open-ended questions, the response was then coded to one of the 271 four-digit ISCO codes (International Labour Organisation, 1990) and subsequently mapped to Ganzeboom et al's SEI index (Ganzeboom et al., 1992). According to the SEI index higher scores of SEI indicate higher levels of occupational status. Construction of the SES indices used in this study is outlined in Chapter 10.

PISA's use of the SES index to measure educational inequality across countries is based on the work of Sirin (2005), who replicated White's work (1982), by conducting a meta-analysis of the literature on SES and academic achievement. These researchers found a medium-strong SES-achievement relationship, although Sirin (2005) reported that this relationship were also contingent upon school level, minority status and school location, making them important to also include within this study.

Part Two: Expectations and Values about A-Levels

The second part of the questionnaire was designed to investigate the premise that students' beliefs about their ability and expectations for success are predictors of grades (Eccles, 2007b; Eccles & Wigfield, 1995; Guo et al., Trautwein et al., 2012). It investigated whether students value activities they are good at and asked about the STV (attainment, intrinsic and utility value) placed on their A-levels (Eccles, 2007b; Eccles et al., 1983; Eccles

et al., 1984; Eccles & Wigfield, 1995; Trautwein et al., 2012; Wigfield & Eccles, 2000). It further investigates the idea that task demands influence expectations and values.

This section of the questionnaire therefore contained 17 items assessing constructs related to adolescents' beliefs and values about achievement and was based upon the self-and-task perception questionnaire by Eccles and Wigfield (1995), which was adapted to produce items relevant to A-levels (see Appendix C section 2.2, and Appendix D). Using a 7-point Likert scale it examined students' perceived task values including; intrinsic (interest) value of A-levels (e.g. 'I like doing A-levels'), their attainment value (e.g. 'How important is it to you to get good grades in your A-levels?') and utility value (e.g. 'How useful are A-levels for what you want to do after you finish school and go to University/ work?'). It also contained expectancy items concerning A-level performance and outcomes including ability perceptions (e.g. 'If you were to order all students in your year group from best to worse academically, where would you put yourself?) and expectations for success (e.g. 'How well do you think you will do in your A-levels this year?'). The expectancy and value items were used to investigate research questions one, two and three. Additionally, this section of the questionnaire measured task perceptions; perceived task difficulty (e.g. 'How difficult are A-levels for you?') and required effort (e.g. 'How hard do you have to try to get good grades in your A-levels?') which formed the basis of part of research question five. Two items were excluded from the original scale (Eccles & Wigfield, 1995) as they assessed specific skills related to maths which could not be converted to items relevant to more general A-level studies (see section 2.2 of Appendix C). To avoid order effects and demand characteristics, as in Eccles' original scales, the items from the self-and-task perception questionnaire were mixed, although presented in the same order for each participant.

Part Three: General Life Values and Expectations

Part three of the questionnaire collected descriptive data for research questions five and six which examined students' perceptions regarding the relationship between their general self-schema (identities), goals and expectations and values for A-levels (research question five), and their perceived influences upon these (research question six). The items included in part three of the questionnaire are derived from the student questionnaire used in wave 6 of the longitudinal Michigan Study of Adolescent and Adult Life Transitions (MSALT). Wave 6 data was collected in 1990, when the students in Michigan were in the 12th grade (thus being in the equivalent year to the 6th formers used in this study) and again used a 7-point Likert scale. These items were related to a number of general values students perceived to be important and also their future expectations and goals (see Appendices C & D). This included asking them about the value they placed on material wealth, extrinsic motivation, need achievement, future work importance, future family importance, altruism and high status. They were also asked about their economic expectations, the likelihood of future education, expectations of a harder life and occupational expectations. Furthermore, open ended questions were used to ask students what job they would like to have when they are 30, if anyone had a positive influence on their choice or discouraged them from thinking about certain jobs, and if so who. They were also asked what job they thought they would actually have when they were 30.

The Likert Scale

All of the items employed in part two of the questionnaire assessing expectations and values about A-levels (see Appendices C & D), and the majority of the items relating to general life expectations and values (part three, see Appendices C & D), employed a 7-point Likert scale. Students were asked about their degree of agreement with a series of statements that form a multiple indicator, or item measure (Bryman, 2012). There is, however,

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disagreement amongst researchers as to the optimal number of scale points; overall results suggest that a rating scale of five categories or more produces statistically reliable values (Preston & Coleman, 2000; Weng, 2004) and that when a rating scale is stretched participants simplify their answer process by choosing anchor points (Weathers, Sharma, & Niedrich, 2005). This evidence suggests that a 7-point Likert scale best fulfilled the purposes of this research which aimed to produce sufficiently statistically reliable values whilst discouraging the use of anchor points when investigating the relationship between expectations, values and A-level achievement. Using a 7-point scale allows for comparability of findings by employing the same scale points as in Eccles' original questionnaires. It should be noted that employing a Likert scale can produce central tendency bias, acquiescence bias and social desirability bias and whilst these limitations may arise they will be addressed by ensuring both randomisation and reverse items (Bryman, 2012).

Procedure

In the majority of the schools (n=10 out of 11) the questionnaires (see Appendix D) were administered to students prior to the summer examination series in May 2014, and the data was collected between 12th March and 23rd April 2014 (n=798). However due to logistic constraints two schools provided students following the exam session (n=132). These post examination questionnaires were administered between 27th June and 9th July 2014. This potentially raises issues concerning the effect that testing before and after exams has on different motivational patterns. This was therefore examined in the analyses and is addressed in the discussion (see Chapter 13). Achievement data consisted of students' A-level or AS grades achieved in the summer examination series 2014. Each participating school provided the researcher with a spreadsheet of the grades each student achieved in that year (so the AS grades for each year 12 student or the A-level grades of each year 13 student). In this

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study the achievement of each student was measured by calculating the *total point score* per student achieved in that academic year using the points allocated in the calculations used by the DfE (see Table 2, Chapter 1).

Before completing the questionnaire students received the participant information sheets and consent forms which introduced the researcher and the study; informing them it was being conducted at the Oxford University Centre for Educational Assessment and aimed to explore the relationship between their expectations, values and their achievement at A-level (Appendix E). Participants were advised that they were able to withdraw and their answers would remain confidential (see Chapter 4 for a full discussion of the ethical issues in this study).

Reliability and Validity of Eccles' Scales

Traditionally Cronbach's Alpha is used to investigate the reliability, or internal consistency of test items. The accepted coefficient for reliability is frequently cited as being somewhere between .7 to .8 (Kaplan & Saccuzzo, 1982; Murphy & Davidshoefer, 1988; Nunnally, 1978; Peterson, 1994). The reliability of items used in the self-and-task perception questionnaire (Eccles & Wigfield, 1995), which formed the basis of part two of the questionnaire in this study (assessing expectations and values about A-levels) are presented in section 4 of the questionnaire manual (see Table 8, Appendix C). The subscales all showed sufficient internal reliability with the exception of utility value which was low (.62). Items measuring expectations showed good reliability (.92) and those assessing intrinsic value (.76), attainment value (.70), task difficulty (.80) and effort (.78) were acceptable.

The internal reliability of the MSALT items measuring general life values and expectations (1990) indicated that several of the subscales had low reliability (see Table 8, Appendix C). This included scales assessing the value placed on material wealth (.49),

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extrinsic motivation (.53), need achievement (.67), future work importance (.67) and future family importance. It was also low for scales measuring negative economic expectations (.58), likely future education (.64) and expectations for a harder life (.51). These findings may account for the lack of empirical work employing these scales, compared to the self-and-task perception questionnaire discussed above. Reliability was however acceptable for items measuring high status/ competitiveness (.76), future family importance (.81) and positive future occupational expectations (.76). The properties of the scales used in both part two (expectations and values for A-levels), and three (general life expectations and values), of the questionnaire are re-examined in this study (see Chapter 7). Analysis of their reliability when tested in a UK, A-level context is an important contribution of this work.

As further discussed in the questionnaire manual (Appendix C) the face and predictive validity of the self-and-task perception questionnaire, which formed the basis of part two of the questionnaire of this study, was reported to be good (Eccles et al., 2005). This was because close linguistic correspondence was found between the items themselves and the constructs (Eccles et al., 2005) and the scales related to course choices and grades, teachers ratings of students, students prior achievement and parents' ratings of their child's abilities and interests (Eccles, 1984; Eccles et al., 1983; Eccles, Meece, Adler, & Kaczala, 1982; Wigfield, 1997).

Conclusion for Chapter 6

The sample, questionnaire and procedure employed in the quantitative study have been outlined in this chapter and linked to the theoretical framework and research questions. A sample of 930 students from 12 schools in Oxfordshire took part in this study. The overview in Table 13 below indicates how part one of the questionnaire collected information on a student's background, based on PISA student and parental questionnaires (2009, 2012),

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with the purpose of investigating how SES, gender and ethnicity affect the expectations and STV attached to A-level achievement (RQ4). The self-and-task perception questionnaire Eccles and Wigfield (1995) formed the basis of part two of the questionnaire designed to investigate the relationship between expectations and A-level achievement (RQ1), the relationships between expectations and subjective task value for an A-level student sample (RQ2) and the relationship between subjective task value and A-level achievement (RQ3). It was also used to investigate the influence of perceived task demands on expectations and values for A-levels (RQ5). Lastly part three of the questionnaire aimed to collect exploratory data on students' general self-schema and goals (RQ5) and their perceived influences upon these (RQ6). Items were based on those used in the MSALT study.

In the following chapter a more detailed description of the sample and parental characteristics is presented, including data on ethnicity, languages spoken at home, country of birth, age of entry to the UK, eligibility for free school meals, number of AS and A-level subjects studied, average point score, parents' level of education and their occupational status. The exploratory data for each of the research questions is also presented. Issues associated with the employment of a Likert scale within the questionnaire have also been considered in this chapter and the reliability and validity of Eccles' scales have been discussed. The reliability of the scales used in this study will be presented in the following chapter.

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Table 13 Overview of Questionnaire and Item Pool

Questionnaire	Focus and Research Question	Basis for Item Pool
Part One	Student background (Subjects, SES, gender, ethnicity) <i>RQ4. How does SES, gender and ethnicity affect the expectations and STV attached to A-level achievement?</i>	PISA Student and Parent Questionnaires (2009, 2012)
Part Two	Expectations and values about A-levels <i>RQ1. What is the relationship between expectations and A-level achievement?</i> <i>RQ2. What are the relationships between expectations and STV for an A-level student sample?</i> <i>RQ3. What are the relationship between STV and A-level achievement?</i> <i>RQ5. What are students' perceptions regarding the relationships between their general self-schema (identities), goals, task demands and expectations and values for A-levels?</i>	Self and Task Perception Questionnaire Eccles and Wigfield (1995)
Part Three	General life values, expectations and goals <i>RQ5. What are students' perceptions regarding the relationship between their general self-schema (identities), goals, task demands and expectations and values for A-levels?</i> <i>RQ6. What are student's perceived influences upon their expectations and values?</i>	MSALT (1990). Wave 6.

Chapter 7 Exploring the Relationships between Expectations, Values and A-level Achievement

The quantitative analyses in this thesis is conducted on the main, year 13, sample (in chapters 7, 8, 9, 10, 11). This has been chosen as the main sample for this research because the qualifications have been studied for longer and they are higher stakes for this year group with regards to their post-18 choices. These are important factors when measuring achievement motivation, expectations and values, especially expectations for success, attainment, utility and intrinsic value. Also, when considering task demands such as perceived task difficulty and effort. These Year 13 students would have already previously attained AS grades in subjects in Year 12 and were leaving school in the few months after participation. For those planning on attending university or completing an apprenticeship places, will have already been offered in many cases. The findings are therefore treated as the main sample in the quantitative results and SEM analyses. The year 12 sample has been analysed and referred to for comparison but the results are presented in Appendix K. These students, by contrast, will have only completed seven or eight months of their courses and will not yet have applied for any further educational or occupational pathways. As this is their first examination series they will have not yet received any external summative grades for these qualifications.

This chapter gives a detailed description of the sample characteristics and reports on the reliability of the scales employed in this research. In order to explore the relationships between expectations, values and A-level achievement the descriptive statistics for each of the research questions are presented. This includes analyses on the relationships between expectations and A-level achievement (RQ1), expectations and STV (RQ2) and STV and achievement (RQ3). Descriptive statistics for differences in expectations, values and achievement on the basis of SES, gender and ethnicity are also presented (RQ4). Initial analyses on the influence of perceived task demands and a student's self-schemas and goals

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(based on their general life values, expectations and future occupational choices) on expectations and values for A-levels are also considered (RQ5). These relationships are further explored in the qualitative data based on both samples (see Chapter 12) as are students' perceived influences upon their expectations and values. In this current chapter only the perceived influences upon students' job choices are presented in relation to research question six. In the following chapter the influences on their studies and their future more generally are discussed. The results presented are linked to the theoretical and methodological assumptions upon which this research is based and were important to explore prior to the formation of a structural equation model which further investigated the relationships between expectations, values and achievement. Thus, further analyses for research questions one, two, three and four will be presented in chapters 9, 10 and 11.

Data Analysis

The data presented in this chapter was analysed using SPSS versions 22 and 24. Frequencies were produced to ensure that the data did not display unspecified missing variables.

Sample Characteristics

Student Sample

As discussed in Chapter 4 a convenience sample was used to recruit the 930 sixth form students who participated in this study. A description of the whole sample by school, gender and year group was presented in Chapter 4 (see

Table 8). In the main year 13 sample (n=396) there were 203 males, and 193 females compared to 242 males, 289 females (three missing) in year 12 (n=536). To investigate whether the sample of students was representative of local and national populations'

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comparisons are made in Table 14. This includes percentages on ethnicity, language spoken at home, country of birth and single parent families however it should be noted that these figures are based on the overall Oxfordshire and English population taken from the Office of National Statistics 2011 Census and are not specifically for KS5 students.

In this study the dominant ethnic group was White British with 81.2% of year 13 students belonging to this group and 82.1% of year 12 students; figures that fall between those reported for Oxfordshire and England and could therefore be seen as representative.

Compared to local and national statistics there were however slightly higher percentages of some mixed-race students in this sample of A-level students including mixed White and Black African students (1% in the year 13 sample and 0.9% in year 12), White and Asian students (2.8% in year 13 and 2.3% in year 12) and other mixed race (0.8% in year 13 and 1.3% in year 12). There were also higher percentages of other Asian students (2.8% in year 13 and 3.4% in year 12) and in year 13 a higher percentage of Chinese students (2.8%).

English was spoken as the main language in this sample of A-level students (92.1% in the year 13 sample, 95.1% in year 12). The statistic for year 13 is in line with figures reported for the wider population within Oxfordshire and England, whilst the figure for the year 12 sample is slightly higher. A slightly higher percentage of students in this sample were born in the UK (87.1% in year 13 and 91.0% in year 12) compared to the statistics reported in the Oxfordshire and English population however this might be expected given that the census data also included older generations. The data showed that 7.1% of year 13 and 5.1% of year 12 students arrived in England before they were 5 years old however, only 2.3% of students in year 13 and 0.9% of students in year 12 arrived in the UK after 12 years. Whilst national figures for KS5 were not available for comparison recent data reported by Strand, Malmberg, and Hall (2015), based on estimates from the Longitudinal Study of Young People in England (LSYPE) using a large dataset of over 15,000 students designed to be nationally representative, suggests the percentages reported are higher than those found in the

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longitudinal data (1.8% arriving 0-4 years, 1.9% arriving between the ages of 5-10, 1.0% arriving between 11-14 years).

The percentage of free school meal pupils in this study (4.1% in year 13, 5.1% in year 12) was moderately higher than those reported for Oxfordshire (3.2%) but lower than those reported for England (8.4%). These differences may be due to the fact the local and national data is based on the percentage of students who achieved level three qualifications, including two A-levels, who had been eligible for free school meals at age 15 years. The current study focused on the self-report data of students who were studying only A-level qualifications and whilst free school meals are frequently used as a measure of SES (Sirin, 2005) it is known that students from lower SES backgrounds drop out of school earlier (White, 1982). As such, the differences between the data in this study and the national figures (Department for Education, 2013a) is an expected one and will be important to explore in relation to A-level outcomes in this research. In this sample 15.2% of year 13 students and 16.9% of year 12 students came from one parent families, which was slightly lower than the percentage in Oxfordshire (18.8%) and lower than the national figure (24.5%).

In this study 50 A-level subjects were studied by 396 students resulting in 1,033 entries. In the year 12 sample 53 AS level subjects were studied by 534 students, totalling 1,867 examination entries. The average achievement of the students in this study was 760 points for A-level students in year 13 and 374 points for AS level students in year 12. The national average for year 13 students is reported as 775 points (Department for Education, 2014b) however this also includes any AS grades achieved by students in year 12 but not continued into full A-level qualifications in year 13. In contrast, the average total point score reported for the students in this study comprises only of the grades achieved in the full A-level qualifications at the end of year 13 (so excludes prior AS grades) as this was the only data made available by schools.

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Table 14 *A Description of the Student Sample in this Research on the Relationship between Expectations, Values and A-level Achievement*¹

Measure	Year 13 (n=396)	Year 12 (n=534)	Population Data for Oxfordshire	Population Data for England
<i>Ethnicity</i>				
White British	81.2%	82.1%	83.6%	79.8%
White Irish	1.0%	0.9%	1.0%	1.0%
White Other	3.3%	3.0%	6.3%	4.7%
Mixed White & Black Caribbean	0.5%	0.9%	0.6%	0.8%
Mixed White & Black African	1.0%	0.9%	0.2%	0.3%
White & Asian	2.8%	2.3%	0.7%	0.6%
Mixed other	0.8%	1.3%	0.5%	0.5%
Asian Indian	1.3%	1.1%	1.2%	2.6%
Asian Pakistani	0.5%	1.1%	1.2%	2.1%
Asian Bangladeshi	1.0%	0.0%	0.4%	0.8%
Asian Other	2.8%	3.4%	1.2%	1.5%
Black Caribbean	0.0%	0.4%	0.5%	1.1%
Black African	0.8%	0.8%	1.1%	1.8%
Chinese	2.8%	0.9%	0.9%	0.7%
Other	0.3%	0.8%	0.7%	1.5%
<i>Main language spoken at home</i>				
English	92.1%	95.1%	93.1%	92.0%
Other	7.9%	4.9%	6.9%	8.0%
<i>Country of birth</i>				
Born in UK	87.1%	91.0%	85.9%	86.2%
Born outside UK	12.9%	9.0%	14.1%	13.8%
Born in England	86.1%	90.1%	83.5%	81.9%
<i>One Parent Family</i>	15.2%	16.9%	18.8%	24.5%

* not all percentages equal 100% due to missing variables

¹ please note that figures used in this table are presented for the overall population based on the Office of National Statistics 2011 Census Data and is not specifically for KS5 students (<http://www.neighbourhood.statistics.gov.uk>)

Parental Characteristics

Parental characteristics were also explored in this study and are reported in Table 15.

This includes data on parents' country of birth, level of education and employment status. Just over three quarters of mothers and fathers were born in the UK (78.1% of mothers of year 13 students, 77.5% of mothers of year 12 students and 74.9% of year 13 fathers, 77.3% of year

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12 fathers). As parental education is a key indicator of SES related to achievement (Gottfried, 1985; Hauser, 1994; Mueller & Parcel, 1981) this was also explored in this sample.

A higher percentage of mothers attended 6th form (22.2% and 22.3% of mothers of year 13 and year 12 students compared to 17.1 and 17.3% of fathers) with a slightly higher percentage of fathers attending tertiary education in the year 13 sample (58.9% of fathers, 52.3% of mothers) but not the year 12 sample. Parental education was an indicator on the SES construct in the structural equation model used in this research (see Chapters 10 & 11). As expected a far higher percentage of fathers were in full time work compared to mothers (85.6% of the fathers of year 13 students compared to 43.1% of mothers and 85.3% of the fathers of year 12 students compared to 49.5% of mothers) whilst mothers were more likely to work part time (34.9% of the mothers of year 13 students compared to 5.4% of fathers and 32.5% of the mothers of year 12 students compared to 4.4% of fathers). Mothers were also more likely to have other home duties (18.5% of the mothers of year 13 students compared to 4.9% of fathers and 11.3% of the mothers of year 12 students compared to 5.3% of fathers).

Occupational Status.

Parental occupation is another key indicator of SES (Gottfried, 1985; Hauser, 1994; Mueller & Parcel, 1981). Figures indicate that Oxfordshire has a slightly larger percentage of people in higher socio-economic occupations compared to the UK, using the standard occupation classification (Office of National Statistics, 2011).

Table 15 *A Description of the Parental Characteristics in this Research on the Relationship between Expectations, Values and A-Level Achievement*

Measure	Year 13 (n=396)	Year 12 (n=534)
<i>Mothers country of birth</i>		
Born in UK	78.1%	77.5%
Born outside of UK	21.9%	22.5%
<i>Fathers country of birth</i>		
Born in UK	74.9%	77.3%
Born outside of UK	25.1%	22.7%
<i>Mothers level of education</i>		
Did not go	0.5%	0.4%
Primary	0.8%	0.4%
Secondary	19.1%	20.4%
6 th form	22.2%	22.3%
Tertiary	52.3%	49.5%
<i>Fathers level of education</i>		
Did not go	0.3%	0.4%
Primary	1.3%	0.6%
Secondary	17.3%	24.1%
6 th form	17.1%	17.3%
Tertiary	58.9%	49.6%
<i>Mothers current employment</i>		
Working full time	43.1%	49.5%
Working part time	34.9%	32.5%
Not working but looking for a job	3.3%	3.8%
Other duties	18.5%	11.3%
<i>Fathers current employment</i>		
Working full time	85.6%	85.3%
Working part time	5.4%	4.4%
Not working but looking for a job	2.8%	1.7%
Other duties	4.9%	5.3%

*Please note not all percentages equal 100% due to missing variables

As discussed in the previous chapter the current study collected information on parental occupation using an open ended approach which presupposes a hierarchical order that allows an unlimited number of SES groups to be captured in a single status dimension with a continuous scale (Ganzeboom et al., 1992; Mueller & Parcel, 1981). As highlighted in Chapter 6 the advantage of this approach is that it captures variability within occupational

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categories, does not neglect significant information from other occupational dimensions and allows for multivariate analysis (Ganzeboom et al., 1992). Parental occupation will therefore form an important part of the latent SES construct structural equation model in this current research (see Chapters 10 & 11).

Table 16 *Standard Occupation Classification in Oxfordshire Compared to the UK (Office of National Statistics, 2011)*

Standard Occupation Classification (SOC)	Oxfordshire	England
1. Managers, Directors and Senior Officials	12.0%	10.9%
2. Professional Occupations	22.7%	17.5%
3. Associate Professional and Technical Occupations	13.6%	12.8%
4. Administrative and Secretarial Occupations	10.3%	11.5%
5. Skilled Trades Occupations	10.7%	11.4%
6. Caring, Leisure and Other Service Occupations	8.3%	9.3%
7. Sales and Customer Service Occupations	6.9%	8.4%
8. Process, Plant and Machine Operatives	5.7%	7.2%
9. Elementary Occupations	9.7%	11.1%

To establish parental occupation in this study each occupation was initially coded using one of the 271 codes from the International Standard Classification of Occupations index (ISCO-08). Since each of these ISCO-08 codes is grouped within broad occupational categories for the purposes of comparison to the Oxfordshire and national data, parental occupation was explored using these broader categories in these exploratory analyses. Compared to the figures in Table 16, overall the current sample of A-level students had a much higher percentage of parents in the top two occupational groups (see Table 17). For example, in the year 13 sample 32.8% of fathers and 17.8% of mothers were managers compared to 12.0% in Oxfordshire. There was also a higher percentage of fathers in these occupations in the year 12 sample (26.0%), although only a very small percentage of mothers (13.3%). Additionally 37.1% of fathers and 39.7% of mothers of year 13 students and 42.7% of fathers and 43.6% of mothers in the year 12 sample were professionals compared to 22.7% in Oxfordshire. At the lower end of the scale fewer parents in the current sample had

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occupations as process, plant and machine operatives or elementary occupations, for example only 2.0% of fathers and 1.5% of mothers in the year 13 sample and 3.0% fathers and 3.6% of the mothers in the year 12 sample in this study had elementary occupations compared to 9.7% in Oxfordshire. The sample was therefore unrepresentative of local data in terms of occupational status. It is possible, however, that the disparity may be due to the differing available classification systems used in these comparisons and it is argued that the open ended approach employed in this research is the advantageous classification system. As Table 17 shows little variation in parental occupations in this sample (for example nearly 70% of fathers and 57.5% of mothers in the year 13 sample are in managerial or professional work and nearly 69% of fathers and 57% of mothers in the year 12 sample) any association between SES, expectations, values and achievement must also be treated with caution. The restricted variation means the findings are not likely to be generalisable across a wider population. Overall the sample therefore appears to be unrepresentative not only in terms of parental occupational status, but also students' country of birth, age of entry to the UK, eligibility for free school meals, single parent families and ethnicity. Language spoken at home was representative of data.

Table 17 *Classifications of Parental Occupations in this Study*

	Year 13		Year 12	
	Father	Mother	Father	Mother
1. Managers	32.8%	17.8%	26.0%	13.3%
2. Professionals	37.1%	39.7%	42.7%	43.6%
3. Technicians and associate professionals	13.0%	14.3%	7.1%	9.3%
4. Clerical support workers	1.2%	6.7%	0.2%	9.1%
5. Service and sales workers	4.6%	18.4%	6.0%	20.5%
6. Skilled agricultural, forestry and fishery workers	0.6%	0.3%	0.6%	0.0%
7. Craft and related trade workers	4.3%	0.9%	9.0%	0.4%
8. Plant and machine operators and assemblers	3.2%	0.6%	3.9%	0.2%
9. Elementary occupations	2.0%	1.5%	3.0%	3.6%
10. Armed forces occupations	1.2%	0.0%	1.5%	0.0%

Internal Reliability of the Expectancy-Value Constructs

Traditionally Cronbach's Alpha is used to investigate the reliability, or internal consistency of questionnaire items and as discussed earlier in this chapter the accepted coefficient for reliability is frequently cited as being somewhere between .7 to .8 (see Chapter 6 where the reliability and validity of Eccles scales are discussed). The reliability of the expectancy-value constructs used in the questionnaire with the main year 13 sample are presented in Table 18 including those measuring self-and-task perceptions for A-levels, general and future life values, future expectations and job identity. Table 1 Appendix K shows the reliability statistics for the year 12 sample. Several constructs in this study were shown to have better reliability than those originally used by Eccles (effort, attainment value and family importance) whilst others had approximately the same reliability coefficients (expectancy, intrinsic value, need achievement, high status, work importance, occupational expectations, job identity formation). The majority of the constructs in the main study had equal or higher reliability than those reported in the pilot analyses with the exception of task difficulty, extrinsic motivation, future work importance and likely future education. Apart from task difficulty the reliability of these still however closely aligned with those reported by Eccles.

Low reliability was found in several constructs in the main study including those related to task difficulty, utility value, material wealth, extrinsic motivation, negative economic expectations, future education and expectations about a harder life. Again, with the exception of task difficulty this replicated the low reported reliability in Eccles' original research and indicated that the scales assessing general life expectations and values are not reliable. The low reliability for items related to task difficulty in this study may reflect the differences between testing the self-and-task perception questionnaire in a UK rather the US context. Eccles' scales were also domain specific and students were asked about their perceived difficulty of a particular subject, whereas students in the current study were asked about the perceived difficulty of their A-levels as a whole.

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Table 18 *Cronbach Alphas of Expectation and Value Items in the Questionnaire*

	Eccles, Adler and Meece (1984)	Main study (year 13)	Number of items in construct
<i>Self and Task Perception Questionnaire</i>			
Expectancy	.92	.91	5
Required effort	.78	.88	3
Attainment value	.70	.85	3
Intrinsic value	.76	.72	2
Task difficulty	.80	.68	2
Utility value	.62	.41	2
<i>General and Future Life Values</i>			
Future family importance	.81	.88	3
High status/ competitiveness	.76	.72	6
Future work importance	.75	.71	3
Need achievement	.67	.70	6
Material wealth	.49	.63	2
Extrinsic motivation	.53	.56	4
<i>Future Expectations</i>			
Positive future occupational expectations	.76	.70	5
Negative economic expectations	.58	.60	2
Likely future education	.64	.58	2
Expectations about a harder future life	.51	.40	2
<i>Job Identity</i>			
Job identity formation	.82	.78	4

Interestingly, it is worth noting that in all but extrinsic motivation the constructs that showed low reliability contained only two items. This may be related to potential issues concerning the reliability of scales used in this study because although Cronbach's alpha is used extensively as a reliability estimate within research, it has been critiqued (Cortina, 1993; Schmitt, 1996; Sijtsma, 2009). The criticisms centre on the use of Cronbach's alpha as a reliability estimate as a measure of internal consistency, and alternatives to Cronbach's alpha are recommended including the use of SEM (Bentler, 2009; Green & Yang, 2009). This recommendation is taken into account and SEM is employed for further analyses in this study (see Chapters 8, 9, 10 and 11). It should be noted that SEM cannot resolve the issue of items with low inter-correlations, which may be similarly problematic, but will allow their reliability as a scale to be re-examined in these future chapters.

What are the Relationships between Expectations, Values and A-level Achievement?

In this study the main research question focused on whether there is a relationship between expectations, subjective task value and A-level achievement, as predicted by Eccles' model (Eccles, 2007b; Eccles et al., 1983; Eccles & Wigfield, 1995) and more recent work (Guo et al., 2015; Trautwein et al., 2012). This investigation therefore sought to determine if there is a relationship between expectations and A-level achievement, expectations and subjective task value, and more specifically if there is a relationship between STV and A-level achievement. The effect of SES, gender and ethnicity on expectations, values and achievement was also investigated. The exploratory statistics on each of these research questions is now therefore presented.

RQ1. What is the Relationship between Expectations and A-level Achievement?

As discussed throughout this research students' expectations predict achievement outcomes (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012). The relationship between students' expectations (measured using items relating to beliefs about ability and expectations for success, see Chapters 1 and 6) and A-levels were explored in this study (n=382). Most (approximately 60%) of the student responses on each item for the expectation scale were ratings of four or five (see Table 19). In terms of ability they saw themselves as being a little above average. They also expected to do slightly better than average in their A-levels (see Table 19). So, overall, they expected to do well. Similar findings were reported for the year 12 sample (see Table 2 Appendix K).

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Table 19 *Descriptive Statistics: Expectations for A-Levels*

	N	Minimum	Maximum	Mean	SD	Skew
Expectations	382	5	35	23.42	5.32	-.48
Q24: compared to other students, how well do you expect to do in your A-levels this year?	392	1 (much worse)	7 (much better)	4.67	1.34	-.30
Q26: How well do you think you will do in your A-levels this year?	391	1 (very poorly)	7 (very well)	4.95	1.18	-.55
Q28: How good are you at A-levels?	391	1 (not at all good)	7 (very good)	4.57	1.17	-.45
Q32: If you were to order all students in your year group from best to worse academically, where would you put yourself?	391	1 (the worst)	7 (the best)	4.62	1.33	-.24
Q36: How have you been doing in your A-levels this year?	391	1 (very poorly)	7 (very well)	4.66	1.22	-.64

As predicted, A-level students' expectations were moderately positively correlated with their achievement in this study for both year 13 ($n=382$, $r=.44$, $p<0.001$) and year 12 students ($n=490$, $r=.44$, $p<0.001$). This may support the hypothesis that students' beliefs about their ability and expectations for success are important predictors of grades (Eccles & Wigfield, 1995). This association should, however, be treated with caution since beliefs about ability and expectations for success at A-level may be predicted by factors such as prior GCSE results. These results will have been a prerequisite to studying A-levels, which require

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a given set of entry requirements. It is known that academic self-concept has consistent reciprocal effects with both achievement and educational attainment (Marsh & Craven, 2006; Marsh & O'Mara, 2008). It is therefore difficult to conclude in which direction the relationships between expectations and A-level achievement operate in this current study in the absence of GCSE results. The relationship between expectations and A-level achievement was however further investigated using SEM (see Chapter 9).

RQ2. What are the Relationships between Expectations and STV for an A-level Student Sample?

Based on the premise that A-level students will value activities they think they are good at (Eccles & Wigfield, 1995) a correlation was conducted on the relationship between STV and expectations. Students valued A-levels if they expected to do well in them, both in the main year 13 sample ($n=378$, $r=.40$, $p<0.001$) and the AS level students in year 12 ($n=509$, $r=.46$, $p<0.001$). Again, this relationship was further investigated using SEM (see Chapter 9).

RQ3.What is the Relationship between STV and A-level achievement?

A further aim of this study was to investigate the relationships between achievement goals and subjective task value. The relationships between attainment value, intrinsic value, utility value and A-levels in this sample of students are now therefore discussed. The average STV score for the year 13 students in this research was 36.72 (SD 6.77) and for year 12 students was 36.45 (SD 6.81) which were above the midpoint of the scale (49). Overall STV scores are comprised of intrinsic value, attainment value and utility value. The component of STV that year 13 students rated most highly was attainment value (87%), followed by utility value (69%) and intrinsic value (63%). Similar results were found for the year 12 sample (see

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Table 3, Appendix K). So, the students in this study rated doing well in their A-levels more highly than the usefulness or enjoyment of them. These results are shown in Table 20. The value placed on attainment and utility is not surprising given the importance of A-level grades for entry into higher education and their relevance for future life options (see Chapter 1).

Table 20 *Descriptive Statistics for Main Sample: Subjective Task Value*

	N	Minimum	Maximum	Mean	Standardised Mean	SD	Skew
Attainment value	393	3	21	18.20	87%	3.23	-1.74
STV	389	7	49	36.72	75%	6.77	-1.39
Utility value	391	2	14	9.71	69%	2.37	-.81
Intrinsic Value	392	2	14	8.80	63%	2.58	-.46

(Key: 1= low intrinsic value, attainment value and utility value, 7= high intrinsic value, attainment value and utility value so high mean indicates high STV. Minimum indicates number of items in scale).

Correlations were conducted on achievement, STV, attainment value, intrinsic value and utility value (Table 21) for the main sample. A-level students generally achieved more highly in tasks they valued ($n=326$, $r=.26$, $p<0.001$). The results of the current research further supported the prediction that achievement is related to attainment value ($n=330$, $r=.25$, $p<0.001$), intrinsic value ($n=329$, $r=.22$, $p<0.001$) and utility value ($n=328$, $r=.17$, $p=0.002$). These associations are however weak. Interestingly the correlations for the year 12 sample were slightly weaker (see Table 5, Appendix K). Although there was a significant relationship between STV and achievement ($n=490$, $r=.20$, $p<0.001$), attainment value and achievement ($n=494$, $r=.23$, $p<0.001$), and intrinsic value and achievement ($n=501$, $r=.16$, $p<0.001$), there was not a significant relationship between utility value and achievement in this comparison, year 12, sample ($n=496$, $r=.08$, $p=0.095$). This may be explained by the fact the year 12 students will not yet have made post-18 choices or university applications in contrast those in year 13 and this may affect their perceived usefulness of these high stakes examinations.

Table 21 *Correlations between STV and Achievement*

	Achievement (Total Point Score)
Subjective Task Value	.26**
Attainment Value	.25**
Intrinsic Value	.22**
Utility Value	.17*

*p=0.002 **P<0.001

Summary of Research Questions 1-3

The main question in this research is whether there is a relationship between expectations, subjective task value and A-level achievement and the results presented so far in this chapter for research questions one to three indicate support for the hypothesis that a relationship exists. There were also positive associations between achievement and the attainment, intrinsic and utility value attributed to A-levels by the main sample of students suggesting that students engage and achieve in A-levels when they value them. Subjective task value was not, however, associated as strongly with achievement as students' expectations. This finding can be explained by the expectancy-value model and the assumption that the expectancy component is a better predictor of grades than STV (Eccles et al., 1984; Fredricks & Eccles, 2002; Guo et al., 2015; Jacobs et al., 2002; Marsh et al., 2005; Meece et al., 1990; Nagengast et al., 2011; Wigfield & Eccles, 1992). This was further investigated in the structural equation models (see Chapters 8 and 9).

RQ4. How does SES, Gender and Ethnicity affect the Expectations and STV attached to A-level Achievement?

In research question four whether SES, gender and ethnicity affect the expectations and STV attached to A-level achievement was investigated. A direct relationship between

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SES, gender, ethnicity and educational achievement has been previously established (Demack et al., 2000; Sirin, 2005; Strand, 2014; White, 1982). Family may provide an indirect link between SES and educational outcomes (Coleman, 1988; Duncan et al., 1994; Eccles, 1992; Entwisle & Astone, 1994; Guo & Harris, 2000). Social factors such as gender and social class are also thought to have an effect on expectations and values (Eccles et al., 2004) and, importantly, differences in task value are predicted to underlie differences in motivation and achievement (Eccles, 1987, 2007b; Eccles et al., 1983; Guo et al., 2015). Furthermore, when specific identities are considered important to the individual then the activities, behaviours and tasks associated with them, in this case A-levels, are thought to will take on high subjective value and the individual will be motivated to act them out (Eccles, 2009). As such SES, gender and ethnicity were considered important variables to explore in this study.

As a single latent construct for SES was used in the structural equation model (see Chapter 10) the correlations between SES indicators were initially explored before further exploratory analyses were conducted (see Table 22). Justification of the latent construct is provided in chapter 6 based on previous literature which typically operationalises SES as a combination of parental educational levels, parental occupations, and family wealth (Caro & Cortés, 2012; Gottfried, 1985; Hauser, 1994). This has also been discussed in chapter 3. Findings are then analysed using SEM in Chapter 10. In this exploratory analyse however significant correlations were found between the variables. These associations were weak with the exception of that between mothers' and fathers' education ($n=388$, $r=.53$, $p<0.001$), and number of books and home possessions ($n=366$, $r=0.52$, $p<0.001$) which were moderate. In the year 12 sample similar associations were found (see Table 6, Appendix K). Negative correlations with occupational group would be expected because the highest occupational group (managers) were coded as one and the lowest occupational group (elementary workers) were coded as nine. These indicators were therefore explored in more detail in relation to the expectations, values and achievement of A-level students in this chapter.

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Table 22 *Correlation between Measures of SES in Main Sample*

	Mother's occupational group	Mother's education	Father's Occupational Group	Father's education	Home possessions
Mother's occupational group					
Mother's education	-.30***				
Father's occupational group	.14*	-.12*			
Father's education	-.22***	.53***	-.12*		
Home possessions	-.28***	.22***	-.28***	.21***	
Number of books	-.26***	.28***	-.17**	.25***	.52***

*p<0.05 ** p<0.005 *** p<0.001

RQ 4(a) How does SES, Gender and Ethnicity affect the Expectations attached to A-level Achievement?

In this study expectations (including ability beliefs, defined as the perceptions of an individual's current competence at A-levels, and expectations for success in the future) were weakly correlated with a number of SES indicators in the main year 13 sample. This included mother's occupational group (n=332, $r=-.12$) and father's occupational group (n=332, $r=-.15$), in the expected direction, home possessions (n=355, $r=.21$), support for learning (n=372, $r=.14$) and number of books (n=382, $r=.17$). Although indicators of SES may therefore be associated with expectations these relationships are surprisingly weak in this sample of A-level students (see Table 23). There was a difference in the expectations of A-level students on the basis of both mother's education ($\beta=0.13$, $p=0.009$) and father's ($\beta=0.20$, $p<0.001$). These relationships were however re-examined using a single latent variable for SES as part of the inferential analysis (see Chapters 10 and 11).

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Table 23 *Correlations between Expectations and SES Indicators*

	Expectations
Home possessions	.21***
Number of books	.17***
Father's occupational group	-.15***
Support for learning	.14**
Mother's occupational group	-.12*
Parental involvement	.03

* $p < 0.05$ ** $p < 0.01$ *** $p \leq 0.001$

A statistically significant gender difference was found in expectations for A-level achievement ($t(380) = -2.74$, $p = 0.006$). Girls had lower expectations (22.65) on average than boys (24.13) for their A-levels. This will be explored in relation to the achievement patterns of students later in this section. Interestingly no significant difference was found in the expectations ($F(13) = 1.10$, $p = 0.356$) among ethnic groups. These exploratory analyses therefore suggest that students' expectations about A-level achievement may be affected by SES and gender but not ethnicity for the main sample. Further analysis between SES, gender and achievement were therefore conducted using structural equation modelling (see Chapters 10 & 11).

Similar associations were found between expectations, gender and SES for the year 12 sample. As seen in Table 7, Appendix K weak associations were again discovered with a number of SES indicators in this comparison sample including mother's occupational group ($n = 460$, $r = -.09$) and father's occupational group ($n = 456$, $r = -.15$), in the expected direction, home possessions ($n = 486$, $r = .25$), support for learning ($n = 509$, $r = .15$) and number of books ($n = 514$, $r = .18$). There was however no difference in the expectations of A-level students on the basis of both mother's education in this sample ($\beta = 0.31$, $p = 0.476$) or father's ($\beta = 0.05$, $p = 0.260$). This may be because there was a higher percentage of parents who had undertaken tertiary education in the main sample (see Table 15). Gender differences also showed a similar pattern to the main sample. There was a significant difference in achievement ($t(515) = -4.23$, $p < 0.001$) with girls reporting lower expectations (20.53) on average than boys (22.45). Where the samples also differed however was with regards to the relationship

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between the expectations of ethnic groups and although no significant difference was found in the main sample a difference was found in the expectations ($F(13)=2.78, p=0.001$) among ethnic groups in the year 12 sample. Again, this may be because of the slightly higher percentages of students in these groups (see Table 15). Mixed White other had the highest mean expectations (24) followed by Mixed White and Black Caribbean (23), other Asian (22), White other (22) and White British (22). The lowest expectations were found in other groups (14), Asian Pakistani (14), White Irish (18) and Black African (19).

RQ 4(b) How does SES, Gender and Ethnicity affect the STV attached to A-level Achievement?

As highlighted in the introduction to research question four a central premise of this thesis is that differences in task value underlie differences in motivation and achievement (Eccles, 1987, 2007b; Eccles et al., 1983; Guo et al., 2015). In this study STV was correlated with a number of SES indicators in the year 13 sample (see Table 24) including home possessions ($n=360, r=.16$), support for learning ($n=378, r=.15$), number of books ($n=389, r=.13$) and father's occupational group ($n=339, r=-.13$). There were fewer associations with indicators in the year 12 sample (see Table 8, Appendix K) where significant relationships were only found between STV and home possessions ($n=486, r=.18$) and STV and support for learning ($n=507, r=.20$). These relationships are surprisingly weak in this sample of A-level students given that parental socialisation models suggest that family characteristics influence, amongst other things, the value their children attach to various achievement related tasks (e.g. Eccles & Davis-Kean, 2005). An association between SES indicators and STV does however support previous research indicating that adolescents benefit from a stimulating family environment as much as younger children (Walberg & Marjoribanks, 1976). There was a significant statistical difference in the STV of A-level students in year 13 based on their mother's level of education ($\beta=0.17, p=0.001$) and father's level of education ($\beta=0.14,$

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$p=0.006$) but not in the year 12 sample for mother's level of education ($\beta=0.03$, $p=0.522$) or father's level of education ($\beta=0.01$, $p=0.987$). Overall however home context was important in relation to the STV students attached to their A-levels.

Table 24 *Correlations between STV and SES Indicators in Main Sample*

	STV
Home possessions	.16**
Support for learning	.15**
Number of books	.13**
Father's occupational group	-.13*
Mother's occupational group	-.09
Parental involvement	.05

* $p<0.05$ ** $p\leq 0.001$

A statistically significant gender difference was found in STV in both the year 13 sample ($t(387)=3.01$, $p=0.003$) where girls had higher STV value for their A-levels (37.76) on average than boys (35.72), and in the year 12 sample ($t(424)=2.21$, $p=0.028$). Here girls had an average STV score of 37.07 than boys 35.71. These results suggest that gender differences do exist in STV however contrary to much of the literature in this area it was girls who had higher STV than boys (e.g. Eccles, 1987, Eccles et al., 1983; Eccles et al., 1984; Gaspard et al., 2015). These differing findings may be due to the fact that previous work focused on more domain specific areas such as maths, rather than being generalised across subjects as was the case in this study, or may reflect the fact that this study is conducted in times where gender patterns have changed. There were further significant gender differences in the attainment value ($t(71)=3.351$, $p=0.001$) and utility value ($t(329)=2.62$, $p=0.009$) of students in the year 13 sample. Girls had both higher attainment value than boys (18.76 versus 17.67) and also saw A-levels as more useful to them (with an average score of 10.03 compared to 9.41 for boys). In the year 12 sample there was also a gender difference in the value placed on attainment ($t(413)=3.56$, $p<0.001$) with girls again reporting a higher average score (18.42)

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than boys (17.38). Again such findings may contradict Eccles' literature with regards to the expected gender differences in STV.

A statistically significant difference was found in STV amongst ethnic groups in the main sample ($F(13)=1.93, p=0.026$) although the numbers in the groups were too small for post-hoc analyses to be conducted. Differences were also found in the year 12 sample ($F(13)=1.80, p=0.040$). Here post-hoc analysis indicated that Black African students had the mean highest STV (43), followed by Asian Indian students (39), Chinese (39) and Black Caribbean's (39). White British students were between the top and bottom scores with a mean STV of 36. The lowest reported STV scores were found in Asian Pakistani students (30), White Irish (31) and mixed White & Black Caribbean students (34). These differences in STV will be discussed later in this chapter in relation to the analyses on achievement patterns.

RQ 4(c) How are SES, Gender and Ethnicity associated with A-level Achievement?

Since educational achievement is known to relate to SES, as previously discussed, its relationship to A-level outcomes was investigated in this study. Achievement correlated in the expected way with mother's occupational group ($n=289, r=-0.25$), father's occupational group ($n=289, r=-0.19$), home possessions ($n=308, r=.21$) and number of books ($n=333, r=.27$) in the year 13 sample (see Table 25). Similar results were reported for the year 12 sample (see Table 9, Appendix K) where achievement also correlated in the expected way with mother's occupational group ($n=449, r=-0.17$), father's occupational group ($n=440, r=-0.20$), home possessions ($n=471, r=.23$) and number of books ($n=497, r=.24$). Negative correlations with occupational group would be expected, as highlighted above, because of the way in which the occupational groups were coded. There was a significant statistical difference in the achievement of A-level students based on their mothers' level of education ($\beta=0.21, p<0.001$) and fathers' level of education ($\beta=0.38, p<0.001$) in the main sample and the achievement of

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students in the AS sample based on mother's ($\beta=0.13$, $p<0.001$) and father's education ($\beta=0.15$, $p=0.001$).

Table 25 *Correlations between A-level Achievement and Indicators of SES for Year 13 Sample*

	Total point score
Number of books	.27*
Mother's occupational group	-.25*
Home possessions	.21*
Father's occupational group	-.19*
Support for learning	.11
Parental involvement	-.01

* $p\leq0.001$

In this study the most frequently selected category for the number of books reported by students in both samples was 201-500, which is higher than the average (155.5) reported for UK students in the recent findings from PISA 2012 (OECD, 2013). The association between these SES variables and A-level achievement are however slightly weaker than those previously reported in meta-analyses where correlations have been found to be around 0.3 (Sirin, 2005; White, 1982). No significant difference was found in the achievement of pupils who reported they were in receipt of free school meals compared with those who were not in either the main year 13 sample ($t(330)=1.90$, $p=0.059$) or the year 12 sample ($t(495)=-1.17$, $p=0.867$). This is surprising given that other indicators of SES, discussed above, were correlated with A-level achievement and that the national data also found that only 35.2 % of students in receipt of free school meals at age 15 achieved two or more A-levels by age 19 compared to 59.5% of non-free school meal students (Department for Education, 2015a). However as discussed earlier in this chapter, when presenting the sample characteristics, the percentage of free school meal students in this study is considerably lower than the national

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average and this may therefore account for these findings. There were no differences in the achievement of students who came from one and two parent families in the main sample ($t(326)=-1.10$, $p=0.272$) or year 12 sample ($t(497)=-1.74$, $p=0.082$).

As expected, SES indicators such as mothers' and fathers' occupational group, and their levels of education, correlate with A-level achievement. This suggests that, in line with other research that found associations between SES and other levels of educational outcomes (Demack et al., 2000; OECD, 2010; Sirin, 2005; White, 1982) socio-economic status relates to the educational attainment of A-level students. Cultural, or social, capital also appears to play an important role (Coleman, 1988; White, 1982) as home atmosphere (parental involvement and number of books at home) correlated with outcomes in this population of A-level students.

As discussed in Chapter 3 the educational achievement of girls in England has significantly increased in recent decades (Arnot et al., 1999) however the exploratory analyses in this study found the mean A-level total point scores were higher for boys who gained 785 points on average, than girls, who achieved 738 points on average. There were however no statistically significant differences in their overall achievement ($t(331)=0-1.58$, $p=0.115$). This was not the case for the students in the year 12 sample where girls, on average, did slightly better (achieving 377 rather than 373 points). Again no statistical difference was found in achievement ($t(498)=0.35$, $p=0.724$). This is interesting given that the results presented in research question one found girls to have lower expectations and in research question two they reported higher STV for their A-levels. These relationships were therefore further investigated in the structural equation models (see Chapters 10 and 11). Gender differences in choice of A-level subjects and the grade point average achieved can be found in Appendix G. Expected differences in gender choices were found in both samples, for example, more males studied business, mathematics, computing, economics, physics, politics and PE whilst females were more likely to study art, biology, English literature, health and social care, psychology

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and sociology, in line with national trends (for example, Department for Education, 2016). Choices are not further analysed in this research but are an area for future exploration (see Chapter 13).

Whilst the literature reports that ethnic gaps in achievement have been found, even when gender and social class are taken into account (Connolly, 2006; Demack et al., 2000; Rothon, 2007), no statistically significant differences in A-level achievement based on ethnicity was found in this study in either the year 13 sample ($F(13)=1.10$, $p=0.378$) or year 12 sample ($F(13)=1.28$, $p=0.220$). This was despite the fact that differences in the STV attached to A-levels differed between ethnic groups, as discussed above.

Summary of the Exploratory Analyses for RQ4

The results from this study suggested that further exploration of the relationship between SES, expectations, STV and achievement in A-level students was warranted using structural equation modelling where a single latent SES construct was created using mother's and father's occupation, mother's and father's education, home resources and number of books (see Chapters 10 and 11). Many of the indicators used for SES in these exploratory analyses were associated with the expectations, values and achievement of A-level students. Additionally, gender differences were further explored using SEM as the results presented in this current chapter found gender differences in expectations and values, but not achievement. Ethnicity was related to STV but not to expectations or achievement. Due to the low numbers in each of the ethnic groups these relationships were not included in the SEM analyses (see Chapter 9).

RQ5. What are Students' Perceptions regarding the Relationship between their General Self-Schema (identities), Goals, Task Demands and Expectations and Values for A-levels?

As the theoretical model in this research suggests relationships between a student's self-schema, goals, perceived task demands and their A-levels these were explored using items from the MSALT study (see Chapter 6). Furthermore, it was anticipated that these schemas, goals and task demands would be affected by the student's background. The A-level students in this study were specifically asked about their general life values, expectations and goals (see Chapter 6) in order to further explore the question of whether relationships exist. They were also asked about the perceived difficulty of their A-levels and the required effort (see Chapter 6).

In Table 26 and Table 10, Appendix K it can be seen that future work was the most important value to the students in this study (85% for both samples), however future family were also important (79% for the main sample, 76% for those in year 12). Overall in this sample of students' positive occupational expectations were good (74% year 13, 72% year 12) although high status was not perceived to be as valuable to them (62% year 13, 59% year 12). Material wealth was important (60% main sample, 61% year 12 sample) but less than half of these A-level students had negative economic expectations (39% and 40%). Interestingly, despite this, 63% of the A-level sample and 64% of the AS sample thought they would have a harder life than their parents but this may not be surprising given recent economic crises and figures which indicate there are 3.7 million children living in poverty in England, with the number predicted to increase in the years to come (Department for Work and Pensions, 2015). It is notable however that despite the fact students thought they would have a harder life than their parents less than half had negative economic expectations and this would be interesting to further explore in future research, for example, to ascertain in what ways students

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anticipate their lives will be more difficult than their parents. The students in this study were not particularly extrinsically motivated (51% in the year 13 sample, 54% in the year 12 sample) but had a strong need for achievement (73% and 72% respectively). They also expected to receive further education in the future (71% of the main sample and 66% of the year 12 sample).

Table 26 *Descriptive Statistics Main Sample: Values and Expectations for Life*

	N	Scale Maximum	Minimum	Maximum	Mean	Standardised mean	SD	Skew
<i>Values for Life</i>								
Future Work Importance	388	21	3	21	17.93	85%	2.47	-1.01
Future Family Importance	388	21	3	21	16.63	79%	4.31	-1.23
Need for Achievement	382	42	6	42	30.94	73%	5.06	-0.42
High Status	383	42	6	42	25.92	62%	6.19	-0.06
Material Wealth	384	14	2	14	8.40	60%	3.01	-0.08
Extrinsic Motivation	376	28	4	28	14.25	51%	4.49	0.03
<i>Expectations for Life</i>								
Positive Occupational Expectations	370	35	5	35	25.92	74%	3.35	-0.12
Future Education Likely	376	14	2	14	9.97	71%	2.89	-0.74
Expect a Harder Life	376	14	2	14	8.76	63%	2.14	0.28
Negative Economic Expectations	371	14	2	14	5.39	39%	2.07	0.62

(Key: 1=strongly disagree 7=strongly agree so high mean indicates higher expectations and values for future life. Minimum indicates number of items in scale).

When students were asked to identify the *two* most important values to them after completing the rating scales they identified being able to support themselves financially (35.4% in the year 13 sample, 30.5% year 12) and being successful in their line of work (23.1% of the main sample, 25.4% of the AS sample) as the most important. However, although being able to support themselves and being successful in their line of work were highly valued it was interesting to find that only 36.0% of A-level students and 30.0% of AS students believed that the job they would like to have when they are 30 years old was the one they thought they would have. Half (approximately 50.0%) of the students in both samples

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reported that they did not believe this would be the case and 15.3% of A-level students and 18.7% of AS students did not know what job they wanted.

There was no statistically significant differences in the subjective task value of those who did, and did not, believe the job they would have was the one they wanted in the main sample ($F(2)=1.20$, $p=0.137$). There was, however, in the year 12 sample ($F(2)=4.85$, $p=0.008$). In both samples there was a higher average subjective task value for those who believed the job they would have was the one they wanted (37.5 year 13 sample, 37.8 year 12 sample) compared to those whose choices did not match (36.5 both year groups) or those who did not know what job they wanted (35 both year groups). A similar pattern was found for the samples with regards to expectations where there was no significant difference ($F(2)=6.24$, $p=0.535$) in the main sample but was for the year 12 sample ($F(2)=5.50$, $p=0.004$). However, for both year groups slightly higher average expectations were held by those who believed the job they would have was the one they wanted (23.65 in the year 13 sample, 22.18 in the year 12 sample) compared to those whose choices did not match (23.49, 21.50 respectively) or those who did not know what job they wanted (22.67 year 13, 19.87 year 12). These results indicate support for the theoretical model in this research which suggests that a student's self-schema and goals are related to their expectations and subjective task values but mainly for the year 12 sample. In terms of achievement there were however no statistical differences between those students who thought the job they would have was the one they wanted, and those who did not believe this would be the case in either the main sample ($F(2)=0.90$, $p=0.406$) or the year 12 sample ($F(2)=0.51$, $p=0.602$). The relationships are now explored in more detail.

Self-schema, Goals and Expectations

The relationships between self-schema, goals and expectations (ability expectations and expectations for success in A-levels, see Chapters 1 and 2) were investigated and the

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results displayed for the main sample in Table 27 suggest that students' expectations for A-levels were indeed associated with these self-schemas and goals as suggested by the theoretical model. Students in the main sample expected to do well if they had a need for achievement ($n=371$, $r=.30$) and valued future work importance ($n=376$, $r=.17$) and high status ($n=371$, $r=.23$). They also expected to do well if they had positive occupational expectations ($n=359$, $r=.29$) and expected to study in the future ($n=365$, $r=.45$). In contrast, they had lower expectations if they had negative economic expectations ($n=360$, $r=-.16$). These values and goals may therefore be motivational factors for A-level students although the correlations were weak except that between expectations for A-levels and expectations for further education in the future which was moderate. A very similar pattern was found in the year 12 sample (see Table 12, Appendix K). Again students (AS) expected to do well if they had a need for achievement ($n=510$, $r=.31$) and valued future work importance ($n=515$, $r=.10$) and high status ($n=509$, $r=.26$). They also expected to do well if they had positive occupational expectations ($n=495$, $r=.33$) and expected to study in the future ($n=502$, $r=.43$). Similarly, they had lower expectations if they had negative economic expectations ($n=496$, $r=-.22$). Additionally, in this comparison sample AS students had lower expectations if they were extrinsically motivated ($n=504$, $r=-.16$) but expected to do well if they anticipated a harder life ($n=500$, $r=.11$).

Table 27 *Correlations between Values and Expectations for Life and Expectations for A-levels: Main Sample*

	Correlations with Expectations
<i>Values for Life</i>	
Need achievement	.30**
High status	.23**
Future work importance	.17**
Material wealth	.07
Extrinsic motivation	-.05
Future family importance	.05
<i>Expectations for Life</i>	
Future education likely	.45**
Positive occupational expectations	.29**
Negative economic expectations	-.16*
Expect harder life	.05

* $p < 0.01$ ** $p \leq 0.001$

Self-schema, Goals and STV

It can be seen in Table 28 that the subjective task value attributed to A-levels was positively correlated with the variables related to life values and expectations in the main sample including; need for achievement ($n=377$, $r=.30$), future work importance ($n=383$, $r=.25$), future family importance ($n=383$, $r=.18$), positive future occupational expectations ($n=365$, $r=.12$) and likely future education ($n=371$, $r=.42$). The majority of these associations are however very weak, except for the relationship between the subjective value attributed to A-levels and expectations for future education, which is moderate. There was a weak, negative correlation between subjective task value and extrinsic motivation ($n=372$, $r=-.17$), in the year 13 sample. Very similar findings were again reported for the year 12 sample (see Table 13, Appendix K) where STV was related to need for achievement ($n=509$, $r=.43$), future work importance ($n=514$, $r=.30$), future family importance ($n=512$, $r=.14$), positive future occupational expectations ($n=494$, $r=.30$) and likely future education ($n=501$, $r=.45$), as in the main sample. Additionally, in the comparison sample, STV was positively related to high status ($n=507$, $r=.17$) and negatively related to both material wealth ($n=509$, $r=-.12$) and negative economic expectations ($n=495$, $r=-.20$). There was also a negative association with extrinsic motivation as in this sample ($n=503$, $r=-.27$). The majority of these associations are however very weak, except for the relationship between the subjective value attributed to A-levels and expectations for future education. Thus, the relationship between self-schemas, goals and STV is weak overall, although they do play a role in the value students attach to their A-levels as suggested by the theoretical model.

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Table 28 *Correlations between Values and Expectations for Life and Subjective Task Value: Main Sample*

	Correlations with Subjective Task Value
<i>Values for Life</i>	
Need achievement	.30**
Future work importance	.25**
Extrinsic motivation	-.17**
Future family importance	.18**
High status	.07
Material wealth	-.02
<i>Expectations for Life</i>	
Future education likely	.42**
Positive occupational expectations	.12*
Negative economic expectations	-.07
Expect harder life	.08

* $p < 0.05$ ** $p \leq 0.001$

Self-schema, Goals and A-level Achievement

Surprisingly very few relationships were established between self-schemas, goals and achievement in the main sample. Correlations were conducted (see Table 29 below for the main sample and Table 14, Appendix K for the year 12 sample) between students' general life values and expectations and achievement (total point score, see Chapter 1). Positive relationships were only found between A-level achievement and need for achievement ($n=320$, $r=.21$), and achievement and anticipated future education ($n=316$, $r=.35$) in the main sample. In the comparison (year 12) group those who were extrinsically motivated ($n=496$, $r=-.16$), valued material wealth ($n=495$, $r=-.10$) and expected a harder life ($n=484$, $r=-.15$) did less well in their AS year whilst those who expected to pursue their education in the future did better ($n=485$, $r=.24$). Although these results indicate that some self-schemas and goals are associated with the educational outcomes of A-level students the correlations are weak. It is interesting that a greater number of self-schemas and goals relate to expectations and STV, rather than achievement, in these analyses. Whilst a need for achievement and anticipated education may relate to achievement as would be expected, more general life value and expectations may not be as important.

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Table 29 *Correlations between Values and Expectations for Life and A-level Achievement*

	Correlations with Total A-level Point Score
<i>Values for Life</i>	
Extrinsic motivation	-.10
Need achievement	.21*
High status	.10
Material wealth	.03
Future work importance	.03
Future family importance	-.01
<i>Expectations for Life</i>	
Future education likely	.35*
Expect harder life	-.06
Negative economic expectations	-.04
Positive occupational expectations	.09

* $p < 0.001$

The Relationship between SES, Self-Schemas and Goals

The results in Table 30 and Table 15, Appendix K show that a number of SES indicators were linked to self-schemas and goal overall in this study, although a greater number of associations were established in the year 12 sample than the main sample. The more home possessions a student reported the greater the need for achievement ($n=487$, $r = .16$ year 12 sample), valuing of high status ($n=488$, $r = .11$ year 12) and expectations for future education ($n=349$, $r = .24$ year 13, $n=481$, $r = .27$ year 12). Home possessions were negatively correlated with extrinsic motivation in the year 12 sample ($n=488$, $r = -.13$) and expectations for a harder life in both samples ($n=349$, $r = -.12$ year 13, $n=477$, $r = -.13$ year 12).

Positive associations were found between number of book at home and expectations for future education in both samples ($n=376$, $r = .18$ year 13, $n=507$, $r = .20$ year 12). Additionally, number of books was positively associated with a need for achievement in the year 12 sample ($n=514$, $r = .10$). In both samples this indicator was however negatively related extrinsic motivation ($n=376$, $r = -.19$ year 13, $n=509$, $r = -.20$ year 12). In the year 13 students number of books was negatively related to expectations for a harder life ($n=376$, $r = -.12$) and in the year 12 there was a negative relationship with material wealth ($n=517$, $r = -.09$). These results suggest that self-schemas and goals are related to the environment students are exposed to at home, but the associations are very weak.

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The findings with regards to support for learning suggest that it was associated with more variables measuring schemas and goals, than any other SES indicator. In both samples students who reported greater support for learning at home valued achievement ($n=372$, $r = .14$ year 13, $n=509$, $r = .16$ year 12) and future education ($n=367$, $r = .16$ year 13, $n=501$, $r = .23$ year 12). It was also positively related to future work importance ($n=515$, $r = .11$), future family importance ($n=513$, $r = .08$) and positive occupational expectations ($n=495$, $r = .17$) in the year 12 sample. Support for learning was negatively correlated with expectations for a harder life ($n=365$, $r = -.13$) in the main sample and extrinsic motivation in the comparison sample ($n=503$, $r = -.13$). The results suggest that support for learning may be an important factor in the way the students see themselves; shaping their life values and their perceived possibilities for the future. Students who reported higher levels of parental involvement valued high status ($n=381$, $r = .12$ year 13, $n=515$, $r = .12$ year 12). Also, in the main sample, those with high parental involvement valued future family importance ($n=386$, $r = .14$) and those in year 12 valued material wealth ($n=519$, $r = .09$).

Surprisingly, relatively few of the students' perceived life values and expectations were related to parental occupational group. There was a correlation between mother's occupational groups and expectations for future education in both samples ($n=329$, $r = -.14$ year 13, $n=457$, $r = -.15$ year 12). It was also related to expectations for a harder life in the year 12 sample ($n=453$, $r = .12$) in the expected direction due to the coding of occupational groups (see Chapter 6). It was not however correlated with any other variables. Similarly, father's occupational group was also associated with expectations for further education ($n=329$, $r = -.24$ year 13, $n=447$, $r = -.18$ year 12) in the expected way. Students whose fathers were in a higher occupational group had less expectation for a harder life in the year 13 sample ($n=329$, $r = .12$) but valued material wealth ($n=457$, $r = -.11$) and high status ($n=454$, $r = -.12$) in the year 12 sample. Again, the directions of the correlations are due to the coding of occupational group.

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It was also interesting to find that both mother's ($\beta=0.10$, $p=0.048$) and father's ($\beta=0.20$, $p<0.001$) education was only related to anticipated future education in the main sample. In the year 12 sample however mother's level of education was positively associated with future family importance ($\beta=0.09$, $p=0.046$), negative economic expectations ($\beta=0.15$, $p=0.001$), positive occupational expectations ($\beta=0.12$, $p=0.009$) and expectations for a harder life ($\beta=0.18$, $p<0.001$). Thus, mother's education level is associated with a student's self-schemas and goals in a number of different ways in the year 12 sample. A similar pattern was found between these variables and father's level of education in the year 12 sample where it was also related to family importance ($\beta=0.11$, $p=0.014$), negative economic expectations ($\beta=0.09$, $p=0.041$) and expectations for a harder life ($\beta=0.15$, $p=0.001$). Unlike mothers it was not related to future occupational expectations but was related to the value placed on high status ($\beta=0.09$, $p=0.034$).

Table 30 *SES, Values and Expectations for Life in Main Sample*

	Home Possessions	No. of books	Support for Learning	Parental Involvement	Mother's occupational group	Father's occupational group
<i>Values</i>						
Material Wealth	-.01	-.01	.01	.05	.07	-.02
Extrinsic Motivation	-.10	-.19***	-.02	-.01	.11	.05
Need for Achievement	.04	-.04	.14**	.06	.03	.01
Future Work Importance	-.03	-.02	.04	.06	.01	-.06
Future Family Importance	.05	.09	.06	.14**	-.02	-.08
High Status	.09	-.01	.06	.12*	.05	-.06
<i>Expectations</i>						
Negative Economic Expectations	.04	.06	.01	.01	-.09	-.02
Positive Occupational Expectations	-.01	-.05	.04	.05	.02	.02
Future Education Likely	.24***	.18***	.16**	.04	-.14**	-.24***
Expect a Harder Life	-.12*	-.12*	-.13*	.02	-.02	.12*

* $p<0.05$ ** $p\leq 0.01$ *** $p\leq 0.001$

It is noticeable from these results that some values and expectations for life are related to more SES indicators than others. For example, whilst expectations for further education and expectations for a harder life are related to most of the indicators in either both, or one of the samples (home possessions, number of books, support for learning and parental occupational group) others were related to very few (for example, future family and work importance, negative economic expectations and positive occupational expectations). These findings are surprising. It may be that students simply do not believe that some factors (such as economic and occupational expectations) are under their control, perhaps reflecting the current economic and political climate in the UK.

The Relationship between Gender, Self-Schemas and Goals

Gender differences were found in general life values and expectations (see Table 31 for the main sample and Table 16, Appendix K for the year 12 sample). In both the main year 13 sample ($t(382)=-4.91$) and the year 12 sample ($t(518)=-5.29$) there were significant gender differences in the value attached to material wealth. There were also gender differences in extrinsic motivation in both the year 13 ($t(374)=-4.07$) and year 12 sample ($t(509)=-4.02$). Additionally, in the main sample, there was a gender difference in the value attached to high status ($t(381)=-4.30$). Boys valued each of these more than girls. For material wealth boys had an average score of 9.11 versus 7.65 in the year 13 sample and 9.28 versus 7.94 in the year 12 sample. They also valued extrinsic motivation more (15.13 versus 13.34 in the year 13 sample and 16.02 versus 14.37 for year 12) and lastly high status, with an average score of 27.23 rather than the girls' average of 24.57 in the main sample. In this study it is assumed that socialisation processes linked to gender roles influence the goals and the values most closely linked to core identities (Eccles, 1992; Ruble, Martin, & Berenbaum, 1998). Eccles found that females were therefore more likely to want jobs that could accommodate family whilst males

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valued prestige and well paid occupations (Eccles et al., 2004; Ruble et al., 1998). The results of this study would support these hypotheses for the values males attributed to their lives, but this was not the case with females. In fact, family importance was valued equally by males and females. These results may reflect the change in gender role attitudes in modern society compared to the period when Eccles originally tested her theories.

Table 31 *Gender Differences in Values and Expectations for Life in Main Sample*

		N	Mean	SD	t	df	sig
<i>Values for Life</i>							
Material wealth	Female	187	7.65	2.98	-4.91	382	<.001*
	Male	197	9.11	2.86			
Extrinsically motivated	Female	184	13.34	4.19	-4.07	374	<.001*
	Male	192	15.13	4.32			
Need achievement	Female	186	30.90	5.00	-0.17	380	.867
	Male	196	30.98	5.13			
Future work importance	Female	189	18.08	2.17	1.15	375	.253
	Male	199	17.79	2.72			
Future family importance	Female	190	16.83	4.32	0.92	386	.359
	Male	198	16.43	4.30			
High status	Female	189	24.57	6.37	-4.30	381	<.001*
	Male	194	27.23	5.73			
<i>Expectations for Life</i>							
Negative economic expectations	Female	186	5.55	1.89	1.56	369	.119
	Male	187	5.22	2.23			
Positive occupational expectations	Female	183	25.66	3.67	-1.32	368	.189
	Male	187	26.18	4.01			
Future education likely	Female	187	9.86	2.90	-0.79	374	.432
	Male	189	10.09	2.87			
Expect a harder life	Female	186	8.70	2.18	-0.55	374	.580
	Male	190	8.82	2.11			

*p<0.001

The Relationship between Ethnicity, Self-Schemas and Goals

There were some ethnic differences with regards to students' self-schemas and goals in this study. Differences were found in the importance attached to likely future education in both the main sample ($F(13)=2.05, p=0.016$) and the year 12 sample ($F(13)=1.91, p=0.027$). There were differences too in expectations of a harder life in the year 13 sample

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($F(13)=2.86, p=0.001$) and in the value attached to material wealth ($F(13)=1.96, p=0.023$) and future work importance ($F(13)=2.42, p=0.004$) in the year 12 sample. Furthermore ethnic differences were found in the positive occupational expectations of students in year 12 ($F(13)=2.74, p=0.001$).

Task Demands

As discussed previously the theoretical model in this research suggests that a student's perception of the task demands may be related to their expectations and values (see Chapters 1 and 2). Thus, the perceived task difficulty and required effort for A-levels were explored in this study (see Chapter 6). The analyses are presented in Table 32 for the main year 13 sample and Table 17, Appendix K for the year 12 sample. The students in both samples rated A-levels a little above the midpoint in terms of difficulty with a mean score of 9.08 (on a scale 2-14) for those studying A-levels and 9.34 for those studying AS levels. Students also perceived that a lot of required effort was required (on average 16.95 for A-level students and 17.00 for AS students on a scale ranging from 3-21). This indicates that students perceive these high stakes examinations to be hard and believe they have to apply themselves in order to achieve.

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Table 32 *Descriptive Statistics: Perceived Task Demands of Year 13 Students*

	N	Minimum	Maximum	Mean	SD	Skew
Task difficulty	390	2	14	9.08	2.21	-.42
Q23: In general, how hard are A-levels for you?	391	1 (very easy)	7 (very hard)	4.89	1.33	-.58
Q27: Compared to other students in your class how hard are A-levels for you?	393	1 (much easier)	7 (much harder)	4.19	1.21	-.07
Required Effort	391	3	21	16.95	3.42	-1.18
Q29: How hard do you have to try to do well in your A-level courses?	393	1 (not very hard)	7 (very hard)	5.47	1.36	-.10
Q33: How hard do you have to try to get good grades in your A-levels?	392	1 (A little)	7 (A lot)	5.62	1.24	-1.06
Q35: How hard do you have to study for your A-level exams to get a good grade?	393	1 (A little)	7 (A lot)	5.83	1.25	-1.33

Table 33 *Correlations between Perceived Task Demands, Expectations, STV and Achievement of Year 13 Students*

	Expectations	STV	Achievement
Task difficulty	-.55*	-.04	-.37*
Effort	-.31*	.21*	-.24*

* p<0.001

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In both samples, as expected, task difficulty was negatively correlated with expectations ($n=379$, $r=-.55$ in the year 13 sample, $n=515$, $r=-.58$ for year 12). Task difficulty was also associated with achievement in this study ($n=329$, $r=-.37$ for the year 13 sample, $n=497$, $r=-.33$ for year 12). Surprisingly task difficulty did not correlate with STV in the students studying A-levels in year 13 ($n=385$, $r=-.04$) but correlated in the comparison sample ($n=514$, $r=-.12$) indicating that students attached more value to tasks they find difficult in their lower sixth year (Eccles et al., 1983). The established correlations between these variables are however weak. These results are displayed in Table 33 for the main sample and Table 18, Appendix K for the year 12 sample.

Effort is known to relate to attainment value, intrinsic value and utility value (Eccles et al., 1983) and its role was also therefore explored in this research. It was negatively correlated with achievement in both samples ($n=329$, $r=-.24$ for the main sample and $n=488$, $r=-.21$ for the comparison sample), as seen in Table 33 and Table 18, Appendix K, presumably because high ability students perceive themselves needing to apply less effort in their A-levels than low ability students, who find them more difficult. This is further supported by the finding that expectations were negatively correlated with effort in this study ($n=381$, $r=-.31$ for year 13 students, $n=509$, $r=-.29$ for year 12 students). Effort was however weakly, positively related to STV in the main sample ($n=387$, $r=.21$) and the comparison one ($n=510$, $r=.13$). As might be expected, a positive correlation between task difficulty and effort was also established ($r=.64$ year 13, $r=.58$ year 12). These results suggest that overall the perceived task demands for A-levels do relate to the expectations and achievement of students, although task difficulty is only related to STV in the year 12 sample. Perceived effort is related to STV in both samples.

The Relationship between SES, Gender, Ethnicity and Task Demands

Some SES indicators were associated with task demands, although any established were very weak, so this does not appear to be a particularly influential factor. In the year 13 sample task difficulty was associated with father's occupational group in the expected way ($n=342$, $r=.13$, $p=0.021$), such that a higher occupational group saw lower perceptions of difficulty. Number of books ($n=390$, $r=-.11$, $p=0.038$), need for achievement ($n=377$, $r=-.16$, $p=0.002$), high status ($n=378$, $r=-.15$, $p=0.003$), positive occupational expectations ($n=366$, $r=-.20$, $p<0.001$), and anticipated future education ($n=371$, $r=-.20$, $p<0.001$), resulted in lower perceptions of difficulty. Negative economic expectations were positively correlated with perceptions of difficulty ($n=367$, $r=.20$, $p<0.001$). Overall these findings would be expected.

Similar results were reported for the year 12 sample where again task difficulty was associated with father's occupational group in the expected way ($n=460$, $r=.15$, $p=0.002$), such that a higher occupational group saw lower perceptions of difficulty. Number of books ($n=521$, $r=-.18$, $p<0.001$), need for achievement ($n=514$, $r=-.09$, $p=0.040$), high status ($n=514$, $r=-.10$, $p=0.026$), positive occupational expectations ($n=503$, $r=-.13$, $p=0.003$), and anticipated future education ($n=508$, $r=-.18$, $p<0.001$), again resulted in lower perceptions of difficulty. Negative economic expectations were similarly positively correlated with perceptions of difficulty ($n=503$, $r=.11$, $p=0.013$) however in the year 12 sample additional indicators were also related to task difficulty. Students who were extrinsically motivated found their courses more difficult ($n=509$, $r=.10$, $p=0.022$). There were further negative associations between difficulty and expectations for a harder life ($n=506$, $r=-.11$, $p=0.018$) and home possessions ($n=494$, $r=-.20$, $p<0.001$). Again, these findings are not surprising.

Interestingly effort was related to few SES indicators in the main sample. More effort was perceived to be required by those who valued future work importance ($n=385$, $r=.14$,

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$p=0.006$) and those had positive occupational expectations perceived less effort to be required ($n=367$, $r=-.12$, $p=0.021$). In the year 12 sample there was also a positive relationship between effort and future work importance ($n=513$, $r=.17$, $p<0.001$), however greater effort was also related to a need for achievement ($n=507$, $r=.14$, $p<0.001$), future family importance ($n=511$, $r=.09$, $p=0.037$), and support for learning ($n=506$, $r=.10$, $p=0.028$). Higher father's occupational group was further associated with perceptions of lower required effort ($n=453$, $r=.14$, $p=0.003$). Number of books at home ($n=512$, $r=-.08$, $p=0.075$) resulted in lower perceptions of required effort. So, it seems that SES is related to the perceived task demands of the students in this sample as anticipated, although these associations are very weak.

Importantly there were significant gender differences in perceived task demands; both in terms of the perceived difficulty of A-levels ($t(388)=4.96$, $p<0.001$) and AS levels ($t(522)=6.16$, $p<0.001$), and the required effort ($t(389)=5.47$, $p<0.001$) in the year 13 and the year 12 sample ($t(513)=5.15$, $p<0.001$). On average girls thought A-levels were more difficult (9.63) than boys (8.56) and also perceived them to require more effort (17.89 compared to 16.06). Similar gender differences were found in the AS sample where girls found them more difficult than boys (9.82 compared to 8.74) and perceived them to require more effort with an average score of 17.61 with boys scoring an average of 16.22. There were no differences between ethnic groups, in terms of the perceived task difficulty of A-levels in either the year 13 sample ($F(13)=.65$, $p=0.812$) or year 12 sample ($F(13)=1.61$, $p=0.079$) nor required effort ($F(13)=1.13$, $p=0.335$) for year 13s or year 12s ($F(13)=.93$, $p=0.521$). In accordance with the theoretical model these results suggest that gender and some aspects of a student's socio-economic background may be associated with a student's perception of the demands of their A-levels.

RQ6. What are Students' Perceived Influences upon their Expectations and Values?

The theoretical model used in this research not only suggests that a student's self-schemas and goals relate to their expectations and values, but that these schemas and goals may be indirectly influenced by the student's perceptions of their socialiser's beliefs, expectations and attitudes (see Chapter 2). These were therefore explored in this study and will now be discussed in more detail. Perceived influences are also further explored in the qualitative phase of the research where students were asked if any people of experiences had influenced the choices they had made about their studies and their future (see Chapter 12).

Perceived Role of Socialisers

The relationships between family characteristics and educational outcomes are well documented and discussed in Chapter 3 (e.g. Bradley & Corwyn, 1999; Brooks-Gunn & Duncan, 1997; McLoyd, 1998). Eccles and Davis-Kean (2005) suggest that expectations and values are determined partly by students' perceptions of their parents' and teachers' expectations which may lead to the socialisation effects of role modelling, communication of expectancies and provision of differential experiences. The A-level students in this study were therefore asked if anyone had encouraged or discouraged them in their job choices in the quantitative study. Socialisers appear to play an important role as 61% of the students in the year 13 sample and 54% in the year 12 sample indicated that someone had positively influenced their desired job choice whilst 34% of those in year 13 and 36% of those in year 12 reported they had been discouraged.

Influences upon the choices of A-level (year 13) students are shown in Table 34. Those for the AS (year 12) sample are shown in Table 19, Appendix K. Family were found to be a significant influence as parents were cited as both the most positive influence upon students' job choice (21.4% for year 13, 18.2% for year 12) and also those who discouraged

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them (29.0% for year 13, 34.5% for year 12). Altogether parents, mothers and fathers were reported as having a positive influence by 43% of A-level students and 41% of AS level students, whilst 53% of those in year 13 and 58% of those in year 12 reported that they had discouraged them. Parents of A-level students do therefore appear to influence their children's aspirations. This may be through explicit and implicit messages they provide as they 'counsel' their children or work with them on different academic activities (Jacobs & Eccles, 2000; Tenenbaum & Leaper, 2003). The results of the current study therefore suggest support for parent socialisation models. Other family were also seen as having a positive influence (13.1% and 13.2% for the year 13 and 12 samples respectively) and to a lesser extent were discouraging (9.0% and 11.3%).

Table 34 *Percentage of Year 13 Students Who Reported Influences upon their Job Choices*

	Positive Influence		Negative Influence	
	Number of students	Percentage of students	Number of students	Percentage of students
Parents	44	21.4%	35	29.0%
Mother	15	7.3%	13	10.7%
Father	30	14.6%	16	13.2%
Family	27	13.1%	11	9.0%
Teacher (s)	27	13.1%	13	10.7%
Friends	13	7.3%	8	6.6%
Siblings	2	1.0%	0	0.0%
Role Model	4	1.9%	0	0.0%
Coach	2	1.0%	0	0.0%
Work experience	5	2.4%	1	0.3%

(*Note: figures are based only on those students who responded to this question, some of whom identified more than one source of influence. % do not equal 100 as not all influences are reported and only key ones reported.)

The other key socialisers reported as being influential were teachers and friends (Table 34 and Table 19, Appendix K), where they were mainly reported as being both encouraging (teachers 13.1%, friends 7.3% for the A-level sample, with higher percentages reported in the AS sample; teachers 17.8%, friends 10.9%) and discouraging (teachers 10.7%, friends 6.6% for year 13's and lower percentage, 7.3% and 4.5% respectively for year 12's). Overall, as

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would be expected, these results suggest that socialisers play a potential role in shaping the goals of A-level students, with parents and teachers being the key sources of influence. A more descriptive analysis of these relationships is outlined in Chapter 12 based on the qualitative data.

Exploring Predictors of Achievement

Multiple regressions were conducted to predict achievement from gender, school sector, SES indicators (including mother's occupational group and education, father's occupational group and education, number of books, home possessions) expectations and STV in line with the variables underlying the structural equation models used in the later analyses (see chapters 8, 9, 10 and 11) and Eccles' theoretical model (see chapter 1). Results indicated that these variables significantly predicted both A-level achievement ($F(10)=13.1$, $p<0.001$) and also AS level achievement ($F(1)=16.5$, $p<0.001$). Thirty eight percent of the variance of students' achievement in year 13 (A-level) and 33% of the variance of students' achievement in year 12 (AS level) was explained by students' gender, school sector, SES, expectations and STV.

In the main (year 13) sample school sector ($\beta=181.54$, $p<0.001$), father's education ($\beta=81.02$, $p<0.001$) and expectations ($\beta=15.54$, $p<0.001$) were significant predictors of achievement as would be anticipated based on the theoretical model. Gender ($\beta=40.69$, $p=0.213$), mother's occupational group ($\beta=-6.01$, $p=0.566$), mother's education ($\beta=-19.43$, $p=0.344$), father's occupational group ($\beta=-6.97$, $p=0.385$), number of books at home ($\beta=16.6$, $p=0.246$), home possessions ($\beta=-13.02$, $p=0.202$) and STV ($\beta=1.90$, $p=0.733$) were not however predictors of A-level achievement. Similarly, in the comparison sample AS achievement was predicted by school sector ($\beta=95.43$, $p<0.001$) and expectations ($\beta=11.21$, $p<0.001$). It was also predicted by being male ($\beta=-33.87$, $p=0.008$). As in the main sample

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achievement was not predicted by mother's occupational group ($\beta=-5.98$, $p=0.081$), mother's education ($\beta=-5.74$, $p=0.473$), father's occupational group ($\beta=-5.11$, $p=0.084$), number of books at home ($\beta=13.35$, $p=0.015$), home possessions ($\beta=-1.21$, $p=0.734$) or STV ($\beta=-1.28$, $p=0.213$). Nor was it predicted by father's education in this sample ($\beta=12.23$, $p=0.102$). These findings are further explored using structural equation modelling in the following chapters (see chapters 8, 9, 10, 11) and using a single SES indices.

Conclusions for Chapter 7

This investigation has sought to determine if there is a relationship between expectations and A-level achievement, expectations and subjective task value, subjective task value and A-level achievement, based on an expectancy-value framework (see Chapters 1, 2 and 3). Overall, the students in this study expected to do well in their A-levels and attached value to them. Attainment value was seen as the most important value, followed by utility value and then intrinsic value. So, the descriptive analyses indicate that doing well, and the usefulness of A-levels in the future, was more important to students than their enjoyment of them. A-levels were perceived to be difficult and students also put in a lot of effort. Achievement was correlated with expectations and STV, including attainment value, utility value and intrinsic value. A relationship was found between expectations and STV as anticipated. SES had an effect on expectations, STV and achievement. There were significant gender differences in the expectations and values of A-level students, but no difference in achievement. Ethnicity only had an effect on STV.

Self-schemas and goals were weakly related to expectations, STV and achievement and it was found that these schemas and goals were, in turn, related to a student's background (their SES, gender and ethnicity). Furthermore, perceived task demands were associated with the expectations, STV and achievement of A-level students. These were again related to some

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measures of SES and gender but not ethnicity. Parents were reported as being the key influence upon a student's choices. Overall these key findings suggest support for the theoretical model in this research and a more detailed summary of each research question will now be provided, contributing to the overall aims of the research by highlighting the multidimensional nature of motivation in A-level students and the results of testing the expectancy-value model in a UK context.

RQ1: What are the Relationships between Expectations and A-level Achievement?

The students in this study expected to do well in their A-levels. Consistent with this previous research (for example, Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012) a moderate relationship was found between expectations and achievement in this study which closely aligned with the correlations reported in Eccles' original work (Eccles, 1984; Eccles et al., 1983). In this study the correlation was $r=.44$ and in Eccles' work it was between $r=.39$ and $r=.50$. A limitation of this research, however, is that prior achievement was not examined (see Chapter 13) and could also account for these findings given that a reciprocal relationship was predicted in previous expectancy-value models and has been found in research in the field (e.g. Eccles, 2007b; Eccles et al., 1983; Marsh & Craven, 2006; Marsh & O'Mara, 2008). Overall conclusions about the direction of this relationship cannot therefore be drawn.

RQ2: What are the Relationships between Expectations and STV for an A-Level Student Sample?

According to the expectancy-value model, students will value activities they believe they are good at (Eccles & Wigfield, 1995). In support of this prediction a moderate relationship between STV and expectations was found in this study as $r=.40$ for the year 13

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sample and $r=.46$ for the year 12 sample. These were slightly lower than that previously found which were reported as being between $r=.49$ to $r=.59$ (Eccles, 1984; Eccles et al., 1983). Generally, however, the students in this study valued A-levels if they expected to do well in them.

RQ3: What are the Relationships between STV and A-level Achievement?

In this study, A-level students generally achieved more highly when they valued A-levels ($r=.26$ year 13, $r=.20$ year 12) and these correlations were in line with those reported previously $r=.11$ to $r=.40$ (Eccles, 1984; Eccles et al., 1983). Academic performance was associated with each component of STV in the main sample. A positive relationship was found between performance and the extent to which a student finds a task interesting and enjoyable, wants to do well and sees it as useful (for example, Eccles et al, 1983; Eccles & Wigfield, 1995). In the year 12 sample performance was not linked to utility value, only intrinsic value and attainment value, possibly because year 12 students have not yet applied for University places, or future courses or jobs in contrast to the year 13 students. In this research, Eccles' results were largely however supported as students generally achieved better when they were interested and enjoyed A-levels, valued achievement and believed A-levels would be useful in terms of their future goals.

The findings presented for these first three research questions suggest that students' beliefs about their expectations and STV relate to their performance at A-level as predicted by the theoretical model. In these exploratory statistics the correlation between expectations and achievement was stronger than those reported between STV and achievement, a finding that is consistent with previous work (Eccles et al., 1984; Fredricks & Eccles, 2002; Guo et al., 2015; Jacobs et al., 2002; Marsh et al., 2005; Meece et al., 1990; Nagengast et al., 2011; Wigfield & Eccles, 1992). The correlations between intrinsic, attainment and utility values and achievement were, however, weak. Much of Eccles' research has not used correlations to

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examine these relationships (for example, Eccles and Wigfield, 1995; Eccles, Adler, & Meece, 1984, Yoon, Eccles, & Wigfield, 1996) and therefore not all of the results in this chapter can be directly compared with her findings. Where factor analysis and structural equation modelling has been used by Eccles comparisons will be discussed later in Chapter 9. It should also be noted that Eccles' correlations reported in this chapter relate to students perceived abilities, values and performance in maths in year 2, with students who were therefore considerably younger than those in this study's sample. This may make comparisons difficult, not only because of the different ages of the samples, but also because the associations were not previously tested in a high stakes examinations context in the UK as is the case in this current research.

RQ4. How does SES, Gender and Ethnicity affect the Expectations and STV attached to A-level Achievement?

This study was also designed to explore whether aspects of a student's background (SES, gender and ethnicity) effect the expectations and STV attached to A-level achievement. A-level performance was found to correlate with a number of SES variables including mothers' occupational and fathers' occupational groups and levels of education, home possessions, number of books, support for learning and parental involvement. These relationships would be expected, given the well-established findings on the associations between SES or family characteristics and educational outcomes Coleman, 1988; Duncan, Brooks-Gunn, & Klebanov, 1994; Eccles, 1992; Guo & Harris, 2000; Sirin, 2005; White, 1982)

Differences in task value, on the basis of gender and ethnicity, have been found to underlie differences in role choice behaviour and achievement (Eccles et al., 1983; Guo et al., 2015; Kohlberg, 1969; Nagy et al., 2008; Parsons & Ruble, 1977; Parsons, Ruble, Hodges, & Small, 1976; Watt et al., 2012). There were differences in the expectations and STV attached

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to achievement on the basis of gender in both samples in this study, and between STV and ethnicity in this investigation. The social processes linked to gender and ethnic roles are likely to have influenced the goals and values most closely linked to the students' core identities (Eccles, 1994; Jacobs & Eccles, 1992).

RQ5. What are Students' Perceptions regarding the Relationship between their General Self-Schema (identities), Goals, Task Demands and Expectations and Values for A-levels?

When students were asked to identify the most important values to them they reported future work and family importance, being able to support themselves financially and being successful in their line of work as valuable. Notably they had positive occupational expectations and despite less than half having negative economic expectations, over half had expectations for a harder life than their parents. The self-schemas and goals of the students in this study, measured using their general life values and expectations, were related to their expectations for A-levels, as well as the value they attached to them. Fewer indicators were related to their achievement. Most of these associations were however weak. In turn aspects of the student's background related to their self-schemas and goals, for instance, measures of SES associated with the home environment were related, with indicators of support for learning showing the greatest number of associations. Boys valued material wealth, high status, and were extrinsically motivated. Some ethnic differences in general life values and expectations were also found. These differences in self-schema and goals may contribute an understanding of the factors underlying the motivation in A-level students which was a key aim of this study.

Previous research predicted that expectations should be inversely related to task difficulty (Eccles, 1984; Eccles et al., 1983) and as expected a negative correlation was found

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between task difficulty and A-level achievement. Here $r = -.37$ in the year 13 sample and $r = -.33$ in the year 12 sample which again closely corresponds with the figures reported in Eccles' original work which were between $r = -.10$ and $r = -.34$. However, when they found A-levels difficult they attributed less value to them but only in the year 12 sample ($r = -.12$). This finding is similar to that in Eccles' research (1983) where correlations ranged from $r = -.05$ to $r = -.12$. Effort was found to be negatively correlated with achievement in this study. Given that a person will calculate the minimal amount of effort needed to achieve on a task (Kukla, 1972) these findings are expected. They may be explained by the fact that high ability students presumably need to apply less effort in their A-levels than low ability students who find them more difficult. Unsurprisingly a positive correlation ($r = .64$ in the main sample and $.58$ in the year 12 sample) was found between perceived task difficulty and the effort applied by the A-level students.

RQ6. What are Students' Perceived Influences upon their Expectations and Values?

The students reported that the key influences upon their choices were their parents. This finding is consistent with both parental socialisation models and other social cognitive mediational models of parental influence (Bronfenbrenner & Morris, 1998; Eccles & Davis-Kean, 2005; Goodnow & Collins, 1990; Grolnick & Slowiaczek, 1994; Marjoribanks, 2002), as well as literature that has found a relationship between family characteristics and educational outcomes (Bradley & Corwyn, 1999; Brooks-Gunn & Duncan, 1997; Hoff-Ginsberg & Tardif, 1995; McLoyd, 1998; Walberg & Marjoribanks, 1976). Teachers were also reported as being influential. These influences are further explored in the qualitative analyses (see Chapter 12).

Overall, these findings indicated that A-level students' expectations, their STV and aspects of their background relate to performance. They aid an understanding of the

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achievement motivation of these students and presented the results of testing the expectancy-value model in a UK context. The interactions between the different aspects of their background (SES, gender, ethnicity), their motivation and achievement are however likely to be far more complex than these exploratory analyses can show. Further exploration of the interrelationships between these variables was therefore warranted using structural equation modelling (SEM). SEM was used to test the hypothesised patterns between background, expectations, values and achievement and evaluate whether the expectancy-value model was plausible when compared to the observed data. Latent variables were constructed for SES, expectations and STV. Since SEM comprises of both a measurement and a structural model the links between the latent variables and their observed measures (i.e. the confirmatory factor analysis model), as well as the latent variables themselves (Byrne, 2012), were explored. The use of SEM in this research therefore aimed to provide a comprehensive approach to modelling the relationships between expectations, values, achievement and student background, and is discussed more fully in the next chapter. The role of school sector was also explored to examine the implications for expectations, values and A-level achievement.

Chapter 8 An Introduction to the Assumptions of Using Structural Equation Modelling to Investigate the Achievement Motivation of A-level Students

Structural equation modelling (SEM) is a comprehensive statistical approach to testing hypotheses about relations among observed and latent variables (Hoyle, 1995). It tests hypothesized patterns of directional and non-directional relationships among these variables (R. C. MacCallum & Austin, 2000). In this research the relationships between student background (SES, gender and school sector), expectations, values, and A-level achievement were therefore examined using SEM. The premise underlying the models used in this thesis was, firstly, that expectations and values have a direct effect on A-level achievement. The models and analyses used to therefore test the relationships between expectations and achievement (research question one), expectations and STV (research question two) and STV and achievement (research question three) are presented in Chapter 9.

Furthermore, SES and gender were predicted to have an effect on A-level achievement. According to the theoretical model (see Chapters 1,2 and 3) these background factors might also be related to expectations and values. These relationships are analysed in Chapter 10. Initially individual models were used to address each research question based on the conceptual model underlying this thesis and in line with the majority of the previous empirical research investigating it (see Chapter 2). As noted in this earlier chapter ‘the empirical tests of these models reported in the literature do not explicitly test the interactions’ (Nagengast et al., 2013 p.431). This is the case when the expectancy-value has been tested in various domains (Trautwein et al., 2006). Since this lack of analysis is an emerging criticism of Eccles work an overall model was also tested in this research. This is analysed in Chapter 11.

SEM is a methodology for representing, estimating, and testing a theoretical network of (mostly) linear relations between these variables (Rigdon, 1998). In this research this

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statistical methodology took a confirmatory (hypotheses testing) approach to the analysis of a structural theory (Byrne, 2012), in this case contributing an understanding and analyses of Eccles' expectancy-value model in a UK context with a sample of A-level students studying for high stakes qualifications.

SEM comprises of a measurement and a structural model, where the measurement model depicts the links between the latent variables and their observed measures (Byrne, 2012) and the structural model represents the hypothesised relationships among the constructs (Tabachnick & Fidell, 2013). These will be specifically discussed in relation to the models and research question in Chapters 9 and 10. According to Byrne (2012) the benefits of SEM are that it is an efficient and convenient way of describing the latent structure of variables and explain how observed and latent constructs relate to each other. It was therefore beneficial in this research for describing the latent structure underlying the STV and expectancy constructs, and explaining how these relate to achievement.

The goals of using SEM in this thesis were to understand the patterns of correlation, and covariance, among the set of variables (achievement, expectations, values, SES, gender and school sector). It is useful for explaining as much variance as possible with the specified models (R. B. Kline, 1998). As such SEM was an appropriate statistical technique to employ because it could be used to evaluate whether Eccles' expectancy-value model of achievement (and thus a theoretical model) was plausible when compared to observed data. SEM allowed the hypothesised models concerning the relationships between expectations, values and A-level achievement to be tested statistically in a simultaneous analysis of variables to determine the extent to which it is consistent with the data (Byrne, 2012).

Overall SEM was a comprehensive and flexible approach to modelling the relations among expectations, values and achievement (Hoyle, 2012). Indeed SEM is one of the most widely used statistical techniques for delineating linear relations in multivariate data among behavioural scientists (Ringo Ho, Stark, & Chernyshenko, 2012). Furthermore extensive

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analyses have been conducted on this expectancy-value theory using SEM, for example see Guo et al, 2015, Hood et al (2012), Trautwein et al (2012), Wigfield (1997), Wigfield, Eccles & Roesner (1998).

In this chapter the software used to analyse the data and the assumptions of SEM are presented including those relating to sample size, estimation techniques, missing data and fit indices. In the following chapters the models used in this research are specified and estimated, and results of the model fit are presented. Model modifications are also considered.

SEM Software

Historically a number of software packages have been available for SEM including LISREL (Jöreskog & Sorbom, 1997), EQS (Bentler, 2004), AMOS (Arbuckle, 2011) and MPlus (L. K. Muthén, 2010). In this research *lavaan* was used (Rosseel, 2012). This is a package for SEM implemented in the R system for statistical computing (R CoreTeam, 2015).

This SEM package provides a basic structural equation modelling facility, including the ability to estimate structural equations in observed variable models by two-stage least squares (2SLS) and to fit general (including latent variable) models by full information maximum likelihood (FIML). There is also a system fit package which implements a variety of observed variable structural equation estimators (Fox, 2006).

This package was chosen because it is known to have a number of advantages over commercial packages; the software is intuitive and rich with modelling features, it is a free, open-source program and one that enables direct access to SEM code (Rosseel, 2012). In the *lavaan* package models are specified using a powerful, easy-to-use text based syntax describing the model (Rosseel, 2012). It has the further advantage that data can be input into R from many different sources: entered directly at the keyboard, read from plain text files in a variety of formats, imported from other statistical packages and spreadsheet programs and

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read from database management systems (Rosseel, 2012). Also, case-by-variable datasets can be stored in data frame objects, which are analogous to internal data sets in SPSS (Fox, 2006). The syntax used in this study can be found in Appendix J.

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Sample Size

As SEM is a large sample technique it was a suitable choice as there was a sample of 930 A-level students in this research (n=396 in the year 13 sample, n=534 in the year 12 sample). Sample size was also discussed in Chapter 6. These large samples were advantageous as covariances are less stable when estimated from small samples and also parameter estimates and chi-square tests of fit are also sensitive to sample size (Tabachnick & Fidell, 2013). A knowledge of the minimum sample size required to achieve a given statistical power is important as this varies as a function of a number of factors including choice of fit index, number of variables and degrees of freedom, the relations among the variables and the value of the fit index (Kim, 2005). The large sample sizes in this study exceed the minimum required sample size to achieve statistical power of 0.50 or 0.80 (see MacCallum, Browne, & Sugawara, 1996).

Model Estimation

Model estimation is an integral part of SEM because the quality of parameter estimates, their associated standard error estimates and overall model fit statistics depend on appropriate estimation methods (P. W. Lei & Wu, 2012). Comparison of estimation methods (maximum likelihood, least squares, Bayesian) shows that maximum likelihood (ML) performs well (Ding, Velicer, & Harlow, 1995; Olsson, Foss, Troye, & Howell, 2000). It is the most common technique used to estimate and test models with latent variables (Anderson

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& Gerbing, 1984) and can be generally endorsed for most uses (Hu & Bentler, 1998; Olsson et al., 2000) despite the fact that most research in the social sciences doesn't meet the necessary assumptions for normality (see Olsson, 1979), as was the case in this research.

Maximum likelihood (ML) is the default estimator used in R and was therefore initially employed as the estimator in this research. There is, however, mixed evidence on its sensitivity to violations of non-normality. Some evidence suggests there is no effect on the standard errors of parameter estimates (M. Lei & Lomax, 2005), that it is relatively robust (Finch, West, & MacKinnon, 1997) and does not strongly bias parameter estimates when there is approximate normal distribution, large sample sizes and five or more indicators, as is the case in this research (D. R. Johnson & Creech, 1983). However it has also been argued that maximum likelihood deflates standard error estimates and inflates chi-squared model statistics under even minor violations of non-normality (Bollen, 1989; Chou & Bentler, 1995). It then leads to excessive rejection of true models, especially when models are large (B. O. Muthén & Kaplan, 1985). In this case a more general robust estimator (MLR, maximum likelihood robust) can be employed which is a maximum likelihood estimation with robust standard errors and a scaled χ^2 test statistic (Rosseel, 2012). After the analyses were initially run using ML they were, therefore, rerun in R using MLR. Although this alternative method of estimation did not alter the overall model fit statistics for any of the research questions the results did indeed indicate that the analyses using ML inflated the chi-square model statistic and deflated the standard errors as predicted in the literature in this field, for example see, Bollen (1989) and Chou & Bentler (1995). The results derived from the MLR estimation are therefore the ones presented in the following results chapters as these are believed to be more robust against violations of the non-normal data in this research.

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Missing Data

Missing data may be missing completely at random (MCAR), missing at random (MAR) or missing not at random (MNAR). MCAR is when the missingness does not depend on the values of the variables in the dataset, observed or unobserved (R. J. A. Little, 1988). So, the observed variables are simply a random subsample of the hypothesised complete data (Enders & Bandalos, 2001). MCAR is a stringent assumption (B. O. Muthén, Kaplan, & Hollis, 1987) and often quite unrealistic (Rubin, 1976). The data are MAR if the problem of the observed missingness pattern, given the observed and unobserved data, does not depend on the values of the unobserved data (Heitjana & Basub, 1996). MAR provides a less restrictive condition under which missing data can be ignored because the observed values need not be a simple random sample of the hypothesised complete data set (Enders & Bandalos, 2001). If data is neither missing completely at random, nor missing at random then it is missing not at random (MNAR). In practice it is not easy to determine if missingness is occurring randomly or systematically and whilst there are ways to determine whether the assumption of MCAR is reasonable there is no definitive test that provides evidence of either MAR or MNAR (R. Kline, 2016). This is because it is straightforward to test whether the data are missing completely at random but impossible to test whether the data are missing at random (Allison, 2003). Schafer and Graham (2002) suggest that when missingness is beyond the researcher's control, its distribution is unknown and MAR is only an assumption, with no way to test whether MAR holds in a data set, except by obtaining follow-up data from non-respondents or by imposing an unverifiable model.

The percentage of missing data for key items is shown in Table 35. Any items to which the student had not provided a response (so not crossed the appropriate box or written an answer for open ended questions) were coded as missing. The percentages of missing data were low except for the achievement data (total point score), which was 15.9% for the year 13 sample and 5.8% for the year 12 sample. This was mainly explained by the fact that

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achievement data was matched to the candidate numbers that students had provided on the front of their questionnaires and it is quite possible that students would not have accurately recalled their number. Issues associated with the use of self-report data are discussed in Chapter 13. There may also have been a number of students who dropped out of courses between completing the questionnaires and the actual A-level examinations. Parental occupational groups also yielded a higher percentage of missing data than other items (6.3% for mother's occupational group and 7.1% for father's occupational group in the main sample and 6.7% and 7.1% respectively for the year 12 sample). It seems that not all students knew what their parents did for a job. For home possessions 7.6% of data was missing in the year 13 sample and 6.6% in the year 12 sample. The missing data for items relating to parental occupation was not reported for PISA 2009 or 2012, however it ranged from 0.8%-5.9% for individual home possessions (OECD, 2012). This was lower than that reported in this study. Overall the UK had, however, some of the highest rate of missing data than the OECD average.

Traditional methods for treating missing data has included listwise and pairwise deletion (R. J. A. Little & Rubin, 1987; Peugh & Enders, 2004) . These are not, however, the currently recommended methods (R. J. A. Little & Rubin, 1987) and their use has been strongly discouraged by the American Psychological Association (Wilkinson, 1999). Listwise deletion requires MCAR data but can yield biased parameter estimates when this condition is not met (Enders & Bandalos, 2001) and has also been shown to yield less effective parameter estimates than other methods (Arbuckle, 1996). Maximum likelihood methods are instead the recommended procedures in the methodological literature (Peugh & Enders, 2004). According to Peugh and Enders (2004) these methods have a strong theoretical framework and are supported by an increasing number of empirical studies that demonstrate their effectiveness (Arbuckle, 1996; Enders, 2001a, 2001b, 2003; Enders & Bandalos, 2001; Gold & Bentler, 2000). Peugh and Enders (2004) go on to say that since in practice, applied

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researchers may not have knowledge about the missing data mechanism, as is the case in this study, and in the absence of such knowledge, they suggest that FIML might be a superior method for dealing with missing data in structural equation models. The models in this research were therefore run using both listwise deletion and FIML. There were no differences in the overall model fit statistics, although as expected there were some differences in the parameter estimates and therefore on the basis of the evidence in this chapter analyses were conducted employing FIML.

Table 35 *Percentage of Missing Data for Key Items in the Main Study*

Variable	Percentage of Missing Data	
	Year 13 sample	Year 12 Sample
School Sector	0.0%	0.0%
Male	0.0%	0.6%
Q21 In general I find working on A-level assignments (Very boring-very interesting)	0.5%	0.6%
Q25 For me, being good at my A-levels is? (Not at all important-very important)	0.5%	0.6%
Number of Books	0.5%	1.1%
Q31 Is the amount of effort it will take to do well in A-levels worthwhile to you (Not very worthwhile-very worthwhile)	0.5%	0.9%
Parental Involvement	0.5%	0.9%
Ethnicity	0.6%	0.6%
Q22 In general, how useful is what you learn at A-level for your daily life outside school? (Not at all useful-very useful)	0.8%	0.7%
Q37 How important is it to you to get grades in your A-levels? (Not at all important-very important)	0.8%	1.5%
Q30 I like doing A-levels (Strongly disagree-strongly agree)	1.0%	0.4%
Q24 Compared to other students, how well do you expect to do in your A-levels this year? (Much worse than other students-much better than other students)	1.0%	0.6%
Mother's Education	1.0%	0.9%
Q34 How useful are A-levels for what you want to do after you finish school and go to University/work? (Not at all useful-very useful)	1.0%	1.1%
Father's Education	1.0%	1.5%
Q28 How good are you at A-levels? (Not at all good-very good)	1.3%	0.6%
Q32 If you were to order all students in your year group from best to worse academically, where would you put yourself? (The worst-the best)	1.3%	0.7%
Q26 How well do you think you will do in your A-levels this year? (Very poorly-very well)	1.3%	0.9%
Q36 How have you been doing in your A-levels this year? (Very poorly-very well)	1.3%	1.5%
Support for Learning	2.8%	2.4%
Mother's Occupational Group	6.3%	6.7%
Father's Occupational Group	7.1%	7.9%
Home Possessions	7.6%	6.6%
Total Point Score	15.9%	5.8%

Note – question items are those used for latent expectations, intrinsic, attainment, utility value and STV constructs

FIML estimates results in near optimal and stable model rejection rates (Enders & Bandalos, 2001). This study therefore used full information maximum likelihood (FIML)

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estimation (Arbuckle, 1996) to handle missing data with the aim of producing valid SEM estimates even if the data is not MCAR but satisfies MAR assumptions. Assuming data is MAR, FIML maximises a modified log-likelihood function that uses all available individual observations (Enders, 2006). FIML is regarded as a state-of-the-art treatment of missing data (Schafer & Graham, 2002). The use of FIML was therefore advantageous over other methods in this study for a number of important reasons; FIML estimations have been found to be more efficient than listwise deletion (Arbuckle, 1996; Enders & Bandalos, 2001; R. B. Kline, 2010), provide unbiased estimates (Enders & Bandalos, 2001; Larsen, 2011), yields the lowest proportion of convergence failures and provides near-optimal type 1 error rates (Enders & Bandalos, 2001).

Fit Indices

Within this research assessment of fit provides an overall perspective on whether the theoretical model on the relationships between expectations, values and A-level achievement is able to reproduce observed data (West, Taylor, & Wu, 2012). Numerous fit indices are available but there is agreement amongst researchers that the χ^2 statistic (Jöreskog, 1969), root mean square error of approximation (RMSEA, Steiger, 1989, 1990, Steiger & Lind, 1980), the standardised root mean square residual (SRMR, Bentler, 1995), comparative fit index (CFI, Bentler, 1990) and Tucker-Lewis Index (TLI, Tucker & Lewis, 1973) should be used (for example, West et al, 2012; Tabachnick & Fidell, 2013; Iacobucci, 2010). These are therefore presented in the results chapters. The standard criteria were applied to the goodness of fit between the hypothesised and observed model, so, for the χ^2 $p > 0.001$; RMSEA < 0.06 for 'good fit' to < 0.08 for 'adequate fit', SRMR < 0.08 . CFI > 0.95 ; TLI > 0.90 - > 0.95 (Browne & Cudek, 1989; Brown, 2006; Hu & Bentler, 1999; Kline, 2005; Bentler & Bonett, 1980). However, in this research, these cut-offs have been treated as guidelines rather than

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highly rigid criteria, or golden rules, that are universally appropriate (Marsh, Hau, & Wen, 2004). This is because fit indices are affected by other factors within the model, for example, the number of indicators of factor loadings (West et al., 2012), sample size, estimator procedure, distributions (Hutchinson & Olmos, 1998; Marsh et al., 2004) and thus require evaluation in relation to the substantive and theoretical issues that are likely to be idiosyncratic to a particular study (Marsh et al., 2004).

Summary of Chapter 8

In this chapter the advantages of using SEM to investigate the relationships between expectations, values and A-level achievement have been outlined, based on the premise that it is a highly comprehensive approach to testing relations among observed and latent variables (Hoyle, 1995). It was an appropriate technique for evaluating whether the expectancy-value model of achievement was plausible when compared to the hypothesised models of the relationships between expectations, values and A-level achievement. The assumptions of SEM have been highlighted. In the following chapter the models used to investigate the relationships between expectation, values and A-levels are outlined and analysed. The models used to investigate the relationships of these variables to SES and gender (research question four) are then presented and analysed in chapter 10 and an overall model presented in chapter 11. As discussed at the start of Chapter 7 the main analyses are conducted on the year 13 sample, with the results reported for year 12 but the tables displayed in Appendix K for this comparison data.

Chapter 9 Findings: Structural Equation Models on the Relationships between Expectations, Values and A-level Achievement

In this chapter the SEM models used to investigate the relationships between expectations, values and A-level achievement will be specified and identified. The analyses for each research question will be presented including the results of the measurement model (factor loadings), the structural model (regression) and model fit statistics. Model modifications for the main sample will also be discussed briefly before overall conclusions are drawn about the relationships between expectations, values and A-level achievement.

Specifying and Identifying the SEM Models

SEM begins with the specification of a model; that is a formal statement of the mechanisms assumed to have given rise to the observed data (Hoyle, 2012). In the current study this specification reflected the hypothesis that there would be a relationship between expectations, values and achievement. This involved the specification of observed and latent variables, the specification of the relationships and specification of the parameters (Ringo Ho et al., 2012). These are represented in the structural and measurement models.

The Measurement Model

The measurement model in SEM depicts the links between the latent variables and their observed measures, and therefore represents the confirmatory factor analysis model (Byrne, 2012). Since confirmatory factor analysis (CFA) focuses on how, and to what extent, observed variables are linked to underlying latent factors and to what extent the observed variables are generated by the underlying latent constructs (Byrne, 2012) it was appropriate for this research. The alternative is exploratory factor analysis which differs fundamentally

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because it is a data-driven approach used to explore and generate hypotheses about underlying processes, usually employed in the process of scale development and construction, (T. A. Brown & Moore, 2012; Tabachnick & Fidell, 2013). There are, therefore, a number of reasons why CFA was the suitable technique in this thesis. It is appropriate when the researcher has knowledge of a previous theory, or research, underlying a latent structure and is therefore able to postulate relations between observed measures and underlying factors (Byrne, 2012). This was the case in the current research as the expectancy-value framework was applied, and thus CFA could be usefully employed to test specific hypotheses about the structure and relations between the latent variables underlying the data and test whether the data fitted the hypothesised (expectancy-value) model based on the previous theory about latent processes (Field, 2013; Tabachnick & Fidell, 2013). CFA also usefully examines the strength of the regression paths from the factors to the observed variables (Byrne, 2012).

Within this research a number of variables were measured. A-level achievement, measured by the total points achieved by students studying for A-levels (for the main sample) or AS levels (for the year 12 sample) and the school sector attended by the pupil (whether they attended an independent or state school), were manifest variables (represented by squares in the path diagrams). It was considered appropriate to include school sector in the model because it relates to the differential achievement of pupils (for example, Coleman, 1982, Stedman, 1983, Dronkers & Roberts, 2000, Caro & Lenkeit, 2012, Department for Education, 2013). Furthermore achievement motivation and school engagement is supported by school characteristics that facilitate the student's universal and personal needs (Eccles, 2007a). It was also found to be a predictor of achievement in the exploratory regression analyses (see Chapter 7).

Ethnicity was explored in relation to achievement in the exploratory statistics presented in Chapter 7 and will be further discussed in the chapter on qualitative interviews (see Chapter 12). It was not however included as a variable in the structural equation model as

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the numbers of non-White participants in the sample were too small to include within the SEM (see Chapter 7) where a minimum sample size of at least 200 is required (see Iacobucci, 2010).

Latent variables (represented by circles in the path diagrams) included expectations and STV (comprising of intrinsic, attainment and utility value). The indices used, and tested, for each of these constructs is detailed below.

Expectations Indices

The latent variable for expectations was constructed from items on a 7-point Likert scale. The items were discussed in detail in Chapter 6 and can also be seen in the student questionnaire (Appendix D) and questionnaire manual (Appendix C). The indices comprised of items relating to the student's beliefs about their ability and expectations of how well they will do on their A-levels based on Eccles & Wigfield's (1995) self-and-task perception questionnaire. They were measured in part two of the questionnaire in this study (see questions 24, 26, 28, 32 and 36).

STV Indices

The latent variable for STV is defined as the value attached to a task because it meets an individual's needs. The value of a specific task is the function of the attainment value, intrinsic value and utility value Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995; Trautwein et al, 2012; Wigfield & Eccles, 2000). In this study these were examined using 7-point Likert scales (see Appendix D) where students were asked about the importance they attached to doing well in their A-levels (the attainment value, items 25, 31, 37), whether they enjoyed their A-levels (intrinsic value, items 21 and 30) and whether they

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thought they were useful because they fulfil a goal, or their future plans (utility value, items 22 and 34). Thus each subscale comprised of two or three items.

The measurement model (CFA) in these analysis therefore depicted the pattern of observed variables for each of these latent constructs in the hypothesised model (Schreiber, Nora, Stage, Barlow, & King, 2006). In this chapter the first set of results presented for each research question are those relating to the measurement model, or CFA.

The Structural Model

The structural model represents the hypothesised relationships among the constructs (Tabachnick & Fidell, 2013). In this study direct paths were predicted between expectations and A-level achievement (research question one) and STV and A-level achievement (research question three). This was based, firstly, on the premise that students' beliefs about their ability and expectations for success are predictors of grades (Eccles et al., 1983; Eccles & Wigfield, 1995; Wigfield & Eccles, 2000). Secondly, there is substantial support for a direct relationship between expectations, task value and achievement (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012; Wigfield & Eccles, 1992; Wigfield & Eccles, 2000). Research has found associations between STV and academic results (Cole et al., 2008; Guo et al., 2015; Hulleman, Godes, et al., 2008; Phan, 2014; Trautwein et al., 2012). The second set of results under each research question therefore address the analyses of the structural model, that is, the results of the causal and correlational links (regressions and correlations) between these variables.

The last set of analyses within each research question focuses on the results of the structural equation model to determine model fit. Fit indices were discussed in previous chapter and the standard criteria outlined were applied to the goodness of fit between the hypothesised and observed model in this current chapter. Thus for the χ^2 $p > 0.001$; RMSEA < 0.06 for 'good fit' to < 0.08 for 'adequate fit', SRMR < 0.08 . CFI > 0.95 ; TLI > 0.90 - > 0.995

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(Browne & Cudek, 1989; Brown, 2006; Hu & Bentler, 1999; Kline, 2005; Bentler & Bonett, 1980). However, in this research, these cut-offs have been treated as guidelines rather than highly rigid criteria, or golden rules, that are universally appropriate (Marsh et al., 2004).

These complex relationships in an SEM model can be expressed in graphical form using path diagrams. These diagrams were employed in the current study to express the relationships between expectations, values and A-level achievement. The advantage of using path diagrams in this study were that they provided a clear and efficient way of demarcating the relationships among the multivariate data and provided an easy communication platform (Ringo Ho et al., 2012).

In SEM models the factor loading or factor variance is traditionally fixed to 1 to identify the model (Tabachnick & Fidell, 2013). This is represented by a dotted line in the path diagrams in this chapter and chapter 10. In this research standardised results are reported where the higher order latent factor variance is fixed to 1 in order to identify the model. The standardised factor loadings are additionally reported for ease of comparability. It should be noted that when initially running analyses including achievement an error warning was produced ('some observed variances were a factor 1000 times larger than others'). As an ill-scaled covariance matrix can cause problems in SEM this variable was rescaled. This was done by dividing the values (achievement) by a constant value as recommended (R. Kline, 2016; T. D. Little, 2013) to ensure it shared a common metric to other variables included in the analyses. Doing so changes the averages and co-variances but not the correlations with other variables (R. Kline, 2016) which was indeed found to be the case when employed in the analyses that follows in both this chapter and chapter 10. It is also an issue discussed further in chapter 11. The results of the SEM analyses on the relationship between expectations, values and A-level achievement will now be discussed.

RQ1. What is the Relationship between Expectations and A-level Achievement?

Students' expectations are known to predict achievement outcomes (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012). In this research the factor loadings of items for the CFA for expectations are presented in Table 36 and Figure 8 for the main sample and Table 20, and Figure 1 in Appendix K for the year 12 sample. Several items loaded more highly, or as expected on this construct, than in Eccles' work (items 26 asking students how well they will do in their A-levels, 24 asking them how well they will do compared to other students and item 28 asking them how good they are at A-levels). Items 32 ('If you were to order all students in your year group from best to worse academically, where would you put yourself?') and 36 ('How have you been doing in your A-levels this year?') loaded less well.

Table 36 CFA Standardised Factor loadings for Expectations in the Main Sample

Latent construct & Item	Item Stem	Loading* Year 13	Eccles and Wigfield (1995)
Expectations			
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.86	0.83-0.85
Q26	How well do you think you will do in your A-levels this year?	0.84	0.78-0.84
Q28	How good are you at A-levels?	0.84	0.80-0.82
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.81	0.86
Q36	How have you been doing in your A-levels this year?	0.73	0.80-0.83

*factor loadings are all significant ($p < 0.001$)

In the main sample results showed that higher expectations relate to higher A-level achievement ($\beta = 0.41$, $p < 0.001$). Model fit was acceptable ($\chi^2 = 73.56(14)$ $p < 0.001$, CFI=0.94, TLI=0.92, RMSEA=0.10, 90% CI .08-.13, SRMR=0.07). Thirty four percent of the variance

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of A-level achievement was explained by students' expectations. The results are shown in Figure 8.

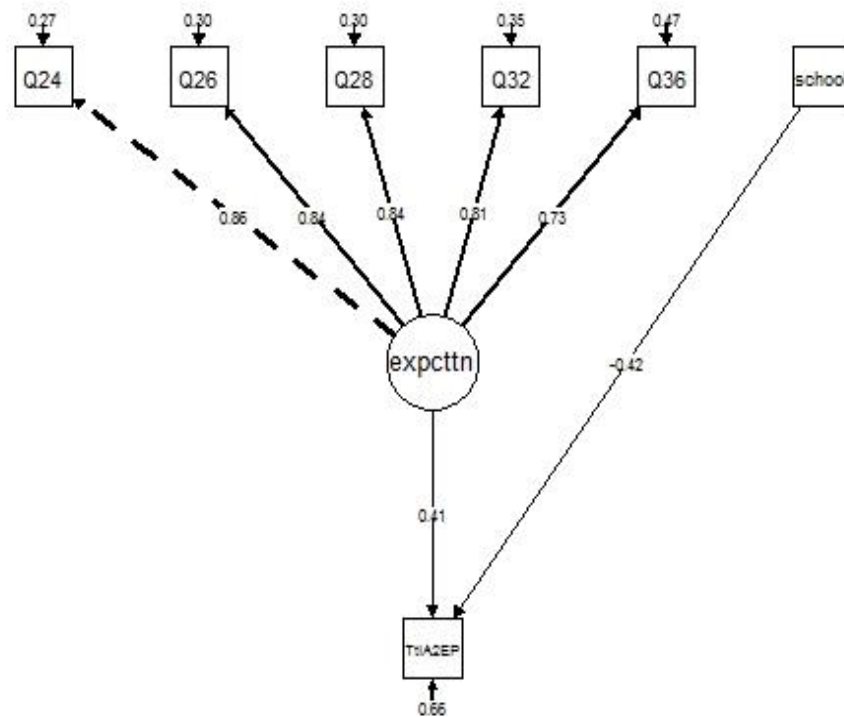


Figure 8 A Path Diagram of the Relationship between Expectations and A-level Achievement in the Main Sample

As shown in Figure 1, Appendix K, in the year 12 sample results similarly showed that higher expectations relate to higher achievement ($\beta = 0.43$, $p < 0.001$) and model fit was acceptable ($\chi^2 = 90.08(14)$, $p < 0.001$, CFI=0.95, TLI=0.92, RMSEA=0.10, 90% CI .08-.12, SRMR=0.11). Here however only 22% of the variance of achievement was explained by students' expectations.

The first research question asked whether a relationship exists between expectations and A-level achievement and the results of the analyses suggest that a relationship does exist

between expectations and achievement. Thus an A-level students' performance might indeed be explained by their expectations of how well they will do. As noted in chapter 7, however, the results on the relationship between expectations and achievement should be treated with caution since prior GCSE results were not collected in this study and it is known that academic self-concept has consistent reciprocal effects with both prior achievement and educational attainment (Marsh & Craven, 2006; Marsh & O'Mara, 2008). It is therefore difficult to conclude in which direction the relationships between expectations and A-level achievement operate in the absence of GCSE results.

RQ2. What are the Relationships between Expectations and STV for an A-level Student Sample?

Based on the exploration that A-level students will value activities they think they are good at (Eccles & Wigfield, 1995) the relationship between expectations and STV was explored. Within this research STV is defined as the value attached to a task because it meets an individual's needs, and the value of a specific task is the function of the attainment value, intrinsic value and utility value (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995; Trautwein et al, 2012; Wigfield & Eccles, 2000). The indices for expectations and STV were summarised in the introduction to this chapter.

Model 1: Expectations and STV (intrinsic value + attainment value + utility value)

When initially testing a measurement model a latent construct comprising of attainment, intrinsic and utility value based on the theoretical framework would not compute. This is contrary to Eccles' work where a three-factor model fitted well (GFI=.99, TLI=.99, based on the findings of Eccles & Wigfield, 1995). Improper solutions, sometimes known as Heywood cases (Boomsma, 1982; Jöreskog, 1967), occur when estimates are non-positive

definite or there are negative variances. This is discussed in more detail in Chapter 11. One reason why this most typically occurs is if there is extreme collinearity between variables (R. Kline, 2016). In this current research there was a high correlation between attainment and utility ($r=0.93$ in the main sample and $r=0.90$ in the year 12 sample) as shown in Appendix L. This issue of collinearity usually occurs when there is a correlation of about .90 or higher, indicating linear dependence among the independent variables (Malone & Lubansky, 2012; Tabachnick & Fidell, 2013). It is problematic because it violates the assumptions of SEM and leads to unstable matrix inversion and thus inaccurate parameter and standard error estimates (Grewal, Cote, & Baumgartner, 2004; Tabachnick & Fidell, 2013). In this research Eccles' original three-factor construct of STV did not converge in the current analyses due to the high correlation between the attainment and utility constructs.

Model 2: Expectations and STV (intrinsic value + a combined attainment utility value)

Model fit was therefore subsequently tested using a two-factor model comprising of intrinsic value and a single latent construct for attainment utility. Here indicators for attainment and utility were loaded on the same construct (see Table 37 and Figure 9 for the main sample and Table 20 and Figure 2 in Appendix K for the year 12 sample).

Each of the expectancy items loaded well on this factor. Within the attainment utility (STV) construct items also loaded reasonably well, with the exception of question 22 which asked students how useful they think A-levels are for their daily life outside school (.30 in the main sample and .33 in the year 12 sample). Interestingly this same item also loaded least well on the utility construct in Eccles' original work (Eccles & Wigfield, 1995). Most items loaded on the constructs equally well, or better than those reported by Eccles (Eccles & Wigfield, 1995). There were some exceptions. Being good at A-levels (Q25) and the importance attached to getting good grades (Q37) loaded far better on attainment value in

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both samples than Eccles' reported for the value attached to maths achievement in her student sample. Some items in this study, however, loaded less well including question 32 ('If you were to order all students in your year group from best to worse academically, where would you put yourself?') and 36 ('How have you been doing in your A-levels this year?') on the expectations construct. Question 30, measuring intrinsic value, ('I like doing A-levels') loaded less well in the main (but not comparison) sample and both items measuring utility value also loaded less well (questions 22 and 34), although only slightly for question 34 in the main sample. This item loaded less well in the comparison sample (0.68).

In the main sample there was a moderate correlation between expectations and STV ($r=0.55$) as shown in Table 38 and Figure 9. There was also a moderate correlation between expectations and intrinsic value ($r=0.50$). Students who had higher expectations attributed value to getting good grades and the usefulness of their A-levels ($r=0.37$) but this relationship was moderate. In the year 12 sample (see Table 22 an, Appendix K) these findings were replicated as moderate correlations between expectations and STV ($r=0.61$) and expectations and intrinsic value ($r=0.54$) were also found. Again, higher expectations were related to perceived usefulness of these qualifications ($r=0.42$).

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Table 37 *CFA Standardised Factor Loadings for Expectations and STV (Intrinsic value + Attainment Utility) in the Main Sample*

Latent construct & Item	Item Stem	Loading* Year 13	Eccles and Wigfield (1995)
Expectations			
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.85	0.83-0.85
Q28	How good are you at A-levels?	0.85	0.80-0.82
Q26	How well do you think you will do in your A-levels this year?	0.84	0.78-0.84
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.80	0.86
Q36	How have you been doing in your A-levels this year?	0.74	0.80-0.83
Intrinsic Value			
Q30	I like doing A-levels?	0.80	0.85-0.88
Q21	In general I find working on A-level assignments?	0.72	0.70-0.73
Attainment Utility Value			
Q37	How important is it to you to get good grades in your A-levels?	0.90	0.57-0.66
Q25	For me, being good at my A-levels is?	0.83	0.67-0.71
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.73	0.75-0.81
Q34	How useful are A-levels for what you want to do after you finish school and go to University/ work?	0.73	0.75-0.81
Q22	In general, how useful is what you learn at A-level for your daily life outside school?	0.30	0.59-0.57
STV			
<i>Intrinsic</i>	Q21 + Q30	0.89	
<i>Attainment Utility</i>	Q25 + Q31 + Q37 + Q22 + Q34	0.66	

Note: Scale of items ranged from 1-7 *factor loadings are all significant ($p < 0.001$)

Table 38 *Correlations between Expectations and STV (Intrinsic Value + Attainment Utility) in the Main Sample*

	Expectations	Intrinsic Value	Attainment Utility
Intrinsic Value	0.50		
Attainment Utility	0.37	0.59	
STV	0.55*	0.89	0.66

* $p < 0.001$

Fit for this structural equation model, where the two-factor model of STV using intrinsic and attainment utility value was tested, was not acceptable in either the year 13 sample ($\chi^2=191.61(51)$ $p < 0.001$, CFI=0.93, TLI=0.91, RMSEA=0.08, 90% CI .07-.10, SRMR=0.06) or the year 12 sample ($\chi^2=260.10(51)$ $p < 0.001$, CFI=0.93, TLI=0.91,

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RMSEA=0.09, 90% CI .08-.10, SRMR=0.06). The lack of fit in this study may be because when there is a high degree of collinearity between factors in SEM it is suggested that one is then removed (Tabachnick & Fidell, 2013 p.689).

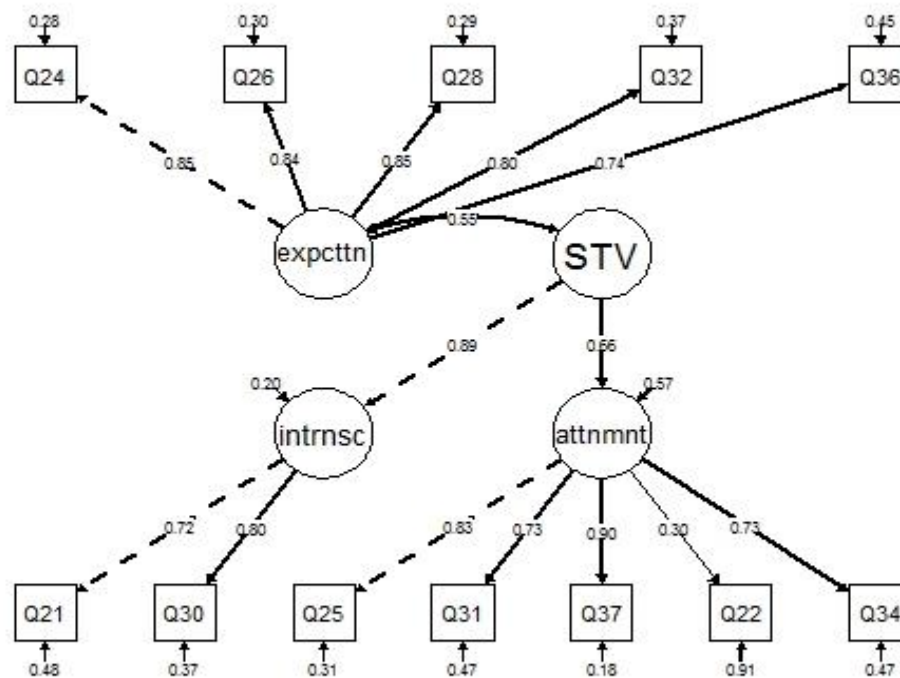


Figure 9 A Path Diagram of the Relationship between Expectations and STV (intrinsic + attainment utility value) in the Main Sample

Model 3: Expectations and STV (intrinsic value + attainment value)

On this basis a revised model was tested where utility was removed as a construct in STV because of the high correlation between this value and attainment value, as discussed above. As was noted in chapter 7 the utility construct, measuring how useful student's perceived their A-levels to be to them, was reported to have low reliability in Eccles' work and this was also found to be the case in the exploratory analysis for both the main sample ($\alpha=.41$) and the year 12 sample ($\alpha=.43$). In this further SEM analyses the item loadings were

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also low for indicators of utility (see items 22 and 34 in Table 2). For item 22 was only .30 in the main sample and .33 in the year 12 sample. As a result of these findings a revised model was therefore tested which included latent constructs representing expectations and STV, but where indicators of only intrinsic value and attainment value were used (see Table 39 and Figure 10 for the main sample and Table 23 and Figure 3 in Appendix K for the year 12 sample). Utility value was not included in the measurement model. Overall in this revised model the loadings were similar to those reported for the previous model. Again, it is noticeable that two of the three items on the attainment factor loaded substantially better on this construct than Eccles reported.

Table 39 CFA Standardised Factor Loadings for Expectations and STV (Intrinsic Value + Attainment Value) in the Main Sample

Latent construct & Item	Item Stem	Loading* Year 13	Eccles & Wigfield (1995)
Expectations			
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.85	0.83-0.85
Q28	How good are you at A-levels?	0.85	0.80-0.82
Q26	How well do you think you will do in your A-levels this year?	0.84	0.78-0.84
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.80	0.86
Q36	How have you been doing in your A-levels this year?	0.74	0.80-0.83
Intrinsic Value			
Q30	I like doing A-levels?	0.79	0.85-0.88
Q21	In general I find working on A-level assignments?	0.73	0.70-0.73
Attainment Value			
Q37	How important is it to you to get good grades in your A-levels?	0.87	0.57-0.66
Q25	For me, being good at my A-levels is?	0.86	0.67-0.71
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.73	0.75-0.81
STV			
<i>Intrinsic</i>	Q21 + Q30	0.90	
<i>Attainment</i>	Q25 + Q31 + Q37	0.65	

Note: Scale of items ranged from 1-7

*factor loadings are all significant ($p < 0.001$)

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The correlations for this model were also very similar to those outlined above in model 2 when utility indicators were included, so there was a moderate correlation between expectations and STV ($r=0.55$) as shown in Table 40 and Figure 10 for the main sample. There was also a moderate correlation between expectations and intrinsic value ($r=0.50$) and students who had higher expectations valued getting good grades ($r =0.36$). Similar results were replicated in the year 12 sample (see Table 24, Appendix K) for the correlations between expectations and STV ($r=0.62$), expectations and intrinsic value ($r=0.54$) and expectations and attainment value ($r=0.39$)

Table 40 *Correlations between Expectations and STV (Intrinsic Value + Attainment) in the Main Sample*

	Expectations	Intrinsic Value	Attainment Value
Intrinsic Value	0.50		
Attainment Value	0.36	0.58	
STV	0.55*	0.90	0.64

* $p<0.001$

When utility value was removed from the STV construct there was then good model fit in both the year 13 sample ($\chi^2=109.83(32)$ $p<0.001$, CFI=0.95, TLI=0.93, RMSEA=0.08, 90% CI .06-.09, SRMR=0.05) and the year 12 sample ($\chi^2=155.50(32)$ $p<0.001$, CFI=0.95, TLI=0.93, RMSEA=0.09, 90% CI .07-.10, SRMR=0.05). This suggested that Eccles' three-factor model of STV was not supported when tested with A-level students in the UK which is an interesting contribution of this work. Instead a two-factor model was better, where the value attached to A-levels, because they meet an individual's needs, was the function of the attainment value and intrinsic value. Interestingly when Eccles generated a two-factor model of STV by combining, in all possible ways the three theoretical constructs (so generating a model using a combination of two of the following; attainment value, utility value and intrinsic value) fit ranged from .87 to .94. The results of the two-factor model in this thesis therefore substantiate Eccles' earlier findings (Eccles & Wigfield, 1995).

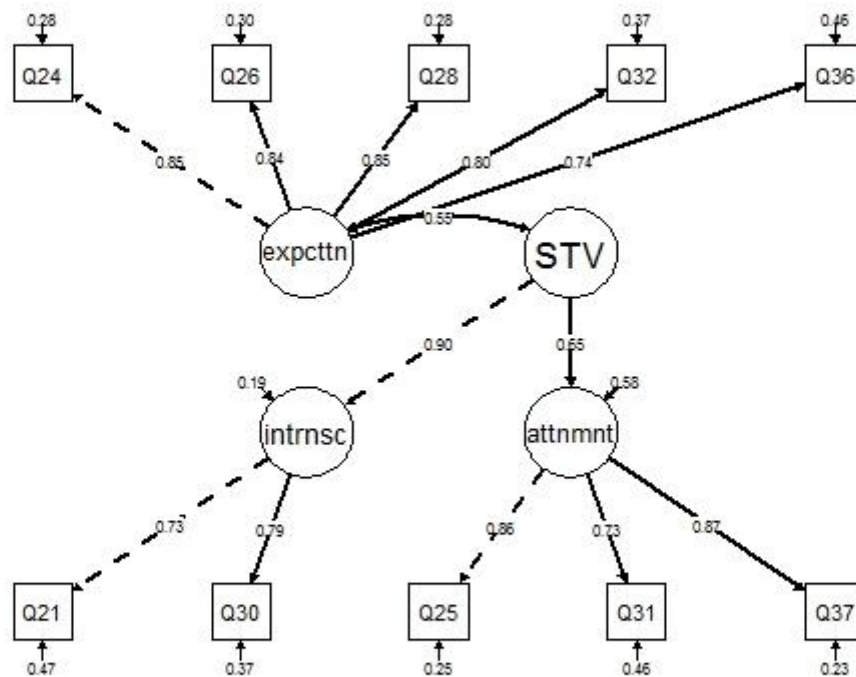


Figure 10 A Path Diagram of the Relationship between Expectations and STV (intrinsic and attainment value) in the Main Sample

The focus of research question two was upon the relationship between expectations and STV in A-level students based on the notion that students will value activities that they think they are good at (Eccles & Wigfield, 1995). A relationship between expectations and STV was found in A-level students but only when the value attached to A-levels was a function of the attainment value and intrinsic value. Eccles' three-factor model of STV could not be supported. When examining STV in the remaining analyses in this research this two-factor model was therefore used (see Figure 10).

RQ3.What is the relationship between STV and A-level achievement?

In the measurement model testing the relationship between A-level achievement and STV, the factor loadings indicate that enjoying A-levels is more important for intrinsic value than interest in assignments (see Table 41 and Figure 11, and Table 25 and Figure 4 in Appendix K). The factor loadings for attainment value indicated that it is driven by the importance attached to achieving good grades and how good students aimed to be, rather than the effort required to achieve the grades (see Table 41 and Table 24, Appendix K). Attainment value loaded more highly on STV than intrinsic value, as might be expected. With the exception of students' enjoyment of A-levels in the year 13 sample all other factor loadings were in line with, or higher than those in Eccles' work.

Table 41 *CFA Standardised Factor Loadings for Intrinsic Value, Attainment Value and STV*

Latent construct & Item	Item Stem	Loading* Year 13	Eccles & Wigfield (1995)
Intrinsic Value			
Q30	I like doing A-levels?	0.79	0.85-0.88
Q21	In general I find working on A-level assignments?	0.73	0.70-0.73
Attainment Value			
Q37	How important is it to you to get good grades in your A-levels?	0.88	0.57-0.66
Q25	For me, being good at my A-levels is?	0.87	0.67-0.71
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.73	0.75-0.81
STV			
Attainment	Q25 + Q31 + Q37	0.85	
Intrinsic	Q21 + Q30	0.68	

Note: Scale of items ranged from 1-7 *factor loadings are all significant ($p < 0.001$)

In the structural model STV was positively related to A-level achievement in both the main sample ($\beta = 0.26$, $p < 0.001$) as shown in Figure 11, and in the year 12 sample ($\beta = 0.27$, $p < 0.001$) as shown in Figure 2, Appendix K, but the relationships were weak. As predicted there was acceptable model fit for the relationship between STV and A-level achievement in the main sample ($\chi^2 = 64.65(12)$ $p < 0.001$, CFI=0.95, TLI=0.92, RMSEA=0.09, 90% CI .07-.11, SRMR=0.03) and also in the comparison sample ($\chi^2 = 36.28(12)$ $p < 0.001$, CFI=0.97, TLI=0.94, RMSEA=0.07, 90% CI .05-.10, SRMR=0.05). In an SEM examining the

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relationship between STV and achievement only 14% of the variance in achievement was explained by STV in the year 13 sample but interestingly 27% of the variance was explained by STV in the year 12 sample. In answer to research question three which focused on the relationship between STV and A-level achievement it could be concluded that a weak positive relationship exists.

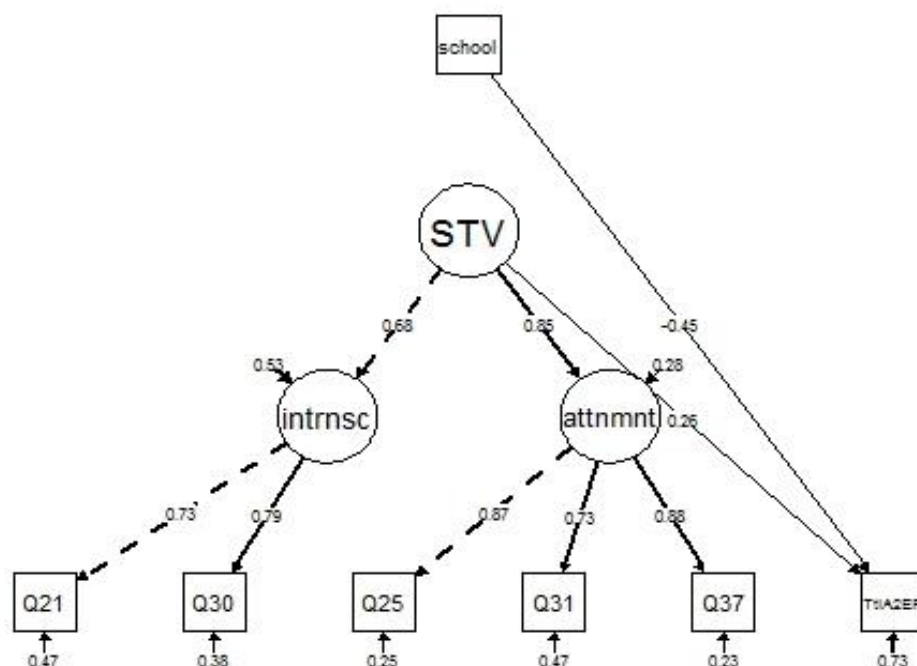


Figure 11 A Path Diagram of the Relationship between STV and A-level Achievement in the Main Sample

Model Modifications

As discussed in the results for research question two Eccles' original three-factor construct of STV, where the value of a task is the function of the attainment, intrinsic and utility value, did not converge in the current analyses due to the high correlation between the

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attainment and utility constructs. As discussed, a two-factor model was therefore alternatively employed in this research comprising of intrinsic value and attainment value, where the value attached to A-levels was a function of students' interest in them and their desire to do well. However model modifications were also explored to investigate a three factor model (using intrinsic, attainment and utility value) that fits the data for A-level students, through model simplification, whilst also maintaining theoretical meaningfulness (Chou & Bentler, 1990).

Model modifications are commonly employed when an original model does not produce a goodness of fit (Chou & Bentler, 1990; R. C. MacCallum, 1986; R. C. MacCallum, Roznowski, & Necowitz, 1992) and are believed to be difficult to avoid because in practice complex models involving latent variables rarely produce acceptable fit (Bollen & Long, 1993). Thus, it was considered informative to inspect the modification indices (MI) in R for the STV latent construct. These modification indices provide an estimate of how the χ^2 of a model including Eccles' three factor STV construct would improve if a particular parameter were unconstrained. R uses the likelihood ratio (LR) test statistic in order to do this (Rosseel, 2012).

The results of the modification analyses indicated high MI for some items, particularly question 31 ('Is the amount of effort it will take to do well in A-levels worthwhile to you?'), question 22 ('In general, how useful is what you learn at A-level for your daily life outside school?') & question 34 ('How useful are A-levels for what you want to do after you finish school and go to University/ work?'). Whilst question 31 was a measure of attainment value in Eccles' scales it showed a high MI for both utility value (25.37) and intrinsic value (22.54). It can be noted that both of the other questions with high values were the two items comprising the utility scale. Figures indicate that question 22 yields a MI of 38.74 on intrinsic value and 24.68 on attainment value. The highest MI however is for attainment value on question 34 (Q34=54.90) and was 31.05 for intrinsic value. This suggested that Q34 was possibly an indicator of attainment, and so for A-level students the usefulness of A-levels was

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highly related to the value they place on attainment. Based on Eccles' work it was however employed as an indicator of utility in the questionnaire used in this research since it asked 'How useful are A-levels for what you want to do after you finish school and go to university/work?' Seemingly when exploring model modifications the utility scale is the most problematic, perhaps unsurprisingly given the low reliability reported for this scale in both Eccles work (.62) and the exploratory analyses in this research (.41). Ordinarily the results of modification indices are used to suggest where correlations could be added between item residuals to improve model fit. The purpose of the modification analyses in this thesis however was to understand more about the large correlation between the attainment and utility constructs which prevented a three-factor model of STV being run. These results suggest that Q34 was the item potentially responsible for the collinearity. A three-factor model of STV was therefore tested, excluding Q34, for research question two ('What is the relationship between expectations and STV in A-level students?') and this then produced adequate model fit ($\chi^2=127.19(41)$ $p<0.001$, CFI=0.95, TLI=0.93, RMSEA=0.07, 90% CI .06-.09, SRMR=0.06). The correlation between attainment and utility was originally very high ($r=0.93$). Removing Q34 substantially lowered it ($r=0.26$). It should be noted however that this model produced a negative variance warning which may make any conclusions drawn problematic (see Chapter 11 for a fuller discussion of the implications of such negative variances).

Model modification is essential in determining how fit can be improved or simplified (Chou & Huh, 2012) and these results possibly suggest that a three factor model of STV might be retained when examining the expectancy-value model with A-level students if one item in the utility construct is removed. Several notes of caution do however need consideration. SEM was employed as a confirmatory technique in this thesis and sought to investigate if the expectancy-value model fitted in a UK based context when examining A-level achievement. There are well documented arguments on the dangers of therefore

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conducting numerous modifications of a model to simply find goodness-of-fit when the original has not worked. These arguments centre on the fact that searching for an appropriate model using repeated modification analysis potentially becomes more exploratory in nature and can lead to inflated type 1 errors (Tabachnick & Fidell, 2013). Thus model modification is criticised for its post-hoc nature (Chou & Huh, 2012). Furthermore any adequate modifications of the model would only then represent one alternative plausible depiction of the data structure and there may be many other models that would yield acceptable fit (Chou & Huh, 2012). Thus, modifying the expectancy-value model would only represent one, of possibly many, alternative fitting models of this dataset from A-level students. For these reasons, the possible modifications to improve fit are therefore acknowledged within this thesis but further analyses were not conducted to avoid analyses becoming exploratory in nature. Additionally, a model that removes individual items would not have theoretical justification. It is also recommended that modified models are cross-validated with another independent sample (Chou & Huh, 2012; Tabachnick & Fidell, 2013) and this would not be feasible within the timeframe of the current research. When modifications were examined in the year 12 sample however the highest MI was again however for attainment value on question 34 ($Q34=63.75$) Again removing this item yielding a three factor model with acceptable fit ($\chi^2=179.13(41)$ $p<0.001$, CFI=0.95, TLI=0.93, RMSEA=0.08, 90% CI .07-.09, SRMR=0.06) and unlike the main sample a negative variance warning did not occur. The correlation between attainment and utility was (0.29).

Conclusions for Chapter 9

The results presented in this chapter showed that, as predicted, expectations did relate to achievement (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012) and students who had higher expectations did better in their A-levels (see Figure 8).

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The known reciprocal relationships between prior achievement, educational attainment and academic self-concept (Marsh & Craven, 2006; Marsh & O'Mara, 2008) have not however been accounted for in this study and therefore it is not possible to conclude in which direction this relationship may operate.

Furthermore, a moderate relationship was found between expectations and the STV attributed to A-levels (see Figure 9). Thus students valued A-levels if they thought they were good at them, supporting this assumption (Eccles & Wigfield, 1995). Eccles' original three-factor model of STV could not however be supported in this work without modifications. Model fit was alternatively produced by removing the utility construct.

STV was also related to achievement (see Figure 11) as anticipated and the relationship is weaker than that for expectations. This would be predicted based on previous work (Eccles et al., 1984; Fredricks & Eccles, 2002; Guo et al., 2015; Jacobs et al., 2002; Marsh et al., 2005; Meece et al., 1990; Nagengast et al., 2011; Wigfield & Eccles, 1992). The results in this chapter have contributed an understanding of the psychological factors relating to A-level achievement motivation however one of the purposes of this research is to provide a multidimensional approach, and therefore in the following chapter the focus is upon the social factors. Thus, the ways in which SES, gender and school sector effect the expectations, values and achievement of A-level students are investigated.

Chapter 10 Findings: The effects of Socio-Economic Status and Gender on the Expectations and STV attached to A-level Achievement

The assumptions of using SEM in this research were outlined in Chapter 8. As discussed in both chapters 8 and 9 this involves specification and identification of a model. In this chapter the models used to investigate the effects of SES and gender on expectations, values and A-level achievement are therefore discussed to address research question four. This not only contributed a knowledge of the social factors that might underlie the motivation of A-level students but also contributed to the understanding of how such factors affect the educational outcomes of A-level students. As was the case for the analyses in chapter 9 the results will include those relating to the measurement model (factor loadings) and the structural model (regression). Again, standardised results are reported where the higher order latent factor variance is fixed to 1 in order to identify the model and the standardised factor loadings are reported for ease of comparability (see Chapter 8). Model fit statistics are presented and interpreted based on the criteria used to assess model fit previously outlined (see Chapters 8 and 9). To overcome any potential issues associated with ill-scaled covariance matrices achievement was again scaled (see Chapters 9 & 11) and also ISEI for both mother and father to ensure a common metric with the other variables being analysed (also see chapter 11). Again this changed the averages and co-variances but not the correlations with other variables (R. Kline, 2016) for the models analysed in this chapter. These are now presented.

Measurement Models

The manifest variables (represented by squares in the path diagrams) for the models used to investigate research question four included; A-level achievement measured by the

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total points achieved by students studying for A-levels (for the main sample) or AS levels (for the year 12 sample), as discussed in chapter one, the school sector attended by the A-level pupil (whether they attended an independent or state school), their gender (boy or girl), mothers' and fathers' occupation and education, home possessions and number of books in the home. There were also a number of latent variables (represented by circles in the path diagrams) including SES, expectations and STV (comprising of intrinsic and attainment value – see Chapter 9). As in chapter 9 the measurement model (CFA) in the analysis for research question four therefore depicted the pattern of observed variables for each of these latent constructs in the hypothesised model (Schreiber et al., 2006). The indices used, and tested for the expectations and STV constructs were outlined in the previous chapter, however the indices used for SES is detailed below.

SES Indices

A latent variable was constructed for SES. As discussed in chapter 3 socio-economic status refers to a combination of characteristics of a student's family that describes its social, economic and cultural status. SES is traditionally operationalised through measures of parental educational levels, parental occupations, and family wealth (Caro & Cortés, 2012; Gottfried, 1985; Hauser, 1994). Typical definitions incorporate parental income, parental education and parental occupation as the three main indicators of SES (Gottfried, 1985; Hauser, 1994; Mueller & Parcel, 1981).

As was specified in both Chapters 3 and 6 a combined measure of SES was used in this research (also see Appendix D). This included mother's and father's occupation using the standard economic index of occupational status which employs a continuous scale (Ganzeboom et al., 1992) and mother's and father's level of education, number of home possessions and number of books in the home, which used ordinal scales with varying scale

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points. These are represented as indicators of SES in the squares in the path diagrams in this chapter. Accordingly a formative, rather than reflective model was assumed as is typically more appropriate for the measurement of SES (Diamantopoulos, Riefler, & Roth, 2008). This was because the SES construct in this research was formed by a combination of its indicator variables (Borsboom, Mellenbergh, & Heerden, 2003, 2004), so by a combination of parental occupation and education, home possessions and number of books. Importantly in a formative model causality therefore flows from these indicators to the construct (Bollen & Lennox, 1991; Edwards & Bagozzi, 2000; R. C. MacCallum, & Browne, M. W., 1993) as shown in the path diagrams below. Since the indicators define the construct in a formative model then the construct is sensitive to the number and types of indicators the researcher selects, and adding or removing an indicator can change the conceptual domain of the construct significantly (Bollen & Lennox, 1991; Edwards & Bagozzi, 2000; R. C. MacCallum, & Browne, M. W., 1993). Furthermore it is assumed that the indicators in a formative model are not interchangeable (Bollen & Lennox, 1991; Edwards & Bagozzi, 2000; Jarvis, Mackenzie, & Podsakoff, 2003). For these reasons it was the most appropriate model in this research based on the theoretical and conceptual assumptions. It is conceptually different to a reflective model where causality alternatively flows from the construct to the observed indicators, and adding or removing an indicator will not alter the definition of the construct (Blalock, 1971; Bollen, 1989; Bollen & Lennox, 1991). These did not apply to the measurement of SES in this study, although the reflective model was appropriate for the measurement of the expectancy and value indices and seen in the path diagrams in this chapter.

Structural Models

Direct effects represent the effect of the independent (exogenous) variable on the dependent (endogenous) variable and therefore included the effects of SES and gender on expectations, STV and A-level achievement. School was also considered in the structural

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model because it relates to the differential achievement of pupils as discussed previously (see Chapter 9). These direct effects were investigated in the analyses for question 4.

Social factors such as gender and social class were predicted to relate directly to the expectations and values of students (Eccles et al., 2004) as seen in the theoretical model underpinning this research (see Chapters 1, 2 & 3). Direct paths were therefore predicted in the SEM models (research questions 4a and 4b). Identities may have an effect on A-level achievement because the value attached to outcomes and goals, are linked to causal attributions, the input of socialisers, role-related beliefs and self-perceptions (Eccles, 2009). Research has shown that student's socialisation experiences influence perceptions of ability and the value attached to various achievement related tasks and educational outcomes (Davis-Kean, 2005; Eccles et al., 1983; Eccles, Wigfield, & Schiefele, 1998; Wigfield & Eccles, 1992).

Furthermore, direct paths between SES and achievement were predicted as this relationship is well established and shows that students from lower socio-economic backgrounds tend to perform more poorly (Demack, Drew & Grimsley, 2000; Gillborn & Mizra, 2000; OECD, 2010; Sirin, 2005; White, 1982). Within Eccles' expectancy value model one of the individual characteristics believed to influence achievement was therefore social class (Eccles et al., 2004). Sex differences in achievement patterns are an area of ongoing concern and gender is known to affect national results up to the age of 19 (Emery, 2011). As was seen in Chapter 3 A-level outcomes have been found to vary by gender. Boys achieved a higher percentage of the top and bottom grades (A*, D, E, U) whilst girls were awarded a higher percentage of A, B and C grades (Department for Education, 2015b). In recent decades the educational achievement of girls in England is known to have significantly increased (Arnot et al., 1999) and the concern has been the underachievement of boys at the end of compulsory schooling (for example, Arnot et al, 1998; Elwood & Gipps, 1999).

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Research evidence on the differential achievement of pupils attending selective versus non-selective schools is longstanding and differences have been found in both the USA and the UK (for example, Coleman, 1982, Stedman, 1983, Dronkers & Roberts, 2000). School SES is positively related to the academic achievement of students even after accounting for family SES (Caro & Lenkeit, 2012). Research largely shows that achievement motivation and school engagement is supported by school characteristics that facilitate the student's universal and personal needs (Eccles, 2007a). As demonstrated in Chapter 3, on average, figures show that the A-level point scores both per entry and per pupil are much better for those attending independent schools compared to those attending comprehensive (state) schools (Department for Education, 2015b). The research and theoretical framework therefore suggests that direct paths can be predicted between SES, gender and A-level achievement in the models tested in this research (research question 4c). The focus is now upon the analyses which have investigated the ways in which SES and gender affect the expectations, values and achievement of A-level students.

RQ 4(a) How does SES and Gender affect the Expectations attached to A-level Achievement?

Overall the results of the CFA, shown for the main sample in Table 42 and for the year 12 sample in Table 26, Appendix K, reflect the well-established idea that SES can be typically operationalised through measures of parental educational levels, parental occupations, and family wealth (Caro & Cortés, 2012; Gottfried, 1985; Hauser, 1994; Mueller & Parcel, 1981). Mothers' and father's education loaded most highly on this construct, followed by home possessions, number of books at home and then mother's and father's occupation (ISEI) in the main sample.

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Table 42 CFA Standardised Factor Loadings for SES and Expectations in Main Sample

Latent construct & Item	Item Stem	Loading* Year 13
Expectations		
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.86
Q26	How well do you think you will do in your A-levels this year?	0.84
Q28	How good are you at A-levels?	0.84
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.80
Q36	How have you been doing in your A-levels this year?	0.72
SES		
Mother's education	What is the highest level of schooling achieved by your mother?	0.73
Father's education	What is the highest level of schooling achieved by your father?	0.69
Home possessions	Which of the following do you have in your home? How many of these do you have at home?	0.61
Number of books	How many books are there in your home?	0.61
ISEI mother	What is your mother's main job?	0.56
ISEI father	What is your father's main job?	0.47

Note: Scale of items ranged from 1-7 *p<0.001

As shown in Table 43 and Figure 12 in the main sample expectations about A-level achievement were positively related to SES, as might be expected ($\beta=0.33$, $p<0.001$). Being a girl was negatively related to expectations about achievement ($\beta=-.11$, $p=0.034$). Girls had lower expectations for achievement. School sector did not relate to expectations ($\beta=-.04$, $p=0.508$). These findings were replicated in the year 12 sample (see Table 27 and Figure 5, Appendix K) where expectations were again related to SES ($\beta=0.26$, $p<0.001$) and being a girl ($\beta=-.19$, $p<0.001$) but not school sector ($\beta=-.03$, $p=0.563$).

Table 43 Regressions between SES, Gender, School Sector and Expectations in Main Sample

	Unstandardised B	Standardised β	Standard Error
SES	0.33**	0.33**	(0.13)
Girl	-0.23*	-0.11*	(0.12)
School	-0.08*	-0.04	(0.14)

*p<0.05 **p<0.001

A structural equation model measuring SES, gender, school sector and expectations was not acceptable in either the main sample ($\chi^2=243.86(63)$ $p<0.001$, CFI=0.89, TLI=0.87, RMSEA=0.09, 90% CI .07-.10, SRMR=0.08) where 12% of the variance in expectations

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could be explained by SES, gender and school sector nor the year 12 sample ($\chi^2=304.33(63)$ $p<0.001$, CFI=0.89, TLI=0.87, RMSEA=0.09, 90% CI .08-.09, SRMR=0.07) where $R^2=0.11$. As the results of the CFA for SES have been reported above the remaining research questions present only the regression analyses for the structural model, and the SEM fit statistics.

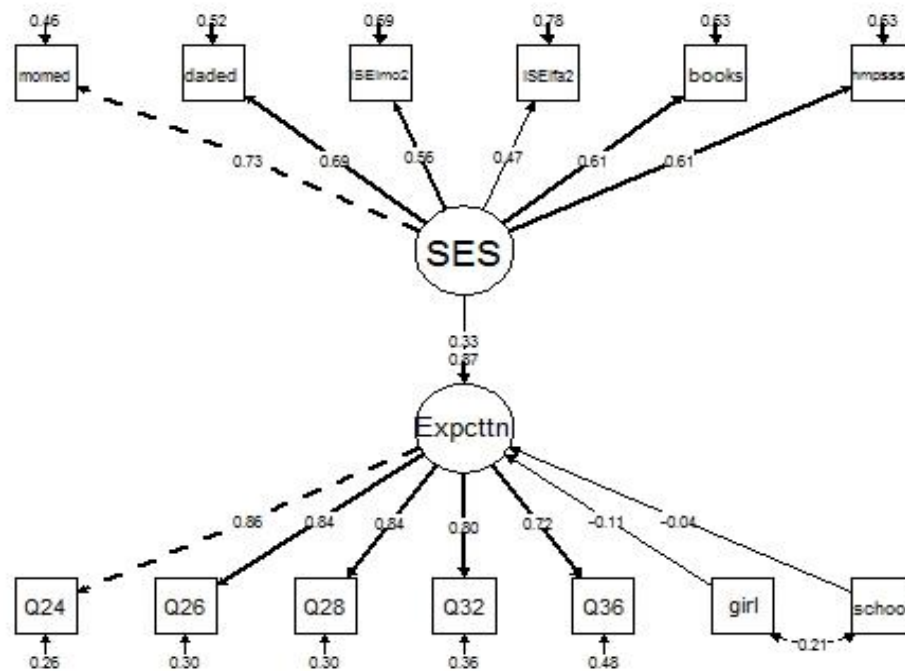


Figure 12 A Path Diagram of the Relationship between SES, Gender, School Sector and Expectations in the Main Sample

RQ 4(b) How does SES and Gender affect the STV attached to A-level Achievement?

The results of the regression of STV on SES, gender and school sector are shown in Table 44 and Figure 13 for the main sample. Being female was positively related to STV ($\beta=0.23$, $p=0.002$) and the unstandardised regression coefficients suggested that the value attached to A-levels increased by 0.47 for girls. SES ($\beta=0.22$, $p=0.061$) and school sector ($\beta=-0.13$, $p=0.128$) were not significantly related to STV (see Table 44 and Figure 13) which is

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surprising given the premise of the expectancy-value model and research in this area (e.g. Eccles, 2007b; Eccles et al, 1983; Eccles et al, 1984; Eccles & Davis-Kean, 2005; Eccles & Wigfield, 2000). Model fit was not acceptable ($\chi^2=208.32(61)$ $p<0.001$, CFI=0.89, TLI=0.86, RMSEA=0.08, 90% CI .07-.09, SRMR=0.08). Only 1% of the variance in STV could be explained by SES, gender and school sector ($R^2=0.01$) which is low. The results for the year 12 sample are not reported for comparison as they resulted from improper solution, yielding a negative variance warning, the implications of which are discussed in Chapter 11.

Table 44 Regression of STV on SES, Gender and School Sector in Main Sample

	Unstandardised β	Standardised β	Standard Error
SES	0.22	0.22	(0.12)
Girl	0.47	0.23*	(0.10)
School	-0.26	-0.13	(0.11)

* $p<0.005$

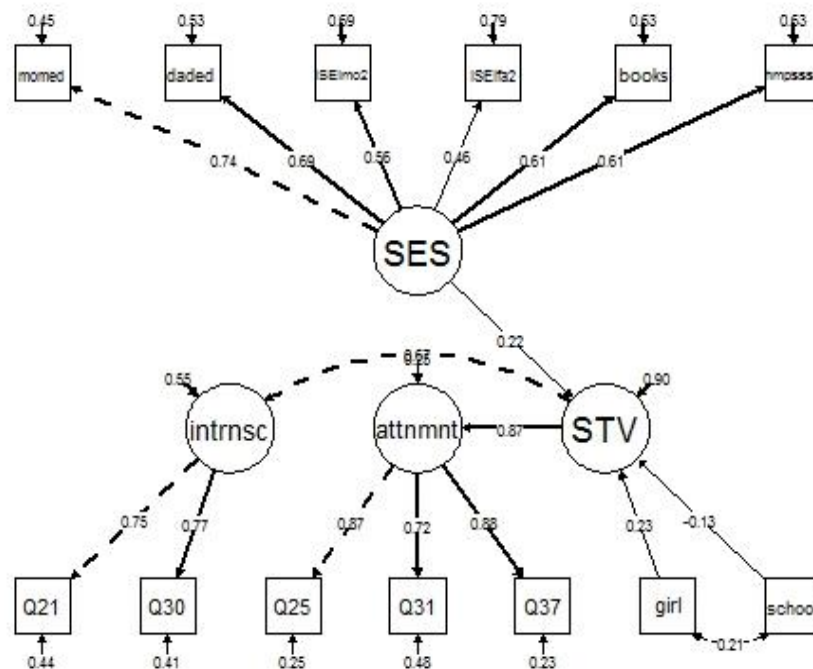


Figure 13 A Path Diagram of the Relationship between SES, Gender, School Sector and STV in the Main Sample

RQ 4(c) How are SES, gender and ethnicity associated with A-level achievement?

The results indicated that A-level achievement was positively related to SES, ($\beta=0.32$, $p<0.001$) whilst attending a state school was negatively related to achievement ($\beta=-.36$, $p<0.001$) where state schools had lower performance (see Table 45 and Figure 14). The unstandardised scores showed that higher SES increased average A-level point scores by 0.85 and attending a state school decreased them by 1.92 points. Gender was not significantly related to achievement ($\beta=-0.06$, $p=0.196$). These findings were replicated in the year 12 sample where SES was positively related to achievement ($\beta=0.36$, $p<0.001$), state school pupils did less well ($\beta=-.18$, $p<0.001$) and gender was not related ($\beta=0.07$, $p=0.108$). Here the unstandardised scores showed that higher SES increased average point scores by less than the main sample 0.49 and attending a state school decreased them by less (0.89 points). The results for the comparison sample are displayed in Table 28 and Figure 6, Appendix K.

Table 45 *Regression of Achievement on SES, Gender and School Sector in Main Sample*

	Unstandardised B	Standardised β	Standard Error
SES	0.85	0.32*	(0.26)
Girl	-0.34	-0.06	(0.26)
School	-1.92	-0.36*	(0.32)

* $p<0.001$

Overall however fit statistics for a model measuring SES, gender, school sector and achievement was not acceptable for either the main sample ($\chi^2=146.27(26)$ $p<0.001$, CFI=0.81, TLI=0.74, RMSEA=0.10, 90% CI .09-.13, SRMR=0.08) nor the year 12 sample ($\chi^2=169.12(26)$ $p<0.001$, CFI=0.81, TLI=0.74, RMSEA=0.10, 90% CI .09-.12, SRMR=0.08). Twenty-five percent of the variance in A-level achievement was explained by SES, gender and school sector in the main sample and 16% in the year 12 sample.

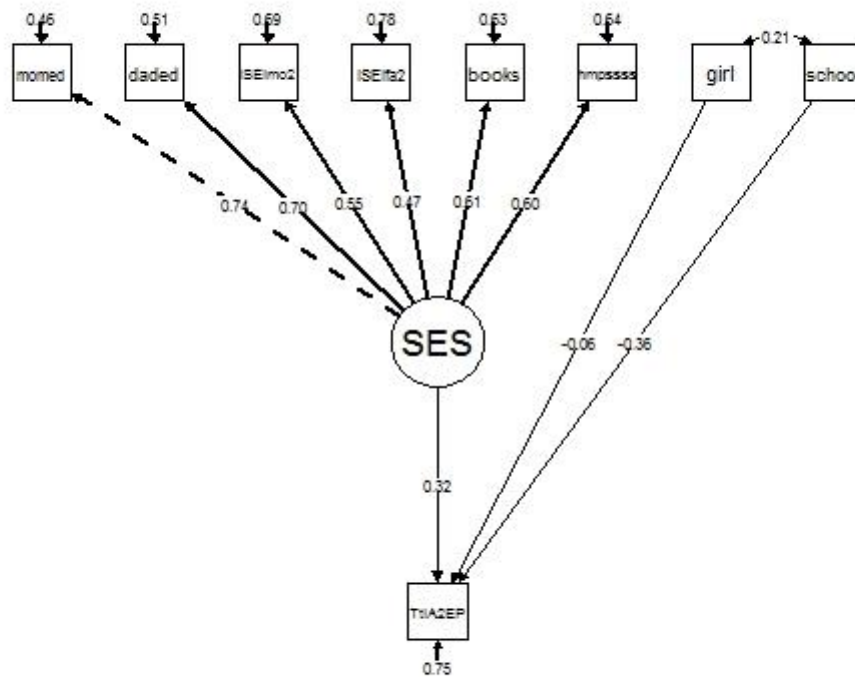


Figure 14 A Path Diagram of the Relationship between SES, Gender, School Sector and A-level Achievement

Summary of the Results for Research Question 4

The models for research question four, investigating how SES and gender affect the expectations and STV attached to A-level achievement did not fit in this current research. One reason for this may be that Eccles' theoretical model, and the adapted model employed in this research, did not explicitly include the role played by school but it was considered important to include in the SEM, as discussed previously. In this research it was found that SES and school sector was related to achievement, however gender was not. SES was also related positively to expectations whilst being a girl was negatively related. Only gender was related

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to the STV attached to A-levels. The implications of these findings are now discussed in further detail.

SES and school sector were directly related to achievement. Students with higher SES and those from independent schools did better in their A-levels. This replicates the well-established findings that SES predicts educational outcomes (Sirin, 2005; White, 1982) as do school differences (Coleman, Hoffer, & Kilgore, 1982; Dronkers & Robert, 2008; Steedman, 1983). SES was positively related to expectations concerning A-level achievement whilst being a girl was negatively related to expectations about achievement. It is interesting that SES was not related to STV and that school was not related either to expectations or STV. This is surprising given the literature suggesting that, for a number of different reasons, family characteristics (Eccles & Davis-Kean, 2005) and the school environment (Eccles & Wigfield, 2000) may predict the value attached to tasks. It is also interesting given that SES was found to relate to expectations for A-level achievement. Any associations made between SES, expectations, values and achievement outcomes in this study must however be interpreted with caution since the exploratory statistics (see Chapter 7) indicated little variation in parental occupations in this sample. It is also important to note that the sample employed in this study contained a higher percentage of independent schools than the UK. These issues have potential implications for the conclusions drawn as the sample is not representative of the entire population and the findings cannot therefore be generalised. Being a girl related to lower expectations but higher value being placed on A-levels. It was not however related to achievement, thus suggesting that, in this sample, gender differences in task value do not underlie differences in achievement patterns contrary to the literature (Eccles, 2011; Eccles et al., 1983; Eccles et al., 1984; Guo et al., 2015; Watt et al., 2006; Watt et al., 2012). As highlighted in Chapter 7 the lack of relationship between gender and achievement is interesting given the gender differences in expectations and STV in this study and will be further explored in an overall model. The findings presented in research question

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four are important for understanding more about the motivational patterns and educational outcomes of A-level students. In the next chapter an overall SEM model involving both psychological and social factors is now therefore investigated.

Chapter 11 Testing an Overall Expectancy-Value Model of A-level Achievement

Motivation

Investigating an overall expectancy-value model is the focus of this chapter. One of the emerging criticisms of the expectancy-value model, as discussed in chapter 2, is that it did not test a multiplicative relationship (interaction) between expectations and values despite this being an important feature in original theories of achievement motivation. It was postulated that one of the reasons for this was that the appropriate statistical techniques were unavailable at the time (Nagengast et al., 2011; Trautwein et al., 2012). SEM is therefore used within this current study to overcome this criticism and thus contribute to research in this field. A summary of the measurement and structural models are provided in this chapter, results are reported and the difficulties of testing an overall model are addressed.

Measurement Model

The measurement model (CFA) in this analyses have been outlined previously in chapters 9 and 10. The manifest variables (represented by squares in the path diagram) for the overall model therefore included; A-level achievement measured by the total points achieved by students studying for A-levels or AS levels (see chapter one), the school sector attended by the students (independent or state sector), their gender (boy or girl), mother's and father's occupation and education, home possessions and number of books in the home. There were also a number of latent variables (represented by circles in the path diagram) including expectations, STV (comprised of intrinsic value and attainment value – see Chapter 9) and SES. Again, as in chapters 9 and 10, the measurement model therefore represents the pattern of the observed variables for each of these latent constructs (Schreiber et al., 2006).

These expectations indices, STV indices and SES indices have been outlined in detail in the previous results chapters (see Chapters 9 and 10). In summary, based on Eccles and

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Wigfield's (1995) self-and-task perception questionnaire the expectations indices comprised of 7-point Likert scale items relating to student's beliefs about their abilities and expectations of how well they will do on their A-levels (see Chapters 6 and 9, Appendix C and Appendix D). The STV indices comprised of items relating to the attainment value and intrinsic value of A-levels, Students were asked about the importance they attached to doing well in their A-levels and whether they enjoyed them (see Chapters 6 and 9, Appendix C and Appendix D). A combined measure of SES was used in this research (see Chapters 3, 6 and 10) which included mother's and father's occupation and education, home possessions and number of books in the home.

Structural Model

A number of direct and indirect relationships were tested in the overall structural model. The direct relationships have been discussed in each of the structural models underlying the analyses in chapters 9 and 10 and thus only a summary is given here. Firstly a direct relationship was tested between expectations and achievement (research question one) since it has been found that beliefs about ability and expectations for success predict achievement outcomes (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012). There is further support for a direct relationship between expectations, task value and achievement (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012; Wigfield & Eccles, 1992; Wigfield & Eccles, 2000). Relationships specifically between STV and academic results have been found in recent studies (Cole et al., 2008; Guo et al., 2015; Hulleman, Godes, et al., 2008; Phan, 2014; Trautwein et al., 2012) and this was investigated in research question three.

A premise underlying the theoretical model is that social factors such as gender and social class relate directly to the expectations and values of students (Eccles et al., 2004).

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There is a substantial field of literature that has been discussed throughout this thesis to further indicate that SES, gender and school sector has a direct effect on educational performance generally and A-level performance specifically (see Chapter 3). However the structural model presented in this chapter also investigates the indirect effects of these variables based on the assumption that differences in task value may explain differences in motivation and achievement (Eccles, 1987, 2007b; Eccles et al., 1983; Guo et al., 2015). Gender differences in task value, in particular have been associated with differential achievement (Eccles, 2011; Eccles et al., 1983; Eccles et al., 1984; Guo et al., 2015; Nagy et al., 2008; Watt et al., 2006; Watt et al., 2012). The importance attached to identities may determine the subjective value and the subsequent motivation attached to tasks (Eccles, 2009). Additionally the theoretical model suggests that the expectation and values attached to educational tasks and outcomes may be influenced by a student's socialisation experiences (Davis-Kean, 2005; Eccles et al., 1983; Eccles et al., 1998; Wigfield & Eccles, 1992). The structural model therefore also investigates these relationships in order to address how SES and gender affect the expectations and values attached to A-level achievement (research question four).

Results of an Overall Expectancy-Value Model in the Main Sample

The factor loadings of items for the CFA model are presented in Table 46 below alongside those obtained when testing parts of the model for the individual research questions (see Chapters 9 and 10). It can be seen that the factor loadings for the expectations, STV and SES items are comparable to those previously obtained in this research. As was discussed in the previous results chapters a number of items loaded less well than those reported by (Eccles & Wigfield, 1995) including items 30 ('I like doing A-levels?'), 32 ('If you were to order all students in your year group from best to worse academically, where would you put

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yourself?') and 36 ('How have you been doing in your A-levels this year?') measuring expectations. Also item 31 measuring attainment value ('Is the amount of effort it will take to do well in A-levels worthwhile to you?'). Others loaded far more highly when tested with a sample of A-level students in a UK context including question 25 ('For me, being good at my A-levels is?') and item 37 ('How important is it to you to get good grades in your A-levels?'). The same pattern, with the exception of question 30, was found in the loadings for the model when tested in the year 12 sample (see Table 28, Appendix K).

As shown in Table 47 and Figure 15, in line with the findings reported for the individual models (see Chapters 9 & 10), higher expectations were positively related to higher A-level achievement ($\beta = 0.31$, $p < 0.001$) and SES ($\beta = 0.37$, $p < 0.001$) and negatively related to being a girl ($\beta = -0.11$, $p = 0.031$) but was not related to attending a state school ($\beta = -0.03$, $p = 0.656$). As previously STV was related to being a girl ($\beta = 0.23$, $p = 0.002$) but was not related to attending a state school ($\beta = -0.11$, $p = 0.156$), however in contrast to the findings stated before and contrary to the literature in this field STV was not related to achievement in this model ($\beta = 0.11$, $p = 0.197$). Also, contrary to the results of testing individual models SES ($\beta = 0.27$, $p = 0.048$) is now related to STV as the research would predict. In line with the significant results in Chapter 10 SES ($\beta = 0.22$, $p = 0.001$) was associated with better A-level achievement whilst pupils attending a state school did less well ($\beta = -0.33$, $p < 0.001$). Being a girl was still unrelated to achievement ($\beta = -0.06$, $p = 0.240$). Overall Model fit was not acceptable when testing all variables simultaneously ($\chi^2 = 471.19(141)$ $p < 0.001$, CFI=0.88, TLI=0.85, RMSEA=0.08, 90% CI .07-.08, SRMR=0.11), the implications of which are discussed in the concluding section of this chapter.

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Table 46 CFA Standardised Factor Loadings for Overall Expectancy-Value Model for the Main Sample

Latent construct & Item	Item Stem	Loadings In Overall Model	Loadings in Individual Models	Eccles & Wigfield (1995)
Expectations [^]				
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.86**	0.85-0.86	0.83-0.85
Q26	How well do you think you will do in your A-levels this year?	0.84**	0.84-0.85	0.78-0.84
Q28	How good are you at A-levels?	0.84**	0.83-0.84	0.80-0.82
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.80**	0.80	0.86
Q36	How have you been doing in your A-levels this year?	0.72**	0.72-0.74	0.80-0.83
Intrinsic Value [^]				
Q30	I like doing A-levels?	0.77**	0.77-0.79	0.85-0.88
Q21	In general I find working on A-level assignments?	0.75**	0.73-0.75	0.70-0.73
Attainment Value [^]				
Q37	How important is it to you to get good grades in your A-levels?	0.88**	0.87-0.88	0.57-0.66
Q25	For me, being good at my A-levels is?	0.87**	0.86-0.87	0.67-0.71
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.72**	0.72-0.73	0.75-0.81
STV [^]				
Attainment	Q25 + Q31 + Q37	0.87*	0.85-0.90	
Intrinsic	Q21 + Q30	0.66**	0.65-0.68	
SES				
Mother's education	What is the highest level of schooling achieved by your mother?	0.73**	0.73	
Father's education	What is the highest level of schooling achieved by your father?	0.70**	0.69-0.70	
Home possessions	Which of the following do you have in your home? How many of these do you have at home?	0.60**	0.60-0.61	
Number of books	How many books are there in your home?	0.60**	0.61	
ISEI mother	What is your mother's main job?	0.55**	0.55-0.56	
ISEI father	What is your father's main job?	0.48**	0.47-0.48	

Note: Scale of items ranged from 1-7[^] **factor loadings are significant (*p=0.003 **p<0.001)

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Table 47 Regressions in the Overall Model in the Main Sample

	Unstandardised B	Standardised β	Standard Error
Expectations			
SES	0.37	0.37***	(0.15)
Girl	-0.23	-0.11*	(0.12)
School	-0.05	-0.03	(0.14)
STV			
SES	0.27	0.27*	(0.14)
Girl	0.45	0.23**	(0.09)
School	-0.22	-0.11	(0.10)
Achievement			
Expectations	0.81	0.31***	(0.15)
STV	0.28	0.11	(0.34)
SES	0.56	0.22***	(0.27)
Girl	-0.30	-0.06	(0.25)
School	-1.75	-0.33***	(0.29)

* $p < 0.05$ ** $p < 0.01$ *** $p \leq 0.001$

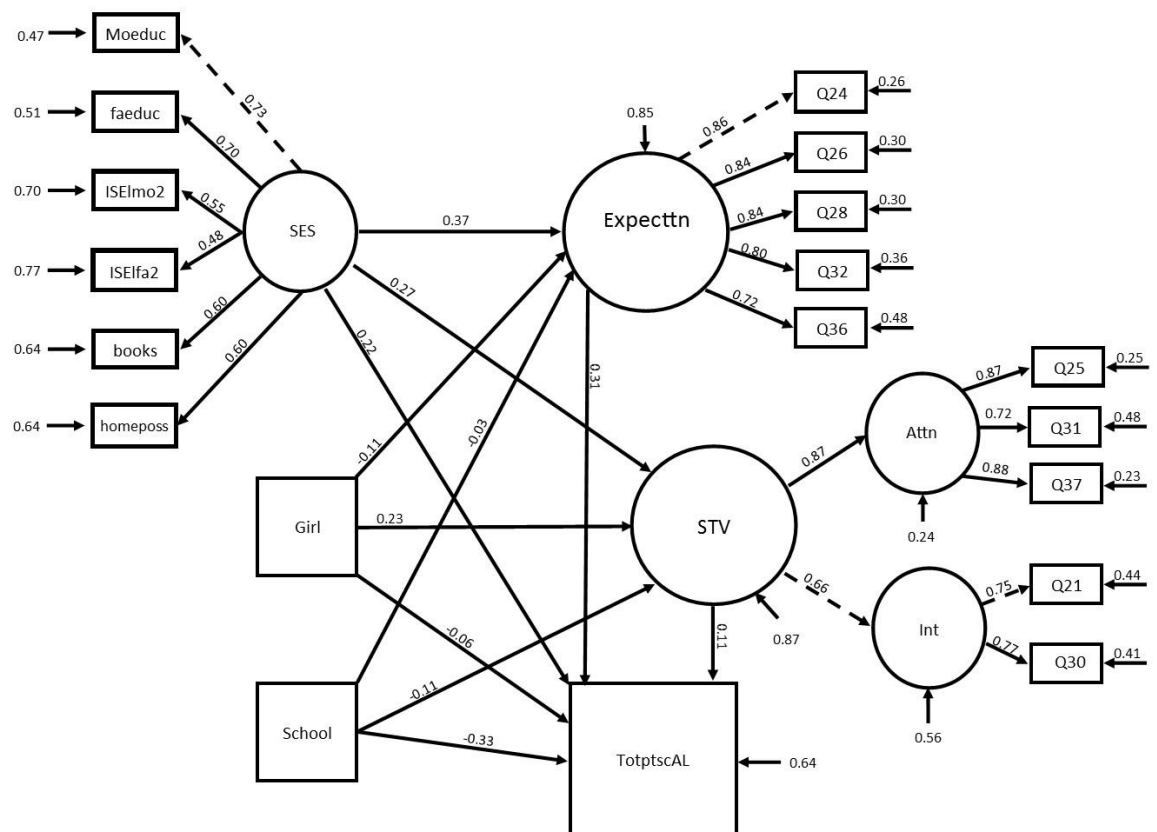


Figure 15 A Path Diagram of an Overall Expectancy-Value Model of A-level Achievement

Difficulties of Testing an Overall Model in a Year 12 Sample

When testing a comparative model for the year 12 sample, again model fit was unacceptable ($\chi^2=649.02(141)$ $p<0.001$, CFI=0.86, TLI=0.84, RMSEA=0.08, 90% CI .08-.09, SRMR=0.13). Additionally, there were problems encountered when running this model which have implications for the validity of these results. These results are presented and then the difficulties associated with the testing are explored. Firstly, when examining the factor loadings for the overall model when tested in the year 12 sample (see Table 29 and Figure 7, Appendix K) the STV construct did not yield similar loadings for the attainment or utility constructs, either to the individual year 12 models or the main sample. Loadings on other constructs were predominantly in line, however the loading for attainment value on STV was 1.8 (non-significant) and for intrinsic value was 0.30. In this model, as in the main sample, expectations are positively related to SES ($\beta = 0.27$, $p<0.001$) and achievement ($\beta = 0.36$, $p<0.001$) and negatively related to being a girl ($\beta = -0.19$, $p<0.001$) but not school. Issues arise when comparing the relationships between STV and the variables where it is not found to relate to achievement, SES, girl or school contrary to previous findings, but this may be the result of the difficulties when running this overall model which may mean the findings can't be trusted (see later discussion below). As in the main sample achievement was positively related to expectations ($\beta = 0.36$, $p<0.001$) and SES ($\beta = 0.27$, $p<0.001$) but negatively related to attending a state school ($\beta = -0.17$, $p<0.001$). It was not related to STV. Another difference with the main sample is that being a girl in the year 12 sample was positively related to achievement ($\beta = 0.14$, $p=0.003$). These results are displayed in Table 30, Appendix K.

There were a number of error warnings omitted when investigating the results of an overall expectancy-value model of AS level achievement. Some of these issues have been previously discussed in Chapters 9 & 10. These included the fact that some observed variances were (at least) a factor 1000 times larger than others and that some estimated variances are negative. This is a common problem in model estimation, especially for the

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novice researcher, and indicate that something has gone wrong with the results and thus estimates in the output cannot be trusted as the standard error of estimates may be affected.(F. Chen, Bollen, Paxton, Curran, & Kirby, 2001).

As discussed in chapters 9 & 10 it is known that an ill-scaled covariance matrix can cause problems in SEM and an initial approach to address the first error message ('some observed variances were a factor 1000 times larger than others') was to therefore check the scaling of the variables. As in the previous analyses the variances for ISEI mother and father were in the hundreds and for average point score in the thousands suggesting that it was necessary to rescale these variables. This was once again by dividing the values by a constant value (R. Kline, 2016; T. D. Little, 2013) to ensure they shared a common metric. Doing so changes the averages and co-variances but not the correlations with other variables (R. Kline, 2016) which was indeed found to be the case when employed in this research. When testing the individual models in Chapters 9 & 10 warnings about the large variances occurred in the absence of any other warnings. However it is known that software packages can find it difficult to successfully converge when the metrics are different (R. Kline, 2016; T. D. Little, 2013). When investigating an overall model scaling did remove the error warning about the larger variances and reduced the size of these variances, but did not otherwise alter the results. The negative variance warning remained and is now further discussed.

Improper solutions may occur when one or more variances are negative (Boomsma, 1982; Jöreskog, 1967) and typically happen for a number of reasons. One reason why this may occur is if there is extreme collinearity between variables (R. Kline, 2016), as was the case in the analyses in Chapter 9 with regards to the utility construct in STV, and therefore in order to investigate this the current model attainment value was also removed from the STV construct as the correlation was 1.82. This did not however remove the warnings. It was therefore assumed that collinearity was not the cause of the problem. R. Kline (2016) based on the work of Wothke (1993) and Rigdon (1997) further suggested that negative variances

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may occur in the presence of outliers, typing mistakes or pairwise deletion. Since the data had been screened and also largely used successfully for the prior analyses in this thesis, and FIML rather than pairwise deletion employed, it is argued these do not offer viable explanations for the difficulties arising in this research.

It is also frequently found that improper solutions occur in small sample sizes, where there are low factor loadings (poor scale reliability) and a low number of indicators per factor (Anderson & Gerbing, 1984; Boomsma, 1985; Van Driel, 1978). This may then be related to the fact that a factor analysis model would not fit the data (Van Driel, 1978). In the current study there was an adequate sample size ($n=534$) and the results of the confirmatory factor analysis model were substantially in line with those obtained for the individual models (see Table 29, Appendix K and Chapters 9 & 10) so again these do not seem to offer reliable explanations for the difficulties.

Poor identification of a model and misspecification are the most cited reasons for improper solutions. As in the overall model for the main sample, and the individual models for the year 12 sample, the higher order latent factor variance is fixed to 1 to identify the model as recommended (see Tabachnick & Fidell, 2013), which previously resulted in analysis without error. There is some literature to suggest that an alternative solution may be to fix the parameter to 0 (Jöreskog, 1967; Sorbom & Jöreskog, 1982) and reanalyse the findings, however it is also advised that this is disputable practice and caution must be applied when doing so (Boomsma, 1985). It can then alter the other parameter estimates

Misspecification may alternatively account for the difficulties. It can occur because of a fundamental incongruence pattern in the sample covariance matrix. In this research it is argued that misspecification is unlikely. This is founded on the fact that, firstly, the model is based upon the expectancy-value theoretical model and secondly, an overall model for the main sample, specified in the same way as for this comparison sample was able to run without resulting in such warnings or improper solutions, although it similarly did not produce model

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fit. Thirdly, findings of the overall model specified yield predominantly similar results to those obtained when running the individual portions of the model used to test research questions 1-4 in chapters 9 and 10. Whilst it is possible to re-specify a model in order to in the case of misspecification it is of critical importance that 'respecification decisions should not be based on statistical considerations alone but rather in conjunction with theory and content consideration' (Anderson & Gerbing, 1988 p.416). They cite the work of Young (1977), suggesting that consideration of theory and content greatly reduced the number of alternative models to investigate, something that is a consideration for this research where a confirmatory model is employed based on the expectancy-value model. Any re-specification would need to therefore be in accordance with the theoretical framework. It is clear that any relationship between misspecification and improper solutions is extremely complex (Anderson & Gerbing, 1984).

A further issue for consideration is that there is some debate about the effect of improper solutions on the overall test statistic in SEM. Anderson and Gerbing (1984), for example, found that although there was a bias in the parameters of models with improper solutions and misspecification (especially in the cross-loadings and coefficient estimates of samples with negative error variances) there was little difference in the test statistic. So they concluded that there are no practical differences between samples with proper and improper solutions in terms of the χ^2 statistic. These findings were later replicated, using LISREL, where significant differences between proper and improper solutions were only found for the root mean square residual but other overall goodness-of-fit indices were not affected. Anderson & Gerbing (1984), Gerbing & Anderson (1985), Gerbing & Anderson (1987) suggest that little is known about the comparative behaviour of goodness-of-fit indices and estimates for improper and proper solutions, and the meaningfulness of their interpretation. It is, in their opinion, quite possible that estimates may be meaningful and yield comparable

solutions. If this were the case, then there would not be model fit for an overall expectancy-value model of achievement in this research.

Implications

The analyses presented in this chapter suggest that statistically testing an overall expectancy-value model of A-level achievement in a UK context is challenging and an overall model does not fit the data or produces unreliable findings with negative variances. These findings are particularly interesting in view of the fact that although the use of Eccles' theoretical model is widespread there are seemingly no examples of it being tested in a whole analytical model. Indeed, the lack of analysis on the interaction between expectations and values is a key criticism of her theory (see Chapter 2). Furthermore, where the framework has been tested using SEM there were alternate postulates of the model, with less variables analysed and where STV was conceptualised differently. For example Guo et al. (2015) tested intrinsic and utility value and used multilevel SEM, Nagengast et al. (2013) and Watt et al. (2006) included only intrinsic value in their model and Trautwein et al. (2012) analysed each of the four subcomponents of STV separately. This is especially interesting given that the difficulties associated with measuring the STV construct in this research. As seen earlier in chapter 9 it was not possible to complete analyses where it was conceptualised as a three-factor construct as in Eccles original model. Again it has raised complex issues when tested within the overall model for the year 12 sample in this chapter. Furthermore, most of these previous studies did not also include the range of variables relating to the student background (the social factors) and predominantly focused on the psychological components. It may therefore be that testing an overall model is not exclusively problematic in this research, but is a wider issue and that a theoretical expectancy-value model does not easily translate into an analytical expectancy-value model. Seemingly an analytical model is statistically complex.

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This may be one reason why this is lacking in Eccles' work (see Chapter 2 and Chapter 8 for a discussion of her omission of analyses on the interaction between expectancy and values).

These difficulties do however have implications for the conclusions of this thesis as the results from the analysis of the overall model may not be viable. Conclusions are alternatively drawn from the results of the individual models testing the relationships between expectations, values and achievement. This is in line with the large body of empirical work in this area (see Chapter 8).

In this chapter the overall expectancy-value model of A-level achievement has been described and analysed. The issues arising from this have been discussed and solutions addressed. It is clear that testing this model is extremely complex and this potentially contributes to knowledge in this field where the expectancy-value framework is being employed in a high-stakes (A-level) context. In the following chapter the qualitative study will be presented including the sample, interview schedule and results. These qualitative interviews were used to explore the students' self-schemas and goals, and their relationship to A-levels, in greater depth. This included whether students perceived A-levels to be useful for the person they want to be, whether they believed A-levels confirmed or changed them and also their perceived influences on their expectations and values. Thus a more descriptive understanding of the nature of the relationships between expectations, values and A-levels was sought.

Chapter 12 Qualitative Research: Exploring Students' Perspectives

The purpose of this chapter is to outline the qualitative research including the interview sample, schedule, coding and analyses. Interviews were conducted as part of the mixed methodology (Creswell & Clark, 2011; Tashakkori & Teddlie, 2010). An outline of semi-structured interviews, including the strengths and challenges of employing them was provided in Chapter 4. The key strengths included their popularity as a method for gathering qualitative data (P. Atkinson & Silverman, 1997; Madill, 2011) and their role in helping to understand the world from the subjects' perspective, including the goals and values that are important in their lives (Tanggaard, 2009). They are therefore used to contribute an understanding of the motivational beliefs of A-level students. Specific comparison of the quantitative and qualitative findings will be made in the conclusion of this thesis (see Chapter 13) as is typically the case in mixed methods studies (see Chapter 3).

As discussed earlier (see Chapters 1, 2 and 3) the theoretical model employed in this thesis suggested that expectations and values may be influenced by a student's goals and self-schemas relating to their identities, their perceived task demands and their perception of their socialiser's beliefs, expectations and attitudes (see Chapter 1). The themes presented in this chapter are based upon these theoretical assumptions. As previously highlighted Eccles (2009) suggested that when specific identities are important to students then the activities, behaviours and tasks associated with them will take on high subjective value and the individual will be motivated to act them out. The purpose of these interviews was therefore to explore the relationship between self-schemas, expectations, values and A-levels from the students' perspectives and understand more about their perceived influences upon these values. Whether students valued A-levels, believed they were helping them to become the person they wanted to be and influences upon their choices were explored in these interviews. It is known that individuals select experiences that enable them to shape their own beliefs

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(Eccles, 2009) and A-levels may be one such experience, making these relationships important to explore in this study. The qualitative methodology was therefore designed to examine research questions five, 'What are students' perceptions regarding the relationship between their general self-schema (identities), goals, task demands and expectations and values for A-levels?' and six, 'What are students' perceived influences upon their expectations and values? The use of interviews aimed to provide a more complete picture of the motivational factors associated with A-level achievement than was possible using quantitative methods alone (see Chapter 4) and draw links between Eccles theory of achievement motivation and A-levels which have not been previously explored. These are important contributions of this work.

Qualitative Pilot Study

The interviews were piloted using an opportunity sample of two females, white British, year 13 students, one white British male 40-year-old teacher and one Indian 44-year-old teaching assistant. The use of adults was to determine if retrospective reflections would lead to any questions having more importance, or to examine if there were areas that would be useful to include when investigating how A-levels had shaped expectations, values, identity and life paths.

A number of changes were made to the proposed procedure and schedule as follows. The participants had been given a copy of Eccles' expectancy-value model to consider prior to the interview questions but they found this complex and the researcher felt it also potentially introduced a bias to the subsequent answers. This was consequently removed. Their reflections were that this would give the impression that they were being tested on it, or would focus attention on the article at the expense of the interview. It was therefore decided not to include stimulus material and simply focus on a general introduction to the interview.

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With regards to the specific items half of the participants struggled with the phrasing of the question 'Have A-levels shaped the way you see yourself?' which was rephrased 'Do you think A-levels have changed or confirmed how you see yourself? If so, how?' Rather than asking participants if there have been life events that have been influential one of the adult participants suggested that it was experiences rather than a specific event that they felt had been important and therefore this question was altered to reflect this.

Once these changes had been made two new pilot interviews were conducted, again using convenience sampling; one with an A-level student and one with a GCSE student, both female. These interviews did not highlight any further problematic areas and these questions formed the basis of the final interview schedule.

Qualitative Sample

In this study 20 participants were selected using a purposeful sampling technique and a maximal variation strategy where 'diverse individuals are chosen who are expected to hold different perspectives on the central phenomenon' (Creswell & Clark, 2011 p.174). As in the quantitative phase, convenience sampling was used. In each school where students had completed the questionnaires prior to the summer exam session (N=11) a senior member of staff was asked to select two students for interviews. These students would have therefore previously participated in the quantitative phase of the study. Gender, socio-economic background and ethnicity were given as indicators of the ways in which the two students might be selected. Academic achievement was not used as one of the selecting variables for several reasons. Firstly, for logistic reasons, as exam results would not be available for several months and the students would have already left school, therefore making it impractical to select them as interviewees at this stage. Completing interviews at this later date may also therefore have resulted in different reflections on motivational patterns which could have

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potentially biased the data collected. Secondly, whilst teachers' estimated grades could have been considered if selecting students for levels of achievement there are concerns that these may be unreliable predictors of *actual* results where previous studies have reported correlation coefficients ranging from $r=0.45$ (J. M. Wilson, 1982) to $r=0.82$ (Baird, 1997) and where reliability differs across subjects (Dhillon, 2005). It is however acknowledged that prior attainment would have played a role as this will have been a prerequisite to students studying A-levels.

Of the 11 schools (8 state schools, 3 independent), only one did not provide any students, one school provided just one and another school provided three. This resulted in 20 interviews being conducted with students from 10 schools. Eighteen students studied only A-levels and two studied a mixture of A-levels and BTEC qualifications. Table 48 shows a description of the interview sample including gender of participants, school types, year group of participants and ethnicity. It shows a largely equal gender division (9 males, 11 females), with two thirds of students coming from schools in the state sector, and in year 13, and six different ethnic groups represented overall. A purposeful sample was therefore achieved.

Table 48 *Description of Interview Sample*

Variable	N (20)
<i>Gender</i>	
Male	9
Female	11
<i>School type</i> (N=10)	
State (N=7)	13
Independent (N=3)	7
<i>Year group</i>	
12	6
13	14
<i>Ethnicity</i>	
White British	14
White other	1
White British/ Black Caribbean	1
African	2
Chinese	1
Filipino	1

Interview Schedule and Procedure

Prior to the interview, students were reminded that they had previously completed a questionnaire which looked at how well they expected to do in sixth form and whether they valued their studies. They were given a blank copy of one of the questionnaires to use as a reminder whilst answering the interview questions if they wished to and were told that the aim of the interview was to find out more about their views on how their studies relate to how they see themselves (their identity). It was also suggested that they might have seen aspects of this discussed in the media; for example, whether boys or girls perform better in A-levels. This may be perceived to be a leading question which is an issue discussed in Chapter 13. The interviews were conducted in a school office or an empty classroom.

At the start of the interviews participants were asked to provide their name, school and year group but were reassured that these would only be used to categorise the interviews and later removed (see Chapter 4 for a full discussion of ethical procedures in this study). They were also asked to state the qualifications being studied, their ethnicity and parent's jobs (if working). Gender was noted by the researcher. Although this information had been collected in the questionnaires these were anonymised by candidate number (see Chapter 6) and therefore the researcher was not able to match the interviewees' data to their questionnaire responses.

In order to explore students' perceptions regarding the relationship between their general self-schema (identities), goals, task demands and expectations and values for A-levels? (research question five) and their perceived influences upon their expectations and values? (research question six) the researcher used a semi-structured interview schedule. This schedule was therefore based on the literature relating to the expectancy-model, and thus the theoretical framework of the thesis, which postulated that a student's expectations and values will affect A-level performance and that these will be influenced by socialisers and a student's goals and general self-schemas (including their identities) and their perceived task demands

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(see Chapters 1, 2 and 3). Students were therefore asked (a) whether and how A-levels have helped them to become the person they want to be (b) if this influences the effort they put in (c) if there were any people or experiences in their life that had influenced the choices they've made about their studies and their future, and if so how they influenced them (d) if A-levels confirmed or changed the way they saw themselves and how. At the end of the interview students were also invited to provide any further information on how they saw the relationship between A-levels and their identity (see Appendix H for a copy of the full interview schedule). It is acknowledged that one of the major limitations of these interviews was that, due to the time constraints imposed by participating schools the interviews had to be brief so that they could be conducted in a short space of time and overall they are therefore lacking in depth. As the study was conducted in the period immediately preceding the examination season students were only able to be briefly withdrawn from a single lesson period in order to participate in the interviews and thus the schedule was constrained by this time frame. This limitation is discussed fully in Chapter 13.

Data Processing

A transcriber was appointed to transcribe the interviews. They were transcribed verbatim. Audiofiles were emailed to the transcriber and stored on a password protected computer and a confidentiality agreement was signed which ensured data was kept confidential and destroyed once the transcription process was completed. These transcriptions resulted in 23,628 words. A copy of the interview coding log showing dates of interviews, duration and word count of each interview can be found in Table 49. The duration recorded below did not include the introductory section so whilst the overall duration was on average about 10-15 minutes this included a lengthy introduction which is a limitation of the interviews addressed in the discussion. On average the recorded duration was 6.37 minutes.

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Again it is acknowledged that this is a clear limitation of the study which will again be addressed in the discussion.

Table 49 *Coding Log*

School	Date	Participants	Duration	Word Count
A	14.3.14	Abbey	5:45	1041
	14.3.14	Angela	4:21	908
B	19.3.14	Barry	9:02	1593
	19.3.14	Ben	4:41	768
	19.3.14	Brian	10:59	1671
C	24.3.14	Carol	7:50	1320
	24.3.14	Christian	6:08	1250
D	25.3.14	David	4:45	840
	25.3.14	Daisy	6:12	1260
E	27.3.14	Erica	5:05	1059
	27.3.14	Ethan	8:21	1379
F	24.4.14	Freddy	8:21	1384
	24.4.14	Fiona	7:52	1267
G	7.5.14	Grace	4:25	818
H	8.5.14	Hannah	5:34	1026
	8.5.14	Heide	7:32	1456
I	9.5.14	Isabel	4:18	886
	9.5.14	Ian	4:23	1016
J	9.5.14	Jenny	8:18	1407
	9.5.14	John	7:01	1279

Coding

Coding was initially done using paper copies of the transcripts and then using NVivo software which allowed the researcher multimodal ways of analysing the data. Coding took place in several stages. Initially coding was deductive and based on Eccles' theoretical framework and the research questions. So as stated in the introduction to this chapter the theoretical model highlighted that expectations and values may be influenced by a student's goals and self-schemas relating to their identities, their perceived task demands and their perception of their socialiser's beliefs, expectations and attitudes (see Chapter 1). Codes were therefore related to the predictions that there will be a relationship between expectations, values and A-level achievement and that goals, self-schemas, identities and task demands relate to the achievement motivation of these students. The codes, derived from the expectancy-value theoretical model (see Figure 2, Chapter 1), were related to student

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background, expectancy-values, task demands and identities and perceptions of socialisation influences. This resulted in seven main codes being used and several sub-codes (shown in brackets) including; background (gender, SES, ethnicity), qualifications (AS, A-level, other, subject choices), expectancy-values (intrinsic value, attainment value, utility value, perceived cost), effort, task difficulty, experiences (influential people, life events), identity (changed identity, confirmed identity). Table 50 below provides a full description of these preliminary codes to give an indication of those arising in the first stage of the coding process. A document detailing specific examples of these from the transcripts is provided in Appendix I where the final coding log is presented.

Table 50 *Codes used in Stage One based on Eccles Theoretical Framework*

Code	Description
<i>Background</i>	
Gender	Male, female
SES	Parental occupation
Ethnicity	Ethnic group (based on categories used by Office of National Statistics)
<i>Qualifications</i>	
AS	Level
A-level	Level
Other	e.g. BTEC
Subject choices	Subjects studied
<i>Expectations and Values</i>	
Intrinsic value	Anticipated enjoyment of activity
Attainment value	Value doing well/ subject or career choice fits with person's identity
Utility value	Value task has because it fulfils a goal
Perceived cost (s)	Cost of participating, e.g. anxiety, fear of; failure, social consequences, loss of energy
<i>Effort</i>	How much effort is applied
<i>Task difficulty</i>	How difficult student finds task
<i>Experiences</i>	
People	Identification of influential people on choices, e.g. family, teachers
Life events	Identification of influential life events on choices
<i>Identity</i>	
Changed identity	Changed student's opinion of who they thought they were
Confirmed identity	Confirmed student's opinion of who they thought they were

As these codes did not capture all aspects of the relationships described by interviewees, in the second stage the researcher used inductive coding to identify further themes and patterns relating to the relationship between expectations, values, goals, self-

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schemas (identities), influences and A-levels in order to gain a further understanding of these. This use of inductive coding was considered important in exploring the complex picture of A-level achievement, which was one of the main aims of this research. Thus the codes identified specifically aimed to provide a further understanding of these relationships based on the theoretical model and research questions. So, the themes presented in this chapter aim to contribute an understanding of students' perceived relationships between their general self-schemas, goals, task demands and expectations and values for A-levels and their perceived influences upon these (research questions five and six). Appendix I provides a full coding log with a description of codes, sub-codes, sources, references, explanations and examples. The main codes used were background, expectancy-values, effort, task difficulty, experiences, future plans, identity, influential people, pressure, previous academic experiences and subjects. A small sample of two interviews was subsequently coded by a second researcher, to ensure reliability, yielding 96% agreement.

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RQ5. What are Students' Perceptions regarding the Relationship between their General Self-Schema (identities), Goals, Task Demands and Expectations and Values for A-levels?

As indicated above the theoretical model in this research (see Chapters 1, 2 and 3) suggested a relationship between a student's general self-schemas, goals, perceived task demands and their expectations and values for A-levels. Based on this model data on the perceived relationships between self-schema, goals and expectations and values for A-levels are initially reported, after which there is a focus on the perceived relationship between identity, goals and A-levels based on the premise that specific identities relate to expectations

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and values and individual will select activities, or behaviours, which enable them to shape their beliefs (Eccles, 2009). In the quantitative analyses relationships were found between STV, expectations and A-levels and these were also related to a variety of future life expectations and values (see Chapters 6 and 9). Perspectives on the relationships between task demands and A-levels are then presented in this chapter. Effort is known to relate to attainment value, intrinsic value and utility value and students are thought to attach less value to tasks they find difficult (Eccles et al., 1983). In the exploratory analysis task demands were related to expectations and values in the sample of A-level students (see Chapter 7). Effort was found to positively correlate with STV and negatively correlate with both achievement and expectations. In both samples task difficulty was negatively correlated with expectations and achievement, but it was also linked to STV in the year 12 sample. The interviews sought to understand more about these relationships so that overall conclusions can be drawn in the following chapter where the quantitative and qualitative are considered simultaneously.

Self-schema, Goals and Expectations and Values for A-levels

Overall 181 references were made to expectancy-values from the 20 students in this study. These included references to their attainment value (50), utility value (39) and intrinsic value (43). Links between a student's self-schema, goals and values for A-levels is presented in this section. Students attached value to doing well in their A-levels (attainment value). This was linked to their self-schema because it was seemingly important for the way some perceived themselves. The literature suggests that it is attainment value that is the most important in terms of identity (Eccles, 2009). These two students valued attainment because it gave them confidence, boosted their self-esteem and made them feel good;

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Daisy: Well a lot of how I see myself is through my work and my success and I think that as a person by doing well in A-levels then actually it's made me more confident as a person in my own abilities and so that has boosted my self-esteem ... I think that naturally as a person I want to succeed whether there is anything based on it or not because I like to succeed.

John: Yes, I need 3 As, which is you know, it could be higher but yes, so, that's basically, and I want to do well anyway because it feels good when you do well.

For others, A-levels were perceived to have both attainment and utility value because the grades specifically allowed them to pursue their choices and so were linked to their goals. The achievement of particular grades was necessary for the following students to obtain their place at University, for example;

Heidi: You just choose, well most people choose the course they know they'll do better in so they pass obviously and then go to uni so yes.

Fiona: I have to have certain grades in my A level to be able to access them. [Referring to either going to University or joining the Army]

A-levels were also, however, seen as useful in terms of the content knowledge they provided and how this potentially contributed to future academic or occupational goals. The students outlined below were able to draw links between what they had learnt and how they could usefully apply this knowledge in the future, even when the A-level they identified was not the course they were then going on to pursue at University;

Grace: Yes, they'll help me get into uni because I've decided what I want to do

Interviewer: And you going to go and do?

Grace: Adult nursing

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- Interviewer: And so how do your A-levels help you do that?
- Grace: They give me some background knowledge as I've picked health and social to help me with that so it gives me background knowledge on diseases and things that all link.
- Heidi: Yes, I think two subjects that I believe will really help me and that's sociology and psychology
- Interviewer: And why do you think they will be useful?
- Heidi: Because hopefully if everything goes well I will move on to do social work in uni so obviously sociology is really needed...you have to be able to understand society and everything so it kind of links into the course I want to do and psychology as well so yes.

As well as A-levels being perceived as valuable for students' confidence, self-esteem and pursuit of their academic or occupational goals, they were further perceived as being useful for developing or contributing to a set of lifelong skills. Students therefore attached value to studying for their A-levels, not only for future educational directions but also for the skills they provided for their future lives. For the students below this included utility in the development and application of their literacy, numeracy, decision making and language skills which provided additional information on the ways in which students see A-levels as useful beyond the information provided in the quantitative phase;

- Abbey: Taking history it's helped me with understanding like social things and it's got me better with my reading skills and English skills and that kind of stuff and Maths has just helped me with my decision skills so it's helped me life wise but not in my studies.
- David: Well I mean I'm doing French at the moment so I think language skills, I think I'd like to travel a lot so I think that would probably help.

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Ethan: I think they will be useful to a point where say, if I'm going for a job, like that I enjoy, people will, like, they'll look and be like oh he's got A levels he can be taught.

There were some mixed explanations of the perceived relationship between A-levels and intrinsic value. Whilst the first student below indicated that attainment and utility value of A-levels were more important to her than intrinsic value the other students suggested that future choices were however based on what they enjoyed and found interesting in their A-level studies. This is consistent with the idea that intrinsic value is important because it allows individuals to seek confirmation of characteristics central to their self-image and place more value on tasks that provide opportunities to fulfil identity or are consistent with their identity and goals (Eccles, 2009). Future choices were therefore not only made on the basis of grades in this sample of students but were also based on what they enjoyed and found interesting in their A-levels studies;

Interviewer: And what about enjoyment of subjects, has that influenced you at all, or not really, or has it been more grades?

Grace: Grades mainly ... Enjoyment not really, it's mainly, I've just thought to myself right I need to get to university and I just need to pick the subjects that are going to get me there with the grades.

Interviewer: Ok, so have your A levels helped you choose your university course do you think?

David: Yes, definitely, I'd say so. The history A-level is the one I've enjoyed the most

Interviewer: And is that why you've picked it at degree level?

David: Yes, yes I think so.

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- Interviewer: So your choice now is based on what you enjoy
- Barry: Yes, exactly, that's something I know I'll enjoy, rather than something, I think I'm probably better at Maths and Physics but I enjoy the Politics a lot more
- Interviewer: Right, and that's determined your choice
- Barry: Yes.

The examples provided suggest that for some of the students in this study a relationship was perceived to exist between their self-schema, goals and their expectations, subjective task values and A-levels. As anticipated by the theoretical model, and in line with the quantitative findings, the students attached value to doing well in them and saw them as useful for their future educational and occupational choices. For some student's these choices were based on intrinsic value. However additional reflections were provided into the ways in which A-levels were thought to be valuable, for example, A-levels were perceived to improve confidence and self-esteem and provide lifelong skills. The qualitative results therefore contribute to an understanding of the students' subjective view on the factors that contribute to their motivation for A-levels. They add insights that were not provided by the quantitative analyses where statistical relationships were simply established with STV. This is discussed in more detail in Chapter 13. The following section further explores the students' perceptions of the relationship between identity and A-levels.

Perceptions of the Relationship between Identity and A-levels

These interviews sought to explore the relationships between identity, expectations, subjective task values and A-levels in more depth than was possible using a questionnaire in the quantitative phase of the study. As discussed above it was hypothesised that when identities are important to students then the activities associated with them will take on high

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subjective value and then facilitate motivation (Eccles, 2009). Students may select experiences that enable them to shape their own beliefs (Eccles, 2009). Identity is a construct that guides life paths and decisions (Kroger, 2007); it can be formed and transformed in schools (Vincent, 2003) and these interviews sought to explore how students perceive their identity and A-levels to interact. Students were asked whether, and how, A-levels might be helping them to become the person they want to be and if their A-levels had confirmed or changed how they saw themselves. This was an important addition to the study as assessment is, after all, a value-laden but purposeful social activity which potentially shapes how societies, groups and individuals understand themselves; creates their identity as learners and impacts directly on how and what is learnt (Hanson, 1993; Stobart, 1998).

Confirming Aspects of Identity

For some students A-levels confirmed aspects of their identity and 14 references were made to this by 11 students. This is consistent with the literature presented above where individuals are thought to place more value on tasks that provide them with an opportunity to fulfil their identity and are consistent with their goals (Eccles, 2009). The students suggested that A-levels confirmed their sense of who they are, what they are interested in, what they enjoy, as well as their future plans. This was demonstrated by Christian who aimed to study aerospace engineering at university, however for Daisy the relationship between identity and A-levels was more generally linked to achievement and her sense that she was capable of doing well;

Christian: ...I've always seen myself as a hands on person and my dad kind of said right you're like quite good at making stuff...I asked to do engineering... it's basically confirmed that what I want to do is what I'm doing now.

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Daisy: I think they've confirmed the way I saw myself as someone who wants to succeed and wants to do well, cos I did well at my AS's and I know I can do that and also that I am interested in science and those are the areas I'd much prefer to be doing than writing an essay.

This research question explored whether there is a perceived relationship between a student's general self-schema (identities), goals and A-levels. This qualitative data indicated that A-levels were perceived to confirm skills, interests or achievements, and attitudes and choices were constructed on these perceptions. This went beyond the information gained from the exploratory analyses where relationships between aspects of a student's background (e.g. gender or ethnicity) were alternatively examined in relation to future life values and goals.

Changing Aspects of Identity

A greater number of students made reference to the fact that they perceived A-levels to have changed them as 23 references were made to this from 15 students. It is known that A-levels are important for determining life trajectories and this was illustrated by the following students who did not know what they want to do before they began their A-levels and had used them as a vehicle for making future choices;

John: So before I did my A levels, I don't think I did, I don't think I did know, who, what I was going to be.

Isabel: I didn't know what I wanted to do when I came to A-levels I kind of just picked subjects which I was good at and then now looking at them I'm kind of like got more of an idea of what kind of career I want to have when I'm older.

The interviews suggested that A-levels potentially change students' future plans and their academic skills, as well as facilitating personal change. Thus their self-schemas, identities and goals related to their A-levels. However, it is also acknowledged that these

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changes could be a natural process that occurs at this adolescent stage of rather than simply a result of A-levels as it is known that adolescence is a key stage in which identities develop life (Erikson, 1963; Marcia, 1966; Wigfield & Wagner, 2007). Several students indicated that A-levels were a vehicle for re-evaluating goals, values and expectations. This was not information that was possible to explore from the questionnaire data and thus aided an overall understanding of how A-levels and identity are linked which is an important contribution of the qualitative data. The female student presented below planned to study psychology at university but found she did not enjoy the essay writing demands of AS level psychology, which coupled with the fact that she failed to achieve the necessary grades at AS level despite retaking the year, encouraged her to rethink her future goals;

Grace: They've changed because at the start I thought I enjoyed writing essays and looking at research and I was really interested in psychology and then I think the grades I got in my first year was a bit like, mmm, maybe not, I need to look at what I'm actually good at and re-evaluate my decision.

A-levels also changed the academic skills students perceived themselves to have, including their ability to work independently, their organisation, creativity and writing skills. For example, when asked how they had changed them students reported;

Christian: study I think, like about being able to work on my own, like I've always been part of a team but I think it's given me a bit more independence working in 6th form.

Ian: I think they've made me more organised.

Students additionally saw A-levels as a vehicle for fostering personal growth, reflecting a positive relationship between self-schemas, identity and A-levels. In many of the examples presented in this chapter it seems that A-levels had resulted in increased confidence

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and sense of worth, for example, students reported being more independent, confident, outspoken, able to express themselves and able to give their opinion;

Chloe: I think they've probably changed it in the way that I see myself as a lot more, like, confident in a way, like, cos we do debates and stuff in like law and philosophy and ethics I come to see myself as more like and open person, like I'll happily just give my opinion on something.

Angela: Yeah maybe more confident, like, I've been asking for help more because I was very very shy...I wouldn't talk to most people but now I don't shut up...Being more independent, doing stuff by myself which sounds a bit weird, but yeah, making me... getting stuff that I need by asking for it.

Furthermore, some students believed that either specific subjects (such as politics) or the wider experience of studying for A-levels had broadened their views on life, made them more open to alternative views and opportunities, encouraged a more empathetic view;

Barry: The politics side of things it more to be more broad minded and open about things, you know, just listening, to be able to listen to more views and like take them on rather than standing up and batting them away with my own views has probably made me a more open minded person... being able to get to an age like this and open information and open opportunities and the subject especially you know I think has enabled me to change my views on certain areas.

Heidi: Before I was really like kept to myself, I didn't really like being out there, and you know I just wanted to do my own thing...I never really cared much about other people but doing psychology... it just made me realise that there's people out there that need help and then the more I started doing research on social work the more I just realised that you don't have to just think about yourself and be selfish you can actually do a job that will help other people as well.

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The positive impact of A-levels on some students was very clear, with them seemingly influencing who they are and who they want to go on to become. The students below perceive A-levels to have developed them, changed them and made them better;

John: Wider, definitely as a person, and just who I am, I certainly, I try to incorporate what I do into who I am so I like to think of myself as a scientist so my views, I try to be very rational in everything I do, sort of critical of everything and that kind of attitude.

Angela: ... they (A-levels) make me want to study hard and become a better person get a good job, be able to become independent....no one's really gone to university in my family or studied anything higher so... They've changed me. They've made me better.

These findings are interesting as they are in contrast to the negative effects of assessment often reported (for example, Hanson, 1993; Reay & Wiliam, 1999). They added an insight into the relationship between self-schemas, identity, goals and A-levels that was not apparent from the results presented previously in this research. A-levels do appear to be important, not just because of the grades obtained which determine future options, but more widely because they play a role in developing a student's general self-schemas. This will also be discussed in Chapter 13.

Cultural Identity

A major limitation of the current research is that ethnicity was not explored in depth and this will be further discussed in Chapter 13. The numbers in ethnic groups were too small for SEM analyses and students were not specifically asked about cultural identity in the interviews. This emerged as important to a small selection of students, nevertheless, and four references were made to the way cultural identities appeared to mediate values. This was information not gained from any other aspects of

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the study. One student whose grandparents came to the UK from Germany in 1937 reflected this, indicating that schemas and identities are perceived to influence values;

Brian: I think there is a strong link in my opinion between being someone who isn't entirely from this country, I have a German passport and feeling British'ish...it seems that for me it's really important that the main priority for me is work and being a financial success.

In this study cultural identity also appeared to mediate goals in such a way that the motivation in A-levels was lowered because it did not align with priorities for the future. Freddy did not value his A-levels because he did not need them to fulfil his long term goals, again suggesting a perceived relationship. For him returning to his Country at birth to learn more about his ethnic background rather than therefore progress from A-levels to university was a priority;

Freddy: University is an option but I would much rather just finish A-levels and then move back to my country and find work, just get in touch with my ethnic background a bit more because I did leave at a very young age...I came here when I was six, and being really young, I completely forgot my language, I just think in English language and my mum didn't speak to me much in Pilipino so it was a shame that I've forgotten it I really want to learn it again.

These examples illustrate potential links between ethnicity, goals, expectations, values and A-levels and suggest that further research is needed to determine whether this affects the importance students attach to the activities, behaviours and tasks associated with their A-levels. Overall the data presented in this section does suggest that students perceived a relationship to exist between their identity, goals and expectations and values for A-levels; for some A-levels confirmed their sense of identity but for others it changed their sense of

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identity. This contributes to the study in a way that was not possible to explore using the questionnaire data; allowing students to explain how identity and A-levels may be linked, in both positive and negative ways. In the quantitative phase of this research specific aspects of a student's background/ identity were examined in relation to expectations, values (for A-levels and life) and A-level outcomes. Importantly data from the qualitative phase was able to offer insight into the different ways in which students perceived their identities to be linked to their motivation and performance at A-level. Since this research question also focused on the perceived relationships between task demands and the expectations and values for A-levels, the role of effort and task difficulty is now examined.

Task Demands, Expectations and Values; Effort in A-levels

In support of the belief that expectancies and values relate to effort (Eccles & Wigfield, 1995) 35 references were made to effort by all 20 of the interviewees. Students reported being more motivated and engaged when they needed the subjects or grades for their future education. Effort was therefore related to the attainment and utility value placed upon A-levels. The student below, for example, was motivated to apply the necessary effort to her biology AS examination in order to continue with her second year of sixth form studies;

Isabel: I look at other subjects like Biology I'm not very good at, but I put more effort into it because I need to get that grade to get into sixth form next year.

The offer of a university place also increased the efforts of students. For example, Daisy had an offer to study medicine at university which she believed was a key motivator because she valued this in terms of her future plans and understood that in order to achieve the necessary grades, and her goal, a great deal of effort would be

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required. Similarly, Hannah was also clear that the effort she was applying to her A-levels was motivated by the need to achieve the grades required for her university place;

Daisy: Having an offer for medicine and being right I've got to get these grades has definitely boosted the amount of effort that I've put in to because I know that's it's very important and also when I was applying I knew that if I got that far I was going to have to work really hard to get the grades so obviously that put in a lot of effort.

Interviewer: Do you think this influences the effort you put in?

Hannah: Yes

Interviewer: Why?

Hannah: Because if I don't do well in them then I can't go to uni

Interviewer: Right, so you basically are putting in the effort because you know you need those grades for those places now

Hannah: Yes.

Effort was not, however, only related to the attainment and utility value placed on A-levels as five of the students illustrated that they were motivated and engaged when they were interested in, and enjoyed, their subjects. Thus effort was also related to intrinsic value as demonstrated by the following student who was clear that her interest in her subjects was the factor that determined the amount of effort applied;

Interviewer: OK so does the effort differ between subjects for you and what makes the difference do you think?

Isabel: If I'm interested in it.

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Interestingly effort was not always related directly to specific goals but was instead determined by more general expectations for the future, in the case of eight students in this sample. In the examples below the students were motivated because they expected the amount of effort they applied to their A-levels to relate to the best opportunities in the future;

- David: I'd say I probably do put a reasonable amount of effort into my A-levels but that's not necessarily with a clear end goal in sight I think it's probably just to give myself the best opportunities.
- Brian: ... in order to do well in the future, it might be logical to try work as hard as I can, to do as well as I can now but I do also do it simply for the satisfaction and the idea of self-accomplishment that I can actually, that I have actually worked as hard and I have taken opportunities...

Thus far the examples outlined in this section have illustrated how values have had a positive impact on the effort students apply to their A-levels. This is in line with the findings in the exploratory analyses that effort related to STV (see Chapter 7). The interview data also however found that when A-levels were not valued for future goals effort may however be reduced, an issue that was referred to seven times by five interviewees. For example, A-levels did not fit with the future plans of this student who, as discussed in the section on identity, instead planned to return to his own country and find work and learn about his culture, having left at a young age;

- Freddy: I'm finding with art lately, because it's a lot of work load that because I'm not necessarily going to university I've been extremely half hearted with it and I did actually only take art at the start of the year because I actually wouldn't necessarily have to put a lot of effort throughout the year and now I'm finding that I want to drop it by the end of this year, because it's just not really of any interest to me anymore.

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Similarly, the student below was unsure of his future plans but knew he did not wish to pursue an academic route despite the aspirations of his parents and teachers. He was clear that this affected the effort he applied to his studies, and was clearly able to contrast his lack of effort in his A-levels to that he applied to his boxing hobby, which he saw as both enjoyable and useful to him in the future.

Ethan: I think my motivation is very low, like and I'm sort of being pushed through the system from my parents and teachers and if it was up to me I probably would've given up now...I boxed for a few years when I was younger and I always worked very hard at that but, and it's something that I would look to do in the future depending on how well it goes ... It was sort of like, the contrast of how hard I worked at that and then in school the lack of motivation where I could train all the time, I could never get bored with it ... I think a lot of the time I'm not motivated unless I, I'm only motivated if I have to do it or if I enjoy it.

These findings do reflect the theoretical idea (Eccles & Wigfield, 1995) that a relationship exists between effort, expectations and values. The interview data seemed to illustrate this, suggesting this would be an interesting area for further exploration. Students, understandably, reported being more motivated and engaged when they needed the subjects or grades for their future education, or saw them as important for securing future opportunities, or when they enjoyed their A-levels. Thus effort was linked to their expectations, attainment, utility and intrinsic values as was the case in the quantitative analysis. They did not aid explanation to how effort was negatively correlated to expectations and achievement in the exploratory analysis. Predictably, effort was reportedly decreased when students did not enjoy their A-levels or they did not expect to need them, or perceive them as useful for their future aspirations. These interviews therefore highlight the possible important relationships between expectations, values, effort and subsequent A-level achievement and these would benefit from further exploration in future research in this field (see Chapter 13).

Task Demands, Expectations and Values; The Role of Task Difficulty

Task difficulty was also a topic of discussion in the interviews with 11 references made to this from nine sources. Several students reported a 'big jump' between GCSE's and A-levels and experienced them as more challenging. This seemingly bore some relationship to their expectations and values. Although the following students had perceived themselves to be academically good at GCSEs this was not reflected in their experience of studying for A-levels which they found more difficult and this was impacting on their expectations, especially their ability expectations;

Chloe: I know a lot of my friends have, like, we've discussed before like how different the jump is and how like we should probably try a bit harder or you don't see yourself as good at something that you thought you were in GCSE...So like when I got B in English and I genuinely thought I was really good at it and then when I did AS I was kind of like this is a bit harder now and I was like maybe I have to try a bit harder now and it made me think that I wasn't as good as I thought I was.

Fiona: I thought that I was actually a really clever student, cos I was one of the top in our school in our year, went into A level and it just all melted away.

These statements suggest that difficulty plays a role in motivation for A-levels. Theoretically Eccles (Eccles et al., 1983; Eccles & Wigfield, 1995) proposed that expectations and STV are negatively related to task difficulty; students value an activity when they think they are good at it but are less likely to believe they're good at something, and will devalue it, if it is difficult. The first set of statements from these interviews would reflect this and also support the findings in the quantitative analyses which found a negative association between expectations and achievement, although there was only a link found with STV in the year 12 sample. It appears from these interviews that further exploration of the relationship between

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task difficulty, expectations, values and outcomes is warranted because task difficulty may also play a potential positive role in motivation as the following students suggest that task difficulty had a positive rather than negative effect on them and increased their sense of efficacy. Thus the interviews potentially contributed an additional understanding to the nature of the relationships between task demands and A-level motivation. This will be discussed in relation to the literature in Chapter 13.

Hannah: Sometimes it's so challenging that you don't think you can do it but then you actually do do it and you think oh I can overcome any challenge kind of thing.

Heidi: Doing A-levels is they're really really hard and you have to be dedicated and I feel like that's helped me a lot.

Although students were not explicitly asked about task difficulty in the interviews this was an emergent theme and was an important finding given the negative correlations established between task difficulty and achievement in the exploratory analyses, as well as a positive relationship found between difficulty and effort. Task difficulty therefore seemingly related to expectations and values, although there were mixed reports on both the perceived positive and negative effects of this on motivation from the interviewees.

Summary of RQ5

In summary, the qualitative data suggests that perceived relationships do exist between students' general self-schema (identities), goals, task demands and expectations and values for A-levels. They appeared to be of value because the achieved grades were an inevitable factor in future educational and occupational options. Future choices were also, however, based on interest and enjoyment. A-levels are therefore important in guiding life paths and decisions,

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but not just in terms of specific goals as the students in this qualitative sample also indicated that they related to more general goals; to develop lifelong skills and give them the best opportunities in the future. For some students A-levels confirmed the way they saw themselves but for others they changed them. This contributes a different understanding to the nature of these relationships than was possible to explore in the quantitative study. This data therefore potentially highlights the complexity of the factors that play a part in the achievement motivation in A-level students. When specific identities were important this did appear to affect their expectation and values for A-levels; cultural identity was one example of this. Effort and task difficulty (task demands) were also related to expectations and values, so effort was reportedly increased when students needed particular grades for university, or when they enjoyed their studies and was decreased when A-levels were not important for their future goals. Interestingly however task difficulty did not always have a negative effect on students and some reported that it increased their motivation. The data from the interviews therefore contributed additional explanations as to the nature of these relationships than was gleaned in the statistical analyses. The influences upon a student's expectations and values are now explored.

RQ6. What are Students' Perceived Influences upon their Expectations and Values?

Students were asked about their perceived influences upon their expectation and values and 47 references were made to influences from the 20 sources. This included the role of socialiser's (parents, teachers and peers) and prior educational achievement.

The Role of Socialisers: Parents

Children's perceptions of socialisers' beliefs, attitudes and behaviours about (gender) roles and stereotypes were thought to influence students' values and expectations (Eccles et al., 1983; Eccles & Davis-Kean, 2005). The relationships between family characteristics and educational outcomes are well documented (Bradley & Corwyn, 1999; Brooks-Gunn & Duncan, 1997; McLoyd, 1998; Sylva, 2014). Parenting practices are strongly implicated in relation to performance (Hoff-Ginsberg & Tardif, 1995; Walberg & Marjoribanks, 1976). It is also well known that family provides an indirect link between SES and educational outcomes (Coleman, 1988; Duncan et al., 1994; Eccles, 1992; Entwisle & Astone, 1994; Guo & Harris, 2000; See & Gorard, 2015). Eccles and Davis-Kean (2005) suggest that expectations and values are determined partly by students' perceptions of their parents' and teachers' expectations which may lead to the socialisation effects of role modelling, communication of expectancies and provision of differential experiences. Simpkins et al. (2012) confirmed that parents' beliefs influence their behaviours which in turn predict the motivational beliefs and behaviours of their offspring.

In this research students were asked to report influences upon their decisions at A-levels and as expected parents (including mothers and fathers) were the highest group reported (just over 40% - see Chapter 7). These interviews also indicate that family are important mediators of students' expectations and values with 21 references being made to this from 11 sources. The interviews however contributed additional information about the nature of these relationships by demonstrating the ways in which parents might play a role. Parents were reported to influence student's decisions, values and expectations in a number of ways; the valuing of education, direct reinforcement of skills the student has, role modelling of career or subject choices and home environment. These are now therefore discussed.

Parents' Role in the Valuing of Education

Parents were perceived to be an important influence in their attitude toward education and the values they placed upon it, by the following students. Abbey believed she was encouraged to value education from a young age and this contributed to the values she attributes to her A-levels;

Abbey: My mum and dad never really went to school, my mum stopped at twelve, my dad stopped at sixteen but they wanted the best for me so they always did my homework with me and everything like ... I think with my A levels it was my parents' influence from a young age...it was the way I was either in the younger years of secondary school or primary school making me do my homework understanding it was important I think that affected my A levels.

However, because Ethan's father had left school at an early age and had to pursue his own education at night school, as an adult he was keen to ensure that his son valued his A-level studies;

Ethan: And because my parents didn't go to school past 16 and then my dad had to do like night school so he understands how important it is so he pushes very hard.

Parents as Reinforcers

Furthermore, parents were seen as being important in their valuing and reinforcement of the student's strengths. In keeping with previous studies the results of this qualitative study suggests that parents potentially influence children's academic achievement, in part, through the direct and indirect influence on their children's academic ability self-concepts (Davis-Kean, Eccles, & Schnabel 2002). Christian's Dad encouraged him to make choices based on the person he perceived him to be;

Christian: Yes, like kind of I've always seen myself as a hands on person and my dad kind of said right you're like quite good at making stuff so ... when I put my GCSE options in I asked to do engineering cos you do that so I kind of led it on myself.

Parents as Role Models

As expected, for some students in this study family background and exposure to role models influenced their choices and expectations for success. For example, Daisy and David indicated that their choices were influenced by the interests and career routes of family members. Daisy's family had a tradition of entering the medical profession and she was aiming to study medicine, whilst David was planning to read history at university and believed that family role models were an underlying influence on his choice;

Daisy: Well a lot of my family are medics, so I've got three grandparents who are medics, and my parents and a cousin so growing up around medics of course you have an automatic, oh I can be a doctor as a kid.

David: Well I suppose I come from a family that are sort of more inclined towards doing art subjects rather than science subjects and so I guess that an interest in that comes from that, I mean my mum did English at University and my dad did history at university so I feel that coming from that background has probably led me into, maybe subconsciously.

Home Environment

Unsurprisingly home environment appears to be a further influence in this qualitative study. This is perhaps not surprising given the statistical links established between SES, or indicators of SES, and achievement in the previous chapters (see Chapters 7 and 10).

Qualitative Study

Research suggests that adolescents benefit as much as younger children from a stimulating family environment where access to cultural resources has the potential to mediate the relationship between SES and student achievement through to adolescence (Bradley, 1994; Bradley & Corwyn, 1999; Brooks-Gunn, Klebanov, & Liaw, 1995; Guo & Harris, 2000; Walberg & Marjoribanks, 1976). Home environment was certainly important in this student's choices;

Isabel: I think I definitely picked more academic subjects because of how I've been brought up, kind of surrounded by books and reading and when we go on holiday, not going onto a beach, going and doing like to a museum or something.

Parents were therefore perceived to be influential in mediating students' values and expectations, and did so in a number of different ways. They were not, however, the only socialisers considered important; teachers and peers were also perceived to be influential and are now discussed.

The Role of Socialisers: Teachers

In the quantitative analysis teachers were also reported to be influential, with 13% of students reporting that they had a positive influence and 11% of students reporting them to have a negative influence. It seems that teachers also played a role in students' attitudes and beliefs in this qualitative study, with six sources reporting this. Research suggests that teacher attitudes and expectations may be part of a complex set of mediators between SES and outcomes (for example, Bradley & Corwyn, 2002). The interviews in this study indicated that teachers are important both in both encouraging future goals but also in moderating unrealistic expectations for success;

Qualitative Study

Chloe: My old philosophy and ethics teacher was like, oh you should do it.... [referring to her university plans]

Daisy: I think what was helpful was my biology teacher telling me point blank that I was not very good at biology so I couldn't be a vet.

The Role of Socialisers: Peers

Peers were reported as a further source of influence by thirteen students in the interviews. This is not unusual as research has discussed the fact that students are likely to compare their interest in different activities to those of their peers, and such social comparisons are then influential in their own valuing of the activities (Wigfield & Cambria, 2010). Peer pressure was a factor in Grace's decision to study A-levels, whilst for Chloe and Angela peers had influenced their specific subject choices;

Grace: 'suppose my friends because most of them stayed on at sixth form, I sort of followed because I didn't know what I wanted to do, so it's just from school into sixth form and then most of them went to university so it's more like, well to get the best job I can when I'm older I need to go and get a degree.

Chloe: My friend picked law and then I kind of thought I wasn't really 100% set on law but then I was like well my friends doing it so I might because I don't know what I want to do.

Angela: Well I really liked art and my friend was really pushing me to do art at GCSE I didn't want to but then I did it and I really enjoyed it so I wanted to carry it on.

The Role of Prior Achievement Related Experiences

Prior attainment emerged as another factor influencing the expectations and values attached to A-levels, particularly students' choices about what to study and future goals. It was highlighted as important by nine students from 12 sources. This is interesting as prior achievement was not specifically investigated in the quantitative phase; a limitation which has been acknowledged (see Chapter 6). The interviews were therefore a useful addition to the knowledge gained in this research. Given that prior attainment is an extremely powerful predictor of later attainment (Marsh & Craven, 2002, 2006) the fact that students reported this as being influential is not surprising. It is known, for example, that obtaining good GCSE results has a major impact in shaping students post-16 destinations (Department for Education, 2012; Sammons et al., 2015). So prior attainment will have been an important determinant of the A-level courses on which students will have been accepted. For a vast number of students in this study choices were made on the basis of the subjects they had done well in and enjoyed, at GCSE or AS levels, or what they had done badly in not enjoyed. For example;

- | | |
|--------|---|
| Fiona: | I got good GCSE results so I came up with the ideal job I'd want and so I chose my A levels based on that. |
| Daisy: | I think they've [A-levels] confirmed the way I saw myself as someone who wants to succeed and wants to do well, cos I did well at my AS's and I know I can do that. |
| Jenny: | I got good results from them [her chosen subjects] at GCSE, I like them, and then I went from there. |
| Grace: | I think the grades I got in my first year was a bit like, mmm, maybe not, I need to look at what I'm actually good at and re-evaluate my decision. |

The results of the qualitative study therefore illustrate that a relationship seems to exist between previous achievement related experiences, students' interpretations of these, and the

Qualitative Study

subsequent value attached to A-levels. Such information has made a useful contribution to the findings of this research beyond that gained in the quantitative phase.

Summary of RQ6

Overall these results support the quantitative analyses presented in Chapter 7 and illustrate that socialisers can have an impact on student's values, expectations and goals as suggested by the theoretical model. The qualitative analyses have, however, played a part in offering an understanding of how this may be from a number of different sources and in a number of different ways. Prior attainment was also influential and further exploration of this in future research is warranted in view of the limitations of this study (see Chapter 13). This was not something that was explored in the quantitative analyses and therefore the interviews were helpful in allowing students to share their perceptions of this relationship. It should be noted that the self-report data however only reflects students' perceptions of influences and it may be difficult in reality for one to be able to knowingly report who, or what, is influential. Furthermore, whilst the evidence so far in this chapter suggests that there are important influences on student's values this was not the case for all students and some were very clear that they felt they had made their choices independently of other people;

Fiona: I don't think there is any one person that's influenced me really.

John: I do feel like I came to that conclusion relatively independently...something I did by myself and the internet probably helped a bit with that, interestingly there's a lot of interesting things that I sort of just stumbled across and thought this is really cool.

Conclusions for Chapter 12

The quantitative analyses established that relationships existed between expectations, values and A-level achievement. It was also important to explore and further understand more about these relationships from a student perspective, which was a significant contribution of the qualitative analyses, for understanding the multidimensional nature of the achievement motivation of A-level students, which was an aim of this thesis. The qualitative interviews thus contributed an understanding of the perceived relationship between self-schemas (identities), goals, task demands and expectations, value and A-levels, as well as a more descriptive analysis of the influence on these. This included the role played by socialisers and prior academic achievement. The views of this student sample aligned with the quantitative analyses that perceived relationships exist between expectations, values and A-levels, something that will be further discussed in more depth in Chapter 13.

The qualitative data indicated that students attached value to doing well in their A-levels; they were perceived as important for the way they saw themselves, for their educational and occupational goals and their future lives. Thus, in answer to research question five, a perceived relationship existed between their general self-schemas, identities, goals and expectations and values for A-levels. The qualitative data aimed to contribute some specific insights into the relationships between A-levels and identity in this small group of students. A-levels were indeed perceived to confirm and change the way students see themselves at this important stage of life. The students who were interviewed illustrated that A-levels seemed to both confirm aspects of their identity, what interests them, what they enjoy and plan to do but A-levels were also perceived to facilitate change including revisions to students' goals and their academic skills. A suggested relationship also existed with task demands; effort and task difficulty were linked to students' expectations, attainment, utility and intrinsic values in these interviews. Perhaps what was most interesting to find in this qualitative analysis was that students' perceived there to be many positive, rather than negative, relationships between self-

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schema (identities), goals, task demands and expectations and values and A-levels. For example, when students' experiences of A-levels led them to have raised expectations of themselves, and their goals for the future, 'made them better', and where task difficulty increased rather decreased the motivation for A-levels. These are important insights that were not obtained from the quantitative analysis and therefore have the potential to add new knowledge to the field of achievement motivation in A-level students and highlight the benefit of using a mixed methods design on this research.

In answer to research question six perceived influences upon expectations and values included parents, peers and teachers. Although this would not be unexpected the interviews added to the exploratory analyses presented in Chapter 7 by expanding on the ways in which these socialisers were perceived to be influential, which is an important contribution. This included their reinforcement of skills, role modelling and facilitating a home environment that encouraged learning.

Overall it seems, from these interviews, that A-levels are important for the development of the young people in this sample. It appears from these interviews, however, that the relationships between self-schemas, identity, goals and the expectations and values for A-level are complex and these qualitative results are not able to make claims about the exact nature of these relationships, but only explore some of the possible interactions. These analyses are exploratory, descriptive and interpretative rather than confirmatory, comprehensive and nomothetic (Rennie, Watson, & Monteiro, 2002) and should be considered tentative in character (Stiles, 1993).

In the following chapter the conclusions of this mixed methods study, and the ways in which this qualitative data challenges and supports both the quantitative analyses and the theoretical model, will be further discussed. The limitations of this research, and ideas for further research will also be presented.

Chapter 13 Discussion: What Motivates A-level Students? Do Expectations and Values Play a Role?

Overall the results suggested that relationships between expectations, values and A-level achievement exist. The picture was however extremely complex. Employing the expectancy-value framework has offered a multidimensional approach to understanding student motivation within educational contexts (Hulleman et al., 2016), in this case in relation to high stakes (A-level) qualifications in the UK which has not been previously investigated. This study has therefore made an important contribution.

The discussions of research questions one, two, three and four are based on the quantitative analyses which investigated associations between expectations, values and achievement using data collected from the questionnaires (see Chapters 4, 6, 7, 9 and 10). As the questionnaires additionally included items relating to perceived task demands, general values, future expectations and goals (their self-schemas) and influences upon these (see Chapters 6 and 7) data from the quantitative phase will also be addressed in the discussion of research questions five and six. In this mixed methods design interviews were further employed to explore and understand how students' self-schema, identities, goals and perceived task demands relate to their expectations and values (see Chapters 4 and 12) in order to provide a more complete picture of these complex relationships. In the discussion of research questions five and six qualitative data will therefore also be considered.

RQ1. What is the Relationship between Expectations and A-level Achievement?

Given the substantive literature indicating an association between expectations and achievement (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Hood et al., 2012; Phan, 2014; Trautwein et al., 2012) it was not surprising that a relationship was found

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between students' expectations and A-level achievement in this study, indicating that this association similarly applies within this context, where it has not been previously explored. Higher expectations related to higher achievement and students expected to do well overall. They had above average ability expectations and expectations for success. It is an important finding that contributes to an understanding of the factors underlying the motivation of students studying for high stakes examinations, and within a UK context, in contrast to the previous work where expectations had been largely investigated in relation to maths, statistics or STEM subjects and conducted in the USA, Australia and Germany. The findings also have potentially important implications for intervention programmes which attempt to raise the expectations of students in order to achieve positive educational outcomes (see Chapter 1 and discussion at the end of this chapter). It is however difficult to draw overall conclusions about the direction of the relationship between expectations and A-level achievement in the absence of GCSE results as previously highlighted (see Chapters 6 and 9) and is a limitation that will be further addressed later in this chapter.

RQ2. What are the Relationships between Expectations and STV for an A-level Student Sample?

When the relationship between expectations and STV was investigated using SEM in this research model fit was not achieved for a three-factor model as originally proposed by Eccles. So, an STV construct that was a function of attainment value, intrinsic value and utility value (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995; Trautwein et al, 2012; Wigfield & Eccles, 2000) could not be supported without modification. Model fit was alternatively achieved when a two-factor model (using only intrinsic and attainment value) was used. This is noteworthy given that reliability for the utility construct was found to be low even in Eccles' original work where $\alpha = .62$ (Eccles & Wigfield, 1995). A

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moderate relationship between STV and expectations was found using the revised two-factor construct in this research in the UK, high stakes A-level context. This is in line with previous work (Eccles & Wigfield, 1995). So, students valued A-levels if they expected to do well in them. This would be expected given that students are known to value activities they are good at (Eccles & Wigfield, 1995) and that other, more recent, research has found a high association between expectations and values (Trautwein et al., 2012).

The role played by utility value is however an area for further investigation (see below) as the exploratory analyses indicated this was important to A-level students. An unexpected finding was that the utility construct (how useful students perceive A-levels to be) would need modification to achieve model fit in the SEM. This is especially interesting given that utility value has been found to relate more closely to expectations than other aspects of STV in modern investigations (Trautwein et al., 2012) and that the direct communication of utility value promotes the interest and performance of learners (Durik et al., 2015). It is possible however that within a modern context the original conceptualisation of utility does not reflect the more recent ideas that there can be different subtypes relating to the utility of tasks for school, daily life, career and future goals (see Chapter 2). It is clearly therefore a crucial component to understand more about. Thus, separate research on the links between A-level achievement and the perceived usefulness of A-levels may be fruitful for further exploring the expectancy-value model in a UK context as highlighted when discussing ideas for further research later in this chapter.

RQ3.What is the relationship between STV and A-level achievement?

Positive relationships were established between components of STV in this study as would be anticipated. As discussed above when a two-factor model of STV was used it related to achievement in this study, so students achieved more highly if they valued their A-

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levels. This is consistent with recent research suggesting an association between STV and academic results (Cole et al., 2008; Guo et al., 2015; Hulleman, Godes, et al., 2008; Phan, 2014; Trautwein et al., 2012). It is worth noting however that in contrast to this study where STV comprised of attainment and intrinsic value these more recent studies operationalised STV differently (see Chapter 2) where varying components were associated with outcomes, including utility (Guo et al., 2015; Hulleman, Durik, et al., 2008). Establishing a relationship between STV and A-level achievement is however an important finding as it provides insight into the motivational factors that contribute to educational success in this population of students.

The relationship between STV and A-level achievement was weaker than that between expectations and achievement as would be predicted by the literature which found expectancies were the stronger predictor of grades (Eccles et al., 1984; Fredricks & Eccles, 2002; Jacobs et al., 2002; Marsh et al., 2005; Meece et al., 1990; Nagengast et al., 2011; Trautwein et al., 2012; Wigfield & Eccles, 1992). In this study the students perceived doing well in their A-levels (attainment value) as more important than either their interest in them (intrinsic value) or usefulness (utility value). Given the significance of A-levels for life pathways this was not unforeseen, especially as grades are the most important determinant of entry into higher education. Attainment value has also been more closely associated with identity than other components (Eccles, 2009). It is clear however that further research into the relationships between specific components of STV and A-level achievement is warranted and this will be discussed later in this chapter. The results of this study have nevertheless investigated important links between Eccles' theory of motivation and the achievement motivation of A-level students, which was an aim of the research. Certainly, the discussion of the first three research questions suggest that psychological factors have a role to play in motivation and achievement in these students supporting the theoretical framework underpinning this work.

RQ4. How does SES, Gender and Ethnicity affect the Expectations and STV attached to A-level Achievement?

The approach used in this research suggested that social, as well as the psychological, factors play a role in the achievement motivation of A-level students providing valuable knowledge within this field. In this study SES was found to directly relate to expectations and A-level achievement. So, students from higher SES backgrounds had higher expectations for their A-levels and achieved better grades. The association between SES and A-level achievement would be expected given the well-established literature linking SES, social capital and educational outcomes (Coleman, 1988; OECD, 2010; Sirin, 2005; White, 1982). Since SES has been strongly associated with attainment at all levels in England and Wales (Goodman & Gregg, 2010; Rothson, 2007), and indeed widely beyond a UK context, the findings of the study support the idea that this includes the attainment of A-level students. This is in line with recent research which showed disadvantaged students did less well in their A-levels (Sammons et al., 2015). Thus the findings of the current study contradict early arguments that the relationship between SES and achievement diminishes as students get older (White, 1982) and supported the arguments claiming that the gap widens (Pungello et al., 1996) or increases (House of Commons Education Committee, 2014; The Sutton Trust, 2011). Traditionally the decline was attributed to the fact that low achieving students left school at the age of 16, however the cohort in this sample were required to stay in education or training until the age of 18. This may therefore have contributed to the fact that the relationship was found to exist.

Furthermore links between SES, parenting practices stimulating interactions, cognitive functioning, and performance are commonly found (Bradley & Corwyn, 1999, 2002; Brooks-Gunn & Duncan, 1997; Hoff-Ginsberg & Tardif, 1995; McLoyd, 1998; See & Gorard, 2015).

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The results therefore support the idea that family influences are a strong predictor of exam success at age 18, just as they have been found to be important at age 16 (for example, DCSF, 2009; Sylva, 2014). Parent socialisation models and associated studies would also predict these findings (Eccles & Davis-Kean, 2005; Simpkins et al., 2012). Seemingly in this study social factors such as SES do contribute to the expectations of students (Eccles et al., 2004), however unexpectedly SES did not relate to the values students attached to their A-levels, contrary to literature in this area (for example, Eccles et al, 2004; Simpkins et al, 2012). The findings on SES and achievement are important. Whilst changing parental education or occupation may not be possible interventions aimed at raising the expectations of those from disadvantaged backgrounds may be, as discussed later in this chapter. The relationships between SES, expectations, STV and achievement are however complex and causality cannot be inferred, an issue that is discussed in more detail in the limitations section of this chapter.

In this study girls did not do better than boys in their A-levels contrary to the recent upward trend in girls' achievement in education (see Chapter 3). The relationship between gender and A-level achievement has been important to explore in order to provide a more complex and complete picture of differential patterns in achievement which, according to Elwood (1999), is critically necessary. As suggested by much of the early research on the expectancy-value model girls did have lower expectations (Eccles, 1987; Eccles et al., 1983; Eccles et al., 1984). One of the reasons for selecting the expectancy-value framework for this thesis was because of the power of the STV perspective to analyse the socio-cultural processes underlying group differences in motivational behaviours (see Chapter 2). The girls in this study has higher STV in the main sample. The findings are contrary however to previous research that found girls achieved less well because they attached less importance to maths, perceived it to be less useful and less enjoyable (Eccles et al., 1983; Meece et al., 1990; Simpkins et al., 2006; Updegraff et al., 1996). It is therefore suggested that within the contemporary UK the findings for Eccles' model can be questioned with regards to gender

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differences; STV did not explain differential achievement as predicted as girls has higher STV but did not do better. This may be because the focus of this study was the STV attached to A-levels rather than being domain (maths) specific but it could also reflect the contextual differences where the model was tested in the modern UK rather than 1980s USA. It may also be a result of the fact that they had lower expectations. There has been recent support for the idea that stereotypical differences in educational outcomes varies between countries (Watt et al., 2012) depending on the education system in which the model is tested.

Ethnicity was not examined in the SEM due to small sample sizes (see Chapters 7 & 9) although the exploratory analysis found a significant difference in the STV of ethnic groups. No differences were found in expectations or achievement. This suggest that the effect of ethnicity on expectations, values and achievement is an area for further investigation and is therefore discussed later in this chapter.

RQ5. What are Students' Perceptions Regarding the relationship between their General Self-schema (identities), Goals, Task Demands and Expectations and Values for A-levels?

The first part of the discussion for research question five focuses on students' perspectives on the link between their self-schema, identities, expectations and values. The perceived relationship with task demands is then addressed. As has been seen in the discussion for research questions one, two and three above the quantitative analyses established associations between expectations, values and achievement using data collected from the questionnaires.

Self-schema (identities), Goals and Expectations and Values for A-levels?

Self-schemas and goals related to the expectations and values of A-level students in a number of different ways in the quantitative analyses. This supported the theoretical framework used in this research and Eccles expectancy-value model (Eccles, 2007b; Eccles et al., 1983) which postulated that an individual's goals and schemas impact on expectations and values. Positive relationships were found between the students' expectations, STV and their need for achievement, the value they placed on work importance, positive occupational expectations and plans for further education. Additionally, expectations were also higher if students valued high status and STV was higher if they valued family importance. Expectations and STV was lower if students had negative economic expectations and STV was lower if they were extrinsically motivated. This link with extrinsic motivation is not surprising given that it is known to have negative effects on motivation including disaffection (Deci & Ryan, 2008). Overall the results suggested that self-schemas and goals may therefore be motivational factors for A-level students, as predicted by the theoretical model. The quantitative analysis established relationships between STV, expectations and A-levels and these were related to a variety of general life values and expectations.

The qualitative data further supported the idea that self-schemas and goals link to students' expectations and values. Findings were in line with the notion that attainment value is seen as most important in terms of identity (Eccles, 2009). A-levels were perceived to have both attainment and utility value because the grades allowed students to pursue their future choices, including academic and occupational goals. Students also suggested that their self-schemas and goals were related to the intrinsic value attached to their A-levels, where decisions were made on the basis of what they had enjoyed and found interesting in their A-levels. Again this is consistent with the literature which suggests that intrinsic value is important in personal identity if motivation is required in challenging situations (Eccles, 2009). High-stakes examinations, in this case A-levels, could be considered one such

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situation. So, as in the quantitative phase, self-schemas and goals were perceived to relate to the expectations and STV for A-levels. The qualitative data also contributed further understanding of the subjective views on the factors that contribute to the motivation for A-levels however as students indicated that A-levels also had attainment value because this improved their confidence and self-esteem. Self-schemas and goals were not only related to utility value because of the grades but furthermore students indicated that A-levels were providing them with content knowledge and lifelong skills that could be useful in the future. This included skills in literacy, numeracy, languages and decision making. This might lend support to the idea that utility value can be subdivided into different components such as usefulness for school (Conley, 2012), daily life (Hulleman & Harackiewicz, 2009), career (Hulleman, Durik, et al., 2008) or future goals (De Volder & Lens, 1982). Seemingly expectations and values may be determined by student's interpretations and perceptions of their own needs (Eccles et al., 1983).

The relationships between identities, expectations and values were also explored in the quantitative phase. It was found that values and expectations correlated with some aspects of identities relating to SES, gender and ethnicity as predicted by the theoretical model which suggested that goals and self-schemas impact on expectations and values but are themselves influenced by a student's family demographics, gender and ethnicity. Notably expectations for both future education and a harder life related to the greatest number of SES variables including home possessions, number of books, support for learning and parental occupational group. Gender differences were found in the goals, general life values, and expectations of students. Boys valued material wealth and high status, and were extrinsically motivated. For males such findings can be explained by previous research where they were reported to value prestige and well paid occupations but this was not the case for females, who had reportedly valued jobs that accommodated family (Eccles, 1992; Ruble et al., 1998). This was in contrast to the findings of this study and may reflect a change in gender role attitudes and

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socialisation. There were differences in the importance attached to future education and expectations of a harder life between ethnic groups. It is therefore possible that different identity beliefs, value systems and normative experiences may influence the importance attached to goals by these students (Wigfield et al., 2004).

The interviews examined how identity was linked to the goals, expectations and values of A-levels since a central premise was that when individuals have different self-images and identities, activities (in this case A-levels) will have different STV (Eccles, 2009). Students were predicted to place more value on tasks that fulfil their identities and are consistent with their goals (Eccles, 2009) and indeed for some students A-levels confirmed the way they saw themselves, their expectations and values including perceptions of their skills, interests, goals, achievements or attitudes. Thus, a confirmatory relationship was perceived to exist between identity and expectation and values for A-levels. Choices for the future were based on these perceptions. For others, however, A-levels had changed their perceptions of themselves, their expectations and values. This included changing their expectations of the courses they would go on to study and their perceptions of their academic skill set (e.g., the ability to work independently, organisational skills, creativity and writing ability). The students perceived A-levels to be a vehicle for re-evaluating goals, values and expectations, not only for future educational and occupational pathways, but also for their perceptions of themselves more widely. This was data that was not obtained in the quantitative phase of this research as it was suggested that A-levels had fostered personal growth, increased confidence and feelings of self-worth and encouraged alternative views. Thus, identity and A-levels were perceived to have a positive impact on students' and their expectations and values; influencing who they are and what they aim to become. This is in contrast to research which shows assessment has a negative effect on individuals (Hanson, 1993; Reay & Wiliam, 1999) but can be explained by the expectancy-value model of identity which suggests that situations provide information that the individual uses to shape beliefs

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and views of the self (Eccles, 2009). In this study, the qualitative data does suggest that A-levels have provided students with such an opportunity. As such the interviews were an asset in gaining insight into students' perceptions regarding the relationship between their schemas, identities, expectations and values. It gave them a voice, recognition for who they are and provided insight into their educational lives to enhance an understanding of their learning, hopes and aspirations (O'Boyle, 2013). This was particularly important as there is a lack of engagement with students about such issues (Elwood & Lundy, 2010).

Overall the data supported the theoretical assumption that self-schemas, identities and goals are linked to expectations and values, and that these are affected by factors associated with a student's background (Eccles, 2007b; Eccles et al., 1983; Eccles & Wigfield, 2002). As predicted, expectations and values were influenced by interpretations, attributions, perceptions of needs and values. Personal and collective identities appeared to play a role in motivation by influencing these expectations and values attached to A-levels. This may help explain the complex picture of achievement.

Task Demands and Expectations and Values for A-levels

The relationship between perceived task demands, expectations and values is an under-researched area in recent explorations of the expectancy-value model and this study therefore makes a contribution to this area. Students perceived A-levels to be hard and thought they would have to apply much effort. Expectations and values are determined by the *interpretations* of reality and so are influenced by perceived characteristics of such task demands (Eccles et al., 1983). Effort and task difficulty were also important concepts within attribution theory (Weiner, 1992). It was not therefore surprising to find that task difficulty was negatively associated with expectations and achievement. It was unexpected that difficulty was not related to STV in the main sample, but only in the year 12 sample, given that students were predicted to attach less value to tasks they find difficult (Eccles et al., 1983;

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Eccles & Wigfield, 1995) and are known to attribute failure to external factors such as task difficulty (Weiner, 1992).

The qualitative analysis provided further insight into these relationships with students perceiving a 'big jump' from GCSE to A-level and suggesting that their perceived task difficulty had affected their expectations, both about their abilities and for success, again supporting the theoretical framework. The interview analyses added to the quantitative findings, however, by alternatively suggesting that task difficulty plays a positive, rather than negative, role in motivation as some students reported that it had a positive effect on them and increased their sense of self-efficacy. This could possibly be explained by goal theories which propose that if students' adopt mastery patterns it has a positive effect on learning, increases competence and results in adaptive outcomes which increase motivation (Ames & Archer, 1987, 1988; Elliot, 2007; Elliot & Harackiewicz, 1996; Senko et al., 2011). Thus, if A-level students see them as an opportunity to learn (learning goals) and not just an opportunity to perform (performance goals) a positive relationship between task difficulty and A-levels may result. Indeed it has been recently suggested that performance and mastery goals can be adopted simultaneously to optimise motivation (Senko et al., 2011).

The theoretical assumption concerning the perceived relationships between effort, expectation and values were also supported in this study. Effort was negatively correlated with expectations and achievement presumably as more able students perceive themselves as needing to apply less effort, an assumption supported by the fact that expectations and effort were themselves correlated. Since effort was known to relate to attainment, intrinsic and utility value (Eccles et al., 1983) it was not surprising that a positive relationship between STV and effort was found in this study. The qualitative data also suggested that effort was indeed perceived to relate to attainment and intrinsic value when students needed particular subjects or grades to pursue their future life pathways but motivation was likewise increased when they enjoyed their A-levels (intrinsic value). Students explained how effort was reduced

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when A-levels did not relate to their expectations and values for the future. This again supports the underlying theoretical assumptions in this thesis. In the interviews students suggested that effort may not however necessarily be related to specific expectations and values but also more general ones, such as giving oneself the best opportunities in life. Thus overall it appears that expectations and values are influenced by perceived characteristics of the task demands of A-levels; by both the perceived task difficulty and required effort. These insights add to this under-researched aspect of the expectancy-value model.

RQ6. What are Students' Perceived Influences upon their Expectations and Values?

In order to contribute to the understanding of the social factors underlying motivation influences were explored, and a number of different factors were perceived to effect students' expectations and values including socialiser's and also prior attainment. These were perceived to impact on students in a number of different ways. Students reported that the key influences upon their A-level and future life pathways were their parents, in both the quantitative and qualitative phases. This finding is consistent with both parental socialisation models and other social cognitive mediational models of parental influence (Bronfenbrenner & Morris, 1998; Eccles & Davis-Kean, 2005; Goodnow & Collins, 1990; Grolnick & Slowiaczek, 1994; Marjoribanks, 2002). Parental involvement is a key factor known to link to higher attainment (Eccles, 1992; Guo & Harris, 2000; See & Gorard, 2015). Parents appeared to influence their children's interests and aspirations, particularly with regards to future educational and vocational options.

The interviews added to the exploratory analysis by indicating the ways in which parents were perceived to be influential including; the influence upon attitudes to education, values placed upon it, the reinforcement of skills, role modelling and facilitating a home environment that encourages learning. This might be expected given that children's

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perceptions of socialisers' beliefs, attitudes and behaviours about (gender) roles and stereotypes are thought to influence students' values and expectations (Eccles et al., 1983; Eccles & Davis-Kean, 2005; Simpkins et al., 2012) and that family characteristics are known to relate to educational outcomes (Bradley & Corwyn, 1999; Brooks-Gunn & Duncan, 1997; McLoyd, 1998). Such findings are further supported by research that has found parental influence may result from messages provided by parents as they guide their children and work with them on different activities (Jacobs & Eccles, 2000) and that students benefit from a stimulating environment (Walberg & Marjoribanks, 1976) as highlighted by students in the qualitative data.

Teachers and peers were the other two key sources of influence reported in the quantitative analyses and were also highlighted as influential in the qualitative data. Teachers are known to play an important role in shaping the aspirations of students (Baker et al., 2014) and good relationships with teachers can contribute to increased attainment in lower SES students (Sammons et al., 2015) so this finding is not unexpected in this research. Whilst this research contributes some insights into the social factors affecting achievement motivation there is still however much to understand about precisely *how* socialiser's influence children's attainment as the relationships are extremely complex, for example, the directionality of these relationships (White, 1982) and exactly how specific parents' beliefs and behaviours influence their child's attainment (Eccles & Davis-Kean, 2005) as discussed in chapter 3.

Although prior attainment was not investigated in this research students nonetheless highlighted this as a factor they perceived to influence their expectations and values in the interviews. A-level choices were reportedly made on the basis of the subjects students' had either done well, or badly in at GCSE or AS level, or those they had enjoyed or not. This is hardly surprising given that prior attainment is known to impact on both post-16 choices (Department for Education, 2012; Sammons et al., 2015) and also later attainment (Marsh & Craven, 2002, 2006). Omission of data on prior attainment was therefore a significant

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limitation of the study which is discussed below, alongside the other limitations perceived to be associated with this research.

Methodological Challenges and Limitations

Sampling Issues

Although convenience sampling is often used in social sciences (Bryman, 2012) it does raise issues of generalisability (see Chapter 4). This was a concern within the current research. For example, as highlighted throughout the chapters there was restricted variation in parents' occupational status, with a high percentage in managerial or professional work, and therefore any associations between SES, expectations, values and achievement must be treated with caution; they cannot be applied to the wider population. Additionally, the sample was not representative of ethnicity (see Chapter 7), with a high percentage of students in some minority ethnic groups (mixed race groups, Asian and Chinese) and a low percentage in others (White other, Black Caribbean). Any conclusions about the relationships between the expectations, values and A-level achievement of ethnic groups must therefore again be carefully considered. There is also a higher proportion of students in independent schools, both in Oxfordshire and this sample, compared to the UK (see Chapter 4). This similarly has implications for the results of this study as any conclusions drawn on the relationship between school sector and expectations, values or achievement may not be representative of school types throughout other areas of the UK. In view of these convenience sampling issues it would be difficult to claim that the results of this investigation are wholly generalisable.

Furthermore, the sample was limited by the schools and students who chose to take part. For example no FE colleges agreed to participate and this was a limitation as research has shown that students attending these institutions may have different aspirations (Meschi, Crawford, & Vignoles, 2011). Any findings and conclusions drawn on the relationships

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between expectations, values and A-level achievement cannot therefore be applied to all A-level students; but only those studying them within a school setting. The percentage of state and independent school pupils participating in this study did fall between Oxfordshire and National statistics (see Chapter 4). Interestingly in one participating school a social group of six African Caribbean boys chose to withdraw from the study and therefore the sample was also limited by those individuals who chose to participate and those who chose to withdraw. Again, this makes application of the results and conclusions to a wider population of A-level students difficult as they are only based on the relationships between the expectations, values and achievement of this particular sample of students. These sampling issues have implications for extending the research with a wider, more representative, sample which will be discussed at the end of this chapter.

Limitations of a Mixed Methods Design

Whilst a limitation of a mixed method design may be contradictory results (Creswell & Clark, 2011) this was not a problem for the current study. Consideration does however need to be given to the consequences of having two different sample sizes (having 930 questionnaires but 20 interviews) when merging the data set and drawing conclusions (Creswell & Clark, 2011). A dominant status design was used in order to reflect this tension methodologically however it is acknowledged that merging the results in this study is problematic. As greater weight has been given to the results of the exploratory and inferential analyses in explaining the links between expectations, values and achievement, and their relationship to the student's background, self-schemas and identity, this will have been reflected in the overall conclusions drawn. The interviews have been used to illustrate themes from the data and provide further insight into students' perceived relationships between their expectations, values, self-schemas (identities) and A-levels, and their perceived influences upon these. The quality of the interview data is recognised as being weaker than that collected

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using the questionnaires, partially, but by no means exclusively, because of the quantity of them (see also interviews and contextual challenges below).

It is also acknowledged that a concurrent mixed methods design may have limited the data collected as it was not possible to identify specific themes in the quantitative analysis that would benefit from specific exploration in the qualitative phase (see Chapter 4). A design that was more iterative in nature would have been more beneficial in understanding the complex relationships between expectations, values and achievement and this is an issue again addressed in the contextual limitations.

Limitations of Self-Report Data

Both the questionnaires and interviews in this study relied on self-report data. This is known to have several limitations including potential validity problems (Barker, Pistrang, & Elliott, 2005) such as; social desirability bias (King & Bruner, 2000), actor-observer effects (Fiske & Taylor, 1991; Jones & Nisbett, 1971) and self-serving bias (Fiske & Taylor, 1991). When self-reporting people often do not know what influences their behaviour (Barker et al., 2005) and may respond more positively because they have a distorted outlook about who they are (John & Robins, 1994) and are predisposed toward self-enhancement, or trying to maintain positivity about the self at the expense of being unrealistic (Fiske & Taylor, 1991). These may therefore pose difficulties for the data collected in this study where lack of credibility due to biased responding is a major issue because it potentially impedes the validity of the self-report as a measure (McDonald, 2008). Self-reports are built on the assumption that the individuals have access to the psychological property that the researcher wishes to measure and that the participants are willing to report that property (Judd & McClelland, 1998). This assumption may be problematic in the current study because according to Kagan (1988) people do not possess the kind of self-awareness about why they do the things they do, that self-report measures take for granted that they have. Thus students

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may not be aware of the factors underlying their motivation for A-levels. Kagan (2007) does however point out that self-reports are the only way to get at personal conceptions of the self and they were therefore considered a useful tool in exploring the relationships between expectations, values, self-schemas, identity, motivation and A-levels.

Furthermore, findings on the relationship between SES and achievement can vary depending on whether the data is collected from students or their parents. Sirin (2005) argued that students are likely to overestimate their family background and family resources, which would artificially limit the variability of the SES measure by pushing it upward. Although these could have potentially been problematic in the current study such criticisms can be overcome because it is known that older students, those from two-parent households, and high achieving students are more likely to report accurately (Sirin, 2005). Since this study sampled 16-18 year old (and therefore older) students, and to some extent they were high achievers because they had remained in the school system taking high stakes examinations, they may be considered more accurate in their self-report measures on SES.

Limitations of Using Questionnaires

There were a number of challenges in employing questionnaires in research. The use of questionnaires potentially limited student responses on the relationships between expectations, values and achievement as closed questions did not allow them to expand upon their answers and the researcher could not prompt or gain further information (Bryman, 2012; Coolican, 2009). The advantage of also employing a mixed methods design however was that the additional use of interviews potentially enables the triangulation of some of the findings (Bryman, 2006; Greene et al., 1989). Thus interviews allowed the researcher to gather expanded information on the ways in which expectations and values relate to A-level goals and achievement and students' perceived influences upon these. They therefore had the

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benefit of overcoming the difficulties associated with closed questions by allowing identification of common themes, elaboration and clarification of some of the data and research questions (see Chapter 4). For example, students provided information on how socialisers may be influential, how task demands related to their A-levels and the ways in which they valued these qualifications.

In part three of the questionnaire students were asked about their general life expectations, values and goals, using items adapted from the Michigan Study of Adolescent and Adult Life Transitions (1990) as discussed in chapter 6. A limitation of this study may however be that the items used lack validity in a modern UK context where notions of life values, goals or work may be different to the USA and may have changed over time. The researcher was however aware of these issues when analysing the results and where appropriate attempted to comment on this, for example, where there were reported gender differences in future expectations and goals (see Chapter 7).

Furthermore when employing questionnaires misinterpretation of questions by participants is possible and may produce distorted answers (Coolican, 2009). The issue of misinterpretation was problematic in the current research when several students attending a fee-paying school indicated that they were in receipt of free school meals. This came to light only when they sought clarification from the researcher. The researcher ensured that answers to this question were subsequently re-checked and re-coded if necessary to indicate that students were not in receipt of free school meals. Misinterpretation had not occurred in the responses of those attending other private schools. In order to overcome this limitation, the researcher therefore attended schools, where permitted, to give out the questionnaires and facilitate their completion where possible so that students had the opportunity to clarify questions to avoid misinterpretation. The researcher was not however present in all schools (n=4).

Limitations of the Interviews

One of the main limitations of this research was that the length of the interviews was a major problem. They were very short and thus the data collected lacked depth. There were a number of general challenges to using interviews discussed in the mixed methodology (see Chapter 4) that were found to be highly relevant. For example the researcher found that as a novice learning about interviewing and conducting them presented challenges (Roulston et al., 2003) and that although they are perceived to be relatively easy to perform they are hard to do well (Potter & Hepburn, 2005). These concerns contributed to their lack of depth in this study. The researcher believes that the experience of conducting interviews in this study developed ‘emerging strengths in the academic journey’ (Roulston et al., 2003) but there were lessons to be learnt. For example, the introduction to the interviews were too lengthy in an attempt to build rapport which had been recommended in the literature, and they suggested to students that they may have seen some issues discussed in the media which may be considered a leading question, potentially biasing subsequent answers. Certainly, students could have been encouraged to expand and develop their answers to the questions more fully and probes could have been used more extensively to add depth to the data. These reflect the inadequacies of the novice interviewer. Some of these issues were however also related to the time constraints of the interviews (see contextual limitations).

It has been argued that data from interviews are personal and idiosyncratic and thus may bear little relationship to ‘reality’, that participants may not always be truthful, may deceive themselves and be unable to provide the level of detail, or use the concepts, that the researcher is interested in (Barker et al., 2005). Whilst these concerns suggest that the results from the interviews in this study may be biased in a number of ways they are still a considerable source of information given that ‘no one else has access to more information’ than oneself, and that this information is rich with motivational and other introspective details that others might not be aware of (Paulhus & Vazire, 2007). This suggests they were an

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invaluable source of data in examining the relationships students perceived to exist between their expectations, values, self-schemas (identity), task demands and their A-levels, as well as their perceived influences upon these.

Limitations of SEM

Whilst SEM has been an appropriate and beneficial technique for analysing the relationships between expectations, values and A-level achievement there is a concern regarding the nature of SEM as a confirmatory technique. As discussed in chapter 8 the results of the analyses in this thesis cannot prove causation. Rather it has been a tool for drawing causal conclusions about the relationships between student background, and demographics, expectations, values and A-level achievement based on a combination of observational data and the theoretical assumptions of Eccles' expectancy-value model (Pearl, 2012).

General practical concerns about the use of SEM were also highlighted in chapter 8 and included issues surrounding normality, missing data, collinearity and the use of global fit indices. In order to ensure these issues did not affect the results of this study the treatment of non-normal data using MLR and missing data using FIML, as well as removal of items that indicate collinearity were discussed (see Chapters 8, 9 and 11). The use of fit indices as guidelines rather than universally rigid criteria, or rules was also employed in line with recommendations in this area (Marsh et al., 2004).

Testing an overall model was problematic which was a potential limitation for this study. A recent criticism of Eccles' work is that the interaction between expectations and values has not been tested (Nagengast et al., 2013) and this study had therefore attempted to explore this. Although an overall model for the year 13 sample did not fit and could not be successfully produced for the comparison sample it is important to note that testing each

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research question was in accordance with the conceptual model and theoretical framework where Eccles' predicted that expectations and values uniquely and independently predict achievement outcomes (see Guo et al., 2015). It is known that 'Eccles' theoretical model does not specifically mention the interaction between expectancies and values at all' (Nagengast et al., 2013, p431 and 'the empirical tests of these models reported in the literature do not explicitly test the interaction' (p431). Although it is therefore a limitation in this study it is also a limitation within the field generally.

Contextual Challenges

There were a number of contextual challenges in this research which resulted in limitations. Firstly, whilst the pilot study was conducted immediately following the summer examinations in 2013 the main phase was conducted immediately prior to the exam session in 2014. Students may have therefore experienced different levels of motivation which could affect their responses on the questionnaire, altering their perceived expectations and also their perceptions of the attainment, utility and intrinsic value of their A-levels. Secondly in the main study, although the majority of the students completed the questionnaires preceding their summer examinations, due to logistic constraints two schools participated after the exam season, and thus some students (n=132) completed the questionnaires post-examinations. Results however indicated no significant differences in the STV of students tested before and after exams, when subsequently analysed. This suggested that overall it did not affect the motivational patterns of these students.

The year groups participating in this study may have also experienced different A-level systems due to the policy changes implemented in September 2013; for some the upper 6th will therefore be their first experience of terminal assessment, but not for all. The lower sixth, by contrast, began a compulsory terminal route and the effect this might have on

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teaching and learning may be a variable that unwittingly affected the values and expectations students had and thus the responses they gave to the questions in this study. The ways in which the differing routes may have affected the results would however be far too complex for the researcher to fully know and was a factor beyond the researcher's control. This issue is however useful to be aware of when considering the results.

In the main study, most students were therefore participating in the research in the term leading up to their A-level examinations, when teaching time was an understandable priority, and as a result schools were more willing to grant access if the fieldwork was conducted in one visit and within a short specified time period (tutor or assembly period). This limited the mixed method design available to the researcher, especially as the students were sitting their A-levels examinations a few weeks later and, for many, then leaving school. This meant it was not practical for the researcher to conduct the interviews following analysis of the quantitative data. It is acknowledged that a sequential design may have facilitated collection of a richer data set for this study, however a concurrent design was used because of these practicalities. As such, time did not allow the researcher to conduct a design that might have been more iterative in nature. This is a limitation of the study.

One of the major contextual limitations of this research was that, due to these time constraints imposed by participating schools, the interviews had to be conducted in a short space of time and overall they are brief. As the study was conducted in the period immediately preceding the examination season students were only able to be withdrawn from a single lesson period in order to participate in the interviews and thus the schedule was constrained by this time frame. This means that the qualitative data is only illustrative and cannot be used to make any substantive claims about students' perceptions of the relationships between their expectations, values, self-schemas (identities) and achievement. Students were not asked about specific aspects of their identity, such as ethnicity or gender, and how these relate to their A-levels. For example, explicit questions could have been asked

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about whether, or to what extent students believed any aspect of their identity such as gender or ethnicity related to their choices or motivation for their A-levels. It would also have been useful to explore the notion of perceived cost in relation to A-levels to see if motivation was affected by any perceived negative consequences of studying for them. This was an issue hinted at by students in the interviews but was not formally studied. Likewise, the links between prior achievement related experiences and A-levels were raised by students, and the relationship between task difficulty and motivation, but were not a formal focus of the interview schedule. On reflection these were omissions that would have benefited from inclusion. The failure to account for prior achievement in this study as a whole is now discussed in more detail.

Failure to Account for Prior Achievement

Another main limitation of this research study, which has been highlighted throughout the thesis, was the failure to collect data on prior educational achievement. As discussed the researcher had collected data on GCSE grades in the pilot phase (see Chapter 5) and had aimed to collect it in the main study however there were a number of contextual difficulties that prevented this. These included; the time taken for students to complete the information concerning their GCSE's which was not feasible within the time frame schools were able to offer for completion of the questionnaires, issues associated with students' recall of this data as the pilot study, and teachers, suggested that not all students were accurately able to remember the grades that had previously achieved. Lastly, GCSE data was not available for all participants directly from their school because of the fluidity of movement between institutions (see Chapter 5). As such it was decided not to collect data on the GCSE results of participants in the main study due to these practical difficulties. A clear limitation of this current study was the failure to account for this more fully in the design, especially given the known reciprocal effects between achievement and educational attainment (Marsh & Craven,

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2006; Marsh & O'Mara, 2008) and the significance of prior achievement for post-16 choices and outcomes (Department for Education, 2012; Sammons et al., 2015) which has also been previously discussed. In this research students' GCSE grades will have determined the A-level options available to them and had a likely effect on the expectations and values they attached to A-level achievement. Although it was not an area explicitly addressed in the interview schedule it was highlighted as important by the interviewees but was not accounted for in the quantitative analyses. In the absence of such data relationships between expectations, values and achievement should be treated with caution because it is possible that the experiences and grades at GCSEs were an explanatory factor for any relationships which had not been accounted for in this work.

Theoretical Limitations

There are also limitations in applying Eccles' model in this study. It is a complex model of achievement motivation with many different components and the timeframe of this research did not allow all aspects to be studied. It is therefore limited to the psychological and social components and is unable to address the developmental aspect, or survey the student's parents or teachers as was the case in the Michigan Study of Adult Life Transitions (MSALT). Additionally, the original items on the self-and-task-perception questionnaire were domain specific, focused on perceptions relating to maths, and in this study have been generalised across A-levels as a whole. This presents a limitation as it is possible that students have different expectations and STV for different subjects, which is not possible to identify in the current study. Various motivational constructs, including task value, self-efficacy, self-concept and achievement goals have been argued to be domain specific (for example see Bong, 2001; Eccles, Wigfield, & Schiefele, 1998; Marsh, Craven, & Debus, 1991; Pintrich,

2003). However as studies examining the association between STV patterns across school subjects are rare (Chow & Salmela-Aro, 2011) this current research is important.

Ideas for Further Research

It is clear that understanding the motivational factors underlying the differential achievement of A-level students is important. It has the potential to address issues surrounding attainment gaps in this student population. Given the lack of research into the educational outcomes of A-levels, which are critical in terms of life chances and entry into higher education (Elwood, 1999), it is apparent that further research into the educational outcomes of A-level students on the basis of SES, gender and ethnicity is warranted with a more extensive large scale sample of students. A wider sample is required to facilitate further analyses of SES and ethnicity variables with a more varied, representative population in order to ensure greater validity and generalisability of research findings in this area. A sequential mixed methods design that was more iterative in nature would be beneficial, as previously highlighted, such that patterns emerging from the quantitative data could have been specifically explored in greater detail.

In order to draw conclusions about the relationships between expectations, values and achievement it would also be valuable to examine the role of prior GCSE attainment within the specified model given that previous achievement is a variable in the expectancy-value model (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984) and it is well known that academic self-concept has consistent reciprocal effects with both achievement and educational attainment (Marsh & Craven, 2006; Marsh & O'Mara, 2008). Students are also more likely to value activities they have experienced confidence in according to longitudinal research (Jacobs et al., 2002). Prior achievement is a key predictor of post-16 choices

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(Department for Education, 2012; Sammons et al., 2015) and therefore warrants further investigation.

It is clearly evident that more work is needed to understand the STV construct, and particularly the role played by utility, since the exploratory and qualitative data indicated its importance for A-level students, although it was problematic when included within the SEM. This is possibly due to the reliability of two item factors, both in Eccles work and in this research (see Chapter 9). Although model modifications were not extensively explored in the current thesis due to theoretical reasons (see Chapters 9 and 11) and practical constraints these could be investigated further to examine the extent to which the removal of utility can be further validated, or the three-factor model of STV modified. The STV construct could also be re-tested in an alternative, larger sample to further examine its validity. The relationships between each specific component and achievement could additionally be explored. Linked to this, research focusing exclusively on the perceived usefulness of A-levels may be important, where both their utility value and relationship to future life expectancies and values can be examined. This may include work on interventions incorporating a utility, or relevance perspective (see below). There are also questions raised about whether the three-factor model of STV encompasses all of the necessary components, or if there are likely to be other values that might be important, for example ones relating to psychological states or the excitement, stimulation or risks associated with tasks (Wigfield & Cambria, 2010). This would be interesting to further explore. Since the literature suggests that STV plays a particularly important role in the choices students make a further area of investigation would be to examine the relationships between STV and subject choices. It would also be of potential interest to carry out more formal mediation and moderation analyses (Baron & Kenny, 1986) on the nature of the relationships between SES, gender, STV, expectations and achievement.

The exploratory findings and qualitative analysis suggested that further exploration of the role of perceived cost and its relationship to expectations, values and achievement may be

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warranted. Perceived cost is also currently under researched (Chen & Chen, 2012; Flake, Barron, Hulleman, & McCoach, 2015; Wigfield & Cambria, 2010) and therefore the task effort cost, outside effort cost, loss of valued alternatives and emotional costs of A-levels could be usefully explored. As discussed above in relation to the limitations of the interviews this would be best implemented by conducting a qualitative study.

Furthermore, it would be fruitful to conduct a more extensive qualitative study on the nature of the relationships between self-schemas, identity and high stakes examinations. Interviews would benefit from being far longer in order to gain fuller, richer data and the notion of identity specified more explicitly in the interview schedule. For example, students could have been asked whether, or how, aspects of their identity such as gender or ethnicity have affected their motivation and goals for A-levels, or possibly their specific identity statuses or schemas related to A-levels explored. Students might even, alternatively, be given the opportunity to self-define identity. The initial findings from this study do illustrate that these are areas which would benefit from being explored with students in more detail than was possible within the constraints of the current study.

Lastly it would be interesting to see if the relationships between expectations, values and achievement are specific to A-level examinations, because they are particularly important for life trajectories, or whether such relationships also apply to other high stakes examinations in England, such as GCSE's. A longitudinal study that follows students from GCSE to A-level would be particularly valuable. Similarly, this study included students studying only A-levels or A-levels alongside vocational qualifications and it would be interesting to examine the relationships between expectation, values and achievement in students studying only vocational students to investigate any differences in achievement motivation.

Implications for Policy and Practice

As noted in the opening of this thesis understanding the motivational beliefs of A-level students has implications for policy makers and practitioners who are concerned with educational outcomes. Understanding the relationships between expectations, values and achievement has clear relevance for policies concerned with the enhancement of student learning and achievement as policy makers, researchers, and educators look for ways to increase student performance and persistence in school, and to better prepare students for future education and entry into an increasingly global workforce (Silva & White, 2013). Policy makers in England have, for example, focused on the differences in aspirations and achievement of particular groups such as ethnic minorities, boys and those from lower socio-economic classes. There are also debates around the widening participation of such groups in HE and the recruitment of students, more generally, to STEM subjects.

Eccles expectancy-value theory, and the results of this research, have a number of implicit and explicit links with the aspirations literature. Most pertinently expectations and values are postulated to play an important role in achievement, choices and aspirations. As discussed throughout this thesis modern expectancy-value theory (Eccles, 2009) suggests that specific identities, including perceptions of self in the future, may influence expectations and values. Aspirations were found to be mediated by differences in value attached to specific domains (Eccles, 1994; Eccles 2007b; Eccles. & Durik, 2006; Watt et al, 2012). It was also noted that studies examining the association between STV patterns across school subjects and aspirations are rare (Chow et al., 2012). In this research links were found between A-level students' expectations, values, goals and self-schemas for general and future life. The framework suggests that a student's context, identity and self-concept are inextricably linked to the development of particular aspirations. Attainment value is known to be important in allowing students to achieve what they need to pursue their goals and is linked to their personal and collective identities, including development of who they are and what they

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aspire to be (Eccles, 2009). Recently intrinsic value has been associated with aspirations as well as engagement and effort (Guo et al., 2016; Guo et al., 2015). Since utility value is associated with the perceived usefulness of a task for future goals it is not surprising that this too relates to educational and occupational aspirations (Wigfield, Tonks, & Klauda, 2016). Some very recent developments in the intervention field have indeed tested how academic self-concept interacts with value beliefs in predicting aspirations (see Guo et al, 2017 below). The results of this thesis found A-levels both confirmed and changed the way students saw themselves, had a positive impact on their expectations, values and aspirations and these related to the effort they applied. For example, students' experiences of A-levels were reported to raise their expectations, and their goals for the future (see Chapter 12) and were seen as important in guiding life paths and decisions as might be expected. In considering the implications of the results of this thesis it is clear that there are therefore implications for policy and practice in a high stakes UK environment.

Educational and occupational aspirations have become an important reference point in policy debates about educational inequality where traditionally low aspirations are presented as a major barrier to closing educational attainment gaps and increasing levels of social mobility (Baker et al., 2014). A major policy goal in recent times has been the increase of HE participation (Berrington, Roberts, & Tammes, 2016; Payne, 2003). Variations in different SES, ethnic and gender groups' participation in HE, participation in STEM subjects and achievement of good degrees have been seen in the UK and have a profound impact on social mobility (Berrington et al., 2016; Shaw et al., 2016). Baker et al. (2014) highlight how a prominent feature of these debates, is the idea that aspirations are important for explaining differences in educational outcomes (Cabinet Office, 2008, 2009, 2011; Department for Business Innovation and Skills, 2009, 2010) since they are thought to shape thinking, influence behaviours relevant to achieving educational success, and subsequently play an important role in determining educational outcomes. Indeed there is a well-established field of

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research indicating that career aspirations do relate to both educational attainment and decisions about academic pathways (Butler & Hamnett, 2011; Croll, 2009; Francis & Archer, 2005; Goodman & Gregg, 2010; Schoon & Polek, 2011). In this study future goals, particularly plans for further education, positive occupational expectations and family importance did relate positively to students' expectations, values, efforts and subsequent achievement. A-levels were perceived to have attainment and utility value because the grades allowed students to pursue their future choices, including academic and occupational goals. However, there were negative associations with negative economic expectations and extrinsic motivation.

The literature suggests that aspirations differ on the basis of where students live, their SES, gender and ethnicity (for example, Butler & Hamnett, 2011; Francis & Archer, 2005; Croll, 2009; Croll & Atwood, 2011; 2013). Eccles' work found that family SES was a significant predictor of college planning and aspirations (Eccles et al., 2004). Just as the expectancy-value theory acknowledges the wider social context and importance of socialiser's in shaping expectations and values, a finding reiterated in this thesis (see research question six), it is acknowledged that parents and social contexts such as schools and neighbourhoods are an important influence on educational and occupational aspirations (Brind, Harper, & Moore, 2008; Marjoribanks, 2003; Moulton, Flouri, Joshi, & Sullivan, 2015; St Clair, Kintrea, & Houston, 2011). Such links form the basis of some recent interventions designed to raise achievement as discussed later in this section.

Contrary to the early literature there is a developing argument that aspirations of young people are generally high and do not differ between particular group. For example, Baker et al. (2014) found that the vast majority of students in the UK, including those from highly disadvantaged backgrounds, hold high aspirations for pursuing further academic qualifications. In fact, as discussed in chapter 3 their analyses suggested that students from the lowest income group had the highest aspirations out of any other group, with the exception of

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students in the top income bracket. Rose and Baird (2013) undertook a survey of 1,701 year 11 & 13 students from 35 institutions and found the majority of young people reported high educational and career aspirations. Chowdry, Crawford, and Goodman. A. (2009) analysed data from LSYPE and found that irrespective of SES many 14 year olds aspired to go to university, although this effect was reduced by age 18. Berrington et al. (2016) used data from the United Kingdom Household Longitudinal Survey (UKHLS), an annual panel survey of over 30,000 private UK households to explore the interaction of gender, class and ethnicity in the educational aspirations of UK teenagers. They found that improvements in attainment and rates of progression to university have been much faster for most ethnic minority groups than for White children. Despite political rhetoric which explains these differences in terms of lack of aspiration the findings of this study again suggest that young people's aspirations for college/university participation remain high. Two-thirds of the young people aged 10–15 held this aspiration in their study which was a larger proportion than actually participated, although there were significant differences by gender, ethnicity and class, with higher aspirations found among girls, teenagers from professional and managerial backgrounds and teenagers from non-White ethnic groups. White boys from the lowest occupational class and from workless households had the lowest aspirations (around 50% a positive aspiration for college or university) and the authors acknowledge that even though this figure is low, it is higher than the percentage of working-class boys who go to university. Berrington et al. (2016) therefore argue that focusing on aspirations alone will not reduce differences in HE participation.

It has therefore been argued that the role of aspirations in determining attainment is often overstated (Baker et al., 2014; Gorard, Huat, & Davies, 2012; Khattab, 2015; Menzies, 2013) and it is misleading to suggest that low aspirations are more prevalent amongst disadvantaged groups than they actually are. The generally high aspirations of all students suggest that the problem is not necessarily one of low aspirations but of the absence of opportunities and conditions for them to be realised (Baker et al., 2014). Overall research on

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the prevalence of low aspirational cultures can be questioned (Baker et al., 2014; Gorard et al., 2012; Rose & Baird, 2013; St Clair & Benjamin, 2011). It is possible that the evidence linking aspirations to school achievement is slim (Khattab, 2015) and researchers are starting to question policy makers ideas that raising aspirations will increase achievement. Baker et al. (2014) suggest that greater caution should be exercised in how aspirations are used to explain educational inequality or advocated as a solution to it. Furthermore, there seems to be little evidence to suggest that interventions designed to raise aspirations are likely to be effective in narrowing educational attainment gaps (Gorard et al., 2012). The Education Endowment Foundation (2017) claim that approaches to raising aspirations have been tried across three broad areas including interventions that focus on parents and families, interventions that focus on teaching practice and out of school or extra-curricular activities. Although they acknowledge that these aim to change aspirations by exposing students to new opportunities, develop self-esteem, motivation or self-efficacy they conclude that these intervention actually have little or no impact on educational attainment, that the relationship is complex and that raising aspirations in isolation is not effective.

Importantly expectancy-value theory and indeed the results of this study may be able to contribute to this debate since it has been claimed that there is a need to look at expectations as well as aspirations. The findings of this research would support this assumption. It is acknowledged that aspirations and expectations are distinguishable concepts as aspirations are what one wants to achieve whereas expectations are what one think they can really achieve (Bohon, Johnson, & Gorman, 2006; Gorard et al., 2012; Reynolds & Pemberton, 2001)). However it is argued that both need to be taken into account when examining performance (Khattab, 2015) since when both are low performance can be negatively affected (Portes, Aparicio, Haller, & Vickstrom, 2010) but high aspirations or expectations can positively influence achievement (Khattab, 2015). In a study examining educational aspirations in inner city schools Strand and Winston (2008) postulated that

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aspirations and attainment may be linked by specific attitudes and influences, many of which are features of the expectancy-value model. Their research identified several key attitudinal factors found to be associated with low aspiration including low academic self-concept, low home-educational aspirations, low peer support, disaffection and a lack of commitment to schooling. Thus expectations were related to aspirations. It is argued that high aspirations should be reinforced by equipping students (especially those from disadvantaged backgrounds) with information and opportunities to raise expectations and efficacy which will raise performance (Khattab, 2015). According to Khattab (2015) these extra steps and interventions (beyond raising aspirations) can lead to higher level of expectations and self-efficacy, which in turn help young people revise their aspirations. Although further research is required the results of this research suggest connections between the goals, identities, expectations, values and achievement of A-level students and it is possible that research purely investigating relationships between aspirations and achievement would benefit from considering the expectancy-value link. In doing so both aspirations and achievement may be raised and there is therefore the potential to contribute to the policy debates surrounding underachievement and participation. As such expectancy-value interventions are now therefore considered.

Expectancy-Value Interventions

In the last decade there has been an emerging field of research on interventions designed to enhance students values and subsequent achievement which are useful to consider in the context of debates surrounding educational achievement in the UK. By targeting psychological mechanisms it is argued that educational outcomes can be enhanced in an efficient and cost-effective manner and these motivation interventions are reported to be extremely effective (Yeager & Walton, 2011). Given the concerns about engagement with STEM subjects both in the UK, as well as other countries, much of this interventions research

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has targeted these subjects (Harackiewicz, Tibbetts, Canning, & Hyde, 2014; Rosenzweig & Wigfield, 2016). It is known that females are underrepresented in mathematics and related careers and this cannot be explained sufficiently by gender differences in achievement (Else-Quest, Hyde, & Linn, 2010; Watt et al., 2012) but may be explained by gender differences in choices and expectancy and value beliefs (e.g., Chow, Eccles, & Salmela-Aro, 2012; Nagy et al., 2006; Watt et al., 2012). Gender differences reported in value beliefs in previous studies are, however, somewhat inconsistent and seem to depend on the type of value (e.g., Frenzel, Goetz, Pekrun, & Watt, 2010; Marsh, Trautwein, Lüdtke, Köller & Baumert, 2005; Meece, Wigfield, & Eccles, 1990; Watt, 2004; Watt et al., 2012). The results of this thesis suggest that interventions could be usefully applied as expectations and values have also been found to relate to A-level achievement and where exploratory analysis indicted a typical gendered pattern in subject choices including STEM subjects (see Chapter 7 and Appendix G). As discussed below these interventions might target the expectancies of students, the values of students, particularly their utility value, or both their expectancies, values and aspirations. These may, in turn, raise the academic achievement of students.

Expectancy interventions

Expectancy interventions aim to help students feel more confident to learn and achieve in a specific academic context and to be in control of producing their achievement outcomes Hulleman et al. (2016). They therefore target constructs such as students' perceived competence to perform specific academic tasks (e.g., self-efficacy, competence beliefs), to obtain a specific performance level (e.g., expectancies, outcome expectations), perceptions for success or failure on academic tasks (e.g., attributions), and how much control they have in creating a positive outcome. Hulleman et al. (2016) suggest that when interventions provide students with specific training in ascribing academic success to things that are within their control (e.g., effort) and the notion that academic difficulties can be overcome (and thus

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increase perceived academic control) then such changes mediate effects on academic motivation and achievement outcomes (e.g., Haynes, Ruthig, Perry, Stupnisky, & Hall, 2006; Perry, Stupnisky, Hall, Chipperfield, & Weiner, 2010). Hulleman et al. (2016) cites intervention studies which sought to alter the attributions that low performing students made regarding their academic achievement, from one of low ability to one underscoring the importance of effort, and the notion that achievement was amenable to change. These shifts in attribution then demonstrated improvement in course grades (Boese, Stewart, Perry, & Hamm, 2013; Hall et al., 2007; Yeager & Walton, 2011), exam performance (Struthers & Perry, 1996), standardized test scores (Good, Aronson, & Inzlicht, 2003), intrinsic motivation (Hall et al., 2007), and reduction in test anxiety and voluntary course withdrawal (Ruthig, Perry, Hall, & Hladkyj, 2004). Since expectations were linked to A-level achievement in this research there are implications for practice. Similar expectancy interventions could be successfully employed with this student population to raise achievement and may be particularly useful to employ with girls and those from lower socio-economic groups who were found to have lower expectations for A-levels.

Value interventions

Since values were also related to achievement in this study there are implications for interventions fostering A-level students' value beliefs. The findings are highly relevant for practice, according to Gaspard, Dicke, Flunger, Brisson, et al. (2015), as value beliefs influence students' academic development in terms of effort and persistence in various school subjects as well as academic choices (Durik, Vida, & Eccles, 2006; Nagengast et al., 2011; Nagy et al., 2006; Simpkins et al., 2006; Trautwein et al., 2006). Based on Eccles' expectancy-value framework this category of interventions therefore targets students' perceptions of the reasons why they see value and meaning in an academic activity (Hulleman

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et al., 2016). These are therefore particularly important to consider at a time when students in the UK are being expected to remain in education or training for longer. Attainment and utility value are viewed as especially important for career aspirations and course choices (Durik et al., 2006; Watt et al., 2012).

Interventions that focus on intrinsic value tend to identify tasks and activities that students find interesting and intrinsically motivating, which are then compared to those that are less interesting and enjoyable on various learning outcomes. This research generally finds support for using interesting tasks as beneficial for interest and value, as well as learning outcomes such as depth of processing, attention, and achievement (Ainley, Hidi, & Berndorff, 2002). This may have implications for the pedagogical practice in A-level teaching.

Two main intervention approaches have been applied to enhance utility value in students. As discussed in chapter 2 one approach was direct communication of utility information in laboratory based studies, Durik et al. (2015) asked college students in the US to learn a new technique for mentally solving multiple problems with instructions containing task utility value information. It was found that the effect of utility value information was positive for individuals with high success expectations but negative for individuals with low success expectancies.

The second approach alternatively encouraged students to self-generate arguments for the utility of material to their lives. Such relevance interventions are particularly important in relation to aspirations as they focus on the usefulness for long term goals as well as short term goals and could again be usefully applied within A-level settings. Relevance interventions promote connections between the learning material and students' personal goals. These connections can refer to different life domains, such as future careers or daily life (Gaspard, Dicke, Flunger, Schreier, et al., 2015). They been successfully applied in both the laboratory and maths and science classrooms (Hulleman & Harackiewicz, 2009; Hulleman, Schrager, Bodmann, & Harackiewicz, 2010). For example, in a series of studies Hulleman et al

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developed and tested interventions designed to increase students' perceptions of the relevance of academic subjects in their lives (i.e., utility value). In the initial studies students were randomly assigned to conditions where they either had to write about how the course material related to their lives, or write a summary of the material they were studying. The findings revealed that high school science students (Hulleman & Harackiewicz, 2009) and college psychology students (Hulleman, Godes, et al., 2010) in the utility value treatment condition reported greater topic interest, future intentions, and academic performance than students in the control condition. These effects were particularly strong for students with low actual or expected academic performance but Hulleman and Harackiewicz (2009) found no moderating effect of gender for the effects of a relevance intervention on interest and performance in high school sciences classes.

Inspired by the potential role that parents play in students' educational trajectories (Jodl, Michael, Malanchuk, Eccles, & Sameroff, 2001) Harackiewicz et al. (2012) further developed an intervention that encouraged parents to talk to their children about the utility value of math and science. This is an important intervention to consider in the context of the research in this thesis as parents were reported to be the most important source of influence on A-level students' choices in both the exploratory and qualitative analyses. Harackiewicz et al.'s (2012) intervention was delivered via two brochures mailed to parents, plus access to a website, while their children were in 10th and 11th grade. Parents therefore received information that highlighted the utility value of mathematics and science courses for their teenagers, along with strategies on how to talk to their teenagers about the value of math and science coursework. The results revealed that students of parents who were randomly assigned to receive the intervention took nearly one additional math or science course in their last two years of high school than students of parents who did not receive the materials. Thus such value interventions may have an impact on the aspirations and achievement of students

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and involving parents using similar strategies prior to their child's A-level option choices may be a helpful strategy to employ in the UK context.

More recently Gaspard, Dicke, Flunger, Brisson, et al. (2015) conducted a cluster randomized controlled study designed to test whether ninth-grade students' value beliefs for mathematics (i.e., intrinsic value, attainment value, utility value, and cost) could be fostered with relevance interventions in the classroom. Again there are implications for A-level pedagogy. They assessed value beliefs in the domain of mathematics with a German instrument (Gaspard, Dicke, Flunger, Schreier, et al., 2015) that was developed to capture the multidimensionality of value beliefs. Intrinsic value was assessed by four items, attainment value was assessed by 10 items covering both the importance of achievement as well as personal importance and utility value was assessed by 12 items focusing on the utility for different life domains within a short-term (school, daily life, social life) as well as a long-term perspective (job, future life in general). Cost was assessed by examining opportunity cost, effort required, and emotional cost. All items were measured with a 4-point Likert scale. In this study eighty-two classrooms were randomly assigned to one of two experimental conditions (either writing a text or evaluating interview quotations) or a control condition. Both experimental groups received a 90-min intervention within the classroom on the relevance of mathematics, consisting of a psychoeducational presentation and relevance-inducing tasks (either writing a text or evaluating interview quotations). Intervention effects were evaluated via self-reports of 1,916 participating students six weeks and five months after the intervention in the classroom. Both intervention conditions fostered more positive long term effects on value beliefs for maths among students. Classes in the quotations condition reported higher utility value, attainment value, and intrinsic value, and classes in the text condition reported higher utility value. Regarding students' beliefs about the usefulness of mathematics, they found stronger effects for those life domains that were targeted by the intervention than for other life domains. Some evidence for stronger effects for females than

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for males was found as the intervention increased the number of STEM courses taken for high achieving girls and low-achieving boys, whereas no effect was found for high-achieving boys and the intervention tended to have negative effects for low-achieving girls. Again, such interventions may offer promising implications for A-level cohorts.

In a new large scale study Guo, Marsh, Parker, Morin, and Dicke (2017) specifically looked at the predictions of expectancy-value theory for achievement and aspirations in science. They tested the relations between achievement, motivational beliefs and coursework aspirations in several different scientific disciplines based on Trends in International Mathematics and Science Study (TIMSS) data including 18,047 grade 8 students from the four OECD countries that collected data for multiple science disciplines. Across the varying countries, they found that high achievement in a particular domain enhanced motivation in the same domain, which in turn predicted domain-specific aspirations. Notably self-concept significantly interacted with intrinsic and utility value to predict aspirations. Thus, students with high science self-concept and task values were more likely to aspire to engage in science, however students with high self-concept but low intrinsic value would not hold such aspirations. Similarly, students who value maths but have a low self-concept for science would not aspire to a scientific pathway. They also found that aspirations in one science domain did not depend only on abilities self-concept, and intrinsic value in that domain but also on relative abilities and motivation in other science domains. Guo et al. (2017) therefore suggest that interventions targeting the promotion of aspirations to STEM majors should seek to enhance both domain-specific self-concept and task values and that multicomponent interventions are therefore the most effective at promoting motivation. The links with the aspirations literature here are clear; raising aspirations alone will not necessarily enhance achievement but simultaneously raising expectations and values may make a contribution to this field. This is however an emerging area of research but one that has potentially important

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implications for its application to the UK policy debates and educational outcomes of A-level students.

Problems with Interventions

Although the findings from this research may have useful implications for the implementation of expectancy-value interventions it should be noted that such interventions are not without their problems. Gaspard et al. (2016) for example, found that although an intervention was successfully implemented in 82 ninth-grade maths classrooms there was a subsequent side effect on value, self-concept and effort in subjects that weren't targeted. Hulleman et al. (2016) highlight that utility value interventions may not be good for all students and that it is essential to acknowledge individual differences when employing strategies designed to enhance motivation. Furthermore, they recommend that variations in interventions are necessary and they should be based on the educational context, teacher expertise and student characteristics. Doubtless moderator variables such as students' competence beliefs or baseline achievement, the teacher-student relationship or school culture may affect the success of any intervention. Seemingly translating interventions into educational practice may not therefore be straightforward as researchers often underestimate the complexity of classrooms (Lazowski & Hulleman, 2016) and a researcher-designed intervention found to be effective in the laboratory or in a specific field context may not work when applied to another context (Daniel, 2012). Overall there is no clear evidence on whether relevance interventions decrease gender differences in motivation for STEM fields, and gender effects might also depend on the type of intervention (Gaspard, Dicke, Flunger, Schreier, et al., 2015). These issues should be borne in mind before implementing such interventions in any A-level context.

A Concluding Note on the Importance of Interventions

Students' expectancy and value beliefs are central predictors of educational outcomes and attainment. Having the skills to learn and persist in the face of challenging academic tasks is central to students' future educational and occupational choices and success. According to Hulleman et al. (2016) if we are to make leverage of the relationships between expectancy-value motivation and learning outcomes, it is critical to identify the sources of expectancy and value that are malleable and potentially accessible to educational practitioners. Importantly they argue that by targeting motivation gaps, educational practitioners, policy-makers, and researchers have a potentially powerful tool to further close achievement gaps and inspire more students to persist academically, both in the short and long-term. This is pertinent in a thesis that considers A-level achievement which are critical for future life pathways in the UK. As Hulleman et al. (2016) postulate when expectancy-value interventions are guided by practical questions and developed in collaboration between researchers and practitioners, they have the potential to solve fundamental challenges of educational practice. The achievement and engagement of A-level students are no exception as the results of this research suggest there are links between goals, identities, expectations, values and achievement.

Conclusions

Eccles' expectancy-value model of achievement motivation suggests that beliefs about ability and expectations for success are a strong predictor of grades and differences in task value underlie differences in motivation and achievement. In this thesis the relationships between expectations, values and A-level achievement were investigated in 930 Oxfordshire students, testing Eccles' model in the context of high stakes qualifications in the UK where it has not been previously explored. Psychological and social variables were examined to provide an understanding of the motivational factors associated with A-level achievement.

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These were important to understand as the grades achieved at A-level influence individuals' life chances, their entry into higher education and determine the options subsequently available to them. A key strength of this study was its large sample size which allowed powerful statistical tools to be used to investigate the relationships between expectations, values and A-level achievement. This research had the additional benefit of employing qualitative methods to further explore these relationships, providing insights that would not otherwise have been possible.

A discussion of the results, limitations and future directions for research have been presented in this chapter. Applying the expectancy-value model in the context of high stakes qualifications in the UK has been beneficial for understanding the relationships between expectations, subjective task value and A-level achievement which was the overarching research question in this thesis. The main conclusion is that A-level students' beliefs about their abilities, expectations for success and STV affect performance, supporting the theoretical framework which predicted these relationships. This is an important contribution since the model has not been previously investigated in this context and given the significance of these qualifications for future life pathways.

A relationship between students' expectations and A-level achievement was found (RQ1) as would be expected based on previous research (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Hood et al., 2012; Phan, 2014; Trautwein et al., 2012). Higher expectations related to higher achievement, supporting this well-established association. Such results should however be treated with caution in the absence of data on prior attainment. Similarly, the predictions of the expectancy-value model were supported in the current investigation with regards to the relationship between expectations and values (RQ2) where a moderate relationship was found. Students valued A-levels if they expected to do well in them. The students in this study achieved more highly if they valued their A-levels

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(RQ3), further supporting the theoretical model and research in this field (Cole et al., 2008; Guo et al., 2015; Hulleman, Godes, et al., 2008; Phan, 2014; Trautwein et al., 2012).

This study provides useful information on students' perceptions of A-levels. Students had above average ability expectations and expectations for success. They attributed value to their A-levels, indicated by rating them above the midpoint in the scale. Consistent with previous studies the relationship between expectations and achievement was stronger than the relationship between STV and achievement (Eccles et al., 1984; Fredricks & Eccles, 2002; Jacobs et al., 2002; Marsh et al., 2005; Meece et al., 1990; Nagengast et al., 2011; Trautwein et al., 2012; Wigfield & Eccles, 1992).

Although the theoretical framework was supported by the results of this research Eccles' original three-factor model of STV, comprising of intrinsic, attainment and utility value, could not be adopted. Alternatively, a two-factor model was used comprising of intrinsic and attainment value. Utility value was removed. Further investigation of students' perceived usefulness of A-levels and the application of the STV construct in a UK context is warranted.

In this research the effects of SES, gender and ethnicity on expectations, values and A-level achievement were also investigated (RQ4). It was not surprising to find that those with higher SES, did better in their A-levels. SES is widely known to relate to achievement (Sirin, 2005; White, 1982) and these findings support the view that the associations between SES and educational outcomes apply to older students' schooling (House of Commons Education Committee, 2014; The Sutton Trust, 2011). Statistics reflect the upward trend in girls' achievement however this was not supported in this study, possibly because although girls had higher STV they had lower expectations. There is however a lack of research into the effects of these variables on A-level outcomes, making this study a worthy one. The findings make a potentially significant contribution.

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SES was also positively related to expectations about achievement. Girls had lower expectations but placed higher value on A-levels. These findings help explain motivational patterns at A-level focusing on the role played by psychological and social variables, which was a critical reason for choosing the theoretical framework. With regards to gender they do however raise potential questions about the effects of testing the model in the context of high stakes qualifications in the UK. The value attached to tasks relates differently to gender in this study compared to when the model was originally tested in the US with regards to domain specific subjects. Previously maths and science subjects have traditionally been studied and shown boys to have higher STV. This has implications for testing the expectancy-value model cross-culturally and beyond subject specific tasks.

The data suggested that self-schemas and goals may be motivational factors for A-level students. This is an under researched area. Students' perceptions regarding the relationship between their self-schemas (identities), goals, task demands and expectations and values for A-levels was the focus of research question five. The quantitative analyses established that the STV and expectations attached to A-levels were related to a variety of general life expectations and values, which is consistent with the idea that students place greater value on tasks that fulfil their identities or are consistent with their goals (Eccles 2009). The qualitative analysis further illustrated this as some students reported that A-levels confirmed the way they saw themselves, their expectations, values and perceptions of their skills, interests, goals, achievement and attitudes. As expected A-levels also changed some students' perceptions of themselves, their expectation and values, for example their proposed educational or occupational pathways. However contrary to the literature which suggests high stakes assessment has a negative effect on individuals (Hanson, 1993; Reay & Wiliam, 1999) this study proposes that studying for A-level qualifications had a potentially positive impact on students. This included changes to their perceived academic skills (e.g. ability to work independently, organisation), lifelong skills (e.g. languages, numeracy), confidence and self-

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esteem. An alternative perspective on the impact of high stakes qualifications has therefore been provided.

Since the perceived relationships between task demands, expectations and values is a further under-researched area, studying the nature of these relationships in a sample of A-level students makes an important contribution. Students perceived A-levels to be difficult and thought they would have to apply effort to them, again providing insight into students' perceptions of these qualifications. The quantitative analyses further indicated that expectations were influenced by perceived task difficulty and expectations and values were influenced by the required effort associated with A-levels. These findings were largely consistent with the expectancy-value model. The model would not however explain the results of the qualitative analyses which suggested that task difficulty was perceived to play a *positive* role in the motivation of some students making this an interesting area for further exploration.

It was not surprising to find that parents and teachers were perceived to influence A-level students' expectations and values (RQ6), however awareness on how students' expectations and values might be shaped was gained. Students indicated that socialiser's play a role by influencing their attitudes to education, the values placed upon it, reinforcing their skills, role modelling and facilitating a home environment that encourages learning.

Since an emerging criticism of Eccles' model is that the interaction between expectations and values was not tested this was examined in this thesis, although running an overall statistical model proved problematic. Re-specifying the model could have been explored however this is not considered good practice unless there is sufficient theoretical justification. It was not therefore considered appropriate in this research. The complexity of running an overall model may account for why it has not been previously tested in this way and why individual models are used, as was also the case in this research. It would certainly

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be beneficial to further examine testing an overall expectancy-value model in the context of high stakes examinations in the UK.

In support of the theoretical framework the results of this study showed that differences in expectations and subjective task values underlie differences in motivation and achievement. It is clear however that these relationships are extremely complex in a group of A-level students. It is argued that this study has made several key contributions;

- it has explored the expectancy-value model in the context of high stakes qualifications in the UK where it has not been previously explored
- adds to research into the effects of SES and gender on A-level outcomes which is currently an under-researched area
- examines how STV patterns apply when studied across school subjects rather than domain specific ones which are the predominant focus of work in this area
- has provided insight into students' perceptions of their A-levels and the notion that studying A-levels has a positive effect, contrary to the argument that high stakes assessment has a negative impact.

Expectations and values play an important role in the motivation and achievement of students studying for A-level qualifications. Learners are not a passive part of the A-level process, instead these qualifications play a potential role in shaping how individuals' see themselves. Engagement and achievement are related to self-schemas and goals. A student is more likely to value, engage and do well in their A-levels if they are consistent with their identity and their goals. Understanding the motivational beliefs of A-level students can drive interventions where practitioners and parents boost students' expectations and values. Importantly they have implications for enhancing outcomes and narrowing educational gaps in this student population and may therefore be of use to researchers, practitioners and policy makers who are concerned with A-level achievement.

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Appendix A: Consent Forms (Pilot Study)

A1: Student Consent Form (Pilot Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

Department of Education

15 Norham Gardens, Oxford, OX2 6PY, UK

Tel: +44 (0)1865 274002/284098 Fax: +44 (0)1865 274027

Email: admin.oucea@education.ox.ac.uk Website: <http://oucea.education.ox.ac.uk>



RESEARCH CONSENT FORM

Project title: Who am I and what can I achieve in high stakes assessment?

Researcher: Carol Brown

Declaration of Consent

I have read the participant information sheet and have had the opportunity to ask questions about the study and receive satisfactory answers to the questions

I understand that I may withdraw from the study without penalty at any time by advising the researchers, and any data already recorded will be discarded

I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee

I understand that my personal data will be treated in total confidence, kept securely in a password-controlled server, and what will happen to the data at the end of the project

I understand that I will have the opportunity to review and comment on any analysis before publication

I understand how to raise a concern and make a complaint, and agree to participate in the project

If you do not wish to take part in this study, please ask your parents to sign and return this form to me

Appendices

A2: Student Information Sheet (Pilot Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

Department of Education

15 Norham Gardens, Oxford, OX2 6PY, UK

Tel: +44 (0)1865 274002/284098 Fax: +44 (0)1865 274027

Email: admin.oucea@education.ox.ac.uk Website: <http://oucea.education.ox.ac.uk>



PARTICIPANT INFORMATION SHEET

Project title: Who am I and what can I achieve in high stakes assessment?

Supervisors: Professor J Baird and Dr T Hopfenbeck, OUCEA, Department of Education, University of Oxford

My name is Carol Brown and I'm from the Department of Education, University of Oxford. I am conducting a study on the relationship between your expectations and values, and your actual A-level achievement, as part of my Doctoral research. Some questions ask you about your background, others ask about your beliefs, values and expectations about your A-levels, and others ask more generally about your values and expectations for your future. I would also like to collect your exam results in the Summer to see if there are any links between your answers and what you achieve.

This is not a test. There are no right answers to the questions. All of the information you give will be put together with other students' information, so it will not be possible to tell which student wrote which of the answers. Some of the questions may seem personal, and you may be unsure why I ask these. It is because I want to be able to compare answers between different groups of students, such as students from different backgrounds. Only the research staff at the University will see your responses – PARENTS OR TEACHERS WILL NOT BE ABLE TO SEE WHAT YOU HAVE WRITTEN. The research data will be stored in a safe place, in a locked filing cabinet in the Oxford University Centre for Educational Assessment and can only be accessed by the researchers. You are asked to provide your candidate number but this is just so that I can match up your answers with your exam results. Your actual responses will still remain anonymous and confidential.

Please try and complete all of the questions, by following the instructions for each set. If you cannot or do not wish to answer a question, please go on to the next. If you are unsure about any of the questions please ask for help. You are also free to withdraw from the study any time you wish to.

This project has been reviewed by, and received ethical clearance through the University of Oxford Central University Research Ethics Committee but if you are unhappy with any aspect of this study you may raise your concerns at curec@socsci.ox.ac.uk

Appendices

A3: School Consent Form (Pilot Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

Department of Education

15 Norham Gardens, Oxford, OX2 6PY, UK

Tel: +44 (0)1865 274002/284098 Fax: +44 (0)1865 274027

Email: admin.oucea@education.ox.ac.uk Website: <http://oucea.education.ox.ac.uk>



RESEARCH CONSENT FORM

Project title: Who am I and what can I achieve in high stakes assessment?

Researcher: Carol Brown

Supervisors: Professor J Baird , Dr T Hopfenbeck

Declaration of Consent

We have read the information sheet and have had the opportunity to ask questions about the study and receive satisfactory answers to the questions

We agree to the participation of our students within this study and to provide GCSE point scores, raw and value added AS/ A-level results of those participating in August 2014

We understand that we may withdraw from the study without penalty at any time by advising the researchers, and any data already recorded will be discarded

We understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee

We understand that the data collected will be treated in total confidence, kept securely in a password-controlled server, and what will happen to the data at the end of the project

We understand that we will have the opportunity to review and comment on any analysis before publication

We understand how to raise a concern and make a complaint, and agree to participate in the project

- ☐ We agree to voluntarily take part in this research
- ☐ We confirm that we have read the information sheet and understand its intent and purpose
- ☐ We agree that data captured by this research can be shared among the research team on this project

Name: _____

Email: _____

Signature: _____

Date: _____

Name of researcher: _____

Signature and date: _____

Appendices

A4: School Information Sheet (Pilot Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

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Email: admin.oucea@education.ox.ac.uk Website: <http://oucea.education.ox.ac.uk>



SCHOOL INFORMATION SHEET

Project title: Who am I and what can I achieve in high stakes assessment?

Supervisors: Professor J Baird and Dr T Hopfenbeck, OUCEA, Department of Education, University of Oxford

My name is Carol Brown and I'm from the Department of Education, University of Oxford. I am conducting a study on the relationship between student's expectations and values, and their actual A-level achievement, as part of my Doctoral research.

Sixth form students will be invited to complete a questionnaire which asks them about their background, their beliefs, values and expectations about their A-levels, and about their general values and expectations for the future.

You are also being asked to provide GCSE point scores and their raw and value added AS/ A-level exam results in August 2014 which will be used to establish if there are any links between their expectations, values and achievements.

Only the research staff at the University will see the data. It will be stored in a safe place, in a locked filing cabinet in the Oxford University Centre for Educational Assessment and can only be accessed by the researchers. It will be destroyed on 1/10/2018.

Students, or the School, are free to withdraw from the study at any time.

This project has been reviewed by, and received ethical clearance through the University of Oxford Central University Research Ethics Committee but if you are unhappy with any aspect of this study you may raise your concerns at curec@socsci.ox.ac.uk

Appendices

Appendix B: Descriptive Statistics Tables (Pilot Study)

Table B1 *The number of males participating in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	no	71	53.0
	yes	61	45.5
	Total	132	98.5
Missing		2	1.5
Total		134	100.0

Table B2 *The number of males and females in each school participating in the pilot study of students preparing for high-stakes, A-level examinations*

			male	
			no	yes
School type	City Comprehensive	Count	50	29
		% within School type	63.3%	36.7%
	Town Comprehensive	Count	21	32
		% within School type	39.6%	60.4%
Total		Count	71	61
		% within School type	53.8%	46.2%

Table B3 *The number of students residing with one or two parents in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	no parents	3	2.2
	single parent	30	22.4
	two parents	96	71.6
	Total	129	96.3
Missing	missing	3	2.2
	System	2	1.5
	Total	5	3.7
Total		134	100.0

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Table B4 *The number of students residing with one or two parents in each school participating in the pilot study of students preparing for high-stakes, A-level examinations*

			Number of parents		
			no parents	single parent	two parents
School type	City Comprehensive	Count	2	18	57
		% within School type	2.6%	23.4%	74.0%
	Town Comprehensive	Count	1	12	39
		% within School type	1.9%	23.1%	75.0%
Total	Count		3	30	96
	% within School type		2.3%	23.3%	74.4%

Table B5 *The number of students receiving free school meals in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	yes	12	9.0
	no	116	86.6
	Total	128	95.5
Missing		6	4.5
Total		134	100.0

Table B6 *The number of students receiving free school meals in each school participating in the pilot study of students preparing for high-stakes, A-level examinations*

			Free school meals		Total
			yes	no	
School type	City Comprehensive	Count	7	71	78
		% within School type	9.0%	91.0%	100.0%
	Town Comprehensive	Count	5	45	50
		% within School type	10.0%	90.0%	100.0%
Total	Count		12	116	128
	% within School type		9.4%	90.6%	100.0%

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Table B7 *The ethnicity of students in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	White British	79	59.0
	White Irish	2	1.5
	White Other	12	9.0
	Mixed White & Black Caribbean	1	.7
	Mixed White & Black African	1	.7
	White & Asian	2	1.5
	Mixed Other	2	1.5
	Asian Indian	4	3.0
	Asian Pakistani	8	6.0
	Asian Bangladeshi	5	3.7
	Asian Other	4	3.0
	Black African	10	7.5
	Other	2	1.5
	Total	132	98.5
Missing		2	1.5
Total		134	100.0

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Table B8 *The ethnicity of students in each school in the pilot study of students preparing for high-stakes, A-level examinations*

		Ethnicity							
			White British	White Irish	White Other	Mixed White & Black Caribbean	Mixed White & Black African	White & Asian	Mixed Other
City Comprehensive	Count	34	2	8	0	1	1	2	
	% within School type	43.0%	2.5%	10.1%	0.0%	1.3%	1.3%	2.5%	
Town Comprehensive	Count	45	0	4	1	0	1	0	
	% within School type	84.9%	0.0%	7.5%	1.9%	0.0%	1.9%	0.0%	
Total	Count	79	2	12	1	1	2	2	
	% within School type	59.8%	1.5%	9.1%	.8%	.8%	1.5%	1.5%	
			Asian Indian	Asian Pakistani	Asian Bangladeshi	Asian Other	Black African	Other	Total
City Comprehensive	Count	4	8	5	3	10	1	79	
	% within School type	5.1%	10.1%	6.3%	3.8%	12.7%	1.3%	100.0%	
Town Comprehensive	Count	0	0	0	1	0	1	53	
	% within School type	0.0%	0.0%	0.0%	1.9%	0.0%	1.9%	100.0%	
Total	Count	4	8	5	4	10	2	132	
	% within School type	3.0%	6.1%	3.8%	3.0%	7.6%	1.5%	100.0%	

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Table B9 *The number of students speaking each language in the pilot study of students preparing for high-stakes, A-level examinations*

	Frequency	Percent
Valid		
Arabic	2	1.5
English	74	55.2
English/Arab/Kurdish	1	.7
English/Bengali	1	.7
English/Punjabi	1	.7
Gaelic	1	.7
German	2	1.5
German/Russian	1	.7
Hepali	1	.7
Iranian	1	.7
Kan-kan-ey	1	.7
Luganda(Uganda)	1	.7
Malayalam	1	.7
Punjabi	1	.7
Russian	1	.7
Spanish	1	.7
Tagalog	1	.7
Tamil	1	.7
Urdu	1	.7
Total	94	70.1
Missing	40	29.9
Total	134	100.0

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Table B10 *The number of students speaking each language in the schools participating in the pilot study of students preparing for high-stakes, A-level examinations*

			language						
School type	City Comprehensive	Count % within School type	Arabic	English	English/ Arab / Kurdish	English/ Bengali	English / Punjabi	Gaelic	German
			2	43	0	1	1	1	1
Total	City Comprehensive	Count	3.40%	72.90%	0.00%	1.70%	1.70%	1.70%	1.70%
		% within School type	0	31	1	0	0	0	1
	Town Comprehensive	Count	0.00%	88.60%	2.90%	0.00%	0.00%	0.00%	2.90%
		% within School type	2	74	1	1	1	1	2
	Total	Count	2.10%	78.70%	1.10%	1.10%	1.10%	1.10%	2.10%
		% within School type							
School type	City Comprehensive	Count % within School type	German/ Russian	Hepali	Iranian	Kan- kan-ey	Luganda (Uganda)	Malayalam	Punjabi
			0	1	0	1	1	1	1
Total	City Comprehensive	Count	0.00%	1.70%	0.00%	1.70%	1.70%	1.70%	1.70%
		% within School type	1	0	1	0	0	0	0
	Town Comprehensive	Count	2.90%	0.00%	2.90%	0.00%	0.00%	0.00%	0.00%
		% within School type	1	1	1	1	1	1	1
	Total	Count	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%
		% within School type							
School type	City Comprehensive	Count % within School type	Russian	Spanish	Tagalog	Tamil	Urdu	Total	
			1	1	1	1	1	59	
Total	City Comprehensive	Count	1.70%	1.70%	1.70%	1.70%	1.70%	100.00%	
		% within School type	0	0	0	0	0	35	
	Town Comprehensive	Count	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
		% within School type	1	1	1	1	1	94	
	Total	Count	1.10%	1.10%	1.10%	1.10%	1.10%	100.00%	
		% within School type							

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Table B11 *The number of students born in England in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	England	96	71.6
	Other	31	23.1
	Total	127	94.8
Missing		7	5.2
Total		134	100.0

Table B12 *The number of student114114s born in England in each school participating in the pilot study of students preparing for high-stakes, A-level examinations*

			Country born		
			England	Other	Total
School type	City Comprehensive	Count	50	26	76
		% within School type	65.8%	34.2%	100.0%
	Town Comprehensive	Count	46	5	51
		% within School type	90.2%	9.8%	100.0%
Total	Count		96	31	127
	% within School type		75.6%	24.4%	100.0%

Table B13 *The number of students entering England in different age groups in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	<5yrs	15	11.2
	6-12yrs	11	8.2
	12+ yrs	4	3.0
	Born in England	96	71.6
	Total	126	94.0
Missing		8	6.0
Total		134	100.0

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Table B14 *The number of students entering England in age group in each school the pilot study of students preparing for high-stakes, A-level examinations*

			Age of arrival				Total
			<5yrs	6-12yrs	12+ yrs	Born in England	
School type	City Comprehensive	Count	12	11	2	50	75
		% within School type	16.0%	14.7%	2.7%	66.7%	100.0%
	Town Comprehensive	Count	3	0	2	46	51
		% within School type	5.9%	0.0%	3.9%	90.2%	100.0%
	Total	Count	15	11	4	96	126
		% within School type	11.9%	8.7%	3.2%	76.2%	100.0%

Table B15 *The number of mothers born in the UK in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	England	78	58.2
	Other	52	38.8
	Total	130	97.0
Missing		4	3.0
Total		134	100.0

Table B16 *The number of mothers born in the UK in each school in the pilot study of students preparing for high-stakes, A-level examinations*

			Country born		Total
			England	other	
School type	City Comprehensive	Count	50	26	76
		% within School type	65.8%	34.2%	100.0%
	Town Comprehensive	Count	46	5	51
		% within School type	90.2%	9.8%	100.0%
Total	Count		96	31	127
	% within School type		75.6%	24.4%	100.0%

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Table B17 *The number of fathers born in the UK in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	England	73	54.5
	Other	53	39.6
	missing	8	6.0
	Total	134	100.0

Table B18 *The number of fathers born in the UK in each school in the pilot study of students preparing for high-stakes, A-level examinations*

			Father born			Total
			England	other	missing	
School type	City Comprehensive	Count	31	42	8	81
		% within School type	38.3%	51.9%	9.9%	100.0%
	Town Comprehensive	Count	42	11	0	53
		% within School type	79.2%	20.8%	0.0%	100.0%
Total	Count		73	53	8	134
	% within School type		54.5%	39.6%	6.0%	100.0%

Table B19 *Mother's highest level of education in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	did not go	2	1.5
	primary	2	1.5
	secondary	40	29.9
	6th form	23	17.2
	tertiary	59	44.0
	Total	126	94.0
Missing		8	6.0
Total		134	100.0

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Table B20 *Mother's highest level of education in each school in the pilot study of students preparing for high-stakes, A-level examinations*

			Mothers highest level of education					Total
			did not go	primary	secondary	6th form	tertiary	
School type	City	Count	2	1	19	10	42	74
		% within	2.7%	1.4%	25.7%	13.5%	56.8%	100.0%
	Comprehensive	School type						
		Count	0	1	21	13	17	52
	Town	% within	0.0%	1.9%	40.4%	25.0%	32.7%	100.0%
		School type						
Total	Comprehensive	Count	2	2	40	23	59	126
		% within	1.6%	1.6%	31.7%	18.3%	46.8%	100.0%
		School type						

Table B21 *Father's highest level of education in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	did not go	3	2.2
	primary	2	1.5
	secondary	44	32.8
	6th form	19	14.2
	tertiary	46	34.3
	Total	114	85.1
Missing		20	14.9
Total		134	100.0

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Table B22 *Father's highest level of education in each school in the pilot study of students preparing for high-stakes, A-level examinations*

			Fathers highest level of education					
			did not go	primary	secondary	6th form	tertiary	Total
School type	City	Count	2	1	19	10	31	63
		% within	3.2%	1.6%	30.2%	15.9%	49.2%	100.0%
	Comprehensive	School type						
		Count	1	1	25	9	15	51
	Town	% within	2.0%	2.0%	49.0%	17.6%	29.4%	100.0%
		School type						
Total		Count	3	2	44	19	46	114
		% within	2.6%	1.8%	38.6%	16.7%	40.4%	100.0%

Table B23 *Father's current employment in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	working full time for pay	94	70.1
	working part time for pay	10	7.5
	not working but looking for a job	3	2.2
	other (duties, retired)	9	6.7
	Total	116	86.6
Missing		18	13.4
Total		134	100.0

Appendices

Table B24 *Father's current employment in each school in the pilot study of students preparing for high-stakes, A-level examinations*

			Father's current employment				Total
			not working			other (duties, retired)	
			Working full time for pay	working part time for pay	but looking for a job		
School type	City	Count	51	7	2	6	66
		% within School type	77.3%	10.6%	3.0%	9.1%	100.0%
	Comprehensive	Count	43	3	1	3	50
		% within School type	86.0%	6.0%	2.0%	6.0%	100.0%
	Town	Count	94	10	3	9	116
		% within School type	81.0%	8.6%	2.6%	7.8%	100.0%
Total		Count	94	10	3	9	116
		% within School type	81.0%	8.6%	2.6%	7.8%	100.0%

Table B25 *Mother's current employment in the pilot study of students preparing for high-stakes, A-level examinations*

		Frequency	Percent
Valid	working FT for pay	74	55.2
	working PT for pay	28	20.9
	not working but looking for job	6	4.5
	other (home duties, retired)	21	15.7
	Total	129	96.3
Missing		5	3.7
Total		134	100.0

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Table B26 *Mother's current employment in each school in the pilot study of students preparing for high-stakes, A-level examinations*

			Mother's current employment				Total
			working FT for pay	working PT for pay	not working but looking for job	Other (home duties, retired)	
School type	City Comprehensive	Count	45	16	3	13	77
		% within School type	58.4%	20.8%	3.9%	16.9%	100.0%
	Town Comprehensive	Count	29	12	3	8	52
		% within School type	55.8%	23.1%	5.8%	15.4%	100.0%
Total	Count		74	28	6	21	129
	% within School type		57.4%	21.7%	4.7%	16.3%	100.0%

Table B27 *Student's most important value in the pilot study of students preparing for high-stakes, A-level examinations*

	Frequency	Percent
Being successful in your line of work	27	20.1
Being able to find steady work	12	9.0
Being able to support yourself (be financially independent)	40	29.9
Helping to improve the lives of others	9	6.7
Getting married	5	3.7
Having children	4	3.0
Being a successful parent (raising happy, well-adjusted children)	16	11.9
Total	114	85.1
Missing	20	14.9
Total	134	100.0

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Table B28 *Student's second most important value in the pilot study of students preparing for high-stakes, A-level examinations*

	Frequency	Percent
Being successful in your line of work	11	8.2
Being able to find steady work	10	7.5
Being able to support yourself (be financially independent)	25	18.7
Helping to improve the lives of others	13	9.7
Getting married	15	11.2
Having children	17	12.7
Being a successful parent (raising happy, well-adjusted children)	25	18.7
Total	114	86.6
Missing	20	13.4
Total	134	100.0

Table B29 *Cronbach's alpha on intrinsic interest value in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	133	99.3
	Excluded	1	.7
	Total	134	100.0

Cronbach's Alpha	N of Items
.717	2

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Table B30 *Cronbach's alpha on attainment value in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	134	100.0
	Excluded	0	.0
	Total	134	100.0

Cronbach's Alpha	N of Items
.855	3

Table B31 *Cronbach's alpha on utility value in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	134	100.0
	Excluded	0	.0
	Total	134	100.0

Cronbach's Alpha	N of Items
.369	2

Table B32 *Cronbach's alpha on expectancy items in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	129	96.3
	Excluded	5	3.7
	Total	134	100.0

Cronbach's Alpha	N of Items
.908	5

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Table B33 *Cronbach's alpha on task difficulty in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	134	100.0
	Excluded	0	.0
	Total	134	100.0

Cronbach's Alpha	N of Items
.707	2

Table B34 *Cronbach's alpha on extrinsic motivation in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	129	96.3
	Excluded	5	3.7
	Total	134	100.0

Cronbach's Alpha	N of Items
.640	4

Table B35 *Cronbach's alpha on need achievement in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	130	97.0
	Excluded	4	3.0
	Total	134	100.0

Cronbach's Alpha	N of Items
.689	6

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Table B36 *Cronbach's alpha on future work importance in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	129	96.3
	Excluded	5	3.7
	Total	134	100.0

Cronbach's Alpha	N of Items
.763	3

Table B37 *Cronbach's alpha on future family importance in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	128	95.5
	Excluded	6	4.5
	Total	134	100.0

Cronbach's Alpha	N of Items
.855	3

Table B38 *Cronbach's alpha on high status/competitiveness in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	127	94.8
	Excluded	7	5.2
	Total	134	100.0

Cronbach's Alpha	N of Items
.721	6

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Table B39 *Cronbach's alpha on negative economic expectations in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	119	88.8
	Excluded	15	11.2
	Total	134	100.0

Cronbach's Alpha	N of Items
.609	2

Table B40 *Cronbach's alpha on positive future occupational expectations in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Case	Valid	117	87.3
	Excluded	17	12.7
	Total	134	100.0

Cronbach's Alpha	N of Items
.737	5

Table B41 *Cronbach's alpha on job identity formation in the pilot study of students preparing for high-stakes, A-level examinations*

		N	%
Cases	Valid	120	89.6
	Excluded	14	10.4
	Total	134	100.0

Cronbach's Alpha	N of Items
.767	4

Appendix C: Questionnaire Manual (Main Study)

QUESTIONNAIRE MANUAL

A Measure of A-level Students Achievement Motivation

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SECTION 1. THE NATURE OF THE INSTRUMENT

Purpose of the questionnaire: To investigate the relationship between expectations, values and A-level achievement including individual differences in performance on the basis of gender, ethnicity and socio-economic status (SES). It is therefore most suitable for students aged 16-18 years studying for high stakes qualifications.

The intended use of this self-report questionnaire is to investigate the factors underlying the achievement motivation of A-level students. This is important to study as the grades achieved in GCE advanced levels (A-levels) influence an individual's life chances, as well as their entry into higher education and determine the options that are subsequently available to them. A-levels are the main form of high stakes examinations taken for university entrance in England and approximately 50% of 16-18 year olds study for these qualifications (**Department for Education, 2013b**).

This questionnaire aims to investigate how expectations and task value affect A-level performance, and explore the socio-cultural factors that underlie differential achievement in A-level outcomes. It therefore collects information on the student's background (gender, ethnicity, socio-economic status, A-level subjects), their expectations and values for their A-levels, and their general life values, expectations and goals.

SECTION 2. TEST DEVELOPMENT

2.1 Theoretical Framework

The questionnaire finds its **theoretical framework** in Eccles expectancy-value model of achievement motivation (Eccles, 2007b; Eccles et al., 1983; Wigfield & Eccles, 2000).

The expectancy-value model of achievement motivation underlies the theoretical framework for this survey (Eccles, 2007b; Eccles et al., 1983; Wigfield & Eccles, 2000). In this model it is suggested that an individual's choice, persistence and performance can be explained by their beliefs about how well they will do and the extent to which they value an activity (Eccles et al., 1983; Wigfield & Eccles, 1992; Wigfield & Eccles, 2000). The focus of this questionnaire was on how such factors explain A-level performance.

Research suggests that students' beliefs about their abilities, expectations for success and their task values predict achievement outcomes in research conducted in the US, Australia and Germany (Eccles et al., 1983; Eccles & Wigfield, 1995; Guo et al., 2015; Trautwein et al., 2012). Differences in task value were found to underlie differences in motivation and achievement (Eccles, 1987, 2007b; Eccles et al., 1983; Eccles et al., 1984; Guo et al., 2015). These hypotheses underlie the design of this questionnaire.

Expectancy of success, referred to as expectations in this study/questionnaire, is composed of a single construct measuring both ability beliefs, defined as the perceptions of an individual's current competence at an activity, and expectations for success in the future in line with empirical work (Eccles & Wigfield, 1995; Wigfield & Eccles, 2000). Although ability beliefs can be distinguished *conceptually* from expectations for success *empirically* the constructs are highly related and have been found to load onto the same factor (see Eccles & Wigfield, 1995). Subjective task value is defined as a quality of the task that contributes to the increasing or decreasing probability that an individual would choose to engage in it (Eccles, 1987; Eccles et al., 1983; Wigfield & Eccles, 1992). The value of a specific task is the function of the attainment value, intrinsic (interest) value, utility value and perceived cost (Eccles, 2007b; Eccles et al., 1983; Eccles et al., 1984; Eccles & Wigfield, 1995). Most of the empirical work on the

expectancy-value model has focused only on these three components, rather than cost (Wigfield & Eccles, 2000) and this is the approach therefore adopted in this instrument.

In Eccles' model (Eccles, 2007b; Eccles et al., 1983) a number of psychological and social factors were believed to impact on an individual's expectations and values, a selection of which are investigated in this questionnaire including; cultural milieu, stable student characteristics, student's perception of their socialiser's beliefs, expectations, attitudes and the student's perception of the task demands and the individual's goals and general self-schema. There is also a well-established literature to suggest relationships between gender, ethnicity, SES and educational achievement (Sirin, 2005; Strand, 2014; White, 1982).

2.2 Item Pool and Scale Development Process

This questionnaire is a revision of several earlier instruments. The questionnaire contains 86 items. The item pool is based on;

- (1) the 2009 and 2012 student and parent questionnaires used in the Programme for International Student Assessment (PISA)**
- (2) the self-and-task perception questionnaire by Eccles and Wigfield (1995)**
- (3) items collected in the main survey given to 12th grade students in wave 6 (1990) of the Michigan Study of Adolescent and Adult Life Transitions (MSALT)**

Part one is a revision of a selection of the items used to collect information on a students' background in the PISA student and parental questionnaires (2009, 2012). They were taken from sections asking students about themselves, their family and home. The items used in this first section of the questionnaire are shown below in Table 1. It shows that it includes items on the student's year group, gender, ethnicity, family structure, their socio-economic background including social capital, home language and immigrant status. These items were derived from the student questionnaire (2009, 2012). Items concerning parental involvement and parental support for learning are taken from the parental questionnaire (2009) but rather than asking parents to rate their involvement this questionnaire asks A-level students to provide self-report data on this. Both closed and open ended questions are used in part one of the questionnaire as seen in Table 1. Open ended answers are required on items enquiring about subjects studied, parental occupations, language spoken at home, age of entry to UK if not born here.

The following items used in this section of the questionnaire required adaptation to be relevant in a UK context; different ethnic groups, which are alternatively based on the categories used by the Office of National Statistics (2011), the highest level of schooling completed by mother and father, student's country of birth has been changed from US to UK, and languages spoken at home is asked as an open ended rather than closed ended question. In addition, students are asked if they are entitled to free school meals, which subjects they study, the level and any grades already achieved. These are not items contained in the PISA questionnaires.

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Table 1 *Items Measuring Student Background*

Q1. Are you female or male?	Gender	Female Male
Q2. Which year are you in?	Year group	Year 12 Year 13 Year 14
Q3. Which best describes you?	Ethnic Group	White: British White: Irish White: Other White Mixed: White and Black Caribbean Mixed: White and Black African Mixed: White and Asian Mixed: Other Mixed Asian: Indian Asian: Pakistani Asian: Bangladeshi Other Asian Black Caribbean Black African Other Black Chinese Other
Q4. Which subjects have you studied or are you studying in Sixth Form?	Subjects Level	None AS AL Other
Q5. Do you receive free school meals?	Free school meals	no yes
Q6. Who usually lives at home with you?	Family composition	Mother (including stepmother or foster mother Father (including stepfather or foster father) Brother (s) (including stepbrothers) Sister (s) (including stepsisters) Grandparents (s) Other (e.g., cousins)
Q7. What is your mother's main job?	Mother's occupation	
Q8. What is the highest level of schooling achieved by your mother?	Mothers education	Did not go to school Primary Secondary (up to age 16) 6th form (A-levels, BTEC's, qualifications up to age 18) Tertiary education (University, Polytechnic) Don't know
Q9. What is your mother currently doing?	Mother's current employment status	
Q10. What is your father's main job?	Father's occupation	

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Q11. What is the highest level of schooling achieved by your father?	Father's education	Did not go to school Primary Secondary (up to age 16) 6th form (A-levels, BTEC's, qualifications up to age 18) Tertiary education (University, Polytechnic) Don't know
Q12. What is your father currently doing?	Father's current employment status	Did not go to school Primary Secondary (up to age 16) 6th form (A-levels, BTEC's, qualifications up to age 18) Tertiary education (University, Polytechnic) Don't know
Q13. What language do you speak at home most of the time?	Language spoken at home	
Q14. In which country were you and your parents born?	Country of birth	England Other
Q15. If <u>you</u> were not born in England, how old were you when you arrived here?	Age of entry to UK	
Q16. Which of the following do you have in your home? Desk Books to help with school work Room of own Technical reference books or manuals Quiet place to study A dictionary Computer for school work Dishwasher Classic literature High-speed internet connection Books of poetry Musical Instrument Works of art	Home possessions	No yes
Q17. <u>How many</u> of these do you have at home? Mobile phones Televisions Computers Cars Bathrooms with a bathtub or shower	Family Wealth	0 1 2 3+
Q18. How many books are there in your home?	Number of books	0-10 11-25 26-100 101-200 201-500 More than 500 books

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Q19. How often does your parent/s or someone else in your home do the following things with you? Discuss political or social issues Discuss books, films or television programmes Discuss how well you are doing at school Eat the main meal with you around a table Spend time just talking to you Go to a bookstore or library with you Talk with you about what you are reading/ studying Help you with your homework	Support for Learning	Never or hardly ever Once or twice a month Once or twice a week Every day or almost
Q20. In the last academic year has your parent/s participated in any of the following school-related activities? Discussed your behaviour or progress with a teacher on their own initiative Discussed your behaviour or progress on the initiative of one of your teachers Volunteered in physical activities Volunteered in extra-curricular activities Volunteered in the school library or media centre Assisted a teacher in the school Appeared as a guest speaker Participated in school committees	Parental involvement	no yes

Part two is an adaptation of the self-and-task perception questionnaire by Eccles and Wigfield (1995) which originally examined domain specific beliefs about maths. This questionnaire has been adapted to produce items relevant to A-levels. For example, ‘How useful is what you learn in *advanced high school math* for your daily life outside school?’ was adapted to ask ‘How useful is what you learn at *A-level* for your daily life outside school?’

The adapted questionnaire contains expectancy items (ability beliefs and expectations for success) concerning A-level performance and outcomes as well as items focusing on perceived task demands (task difficulty and required effort). Students’ perceived task values are also examined including intrinsic interest value of A-levels, their attainment value and utility value. In total this yielded 17 items. Two items were excluded from the original scale as they assessed specific skills related to maths which could not be converted to items relevant to more general A-level studies. These items were related to perceived task difficulty (‘compared to most other school subjects that you take, how hard is maths for you?’) and required effort (‘To do well in math I have to work ...much harder in math than other subjects, much harder in other subjects than math’).

The items comprising part two of the questionnaire are presented in Table 2. They are measured using a 7-point Likert scale. It shows that there are two items each measuring intrinsic value (21, 30), utility value (22, 34), task difficulty (23, 27), three items measuring attainment value (25, 31, 37) and effort (29, 33, 35) and five items measuring ability/ expectancy (24, 26, 28, 32, 36).

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Table 2 *Expectations and Values about A-levels Questionnaire*

Q21. In general I find working on A-level assignments (Very boring-very interesting)	Intrinsic value
Q22. In general, how useful is what you learn at A-level for your daily life outside school? (Not at all useful-very useful)	Utility value
Q23. In general, how hard are A-levels for you? (Very easy-very hard)	Task difficulty
Q24. Compared to other students, how well do you expect to do in your A-levels this year? (Much worse than other students-much better than other students)	Ability/expectancy
Q25. For me, being good at my A-levels is? (Not at all important-very important)	Attainment value
Q26. How well do you think you will do in your A-levels this year? (Very poorly-very well)	Ability/expectancy
Q27. Compared to other students in your class how hard are A-levels for you? (Much easier-much harder)	Task difficulty
Q28. How good are you at A-levels? (Not at all good-very good)	Ability/expectancy
Q29. How hard do you have to try to do well in your A-level courses? (Not very hard-very hard)	Required Effort
Q30. I like doing A-levels (Strongly disagree-strongly agree)	Intrinsic value
Q31. Is the amount of effort it will take to do well in A-levels worthwhile to you? (Not very worthwhile-very worthwhile)	Attainment value
Q32. If you were to order all students in your year group from best to worse academically, where would you put yourself? (The worst-the best)	Ability/expectancy
Q33. How hard do you have to try to get good grades in your A-levels? (A little-a lot)	Required Effort
Q34. How useful are A-levels for what you want to do after you finish school and go to University/ work? (Not at all useful-very useful)	Utility value
Q35. How hard do you have to study for your A-level exams to get a good grade? (A little-a lot)	Required Effort
Q36. How have you been doing in your A-levels this year? (Very poorly-very well)	Ability/expectancy
Q37. How important is it to you to get grades in your A-levels? (Not at all important-very important)	Attainment value

Part three is based on items collected in the main survey given to 2,381 12th grade students in wave 6 (1990) of the Michigan Study of Adolescent and Adult Life Transitions (MSALT), a longitudinal study which investigated adolescents' achievement-related beliefs, motives, values, and behaviours (<http://www.rcgd.isr.umich.edu/msalt/home.htm>). These items are related to a number of general values students perceive to be important to them now and in their adult lives, and also their future expectations. In this study they are used to explore students' self-schemas and goals.

More specifically students are asked about the **value** they place on material wealth, extrinsic motivation, need achievement, future work importance, future family importance, altruism, high status/competitiveness. This results in 28 items, assessed on a 7-point Likert scale (strongly disagree-strongly agree). Some items are employed in more than one construct. The items used to measure general and future life values are displayed in Table 3. Students are also asked to subsequently list the two most important values to them from these items, again a question taken from the MSALT questionnaire.

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Table 3 *General and Future Life Values Questionnaire*

Q38. I'd like to accomplish something in life that will be well known	High status/ competitive
Q39. I feel that winning is very important	High status/ competitive
Q40. I would give up a secure job for a chance to make big money	Material wealth + extrinsically motivated
Q41. To me, work is nothing more than making a living	Extrinsically motivated
Q42. I'd like to be famous	High status/ competitive
Q43. I like the kind of work you can forget about after the day is over	Extrinsically motivated
Q44. Doing my very best at the tasks I take on is very important to me	Need achievement
Q45. I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do	Need achievement
Q46. I would rather be president of a club than just a member	High status/ competitive
Q47. I like to try things I've never done before	Need achievement
Q48. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult	Single item
Q49. I would like a lot of expensive possessions	Material wealth + extrinsically motivated
Q50. I really enjoy working in situations involving skill and competition	Need achievement
Q51. When a group I belong to plans an activity, I would rather organize it myself than have someone organize it and just help out	High status/ competitive
Q52. I want to do my best in my job even if this sometimes means working overtime	Need achievement
Q53. It is important to me to perform better than others on a task	High status/ competitive
Q54. I expect my work to be a very central part of my life	Need achievement
Q55. I would turn down a promotion in my career if it meant moving away from close supportive friendships	Single item
Q56. If a choice had to be made, I would put my partner's career before mine	Single item
Q57. I would readjust my work schedule or work part-time to meet the needs of my children	Single item

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Q58. If I had a great career opportunity in another location I would expect my spouse and family to move	Single item
Q59. Being very successful in your line of work	Future work importance
Q60. Being able to find steady work	Future work importance
Q61. Being able to support yourself (being financially independent)	Future work importance
Q62. Helping to improve the lives of others	Altruism
Q63. Getting married	Future family importance
Q64. Having children	Future family importance
Q65. Being a successful parent (raising healthy, happy, well-adjusted children)	Future family importance
Q66. Now pick the two most important goals	

Students are also asked to think about their future **expectations**. They are asked to indicate, on a 7-point Likert scale (very unlikely-very likely), how likely a series of statements will be for them in the following 10-15 years. Two items each measure negative economic expectations, the likelihood of future education and expectations of a harder life, whilst five items are included in the scale measuring positive future occupational expectations. The scale used to measure expectations is shown in Table 4.

Table 4 *Future Expectations Questionnaire*

Q67. You will have a job you enjoy doing	Positive future occupational expectations
Q68. You will be a success in your line of work	Positive future occupational expectations
Q69. You will be laid off from your job	Negative economic expectations + Positive future occupational expectations (negatively scored)
Q70. You will have a job that pays well	Positive future occupational expectations
Q71. You will have difficulty supporting your family financially	Negative economic expectations + Positive future occupational expectations (negatively scored)
Q72. You will finish your A-level courses	Single item
Q73. You will complete a vocational college course	Single item

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Q74. You will graduate from University	Likely future education
Q75. You will attend graduate or professional school after University	Likely future education
Q76. You will have good friends you can count on in the future	Single item
Q77. That life will turn out better for you than for your parents	Expectations of a future harder life
Q78. That life will turn out to be harder for you than it was for your parents	Expectations of a future harder life (negatively scored)

The questionnaire then focuses on job identity. There are a number of short answer questions asking the student what job they would like to have when they are 30 (Q79), if anyone has had a positive influence on their choice or discouraged them from thinking about certain jobs, and if so who (Q84 & 85). They are also asked what job they think they will actually have when they are 30 (Q86). With regards to the job they think they would like to have four statements employing a 7-point scale are provided. They ask students how sure they are that this is the kind of job they would like, how much they have thought about this choice, how likely it is that they will be successful in that kind of job and how likely they think it is that they will have that kind of job (Q80-83).

SECTION 3. ADMINISTRATIVE PROCEDURES

Administration is comparable to that employed in most self-report tests and should take approximately 20 minutes.

Administration of the questionnaire requires minimal training. Test instructions are straightforward and in line with the administration procedures traditionally used with self-report measures.

Students are required to record their A-level candidate numbers on the first page to allow their A-level results to be matched to their responses and to ensure greater confidentiality than providing their names.

Before beginning students should be informed that the survey asks about their personal attitudes and beliefs, so there are no right or wrong answers. In accordance with ethical guidelines they are ensured that data will be anonymous, stored securely, and later destroyed and that they are free to withdraw from the study at any time without giving a reason for doing so. These instructions are specified on the front page of the questionnaire.

Students indicate their response to items by placing a cross in a box to indicate their answer (part one), circle their response on a Likert scale of 1-7 (parts two and three) and occasionally provide a short written answer.

The administration of the questionnaire should take approximately twenty minutes and be completed using a pen. Students may be tested simultaneously within a specified time period or alternatively the survey may be given to them to complete independently.

SECTION 4. TECHNICAL INFORMATION

4.1 Scoring Items

Part One: Student Background

Many items included in the first section of the questionnaire, collecting information on a student's background, are coded as single items with a fixed response answer. This includes gender, year group, subject level and grades, receipt of free school meals, family composition, parental education, parental employment status and language spoken at home, whether the student and their parents were born in England and number of books at home (see Table 1). Family composition is also subsequently used to code whether or not a student is part of a single parent family. Students indicate the age at which they entered the UK. This is then recoded as; born in England, 5 years and below, 6-12 years, 12 years and above.

In line with the coding used in PISA (2009) occupational status is coded as follows (OECD, 2010); father's and mother's occupational status is initially obtained by asking open-ended questions. The response is then coded to one of the four-digit ISCO codes (International Labour Organisation, 1990) and then mapped to Gazenboom et al's SEI index (Ganzeboom et al., 1992). According to the SEI index higher scores of SEI indicate higher levels of occupational status.

Several subscales are employed to measure aspects of a students' background, where items are coded using a total score. This includes subscales measuring home possessions, support for learning and parental involvement. With the home possession subscale (see Table 1) students indicate which of 13 items they had in their home (yes or no), thus yielding a total score ranging from 0-13. The support for learning subscale (see Table 1) comprises of eight items where students indicate whether their parent/s or someone else in their house engages in these activities with them; never or hardly ever, once or twice a month, once or twice a week, every day or almost every day. These are scored 0,1,2,3 respectively and again a total score is used. Scores range from 0-24. With the parental involvement subscale (see Table 1) students are asked to indicate if their parent/s has participated in any of the eight school-related activities listed (yes or no) and a total score therefore comprises of a count of the number they indicate their parent/s has participated in. Scores therefore range from 0-8.

Part Two: Expectations and Values about A-levels Questionnaire

As shown in Table 5 the expectations and values about A-level questionnaire consists of several subscales; expectations, subjective task value including intrinsic value, utility value, attainment value (see theoretical framework) and separate scores for both task difficulty and required effort. Separate scores should be reported for each subscale as well as an overall score for STV. The range of possible scores for each subscale ranges from 2-35.

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Table 5 *Scoring Subscales in the Expectations and Values about A-levels Questionnaire*

Subscale	No. of Items	Items (see Table 2)	Range
Expectations	5	24,26,28,32,36	5-35
Intrinsic Value	2	21,30	2-14
Attainment Value	3	25,31,37	3-21
Utility Value	2	22,34	2-14
Task Difficulty	2	23,27	2-14
Required Effort	3	29,33,35	3-21

Part Three: General and Future Life Values and Expectations

As shown in Table 6 the General and Future Life Values Questionnaire consists of several subscales; high status/ competitiveness, material wealth, extrinsic motivation, need achievement, future work importance and future family importance. Possible scores range from 2-42. Separate scores should be reported for each subscale. Similar scoring procedures apply for the Future Expectations Questionnaire, where the subscales are shown in Table 7. Here the possible scores ranged from 2-35.

Table 6 *Scoring Subscales for the General and Future Life Values Questionnaire*

Subscale	No. of Items	Items (see Table 3)	Range
High Status/ Competiveness	6	38,39,42,46,51,53	6-42
Material Wealth	2	40,49	2-14
Extrinsic Motivation	4	40,41,43,49	4-28
Need Achievement	6	44,45,47,50,52,54	6-42
Future Work Importance	3	59,60,61	3-21
Future Family Importance	3	63,64,65	3-21

Table 7 *Scoring Subscales for the General and Future Life Expectations Questionnaire*

Subscale	No. of Items	Items (see Table 4)	Range
Negative Economic Expectations	2	69,71	2-14
Positive Occupational Expectations	5	67,68,69,70,71	5-35
Future Education Likely	2	74,75	2-14
Expect a Harder Life	2	77,78	2-14

4.2 Reliability and Validity

Reliability and validity of Eccles' scales are reported. The findings of this study replicate the reliability statistics with the exception of items related to task difficulty.

Traditionally Cronbach's Alpha is used to investigate the reliability, or internal consistency of test items. The accepted coefficient for reliability is frequently cited as being somewhere between .7 to .8 (Kaplan & Saccuzzo, 1982; Murphy & Davidshoefer, 1988; Nunnally, 1978; Peterson, 1994).

The reliability of items used in the self-and-task perception (expectations and values) questionnaire and future life values and expectations questionnaire are presented in Table 5. Several items in this study are shown to have better reliability than in Eccles' original scales (effort, attainment value, need achievement and family importance) whilst other items had approximately the same reliability coefficients (ability/expectancy, intrinsic value, high status, work importance, occupational expectations, job identity formation).

Low reliability was found in several items in the main study including those related to utility value, task difficulty, material wealth, extrinsic motivation, negative economic expectations, future education and expectations about a harder life. With the exception of task difficulty this replicated the low reported reliability in Eccles' original scales. The low reliability for items related to task difficulty in this study may reflect the differences of testing the self-and-task perception questionnaire in a UK rather the US context. Eccles' scales are also domain specific and students were asked about their perceived difficulty of a particular subject, whereas students in the current study are asked about the perceived difficulty of their A-levels as a whole.

Table 8 Cronbach Alphas of Expectancy-Value Questionnaire Items

	Eccles, O'Neill & Wigfield (2005)	MSALT Wave 6*	Main study (Year 13)	No. of items in scale
<i>Self and Task Perception Questionnaire</i>				
Ability/ expectancy	.92		.91	5
Intrinsic value	.76		.72	2
Attainment value	.70		.85	3
Utility value	.62		.41	2
Task difficulty	.80		.68	2
Required effort	.78		.88	3
<i>General and Future Life Values</i>				
High status/ competitiveness		0.76	.72	6
Material wealth		0.49	.63	2
Extrinsic motivation		0.53	.56	4
Need achievement		0.67	.70	6
Future work importance		0.67	.71	3
Future family importance		0.81	.88	3
<i>Future Expectations</i>				
Negative economic expectations		0.58	.60	2
Positive future occupational expectations		0.76	.70	5
Likely future education		0.64	.58	2
Expectations about a harder future life		0.51	.40	2
<i>Job Identity</i>				
Job identity formation		0.82	.78	4

*<http://www.rcgd.isr.umich.edu/msalt/researchers.htm#scales>

Eccles, Wigfield and O'Neill (2005) discuss the validity of the expectancy and subjective task value scales. They report face validity for the scales as very close linguistic correspondence was found between the items themselves and the constructs (Eccles et al., 2005). Furthermore they propose that the predictive validity of the scales was high as they were found to relate to course choices and grades received later in school, to teachers ratings of students, students prior achievement, parents' ratings of their child's abilities and interests (Eccles, 1984; Eccles et al., 1983; Eccles et al., 1982; Wigfield, 1997).

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Appendix D: Student Questionnaire (Main Study)



OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Expectations, values and A-level achievement:

Student Survey

This survey is part of a research study exploring students' expectations, values and A-level achievement. The study is being conducted as a part of a doctoral research project at the University of Oxford Centre for Educational Assessment.

The survey asks about your personal attitudes and beliefs, so there are no right or wrong answers. All data will be anonymous, stored securely, and later destroyed. No individuals will be named in any resultant reports. You are free to withdraw from the study at any time without giving a reason for doing so.

The survey should take approximately 20 minutes to complete and should be completed in black or blue ink.

Please note that by returning your completed booklet you are consenting for your responses to be included in data analysis and reports.

Please enter your examination candidate number so that your responses can be matched to your examination results.

Candidate number _____

General enquiries: If you have any queries about the research project or would like further information, please contact Mrs Carol Brown at carol.brown@education.ox.ac.uk

PART ONE: STUDENT BACKGROUND

The first section of this questionnaire will ask you about your background. Please read each question carefully and answer as accurately as you can. You will normally answer by putting a cross in a box but for a few questions you will need to write a short answer. If you make a mistake when crossing a box, erase or cross out your mistake and mark the correct box. If you make a mistake when writing an answer, simply cross it out and write the correct answer next to it. You may ask for help if you do not understand something or are not sure how to answer a question

Q1 Are you? Female ☐₁ Male ☐₂

Q2 What year are you in? Year 12 ☐₁ Year 13 ☐₂ Year 14 ☐₃

Q3 Which best describes you? (Please cross only one box)

White: British	☐ ₁	Asian: Pakistani	☐ ₉
White: Irish	☐ ₂	Asian: Bangladeshi	☐ ₁₀
White: Other White	☐ ₃	Other Asian	☐ ₁₁
Mixed: White and Black Caribbean	☐ ₄	Black Caribbean	☐ ₁₂
Mixed: White and Black African	☐ ₅	Black African	☐ ₁₃
Mixed: White and Asian	☐ ₆	Other Black	☐ ₁₄
Mixed: Other Mixed	☐ ₇	Chinese	☐ ₁₅
Asian: Indian	☐ ₈	Other	☐ ₁₆

Q4 Which subjects have you studied or are you studying in Sixth Form?

(Please list your subjects, level(s) studied and any grades already achieved)

Subject	AS level	Grade (if known)	A level	Grade (if known)
	☐ ₁		☐ ₂	
	☐ ₁		☐ ₂	
	☐ ₁		☐ ₂	
	☐ ₁		☐ ₂	
	☐ ₁		☐ ₂	

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Q5 Do you receive free school meals? No ☐₀ Yes ☐₁

Q6 Who usually lives at home with you? *(Please put a cross in the boxes of those that you live with)*

a) Mother (including stepmother or foster mother)	☐
b) Father (including stepfather or foster father)	☐
c) Brother (s) (including stepbrothers)	☐
d) Sister (s) (including stepsisters)	☐
e) Grandparent (s)	☐
f) Other (e.g., cousins)	☐

Q7 What is your mother's main job? (e.g., school teacher, cook, sales manager).

(If she is not working now please tell me her last main job.)

Please write the job title _____

Q8 What is the highest level of schooling achieved by your mother? *(Please cross one box)*

Did not go to school	☐ ₁	Sixth form (A-levels, BTEC's, qualifications up to age 18)	☐ ₄
Primary education	☐ ₂	Tertiary education (University, Polytechnic)	☐ ₅
Secondary education (up to age 16)	☐ ₃	Don't know	☐ ₆

Q9 What is your mother currently doing? *(Please tick only one box)*

Working full time for pay	☐ ₁	Other (home duties, retired)	☐ ₄
Working part time for pay	☐ ₂	Don't know	☐ ₅
Not working, but looking for a job	☐ ₃		

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Q10 What is your father's main job? (e.g., school teacher, cook, sales manager)

(If he is not working now, please tell me his last main job)

Please write the job title _____

Q11 What is the highest level of schooling achieved by your father? *(Please cross one box)*

- | | | | |
|------------------------------------|---------------------------------------|--|---------------------------------------|
| Did not go to school | ☐ ₁ | Sixth form (A-levels, BTEC's, qualifications up to age 18) | ☐ ₄ |
| Primary education | ☐ ₂ | Tertiary education (University, Polytechnic) | ☐ ₅ |
| Secondary education (up to age 16) | ☐ ₃ | Don't know | ☐ ₆ |

Q12 What is your father currently doing? *(Please cross only one box)*

- | | | | |
|------------------------------------|---------------------------------------|------------------------------|---------------------------------------|
| Working full time for pay | ☐ ₁ | Other (home duties, retired) | ☐ ₄ |
| Working part time for pay | ☐ ₂ | Don't know | ☐ ₅ |
| Not working, but looking for a job | ☐ ₃ | | |

Q13 What language do you speak at home most of the time? _____

Q14 In which country were you and your parents born?

	<i>You</i>	<i>Mother</i>	<i>Father</i>
<i>England</i>	☐ ₁	☐ ₁	☐ ₁
<i>Other Country</i>	☐ ₂	☐ ₂	☐ ₂

Q15 If you were not born in England, how old were you when you arrived here?

If you were born in England please skip this question

If you were less than 12 months old, please write zero (0) _____ years old

Q16 Which of the following do you have in your home? *(Please cross only one box in each row)*

	No	Yes		No	Yes
a) A desk to study at	☐ ₀	☐ ₁	b) Books to help with your school work	☐ ₀	☐ ₁
c) A room of your own	☐ ₀	☐ ₁	d) Technical reference books or manuals	☐ ₀	☐ ₁
e) A quiet place to study	☐ ₀	☐ ₁	f) A dictionary	☐ ₀	☐ ₁
g) A computer you can use for school work	☐ ₀	☐ ₁	h) A dishwasher	☐ ₀	☐ ₁
i) Classic literature (e.g., Shakespeare)	☐ ₀	☐ ₁	j) A high-speed Internet connection	☐ ₀	☐ ₁
k) Books of poetry	☐ ₀	☐ ₁	l) A musical instrument	☐ ₀	☐ ₁
m) Works of art (e.g., paintings)	☐ ₀	☐ ₁			

Q17 How many of these do you have at home? *(Please cross only one box in each row)*

	0	1	2	3+
Mobile phones	☐ ₀	☐ ₁	☐ ₂	☐ ₃
Televisions	☐ ₀	☐ ₁	☐ ₂	☐ ₃
Computers	☐ ₀	☐ ₁	☐ ₂	☐ ₃
Cars	☐ ₀	☐ ₁	☐ ₂	☐ ₃
Bathrooms with a bathtub or shower	☐ ₀	☐ ₁	☐ ₂	☐ ₃

Q18 How many books are there in your home?

There are usually 40 books per metre of shelving. Don't include magazines, newspapers or your schoolbooks (Please cross only one box)

0-10	☐ ₀	101-200	☐ ₃
11-25	☐ ₁	201-500	☐ ₄
26-100	☐ ₂	More than 500 books	☐ ₅

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Q19 How often does your parent/s or someone else in your home do the following things with you? *(Please cross only one box in each row)*

	Never or hardly ever	Once or twice a month	Once or twice a week	Every day or almost every day
a) Discuss political or social issues	☐ ₀	☐ ₁	☐ ₂	☐ ₃
b) Discuss books, films or television programmes	☐ ₀	☐ ₁	☐ ₂	☐ ₃
c) Discuss how well you are doing at school	☐ ₀	☐ ₁	☐ ₂	☐ ₃
d) Eat the main meal with you around a table	☐ ₀	☐ ₁	☐ ₂	☐ ₃
e) Spend time just talking to you	☐ ₀	☐ ₁	☐ ₂	☐ ₃
f) Go to a bookstore or library with you	☐ ₀	☐ ₁	☐ ₂	☐ ₃
g) Talk with you about what you are reading/ studying	☐ ₀	☐ ₁	☐ ₂	☐ ₃
h) Help you with your homework	☐ ₀	☐ ₁	☐ ₂	☐ ₃

Q20 In the last academic year has your parent/s participated in any of the following school-related activities? *(Please cross only one box in each row)*

	No	Yes
a) Discussed your behaviour or progress with a teacher on their own initiative	☐ ₀	☐ ₁
b) Discussed your behaviour or progress on the initiative of one of your teachers (e.g. parents evening)	☐ ₀	☐ ₁
c) Volunteered in physical activities, e.g., building maintenance, carpentry, gardening or yard work	☐ ₀	☐ ₁
d) Volunteered in extra-curricular activities, e.g., book club, school play, sports, field trip	☐ ₀	☐ ₁
e) Volunteered in the school library or media centre	☐ ₀	☐ ₁
f) Assisted a teacher in the school	☐ ₀	☐ ₁
g) Appeared as a guest speaker	☐ ₀	☐ ₁
h) Participated in school committees, e.g., PTA, Governor	☐ ₀	☐ ₁

PART TWO : EXPECTATIONS AND VALUES ABOUT YOUR A-LEVELS

This section of the questionnaire will ask you about your perceptions of yourself and your ability to complete A-level tasks. Please read each question carefully and answer as accurately as you can. You will be asked to circle the answer that best represents your view on a scale of 1-7, for example

Studying for A-levels is;

Very easy									Very hard
1	2	3	4	5	6			7	

If you make a mistake erase it, or cross it out, and circle the correct number

You may ask for help if you do not understand something or are not sure how to answer a question

Q21	In general I find working on A-level assignments									
	Very boring	1	2	3	4	5	6	7	Very Interesting	
Q22	In general, how useful is what you learn at A-level for your daily life outside school?									
	Not at all useful	1	2	3	4	5	6	7	Very useful	
Q23	In general, how hard are A-levels for you?									
	Very easy	1	2	3	4	5	6	7	Very hard	
Q24	Compared to other students, how well do you expect to do in your A-levels this year?									
	Much worse than other students	1	2	3	4	5	6	7	Much better than other students	
Q25	For me, being good at my A-levels is?									
	Not at all important	1	2	3	4	5	6	7	Very important	
Q26	How well do you think you will do in your A-levels this year?									
	Very poorly	1	2	3	4	5	6	7	Very well	
Q27	Compared to other students in your class how hard are A-levels for you?									
	Much easier	1	2	3	4	5	6	7	Much harder	
Q28	How good are you at A-levels?									
	Not at all good	1	2	3	4	5	6	7	Very good	
Q29	How hard do you have to try to do well in your A-level courses ?									
	Not very hard	1	2	3	4	5	6	7	Very hard	
Q30	I like doing A-levels									
	Strongly disagree	1	2	3	4	5	6	7	Strongly agree	
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you									
	Not very worthwhile	1	2	3	4	5	6	7	Very worthwhile	
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?									
	The worst	1	2	3	4	5	6	7	The best	

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Q33	How hard do you have to try to get good grades in your A-levels?									
	A little	1	2	3	4	5	6	7	A lot	
Q34	How useful are A-levels for what you want to do after you finish school and go to University/ work?									
	Not at all useful	1	2	3	4	5	6	7	Very useful	
Q35	How hard do you have to study for your A-level exams to get a good grade?									
	A little	1	2	3	4	5	6	7	A lot	
Q36	How have you been doing in your A-levels this year?									
	Very poorly	1	2	3	4	5	6	7	Very well	
Q37	How important is it to you to get good grades in your A-levels?									
	Not at all important	1	2	3	4	5	6	7	Very important	

PART THREE: GENERAL LIFE EXPECTATIONS AND VALUES

This section of the questionnaire will ask you, more generally, about your perceptions of yourself, your expectations and values. Please read each question carefully and answer as accurately as you can.

You will usually be asked to put a cross in a box (one per line). If you make a mistake erase or cross it out, and alternatively mark the correct box. Sometimes you will instead be asked to provide short answers. You may ask for help if you do not understand something or are not sure how to answer a question.

Read each of the statements below and put a cross in one box (per line) to show how much you agree or disagree

		Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Q38	I'd like to accomplish something in life that will be well known							
Q39	I feel that winning is very important							
Q40	I would give up a secure job for a chance to make big money							
Q41	To me, work is nothing more than making a living							
Q42	I'd like to be famous							
Q43	I like the kind of work you can forget about after the day is over							
Q44	Doing my very best at the tasks I take on is very important to me							
Q45	I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do							
Q46	I would rather be president of a club than just a member							
Q47	I like to try things I've never done before							
Q48	I would rather do something at which I feel confident and relaxed than something which is challenging and difficult							
Q49	I would like a lot of expensive possessions							
Q50	I really enjoy working in situations involving skill and competition							
Q51	When a group I belong to plans an activity, I would rather organize it myself than have someone organize it and just help out							
Q52	I want to do my best in my job even if this sometimes means working overtime							

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Q53	It is important to me to perform better than others on a task							
		Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Q54	I expect my work to be a very central part of my life							
Q55	I would turn down a promotion in my career if it meant moving away from close supportive friendships							
Q56	If a choice had to be made, I would put my partner's career before mine							
Q57	I would readjust my work schedule or work part-time to meet the needs of my children							
Q58	If I had a great career opportunity in another location I would expect my spouse and family to move							

Now put a cross in each line to show how important each of the following will be to you in your adult life?

		Not at all Important							Extremely Important
		1	2	3	4	5	6	7	
Q59	Being very successful in your line of work								
Q60	Being able to find steady work								
Q61	Being able to support yourself (being financially independent)								
Q62	Helping to improve the lives of others								
Q63	Getting married								
Q64	Having children								
Q65	Being a successful parent (raising healthy, happy, well-adjusted children)								

Q 66 Now, from the above list, pick the two most important goals to you:

_____ and _____

When you think about your future, how likely do you think each of the following will be in the next 10 to 15 years (put only one cross per line)

		Very Unlikely 1 2 3 4 5 6 7 Very likely						
Q67	You will have a job you enjoy doing							
Q68	You will be a success in your line of work							
Q69	You will be laid off from your job							
Q70	You will have a job that pays well							
Q71	You will have difficulty supporting your family financially							
Q72	You will finish your A-level courses							
Q73	You will complete a vocational college course							
Q74	You will graduate from University							
Q75	You will attend graduate or professional school after University							
Q76	You will have good friends you can count on in the future							
Q77	That life will turn out better for you than for your parents							
Q78	That life will turn out to be harder for you than it was for your parents							

Q79 If you could have any job you wanted, what job would you like to have when you are 30 or put 'don't know'?

Please circle the answer that best represents your view on each of the following statements

Q80 How sure are you that this is the kind of job you would like?									
Not at all sure	1	2	3	4	5	6	7	Very sure	
Q81 How much have you thought about this choice?									
A little	1	2	3	4	5	6	7	A lot	

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Q82 How likely is it that you will be successful in this kind of job?								
Very unlikely	1	2	3	4	5	6	7	Very likely
Q83 How likely do you think it is that you will have this kind of job?								
Very unlikely	1	2	3	4	5	6	7	Very likely

Q84 Has anyone had a positive influence on your choice of this job? ___yes ___no

If yes, who? _____

Q85 Did anyone discourage you from thinking about certain kinds of jobs? ___yes ___no

If yes, who? _____

Q86 Now, what specific job do you think you will actually have when you are 30 or put 'don't know'?

Appendix E: Consent Forms (Main Study)

E1: *Student Consent Form (Main Study)*

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

Department of Education

15 Norham Gardens, Oxford, OX2 6PY, UK

Tel: +44 (0)1865 274002/284098 Fax: +44 (0)1865 274027

Email: admin.oucea@education.ox.ac.uk Website: <http://oucea.education.ox.ac.uk>



RESEARCH CONSENT FORM (Questionnaire phase)

Project title: Eccles' Theory of Identity and Achievement. A Study of Students Preparing for High-Stakes, A-level examinations

Researcher: Carol Brown **Supervisors:** Professor Jo-Anne Baird & Dr Therese Hopfenbeck

I have read the participant information sheet and have had the opportunity to ask questions about the study and receive satisfactory answers to the questions

I understand that I may withdraw from the study without penalty at any time by advising the researchers, and any data already recorded will be discarded

I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee

I understand that my personal data will be treated in total confidence, kept securely in a password-controlled server, and what will happen to the data at the end of the project

I understand how to raise a concern and make a complaint, and agree to participate in the project

I understand that I will have the opportunity to review and comment on any analysis before publication

☐ Please tick this box if you would like to receive a summary of the research findings when it is completed and provide your email in the box below

If you wish to opt out of this study and do not wish to take part please sign below and return the form to me

☐ I do not wish to participate in this study

Name: _____

Signature: _____

Date: _____

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E2: Student Information Sheet (Main Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

Department of Education

15 Norham Gardens, Oxford, OX2 6PY, UK

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PARTICIPANT INFORMATION SHEET

Project title: Eccles' Theory of Identity and Achievement. A Study of Students Preparing for High-Stakes, A-level examinations

Supervisors: Professor J Baird and Dr T Hopfenbeck, OUCEA, Department of Education, University of Oxford

My name is Carol Brown. I am conducting a study at the Department of Education, University of Oxford on the relationship between A-level students' expectations and values, and actual A-level achievement, as part of my Doctoral research. If you agree to take part, I will ask you to complete a questionnaire. Some questions ask you about your background, others ask about your beliefs, values and expectations about your A-levels, and others ask more generally about your values and expectations for your future. I would also like to collect your exam results in the Summer to see if there are any links between your answers and what you achieve.

You do not have to complete this questionnaire if you don't want to, and you don't have to give a reason for not participating. If you begin the questionnaire and then decide you don't want to hand it in, all you have to do is let me know. Your teachers will not know if you do not participate, and there will be no academic consequences. If you have any questions that you would like to ask before deciding whether to take part in this project, please ask me. You can email me at carol.brown@education.ox.ac.uk or you can give a note to your Head of Sixth Form to pass on to me.

This is not a test. There are no right answers to the questions. Any information you give will be put together with other students' information, so it will not be possible to tell which student wrote which of the answers. Some of the questions may seem personal, and you may be unsure why I ask these. It is because I want to be able to compare answers between different groups of students, such as students from different backgrounds. Only the research staff at the University will see your responses – PARENTS OR TEACHERS WILL NOT BE ABLE TO SEE WHAT YOU HAVE WRITTEN. The research data will be stored in a safe place, in a locked filing cabinet in the Oxford University Centre for Educational Assessment and can only be accessed by the researchers. You are asked to provide your candidate number but this is just so that I can match up your answers with your exam results. Your actual responses will still remain anonymous and confidential. If you complete a questionnaire, it will be destroyed at the end of this project, as will any exam results that I have obtained. Only anonymised summaries in which no one can be identified will be made available to genuine academic researchers in the future.

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You may later be invited to take part in an interview so that I can gain some insight into your goals and expectations for your A-levels. Agreeing to complete the questionnaire will not oblige you to participate in an interview. If you are happy to take part in an interview, and if you are invited to do so, the interview will be audio recorded. I will learn the names of the students who take part in the interviews, but the names will not be written down anywhere. Recordings of the interviews will be kept as password-protected files on a password-protected computer. Only the research team will have access to these recordings. At the end of the project, the recordings will be destroyed and only anonymised transcripts, with any information removed that might identify a person or a school, will be made available to genuine academic researchers in the future.

The results of this project will be written up as a thesis. Upon successful submission of the thesis, it will be available openly both in the University library and online so that the research can be useful to other people in the UK and internationally. Neither you nor your school will be identifiable in the thesis.

This project has been reviewed by, and received ethical clearance through the University of Oxford Central University Research Ethics Committee but if you are unhappy with any aspect of this study you may raise your concerns at jo-anne.baird@education.ox.ac.uk

Appendices

E3: School Consent Form (Main Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

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RESEARCH CONSENT FORM (Schools)

Project title: Eccles' Theory of Identity and Achievement. A Study of Students Preparing for High-Stakes, A-level examinations

Researcher: Carol Brown

Supervisors: Professor J Baird, Dr T Hopfenbeck

Declaration of Consent

We have read the information sheet and have had the opportunity to ask questions about the study and receive satisfactory answers to the questions

We agree to the participation of our students within this study and to provide GCSE point scores, raw and value added AS/ A-level results of those participating in August 2014.

We understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee

We understand that the data collected will be treated in total confidence, kept securely in a password-controlled server, and what will happen to the data at the end of the project

We understand how to raise a concern and make a complaint, and agree to participate in the project

- ☐ We agree to voluntarily take part in this research
- ☐ We confirm that we have read the information sheet and understand its intent and purpose
- ☐ We agree that data captured by this research can be shared among the research team on this project
- ☐ We would like to receive a summary of the results of this project

Name: _____

Email: _____

Signature: _____

Date: _____

Name of researcher: _____

Signature and date: _____

Appendices

E4: School Information Sheet (Main Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

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SCHOOL INFORMATION SHEET

Project title: Eccles' Theory of Identity and Achievement. A Study of Students Preparing for High-Stakes, A-level examinations

Supervisors: Professor J Baird and Dr T Hopfenbeck, OUCEA, Department of Education, University of Oxford

My name is Carol Brown and I am conducting a study on the relationship between students' expectations and values, and their actual A-level achievement, as part of my Doctoral research at the Department of Education, University of Oxford.

Sixth form students will be invited to complete a questionnaire which asks them about their background, their beliefs, values and expectations about their A-levels, and about their general values and expectations for the future. A subsample of approximately 10 students will also be asked to take part in an interview (group or individual) to explore the relationship between their identity and goals and expectations for A-levels in more detail. Schools will be asked to distribute the student information sheets and consent forms prior to the study taking place. A 20 minute period will then be required in which students should be available to complete the questionnaires in the school day. I will be available to supervise this, collect consent forms and answer any questions the students may have. For the subsequent interview stage of the study I would require a room for a 30 minute period. These interviews could take place in a lunchtime or students free periods.

You are also being asked to provide GCSE point scores and their raw and value added AS/ A-level exam results in August 2014 which will be used to establish if there are any links between their expectations, values and achievements. Students will be asked to provide their candidate numbers on their questionnaires to allow their results to be matched to their responses.

Only the research staff at the University will see the data. It will be stored in a safe place, in a locked filing cabinet in the Oxford University Centre for Educational Assessment and can only be accessed by the researchers. It will be destroyed on 1/10/2018.

Students, will be free to withdraw from the study at any time.

This project has been reviewed by, and received ethical clearance through the University of Oxford Central University Research Ethics Committee but if you are unhappy with any aspect of this study you may raise your concerns at jo-anne.baird@education.ox.ac.uk

Appendices

E5: Interview Consent Form (Main Study)

OXFORD UNIVERSITY CENTRE FOR EDUCATIONAL ASSESSMENT

Director: Professor Jo-Anne Baird

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RESEARCH CONSENT FORM (Interview phase)

Project title: Eccles' Theory of Identity and Achievement. A Study of Students Preparing for High-Stakes, A-level examinations

Researcher: Carol Brown **Supervisors:** Professor Jo-Anne Baird & Dr Therese Hopfenbeck

I have read the participant information sheet and have had the opportunity to ask questions about the study and receive satisfactory answers to the questions

I understand that I do not have to answer any questions which make me feel uncomfortable or I find difficult

I understand that the interview will be audio recorded

I understand that I may withdraw from the study without penalty at any time by advising the researchers, and any data already recorded will be discarded

I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee

I understand that my personal data will be treated in total confidence, kept securely in a password-controlled server, and what will happen to the data at the end of the project

I understand how to raise a concern and make a complaint, and agree to participate in the project

I understand that I will have the opportunity to review and comment on any analysis before publication

☐ Please tick this box if you would like to receive a summary of the research findings when it is completed and provide your email in the box below

If you wish to opt out of this study and do not wish to take part please sign below and return the form to me

☐ I do not wish to participate in this study

Name: _____

Signature: _____

Date: _____

Appendix F: Descriptive Statistics on Expectations and Values for A-levels and General Life for Main Sample

F1 Descriptive Statistics: Subjective Task Value (Intrinsic Value, Attainment Value, Utility Value) in Main Sample

	N	Minimum	Maximum	Mean	SD	Skew
Intrinsic value				8.80		
Q21: In general I find working on A-level assignments	392	1 (Very boring)	7 (very interesting)	4.46	1.29	-.65
Q30: I like doing A-levels	392	1 (strongly disagree)	7 (strongly agree)	4.34	1.59	-.32
Attainment value				18.20		
Q25: For me, being good at my A-levels is?	394	1 (not at all important)	7 (very important)	6.13	1.20	-1.77
Q31: Is the amount of effort it will take to do well in A-levels worthwhile to you	394	1 (not very worthwhile)	7 (very worthwhile)	5.75	1.41	-1.32
Q37: How important is it to you to get good grades in your A-levels?	393	1 (not at all important)	7 (very important)	6.30	1.11	-2.09
Utility value				9.71		
Q22: In general, how useful is what you learn at A-level for your daily life outside school?	393	1 (not at all useful)	7 (very useful)	3.83	1.50	-.10
Q34: How useful are A-levels for what you want to do after you finish school and go to University/ work?	392	1 (not at all useful)	7 (very useful)	5.88	1.50	-1.55

*1=strongly disagree 7=strongly agree

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F2 Descriptive Statistics: General Life Values and Expectations in Main Sample

	N	Minimum	Maximum	Mean	SD	Skew
Material wealth				8.40		
Q40: I would give up a secure job for a chance to make big money	388	1	7	4.05	1.61	.02
Q49: I would like a lot of expensive possessions	386	1	7	4.35	1.90	-.16
Extrinsic motivation				14.25		
Q40: I would give up a secure job for a chance to make big money	388	1	7	4.05	1.60	.02
Q41: To me, work is nothing more than making a living	388	1	7	2.83	1.53	.66
Q43: I like the kind of work you can forget about after the day is over	386	1	7	3.08	1.58	.53
Q49: I would like a lot of expensive possessions	386	1	7	4.35	1.90	-.16
Need for Achievement				30.94		
Q44: Doing my very best at the tasks I take on is very important to me	391	1	7	5.63	1.26	-1.14
Q45: I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do	390	1	7	4.53	1.35	-.19
Q47: I like to try things I've never done before	389	1	7	5.53	1.29	-.74
Q50: I really enjoy working in situations involving skill and competition	389	1	7	4.92	1.42	-.51
Q52: I want to do my best in my job even if this sometimes means working overtime	390	1	7	5.42	1.32	-.88
Q54: I expect my work to be a very central part of my life	389	1	7	4.96	1.34	-.61
Future work importance				17.93		
Q59: Being very successful in your line of work	389	1	7	5.78	1.06	-.90
Q60: Being able to find steady work	388	1	7	5.78	1.15	-1.18
Q61: Being able to support yourself (being financially independent)	388	1	7	6.37	.88	-2.05
Future family importance				16.63		
Q63: Getting married	388	1	7	5.24	1.64	-.88
Q64: Having children	388	1	7	5.36	1.67	-1.01
Q65: Being a successful parent (raising healthy, happy, well-adjusted children)	389	1	7	6.03	1.48	-1.86

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High status				25.92		
Q38: I'd like to accomplish something in life that will be well known	391	1	7	5.13	1.42	-.52
Q39: I feel that winning is very important	390	1	7	4.57	1.67	-.23
Q42: I'd like to be famous	390	1	7	3.21	1.70	.47
Q46: I would rather be president of a club than just a member	387	1	7	3.97	1.70	.19
Q51: When a group I belong to plans an activity, I would rather organize it myself than have someone organize it and just help out	389	1	7	4.41	1.61	-.15
Q53: It is important to me to perform better than others on a task	391	1	7	4.70	1.51	-.35
Negative economic expectations				5.39		
Q69: You will be laid off from your job	378	1	7	2.62	1.21	.69
Q71: You will have difficulty supporting your family financially	376	1	7	2.75	1.24	.72
Positive future occupational expectations				25.92		
Q67: You will have a job you enjoy doing	384	1	7	5.45	1.06	-.52
Q68: You will be a success in your line of work	384	1	7	5.05	1.05	-.10
Q69 (negatively scored): You will be laid off from your job	378	1	7	5.38	1.21	-.69
Q70: You will have a job that pays well	380	1	7	4.80	1.12	-.22
Q71 (negatively scored): You will have difficulty supporting your family financially	376	1	7	5.25	1.24	-.72
Future education likely				9.97		
Q74: You will graduate from University	381	1	7	5.93	1.56	-1.72
Q75: You will attend graduate or professional school after University	376	1	7	4.05	1.86	-.07
Expectations for a harder life				8.76		
Q77: That life will turn out better for you than for your parents	378	1	7	4.53	1.26	.16
Q78 (negatively scored): That life will turn out to be harder for you than it was for your parents	378	1	7	3.75	1.44	.06

*1=strongly disagree 7=strongly agree

Appendix G: A-level and AS level Subject Choices by Gender

G1: A-level Subject Choices and Average A-level Total Point Score by Gender

A-LEVEL SUBJECT	MALE		FEMALE		OVERALL	
	Total Entries	Average Points	Total Entries	Average Points	Total Entries	Average Points
Additional Further Maths	3	290	0	N/A	3	290
Applied Business Studies	3	210	0	N/A	3	210
Art	2	270	12	253	14	255
Art and Design	4	233	6	245	10	240
Biology	44	239	73	240	117	239
Business Studies	8	191	6	230	14	208
Chemistry	44	264	46	253	90	258
Classics	2	255	0	N/A	2	255
Computing	7	223	0	N/A	7	223
Design and Technology	1	180	2	255	3	230
Drama and Theatre Studies	3	240	9	257	12	253
Dutch	0	N/A	1	270	1	270
Economics	15	218	9	267	24	236
English Language	9	270	9	280	18	275
English Literature	19	235	54	236	73	236
English Literature & Language	5	270	3	240	8	259
Fine Art	0	N/A	1	210	1	210
Food Technology	0	N/A	1	240	1	240
French	10	249	18	245	28	246
Further Maths	30	261	10	270	40	263
General Studies	2	240	0	N/A	2	240
Geography	27	238	23	245	50	241
Geology	4	278	0	N/A	4	278
German	2	285	5	258	7	266
Greek	3	300	0	N/A	3	300
Health & Social Care	0	N/A	1	150	1	150
History	36	256	41	252	77	254
Information Technology	0	N/A	4	165	4	165
Italian	1	240	2	240	3	240
Latin	6	280	1	270	7	279
Law	2	180	2	210	4	195
Leisure	4	203	0	N/A	4	203
Mandarin	0	N/A	1	240	1	240
Mathematics	86	262	53	257	139	260
Media Studies	5	234	3	240	8	236
Music	3	220	4	225	7	223
PE	7	154	4	233	11	183
Performing Arts	2	255	0	N/A	2	255
Philosophy	2	225	1	240	3	230
Physics	53	237	18	253	71	241
Politics	9	273	4	285	13	277
Product Design	1	210	0	N/A	1	210
Psychology	13	194	55	228	68	221
Religious Studies	8	263	10	261	18	262
Russian	0	N/A	5	288	5	288
Sociology	2	195	23	236	25	233
Spanish	4	285	2	255	6	275
Sports Studies	1	240	1	270	2	255
Study Skills	2	180	9	-	11	256
Textiles	0	N/A	2	270	2	270

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G2: AS-level Subject Choices and Average Total AS Point Score by Gender

AS LEVEL SUBJECT	MALE		FEMALE		OVERALL	
	Total Entries	Average Points	Total Entries	Average Points	Total Entries	Average Points
Applied Business	5	105	3	100	8	103
Art & Design	3	70	24	102	27	98
Art & Design Graphics	0	N/A	1	105	1	105
Art	5	108	10	105	15	106
Biology	59	83	98	84	157	84
Business Studies	19	96	19	93	38	94
Business Vocational	6	105	13	90	19	95
Chemistry	81	100	51	94	132	97
Computing	16	85	4	49	20	78
Creative Writing	1	105	1	90	2	98
Critical Thinking	1	90	1	120	2	105
Drama & Theatre Studies	6	113	19	107	25	108
Economics	53	98	24	100	77	99
English	13	126	11	109	24	118
English Language	1	120	6	100	7	103
English Literature	22	87	91	103	113	100
English Literature & Language	6	100	21	106	27	104
Film Studies	0	N/A	1	105	1	105
Fine Art	1	75	8	118	9	113
Food Technology	1	90	3	90	4	90
French	19	116	21	111	40	114
Further Mathematics	21	125	9	95	30	116
Geography	43	108	32	99	75	105
German	4	120	2	120	6	120
Government & Politics	10	104	6	95	16	100
Greek	1	135	0	N/A	1	135
Health & Social Care	0	N/A	9	107	9	107
History	47	118	53	108	100	113
Human Biology	1	105	10	57	11	61
ITC	3	60	1	75	4	64
Latin	5	123	2	128	7	124
Law	5	90	6	93	11	91
Leisure	1	120	0	N/A	1	120
Mathematics	122	105	83	97	205	102
Media Studies	26	110	19	104	45	107
Music	4	109	3	110	7	109
PE	13	85	6	88	19	86
Performing Arts	5	120	7	116	12	118
Philosophy	2	113	4	64	6	80
Photography	3	100	7	101	10	101
Physics	91	94	23	88	114	93
Politics	8	116	7	94	15	106
Product Design	18	89	1	0	19	84
Psychology	43	80	104	93	147	89
Religious Studies	5	123	24	100	29	104
Science in Society	1	90	2	38	3	55
Sociology	20	94	47	100	67	98
Spanish	9	125	3	135	12	128
Sports Studies	0	N/A	4	98	4	98
Textiles	0	N/A	6	110	6	110
Theology	7	133	0	N/A	7	133

Appendix H: Interview Schedule

INTERVIEW SCHEDULE

Read consent form. Gain consent for recording

Thank you for agreeing to take part in this interview. Earlier you filled in a questionnaire which looked at how well you expect to do in Sixth form and whether you value your studies. Here is a copy of one of the questionnaires if you would like to use it as a reminder when I ask you some questions. The aim of this interview is to find out more about your views and to investigate how your studies relate to how you see yourself - your identity. You will have probably also have seen aspects of this discussed in the media; for example, whether boys or girls perform better in A-levels. I am going to ask you a few questions but if there is anything you feel uncomfortable with then you don't have to answer, you can simply say you would rather move on to the next question. Also, if you decide that you do not want to take part after all, you can just say so and we can stop.

****start recording****

Ask each participant to introduce themselves, for the purposes of transcribing from the recording;

To start, can I please ask you to introduce yourself by telling me;

- your name
- your school
- year group.

These details will only be used to categorise the interviews and will later be removed so that what you say remains anonymous.

Background information (structured)

Could you also tell me

- the subjects you are studying
- whether these are AS, A-level or other types of qualifications

I know you put this on your questionnaire but they are anonymous, so for this interview it would also be useful if you could tell me a few key things about yourself.

- Firstly, can you tell me your ethnic background?
- It would also be useful if you could tell me what your parents do for their job, if they work.

A-levels and Identity (semi-structured)

1. Do you think your A-levels are helping you to become the person you want to be? How OR why not? (**Possible prompts** - helping with getting to University, getting into the right course, apprenticeships, job choices, career aspirations, facilitating particular life skills e.g. confidence, independent learners etc)
2. Do you think this influences the effort you put in?

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3. Have there been any people or experiences in your life that have influenced the choices you've made about your studies and your future? If so how did they influence you? (**possible prompts** - parents, teachers etc as role models, life events e.g. illness, personal experiences, previous academic achievements or failures)
4. Have A-levels confirmed or changed the way you see yourself? How? (**possible prompts** - confirmed skills and abilities in subject areas, confirmed HE/ career choice, changed aspirations, changed perceived skills, e.g., academic versus practical, organisation, confidence, changed HE/ career choice)
5. When you think about the things we have discussed today (for example, ****tailor to issues discussed by student****) is there anything else you have been thinking about during the interview that you believe is important to tell me?

Thank you very much for agreeing to be interviewed and for your time. Good luck with your forthcoming exams.

Appendix I: Interview Codebook

- This log contains the codes used to answer the research questions
- Main codes are shown in **bold**
- sub-codes are indented

Code Name	Sources	References	Explanation	Example (s)
Background	20	81	General code for students' background including gender, ethnicity, SES	
Ethnicity	20	20	Ethnic background	'White British' 'African, Black African'
Gender	20	20	Male, female identified by coding student name and hand coding of researcher at interview	Hannah
Socio-economic	20	21	Parental job (s)	'my dad is a truck driver, a HGV driver and my mum is PA to the councillor'
Year group	19	20	Year 12 or 13	Year 13
Expectancy-values	20	181	Students' expectations for A-levels, future educational, occupational and life goals and value attributed to them	
Attainment value	18	50	Value or importance attributed to doing well in A-levels. Studying A-levels, subject or career choice fits with person's identity	'I liked Chemistry, Biology and Maths and that fitted with the possibility of doing medicine so I chose those...when I was applying I knew if I got that far I was going to have to work really hard to get those grades' 'Yes I need 3 A's...and I want to do well anyway because it feels good when you do well' 'Picking the University has helped me work towards certain grades for my A-levels'

Appendices

Effort	20	35	Effort applied to succeeding at A-levels, effort student considers worthwhile .	
Effort determined by subject or grades	4	5	effort determined by subject requirements or grade requirements	'Having an offer for medicine and being right I've got to get these grades has definitely boosted the amount of effort that I've put in'
Effort determined by interest or enjoyment	5	6	effort determined by interest or enjoyment of A-levels or specific subjects	'because I enjoy it I have to put more effort into it' 'so does the effort differ between subjects for you and what Makes the difference do you think?' 'if I'm interested in it'
Effort determined by personal growth	8	8	effort determined by personal growth for the self or future opportunities	'in order to do well in the future it might be logical to try and work as hard as I can' 'I probably do put a reasonable amount of effort into my A-levels but that's not necessarily with a clear goal in sight I think it's probably just to give myself the best opportunities'
Lack of effort	5	7	Lack of effort is discussed	'I'm finding with art lately because it's a lot of work that because I'm not necessarily going to University I've been extremely half hearted...now I'm finding I want to drop it by the end of this year because it's just not really of interest to me anymore' 'I think my motivation is very low, like I'm sort of being pushed through the system from my parents and teachers and if it was up to me I probably would've given up now'
Intrinsic value	16	43	Enjoyment of studying for A-levels - generally and subject specific	'I think the majority of my choices are based on what I enjoy' '...then I thought what really interests me and what do I want to spend 3 or 4 years doing...' '...I chose because I enjoy Chemistry and Physics that's the thing that determined me to do a degree in Chemistry'

Appendices

Perceived cost	3	3	Cost of participating in A-levels, e.g. anxiety, fear of failure, fear of social consequences, loss of energy	'Just competing locally at the moment, attempting to focus on studying' 'Well sometimes they make me feel really horrible about myself ...'
Task difficulty	9	11	How difficult A-levels, or subjects are experienced as being	'sometimes it's so challenging that you don't think you can do it but then you actually do it and you think oh I can overcome any challenge kind of thing' 'I thought I was actually a really clever student, cos I was like one of the top in our school in our year, went into A-level and it just melted away' 'When I got a B in English I genuinely thought I was really good at it and then when I did AS I was kind of like this is a bit harder now...'
Utility Value	19	39	Value A-levels have because they fulfil a goal/ future plans	
University or academic goals	16	27	A-levels are useful in fulfilling a university or academic goal	'They'll help me get into Uni because I've decided what I want to do' 'I need to get to Uni and I just need to pick the subjects that are going to get me there with the grades'
Useful life skills	12	14	A-levels are useful because they develop or contribute to future life skills	'I'm doing French at the moment so I think language skills, I think I'd like to travel a lot so I think that would probably help' 'I think they do, cos they make me want to study hard and become a better person, get a job, be independent'
Experiences	8	9	Life events/ experiences related to decisions to study A-levels including reference to specific subject choices	
Area	1	1	Influences of geographical area/ neighbourhood	'...growing up here where its school is always very easy and the majority of people go into 6th form...whereas in say a London school...the chances of going on to do it are much slimmer'

Appendices

Books	2	3	Influence of specific books, authors	'I've read quite a few of Stephen Pinker's books and then when I emailed him he was extremely positive when he replied back so he influenced me quite a lot'
Extra Curricula	1	1	Influence of extra-curricular activities	'...'cos I'm part of the Air Cadets and they're about aviation and stuff' 'the military, CCF presence that is at my school...I tried it out in year 9 and then I loved this and knew I wanted to do something related to the military...'
Work Experience	2	2	Influence of work experience	'I did it for work experience and it was good'
Future Plans	20	21	Future educational, occupational and life plans	'I'm either going to University or joining the Army' 'I want to do a neuroscience degree at St Andrews'
Identity	20	54	General reference to aspects of identity, way see self, self - esteem, sense of self	
Changed identity	15	23	Has changed way student sees themselves; generally, subject skills, study skills, life skills	
Changed future plans	5	5	Changed plans student had for the future	'...I think the grades I got in my first year was a bit like, mmm, maybe not, I need to look at what I'm actually good at and re-evaluate my decision' 'I used to think I was money driven and I now know that I am more driven by what I enjoy'
Changed Study skills	5	6	Changed way student approached studies	'I think they've made me more organised' 'independent study...it's given me a bit more independence working in 6th form'

Appendices

Personal change	9	11	Personal change, e.g., confidence, independence, determination	'My A-levels have allowed me to sort of become more independent and allowed me to become more confident..' 'I think they've probably changed it in the way I see myself as a lot more, like, confident in a way...' 'They've changed me. They've made me better'
Confirmed identity	11	14	Confirmed way student sees themselves; generally, subject skills, study skills, life skills	'It's basically confirmed that what I want to do is what I'm doing now' 'I think they've confirmed the way I saw myself as someone who wants to succeed and wants to do well, cos I did well at my AS's and I know I can do that and also that I am interested in science and those are the areas I'd much prefer to be doing than writing an essay'
Cultural identity	2	4	Reference to ethnicity, racial background, cultural identity	'I would much rather just finish A-levels and then move back to my country and find work, just get in touch with my ethnic background a bit more because I did leave at a young age'
School Identity	3	4	Reference to type of school (state, independent) and school environment	' maybe identity as in the place of education maybe the private side of it might influence ambition of, or expectation you have...I'm not sort of prejudicing against other people and I've got good friends from State schools who maybe would set lower heights who could achieve more'
Influential People	20	47	Direct or indirect influence of specific people upon decision to study for A-levels, subject choices or future academic, occupational, life choices	
Coach	1	1	Influence of coach	'my basketball coach has been a big influence on me'
Friends	3	3	Influence of friends, peer pressure	'I suppose my friends because most of them stayed on at sixth form, I sort of followed them because I didn't know what to do' 'my friend picked Law and then I kind of thought I wasn't really 100% set on law but then I was like well my friends doing it so I might because I don't know what I want to do'

Appendices

Grandparents	3	4	Influences of grandparent (s)	'It's a bit of family pressure as well in terms of the fact that my grandparents came to the UK from Germany in 1937' 'My grandfather was quite successful in his time...his determination probably had driven me to emulate that'
None	4	4	Student specifies no particular influence or belief that have been free to make own decisions without external influences	'I don't think there is any one person that's influenced me' 'Family have had very little influence, they're very open to letting me do what I want...'
Parents	11	21	Influence of parent (s)	'my mum and dad never really went to school, my mum stopped at twelve, my dad stopped at sixteen but they wanted the best for me so they always did my homework with me' 'it was my parents influence from a young age...making me do my homework understanding it was important I think that affected my A levels
Siblings	4	6	Influence of brother or sister	'my older brother - he did his A levels and so he did English Literature and he's like oh you'd really like it and so I think that's partly the reason I took it because my older brother did' 'I saw occupational therapy then my sister was like oh yes its quite a good course to do and you can get a job after, it's in demand right now so I just thought ok'
Teacher (s)	6	6	Influence of teacher (s)	'my old philosophy and ethics teacher was like, oh you should do it..' 'I think what was helpful was my biology teacher telling me point blank that I was not very good at biology so I couldn't be a vet..'
Pressure	3	6	Pressures (direct or indirect) attached to doing well at A-level or upon specific choices, references to competition	'It's almost a pressure that you have to achieve and get over rather than just a leisure and fun I'd say'

Appendices

Previous academic experiences	9	12	Influence of previous academic experiences on decision to study A-levels, expectations for success, specific subject choices	'...I think the grades I got in my first year was a bit like, mmm, maybe not, I need to look at what I'm actually good at and re-evaluate my decision' 'I got good results from them at GCSE, I like them, and then I went from there'
Subjects	20	20	AS, A-level, BTEC subject choices	'Chemistry, Biology, Geography and Geology to a-level'

Appendix J: SEM Syntax Files

Syntax for AL Analysis in R

```
# install.packages('foreign')
# install.packages('lavaan')
# install.packages('lme4')
# install.packages('quantreg', 'semPlot')

library('foreign')
library('lavaan')
library('lme4')
library('semPlot')

# Read data C:\Users\brown\Desktop\DPhil\SEM analysis
mydata <- read.spss ("C:/Users/Carol/Desktop/DPhil/SEM analysis/SEM analysis april 2016
inc MLR/Main study data (AL1).sav", to.data.frame=T)

# Create numeric school variable
mydata$school[mydata$schsector=="State sector"] <- 1
mydata$school[mydata$schsector=="Independent sector"] <- 0

# Create numeric gender variable
mydata$girl[mydata$Male=="no"] <-1
mydata$girl[mydata$Male=="yes"] <-0

# Create numeric parental education for model
mydata$daded <- as.numeric(mydata$faeduc)
mydata$daded[mydata$daded==6] <- NA # recode 'dont know' as missing

mydata$momed <- as.numeric(mydata$moeduc)
mydata$momed[mydata$momed==6] <- NA # recode 'dont know' as missing

# Create numeric books variable
mydata$books <- as.numeric(mydata$nobooks)

# scale variables
mydata$ISEImo2 <- mydata$ISEImo / 10
mydata$ISEIfa2 <- mydata$ISEIfa / 10
mydata$ TotalA2ExaminationPointscore <- mydata$ TotalA2ExaminationPointscore / 100

# 1. What is the relationship between expectations and A-level grades?

rq.1 <- '
# Measurement part
# Expectations
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36
```

Appendices

Structural part

TotalA2ExaminationPointscore ~ expectations + school'

```
fit <- sem(rq.1, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized=TRUE)
inspect(fit, 'r2')
inspect(fit, 'cor.lv')
semPaths (fit, what="std",
          style="lisrel", edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

2. What is the relationship between expectations and subjective task value for an A-level student sample?

```
rq.2 <- '
# Measurement part
# Expectations
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36
```

```
#STV model 1 (3 factor)
intrinsic =~ Q21 + Q30
attainment =~ Q25 + Q31 + Q37
utility =~ Q22 + Q34
```

STV =~ intrinsic + attainment + utility'

```
fit <- sem(rq.2, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized=TRUE)
inspect(fit, "cor.lv")
semPaths (fit, what="std",
          style="lisrel", edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

```
rq.2 <- '

```

Measurement part

```
# Expectations
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36
```

```
#STV model 2 (attainment utility as a combined model)
intrinsic =~ Q21 + Q30
attainmentutility =~ Q25 + Q31 + Q37 + Q22 + Q34
```

STV =~ intrinsic + attainmentutility'

Appendices

```
fit <- sem(rq.2, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized=TRUE)
inspect(fit,"cor.lv")
semPaths (fit, what="std",
          style="lisrel",edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

#STV (excluding utility value)

```
rq.2 <- '
```

```
# Measurement part
# Expectations
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36
```

#STV model 3 (excluding utility)

```
intrinsic =~ Q21 + Q30
attainment =~ Q25 + Q31 + Q37
```

```
STV =~ intrinsic + attainment'
```

```
fit <- sem(rq.2, data = mydata, missing='fiml', estimator='MLR')
```

```
summary(fit, fit.measures=TRUE, standardized=TRUE)
inspect(fit,"cor.lv")
semPaths (fit, what="std",
          style="lisrel",edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

3. What are the relationships between STV and A-level achievement?

```
rq.3 <- '
```

Measurement part (excluding utility)

```
intrinsic =~ Q21 + Q30
attainment =~ Q25 + Q31 + Q37
```

```
STV =~ intrinsic + attainment
```

```
# Structural part
TotalA2ExaminationPointscore ~ STV + school '
```

```
fit <- sem(rq.3, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized = TRUE)
inspect(fit, 'r2')
semPaths (fit, what="std",
          style="lisrel",edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

Appendices

RQ4

(a) How does socio-economic status, gender and school sector affect achievement the expectations about A-level achievement?

(b) How does socio-economic status, gender and school sector affect achievement the STV attached to A-level achievement?

(c) How does socio-economic status, gender and school sector affect A-level achievement?

4(a) How do socio-economic status, gender and school sector affect the expectations about A-level achievement?

```
rq.4 <- '
```

```
# Measurement part
```

```
#Expectations
```

```
Expectations =~ Q24 + Q26 + Q28 + Q32 + Q36
```

```
SES =~ momed + daded + ISEImo2 + ISEIfa2 + books + homepossessions
```

```
# Structural part
```

```
Expectations ~ SES + girl + school'
```

```
fit <- sem(rq.4, data = mydata, missing='fiml', estimator='MLR')
```

```
summary(fit, fit.measures=TRUE, standardized = TRUE)
```

```
inspect(fit, 'r2')
```

```
inspect(fit, 'cor.lv')
```

```
semPaths (fit, what="std",
```

```
style="lisrel",edge.color="black", fade=FALSE,
```

```
edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

4(b) How do socio-economic status, gender and school sector affect achievement the STV attached to A-level achievement?

```
rq.4 <- '
```

```
# Measurement part
```

```
#STV (excluding utility)
```

```
intrinsic =~ Q21 + Q30
```

```
attainment =~ Q25 + Q31 + Q37
```

```
STV =~ intrinsic + attainment
```

```
SES =~ momed + daded + ISEImo2 + ISEIfa2 + books + homepossessions
```

```
# Structural part
```

```
STV ~ SES + girl + school'
```

Appendices

```
fit <- sem(rq.4, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized = TRUE)
inspect(fit, 'r2')
inspect(fit,'cor.lv')
semPaths (fit, what="std",
          style="lisrel",edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

#4 (c) How do socio-economic status, gender and school sector affect A-level achievement?

```
rq.4 <- '
```

```
# Measurement part
```

```
SES =~ momed + daded + SEImo2 + SEIfa2 + books + homepossessions
```

```
# Structural part
```

```
TotalA2ExaminationPointscore ~ SES + girl + school'
```

```
fit <- sem(rq.4, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized = TRUE)
inspect(fit, 'r2')
inspect(fit,'cor.lv')
semPaths (fit, what="std",
          style="lisrel",edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

```
# Overall Model
```

```
rq.1<- '
```

```
# Measurement part
```

```
# expectations
```

```
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36
```

```
#STV
```

```
intrinsic =~ Q21 + Q30
```

```
attainment =~ Q25 + Q31 + Q37
```

```
STV =~ intrinsic + attainment
```

```
SES =~ momed + daded + SEImo2 + SEIfa2 + books + homepossessions
```

```
# Structural part
```

```
TotalA2ExaminationPointscore ~ expectations + STV + SES + girl + school
```

```
STV ~ SES + girl + school
```

```
expectations ~ SES + girl + school'
```


Appendices

```
fit <- sem(rq.1, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized = TRUE)
inspect(fit, 'r2')
inspect(fit, 'cor.lv')
semPaths(fit, what="std",
         style="lisrel", edge.color="black", fade=FALSE,
         edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

Syntax for AS Analysis in R

```
# install.packages('foreign')
# install.packages('lavaan')
# install.packages('lme4')
# install.packages('quantreg', 'semPlot')

library('foreign')
library('lavaan')
library('lme4')
library('semPlot')

# Read data C:\Users\brown\Desktop\DPhil\SEM analysis
mydata <- read.spss ("C:/Users/Carol/Desktop/DPhil/SEM analysis/SEM analysis april 2016
inc MLR/Main study data (AS1).sav", to.data.frame=T)

# Create numeric school variable
mydata$school[mydata$schsector=="State sector"] <- 1
mydata$school[mydata$schsector=="Independent sector"] <- 0

# Create numeric gender variable
mydata$girl[mydata$Male=="no"] <-1
mydata$girl[mydata$Male=="yes"] <-0

# Create numeric parental education for model
mydata$daded <- as.numeric(mydata$faeduc)
mydata$daded[mydata$daded==6] <- NA # recode 'dont know' as missing

mydata$momed <- as.numeric(mydata$moeduc)
mydata$momed[mydata$momed==6] <- NA # recode 'dont know' as missing

# Create numeric books variable
mydata$books <- as.numeric(mydata$nobooks)

# scale variables
mydata$ISEImo2 <- mydata$ISEImo / 10
mydata$ISEIfa2 <- mydata$ISEIfa / 10
mydata$ TotalASExaminationPointscore <- mydata$ TotalASExaminationPointscore / 100
```

Appendices

1. What is the relationship between expectations and A-level grades?

```
rq.1 <- '  
# Measurement part  
# Expectations  
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36  
  
# Structural part  
TotalASExaminationPointscore ~ expectations + school'  
  
fit <- sem(rq.1, data = mydata, missing='fiml', estimator='MLR')  
summary(fit, fit.measures=TRUE, standardized=TRUE)  
inspect(fit, 'r2')  
inspect(fit, 'cor.lv')  
semPaths (fit, what="std",  
          style="lisrel", edge.color="black", fade=FALSE,  
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

2. What is the relationship between expectations and subjective task value for an A-level student sample?

```
rq.2 <- '  
# Measurement part  
# Expectations  
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36  
  
#STV model 1 (3 factor)  
intrinsic =~ Q21 + Q30  
attainment =~ Q25 + Q31 + Q37  
utility =~ Q22 + Q34  
  
STV =~ intrinsic + attainment + utility'  
  
fit <- sem(rq.2, data = mydata, missing='fiml', estimator='MLR')  
summary(fit, fit.measures=TRUE, standardized=TRUE)  
inspect(fit, "cor.lv")  
semPaths (fit, what="std",  
          style="lisrel", edge.color="black", fade=FALSE,  
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)  
  
rq.2 <- '  
  
# Measurement part  
  
# Expectations  
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36  
  
#STV model 2 (attainment utility as a combined model)
```

Appendices

intrinsic =~ Q21 + Q30

attainmentutility =~ Q25 + Q31 + Q37 + Q22 + Q34

STV =~ intrinsic + attainmentutility'

```
fit <- sem(rq.2, data = mydata, missing='fiml', estimator='MLR')
```

```
summary(fit, fit.measures=TRUE, standardized=TRUE)
```

```
inspect(fit,"cor.lv")
```

```
semPaths (fit, what="std",
```

```
  style="lisrel",edge.color="black", fade=FALSE,
```

```
  edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

#STV (excluding utility value)

```
rq.2 <- '
```

```
# Measurement part
```

```
# Expectations
```

```
expectations =~ Q24 + Q26 + Q28 + Q32 + Q36
```

#STV model 3 (excluding utility)

```
intrinsic =~ Q21 + Q30
```

```
attainment =~ Q25 + Q31 + Q37
```

```
STV =~ intrinsic + attainment'
```

```
fit <- sem(rq.2, data = mydata, missing='fiml', estimator='MLR')
```

```
summary(fit, fit.measures=TRUE, standardized=TRUE)
```

```
inspect(fit,"cor.lv")
```

```
semPaths (fit, what="std",
```

```
  style="lisrel",edge.color="black", fade=FALSE,
```

```
  edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

3. What are the relationships between STV and A-level achievement?

```
rq.3 <- '
```

```
# Measurement part (excluding utility)
```

```
intrinsic =~ Q21 + Q30
```

```
attainment =~ Q25 + Q31 + Q37
```

```
STV =~ intrinsic + attainment
```

```
# Structural part
```

```
TotalASExaminationPointscore ~ STV + school '
```

Appendices

```
fit <- sem(rq.3, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized = TRUE)
inspect(fit, 'r2')
semPaths (fit, what="std",
          style="lisrel",edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

RQ4

(a) How does socio-economic status, gender and school sector affect achievement the expectations about A-level achievement?

(b) How does socio-economic status, gender and school sector affect achievement the STV attached to A-level achievement?

(c) How does socio-economic status, gender and school sector affect A-level achievement?

(a) How do socio-economic status, gender and school sector affect the expectations about A-level achievement?

```
rq.4 <- '
# Measurement part
#Expectations
```

Expectations =~ Q24 + Q26 + Q28 + Q32 + Q36

SES =~ momed + daded + ISEImo2 + ISEIfa2 + books + homepossessions

```
# Structural part
Expectations ~ SES + girl + school'
```

```
fit <- sem(rq.4, data = mydata, missing='fiml', estimator='MLR')
summary(fit, fit.measures=TRUE, standardized = TRUE)
inspect(fit, 'r2')
inspect(fit,'cor.lv')
semPaths (fit, what="std",
          style="lisrel",edge.color="black", fade=FALSE,
          edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

(b) How do socio-economic status, gender and school sector affect achievement the STV attached to A-level achievement?

```
rq.4 <- '
# Measurement part
#STV (excluding utility)
intrinsic =~ Q21 + Q30
attainment =~ Q25 + Q31 + Q37
```

STV =~ intrinsic + attainment

SES =~ momed + daded + ISEImo2 + ISEIfa2 + books + homepossessions

Appendices

Structural part

STV ~ SES + girl + school'

```
fit <- sem(rq.4, data = mydata, missing='fiml', estimator='MLR')
```

```
summary(fit, fit.measures=TRUE, standardized = TRUE)
```

```
inspect(fit, 'r2')
```

```
inspect(fit,'cor.lv')
```

```
semPaths (fit, what="std",
```

```
  style="lisrel",edge.color="black", fade=FALSE,
```

```
  edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

(c) How do socio-economic status, gender and school sector affect A-level achievement?

```
rq.4 <- '
```

Measurement part

SES =~ momed + daded + SEIImo2 + SEIIfa2 + books + homepossessions

Structural part

TotalASExaminationPointscore ~ SES + girl + school'

```
fit <- sem(rq.4, data = mydata, missing='fiml', estimator='MLR')
```

```
summary(fit, fit.measures=TRUE, standardized = TRUE)
```

```
inspect(fit, 'r2')
```

```
inspect(fit,'cor.lv')
```

```
semPaths (fit, what="std",
```

```
  style="lisrel",edge.color="black", fade=FALSE,
```

```
  edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

overall model

```
rq.1<- '
```

Measurement part

expectations

expectations =~ Q24 + Q26 + Q28 + Q32 + Q36

#STV

intrinsic =~ Q21 + Q30

attainment =~ Q25 + Q31 + Q37

STV =~ intrinsic + attainment

SES =~ momed + daded + SEIImo2 + SEIIfa2 + books + homepossessions

Appendices

Structural part

TotalASExaminationPointscore ~ expectations + STV + SES + girl + school

STV ~ SES + girl + school

expectations ~ SES + girl + school'

```
fit <- sem(rq.1, data = mydata, missing='fiml', estimator='MLR')
```

```
summary(fit, fit.measures=TRUE, standardized = TRUE)
```

```
inspect(fit, 'r2')
```

```
inspect(fit,'cor.lv')
```

```
semPaths (fit, what="std",
```

```
  style="lisrel",edge.color="black", fade=FALSE,
```

```
  edge.width=0.5, nCharNodes=7, intercepts = FALSE)
```

Appendix K: Analyses for Year 12 Sample

Table K1 *Cronbach Alphas of Expectation and Value Items in the Questionnaire for AS student Sample*

	Eccles, Adler and Meece (1984)	Year 12 Sample	Number of items in construct
<i>Self and Task Perception Questionnaire</i>			
Expectancy	.92	.90	5
Attainment value	.70	.86	3
Required effort	.78	.85	3
Intrinsic value	.76	.76	2
Task difficulty	.80	.67	2
Utility value	.62	.43	2
<i>General and Future Life Values</i>			
Future family importance	.81	.86	3
High status/ competitiveness	.76	.75	6
Future work importance	.75	.74	3
Need achievement	.67	.70	6
Material wealth	.49	.65	2
Extrinsic motivation	.53	.63	4
<i>Future Expectations</i>			
Positive future occupational expectations	.76	.77	5
Negative economic expectations	.58	.64	2
Likely future education	.64	.61	2
Expectations about a harder future life	.51	.39	2
<i>Job Identity</i>			
Job identity formation	.82	.82	4

Appendices

Table K2 *Descriptive Statistics: Expectations for AS Levels*

	N	Minimum	Maximum	Mean	SD	Skew
Expectations	520	5	35	21.35	5.28	-.34
Q24: compared to other students, how well do you expect to do in your A-levels this year?	531	1 (much worse)	7 (much better)	4.14	1.33	-.22
Q26: How well do you think you will do in your A-levels this year?	529	1 (very poorly)	7 (very well)	4.35	1.26	-.47
Q28: How good are you at A-levels?	531	1 (not at all good)	7 (very good)	4.21	1.13	-.42
Q32: If you were to order all students in your year group from best to worse academically, where would you put yourself?	530	1 (the worst)	7 (the best)	4.29	1.25	-.15
Q36: How have you been doing in your A-levels this year?	529	1 (very poorly)	7 (very well)	4.37	1.23	-.33

Table K3 *Descriptive Statistics for AS Sample: Subjective Task Value*

	N	Minimum	Maximum	Mean	Standardised Mean	SD	Skew
Attainment value	523	3	21	17.95	85%	3.26	-1.52
STV	519	7	49	36.45	74%	6.81	-1.04
Utility value	526	2	14	9.83	70%	2.32	-.70
Intrinsic Value	531	2	14	8.63	62%	2.59	-.35

(Key: 1= low intrinsic value, attainment value and utility value, 7= high intrinsic value, attainment value and utility value so high mean indicates high STV. Minimum indicates number of items in scale).

Appendices

K4 Descriptive Statistics: Subjective Task Value (Intrinsic Value, Attainment Value, Utility Value) in Year 12 Sample

	N	Minimum	Maximum	Mean	SD	Skew
Intrinsic value				8.63		
Q21: In general I find working on A-level assignments	531	1 (Very boring)	7 (very interesting)	4.24	1.26	-.44
Q30: I like doing A-levels	532	1 (strongly disagree)	7 (strongly agree)	4.39	1.60	-.31
Attainment value				17.95		
Q25: For me, being good at my A-levels is?	531	1 (not at all important)	7 (very important)	6.09	1.18	-1.53
Q31: Is the amount of effort it will take to do well in A-levels worthwhile to you	529	1 (not very worthwhile)	7 (very worthwhile)	5.59	1.41	-1.08
Q37: How important is it to you to get good grades in your A-levels?	526	1 (not at all important)	7 (very important)	6.23	1.10	-1.86
Utility value				9.83		
Q22: In general, how useful is what you learn at A-level for your daily life outside school?	526	1 (not at all useful)	7 (very useful)	3.91	1.48	-.09
Q34: How useful are A-levels for what you want to do after you finish school and go to University/ work?	528	1 (not at all useful)	7 (very useful)	5.92	1.43	-1.41

*1=strongly disagree 7=strongly agree

Table K5 Correlations between STV and Achievement for AS Sample

	Achievement (Total Point Score)
Attainment Value	.23*
Subjective Task Value	.20*
Intrinsic Value	.16*
Utility Value	.08

*p<0.001

Appendices

Table K6 *Correlation between Measures of SES in Year 12 Sample*

	Mother's occupational group	Mother's education	Father's Occupational Group	Father's education	Home possessions
Mother's occupational group					
Mother's education	-.27**				
Father's occupational group	.23**	-.24**			
Father's education	-.13*	.42**	-.37**		
Home possessions	-.28**	.28**	-.32**	.20**	
Number of books	-.17**	.27**	-.20**	.18**	.45**

* p<0.01 ** p<0.001

Table K7 *Correlations between Expectations and SES Indicators for AS Sample*

	Expectations
Support for learning	.15***
Home possessions	.25***
Number of books	.18***
Mother's occupational group	-.09*
Father's occupational group	-.15**
Parental involvement	-.02

* p<0.05 ** p<0.005 *** p<0.001

Table K8 *Correlations between STV and SES Indicators for AS Sample*

	STV
Support for learning	.20*
Home possessions	.18*
Number of books	.07
Mother's occupational group	-.06
Father's occupational group	-.02
Parental involvement	.01

* p<0.001

Appendices

Table K9 *Correlations between AS level Achievement and Indicators of SES*

	Total point score
Number of books	.24**
Home possessions	.23**
Father's occupational group	-.20**
Mother's occupational group	-.17**
Parental involvement	-.09*
Support for learning	.06

*p≤0.05 **p<0.001

Table K10 *Descriptive Statistics Year12 Sample: Values and Expectations for Life*

	N	Scale Maximum	Minimum	Maximum	Mean	Standardised mean	SD	Skew
<i>Values for Life</i>								
Future Work Importance	527	21	3	21	17.77	85%	2.54	-1.42
Future Family Importance	525	21	3	21	15.96	76%	4.31	-1.23
Need for Achievement	520	42	6	42	29.65	72%	5.57	-0.35
Material Wealth	523	14	2	14	8.54	61%	2.93	-0.01
High Status	519	42	6	42	24.84	59%	6.57	0.11
Extrinsic Motivation	514	28	4	28	15.09	54%	4.49	0.20
<i>Expectations for Life</i>								
Positive Occupational Expectations	507	35	5	35	25.31	72%	4.20	-0.33
Future Education Likely	513	14	2	14	9.20	66%	2.70	-0.63
Expect a Harder Life	511	14	2	14	8.93	64%	2.19	0.29
Negative Economic Expectations	508	14	2	14	5.61	40%	2.18	-0.54

(Key: 1=strongly disagree 7=strongly agree so high mean indicates higher expectations and values for future life. Minimum indicates number of items in scale).

Appendices

K11 Descriptive Statistics: General Life Values and Expectations in Year 12 Sample

	N	Minimum	Maximum	Mean	SD	Skew
Material wealth				8.54		
Q40: I would give up a secure job for a chance to make big money	529	1	7	4.07	1.59	.09
Q49: I would like a lot of expensive possessions	525	1	7	4.47	1.81	-.21
Extrinsic motivation				15.09		
Q40: I would give up a secure job for a chance to make big money	529	1	7	4.07	1.59	.09
Q41: To me, work is nothing more than making a living	526	1	7	3.10	1.60	.61
Q43: I like the kind of work you can forget about after the day is over	525	1	7	3.43	1.79	.46
Q49: I would like a lot of expensive possessions	525	1	7	4.47	1.831	-.21
Need for Achievement				29.65		
Q44: Doing my very best at the tasks I take on is very important to me	528	1	7	5.41	1.29	-.74
Q45: I more often attempt difficult tasks that I am not sure I can do than easier tasks I believe I can do	524	1	7	4.21	1.43	-.07
Q47: I like to try things I've never done before	528	1	7	5.28	1.48	-.70
Q50: I really enjoy working in situations involving skill and competition	527	1	7	4.69	1.53	-.37
Q52: I want to do my best in my job even if this sometimes means working overtime	527	1	7	5.31	1.39	-.83
Q54: I expect my work to be a very central part of my life	529	1	7	4.69	1.34	-.31
Future work importance				17.77		
Q59: Being very successful in your line of work	527	1	7	5.69	1.18	-1.16
Q60: Being able to find steady work	527	1	7	5.78	1.03	-1.07
Q61: Being able to support yourself (being financially independent)	527	1	7	6.31	.88	-2.00
Future family importance				15.96		
Q63: Getting married	526	1	7	5.00	1.67	-.74
Q64: Having children	526	1	7	5.07	1.78	-.84
Q65: Being a successful parent (raising healthy, happy, well-adjusted children)	526	1	7	5.89	1.55	-1.70

High status				24.84		
Q38: I'd like to accomplish something in life that will be well known	529	1	7	4.87	1.52	-.39
Q39: I feel that winning is very important	528	1	7	4.41	1.65	-.12
Q42: I'd like to be famous	526	1	7	3.25	1.77	.48
Q46: I would rather be president of a club than just a member	526	1	7	3.64	1.73	.33
Q51: When a group I belong to plans an activity, I would rather organize it myself than have someone organize it and just help out	528	1	7	4.04	1.64	-.03
Q53: It is important to me to perform better than others on a task	528	1	7	4.62	1.52	-.31
Negative economic expectations				5.61		
Q69: You will be laid off from your job	516	1	7	2.70	1.28	.79
Q71: You will have difficulty supporting your family financially	513	1	7	2.91	1.25	.54
Positive future occupational expectations				25.58		
Q67: You will have a job you enjoy doing	521	1	7	5.20	1.11	-.66
Q68: You will be a success in your line of work	521	1	7	4.93	1.09	-.33
Q69 (negatively scored): You will be laid off from your job	516	1	7	5.30	1.28	-.79
Q70: You will have a job that pays well	520	1	7	4.75	1.10	-.23
Q71 (negatively scored): You will have difficulty supporting your family financially	513	1	7	5.09	1.25	-.54
Future education likely				9.20		
Q74: You will graduate from University	517	1	7	5.45	1.57	-1.15
Q75: You will attend graduate or professional school after University	514	1	7	3.75	1.61	.05
Expectations for a harder life				8.93		
Q77: That life will turn out better for you than for your parents	514	1	7	4.63	1.28	.09
Q78 (negatively scored): That life will turn out to be harder for you than it was for your parents	514	1	7	4.30	1.49	-.13

*1=strongly disagree 7=strongly agree

Table K12 Year 12 Sample: *Correlations between Values and Expectations for Life and Expectations for A-levels*

	Correlations with Expectations
<i>Values for Life</i>	
Need achievement	.31**
High status	.26**
Extrinsic motivation	-.16**
Future work importance	.10*
Future family importance	.07
Material wealth	.02
<i>Expectations for Life</i>	
Future education likely	.43**
Positive occupational expectations	.33**
Negative economic expectations	-.22**
Expect harder life	.02*

*p<0.05 **p<0.001

Table K13 *Correlations between Values and Expectations for Life and Subjective Task Value: Year 12 Sample*

	Correlations with Subjective Task Value
<i>Values for Life</i>	
Need achievement	.43**
Future work importance	.30**
Extrinsic motivation	-.27**
High status	.17**
Future family importance	.14*
Material wealth	-.12*
<i>Expectations for Life</i>	
Future education likely	.45**
Positive occupational expectations	.30*
Negative economic expectations	-.20
Expect harder life	.04

*p<0.01 **p≤0.001

Table K14 *Correlations between Values and Expectations for Life and AS Student Achievement*

	Correlations with Total AS level Point Score
<i>Values for Life</i>	
Extrinsic motivation	-.16***
Need achievement	.01
High status	.03
Material wealth	-.10*
Future work importance	-.07
Future family importance	-.04
<i>Expectations for Life</i>	
Future education likely	.24***
Expect harder life	-.15**
Negative economic expectations	.06
Positive occupational expectations	-.07

*p<0.05 **p<0.01 ***p<0.001

Table K15 SES, Values and Expectations for Life in Year 12 Sample

	Home Possessions	No. of books	Support for Learning	Parental Involvement	Mother's occupational group	Father's occupational group
<i>Values</i>						
Material Wealth	-.03	-.09*	-.02	.09*	.03	-.11*
Extrinsic Motivation	-.13**	-.20***	-.13**	-.86	.05	-.07
Need for Achievement	.16***	.10*	.16***	.05	.01	-.02
Future Work Importance	.08	-.04	.11*	.04	.06	.09
Future Family Importance	.02	-.08	.08*	-.02	-.04	-.02
High Status	.11*	.03	.08	.12**	-.01	-.12**
<i>Expectations</i>						
Negative Economic Expectations	-.02	-.02	.09	-.04	-.01	-.03
Positive Occupational Expectations	-.06	-.01	.17***	.07	-.03	-.02
Future Education Likely	.27***	.20***	.23***	.07	-.15***	-.18***
Expect a Harder Life	-.13**	-.07	-.07	.04	.12*	.06

*p<0.05 **p≤0.01 ***p ≤0.001

Table K16 Gender Differences in Values and Expectations for Life in Year 12 Sample

		N	Mean	SD	t	df	sig
<i>Values for Life</i>							
Material wealth	Female	286	7.94	2.98	-5.29	518	<.001*
	Male	234	9.28	2.86			
Extrinsically motivated	Female	284	14.37	4.19	-4.02	509	<.001*
	Male	227	16.02	4.32			
Need achievement	Female	286	29.25	5.00	-1.84	515	.867
	Male	231	30.16	5.13			
Future work importance	Female	288	17.94	2.17	1.77	522	.253
	Male	236	17.55	2.72			
Future family importance	Female	286	16.20	4.32	1.32	520	.359
	Male	236	15.69	4.30			
High status	Female	282	23.57	6.37	-4.89	473	<.001*
	Male	234	26.38	5.73			
<i>Expectations for Life</i>							
Negative economic expectations	Female	276	5.57	1.89	-0.44	503	.119
	Male	229	5.65	2.23			
Positive occupational expectations	Female	275	25.21	3.67	0.69	502	.189
	Male	229	25.46	4.01			
Future education likely	Female	282	9.35	2.90	1.12	508	.432
	Male	228	9.08	2.87			
Expect a harder life	Female	286	8.88	2.18	-0.58	506	.580
	Male	228	8.99	2.11			

*p<0.001

Table K17 *Descriptive Statistics: Perceived Task Demands of Year 12 Students*

	N	Minimum	Maximum	Mean	SD	Skew
Task difficulty	527	2	14	9.34	2.08	-.37
Q23: In general, how hard are A-levels for you?	530	1 (very easy)	7 (very hard)	5.02	1.25	-.61
Q27: Compared to other students in your class how hard are A-levels for you?	529	1 (much easier)	7 (much harder)	4.32	1.14	-.01
Required Effort	518	3	21	17.00	3.12	-1.20
Q29: How hard do you have to try to do well in your A-level courses?	528	1 (not very hard)	7 (very hard)	5.49	1.25	-1.01
Q33: How hard do you have to try to get good grades in your A-levels?	528	1 (A little)	7 (A lot)	5.64	1.15	-.96
Q35: How hard do you have to study for your A-level exams to get a good grade?	524	1 (A little)	7 (A lot)	5.87	1.14	-1.26

Table K18 *Correlations between Year 12 Students Perceived Task Demands, Expectations, STV and Achievement*

	Expectations	STV	Achievement
Task difficulty	-.58**	-.12*	-.33**
Effort	-.29**	.13*	-.21**

*p<0.01 **p<0.001

Table K19 *Percentage of Year 12 Students Who Reported Influences upon their Job Choices*

	Positive Influence		Negative Influence	
	Number of students	Percentage of students	Number of students	Percentage of students
Parents	47	18.2%	61	34.5%
Mother	27	10.4%	16	9.0%
Father	32	12.4%	26	14.7%
Family	34	13.2%	20	11.3%
Teacher (s)	46	17.8%	13	7.3%
Friends	28	10.9%	8	4.5%
Siblings	12	4.7%	7	4.0%
Role Model	4	1.6%	0	0.0%
Coach	5	1.9%	0	0.0%
Work experience	6	2.3%	0	0.0%

(*Note: figures are based only on those students who responded to this question, some of whom identified more than one source of influence. % do not equal 100 as not all influences are reported and only key ones reported)

Table K20 CFA Standardised Factor loadings for Expectations in Year 12 Sample

Latent construct & Item	Item Stem	Loading*	Eccles and Wigfield (1995)
Expectations			
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.84	0.83-0.85
Q26	How well do you think you will do in your A-levels this year?	0.84	0.78-0.84
Q28	How good are you at A-levels?	0.83	0.80-0.82
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.76	0.86
Q36	How have you been doing in your A-levels this year?	0.77	0.80-0.83

*factor loadings are all significant ($p < 0.001$)

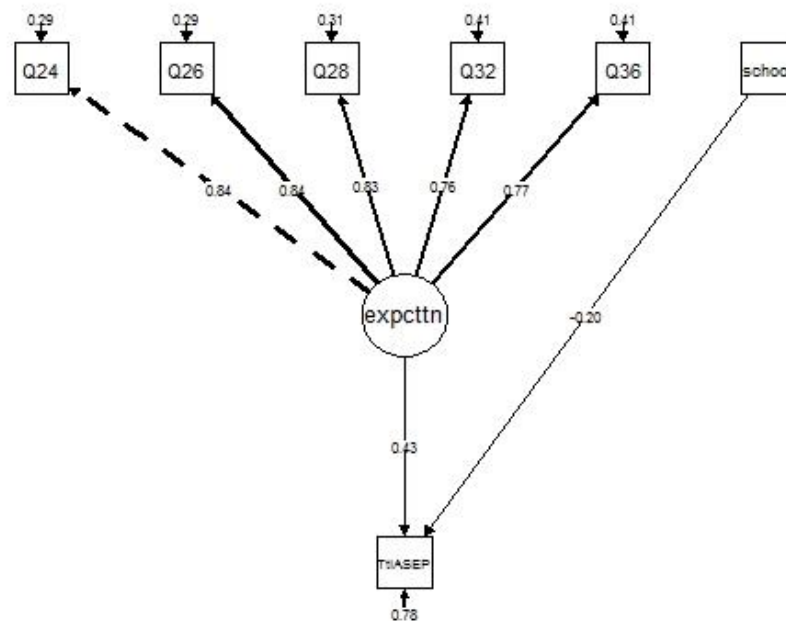


Figure K1 A Path Diagram of the Relationship between Expectations and AS level Achievement

Table K21 CFA Standardised Factor Loadings for Expectations and STV (Intrinsic Value + Attainment Utility Value) in the AS Sample

Latent construct & Item	Item Stem	Loading* Year 12	Eccles and Wigfield (1995)
Expectations			
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.85	0.83-0.85
Q28	How good are you at A-levels?	0.83	0.80-0.82
Q26	How well do you think you will do in your A-levels this year?	0.83	0.78-0.84
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.75	0.86
Q36	How have you been doing in your A-levels this year?	0.77	0.80-0.83
Intrinsic Value			
Q30	I like doing A-levels?	0.85	0.85-0.88
Q21	In general I find working on A-level assignments?	0.74	0.70-0.73
Attainment Utility Value			
Q37	How important is it to you to get good grades in your A-levels?	0.86	0.57-0.66
Q25	For me, being good at my A-levels is?	0.87	0.67-0.71
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.77	0.75-0.81
Q34	How useful are A-levels for what you want to do after you finish school and go to University/ work?	0.68	0.75-0.81
Q22	In general, how useful is what you learn at A-level for your daily life outside school?	0.33	0.59-0.57
STV			
Intrinsic	Q21 + Q30	0.87	
Attainment Utility	Q25 + Q31 + Q37 + Q22 + Q34	0.63	

Note: Scale of items ranged from 1-7 *factor loadings are all significant (p<0.001)

Table K22 Correlations between Expectations and STV (Intrinsic Value + Attainment Utility) in the Year 12 Sample

	Expectations	Intrinsic Value	Attainment Utility
Intrinsic Value	0.54		
Attainment Utility	0.42	0.60	
STV	0.61*	0.88	0.68

*p<0.001

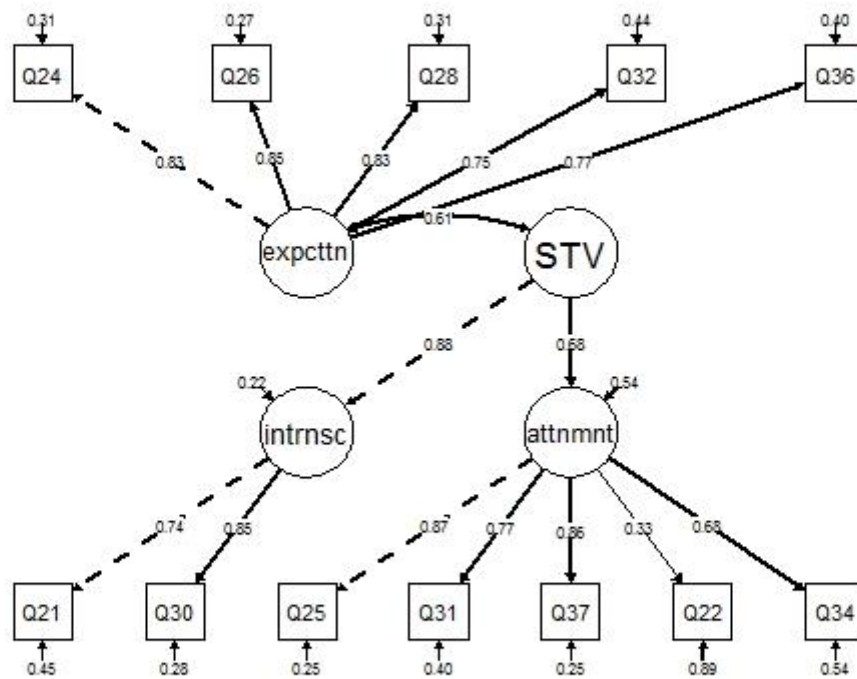


Figure K2 A Path Diagram of the Relationship between AS level students' Expectations and STV (intrinsic + attainment utility value)

Table K23 CFA Standardised Factor Loadings for Expectations and STV (Intrinsic Value + Attainment Value) in the Main Sample

Latent construct & Item	Item Stem	Loading* Year 12	Eccles & Wigfield (1995)
Expectations			
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.85	0.83-0.85
Q28	How good are you at A-levels?	0.83	0.80-0.82
Q26	How well do you think you will do in your A-levels this year?	0.83	0.78-0.84
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.75	0.86
Q36	How have you been doing in your A-levels this year?	0.77	0.80-0.83
Intrinsic Value			
Q30	I like doing A-levels?	0.84	0.85-0.88
Q21	In general I find working on A-level assignments?	0.75	0.70-0.73
Attainment Value			
Q37	How important is it to you to get good grades in your A-levels?	0.90	0.57-0.66
Q25	For me, being good at my A-levels is?	0.87	0.67-0.71
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.74	0.75-0.81
STV			
Intrinsic	Q21 + Q30	0.90	
Attainment	Q25 + Q31 + Q37	0.65	

Note: Scale of items ranged from 1-7 *factor loadings are all significant ($p < 0.001$)

Table K24 Correlations between Expectations and STV (Intrinsic Value + Attainment) in the Main Sample

	Expectations	Intrinsic Value	Attainment Value
Intrinsic Value	0.54		
Attainment Value	0.39	0.55	
STV	0.62*	0.87	0.63

* $p < 0.001$

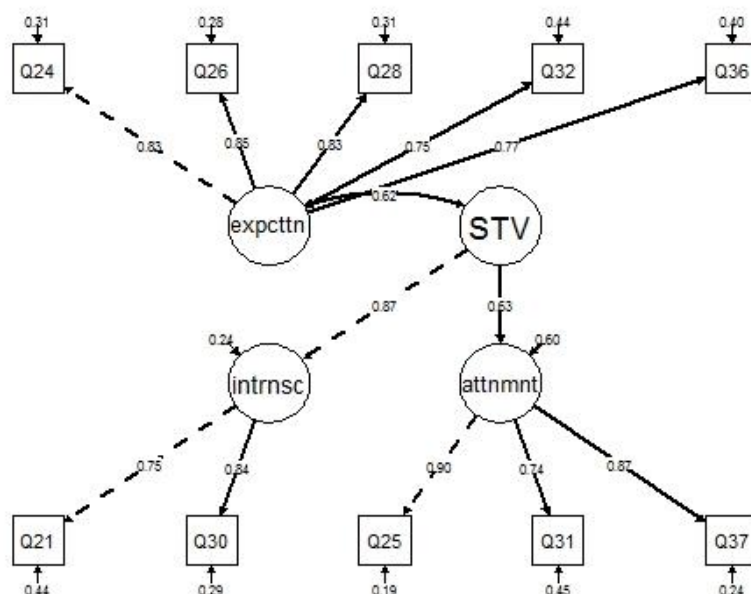


Figure K3 A Path Diagram of the Relationship between AS level students' Expectations and STV (intrinsic and attainment value)

Table K25 CFA Standardised Factor Loadings for Intrinsic Value, Attainment Value and STV in Year 12 Sample

Latent construct & Item	Item Stem	Loading* Yearr 12	Eccles & Wigfield (1995)
Intrinsic Value			
Q30	I like doing A-levels?	0.87	0.85-0.88
Q21	In general I find working on A-level assignments?	0.72	0.70-0.73
Attainment Value			
Q25	For me, being good at my A-levels is?	0.90	0.67-0.71
Q37	How important is it to you to get good grades in your A-levels?	0.87	0.57-0.66
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.74	0.75-0.81
STV			
Intrinsic	Q21 + Q30	0.61	
Attainment	Q25 + Q31 + Q37	0.89	

Note: Scale of items ranged from 1-7

*factor loadings are all significant ($p < 0.001$)

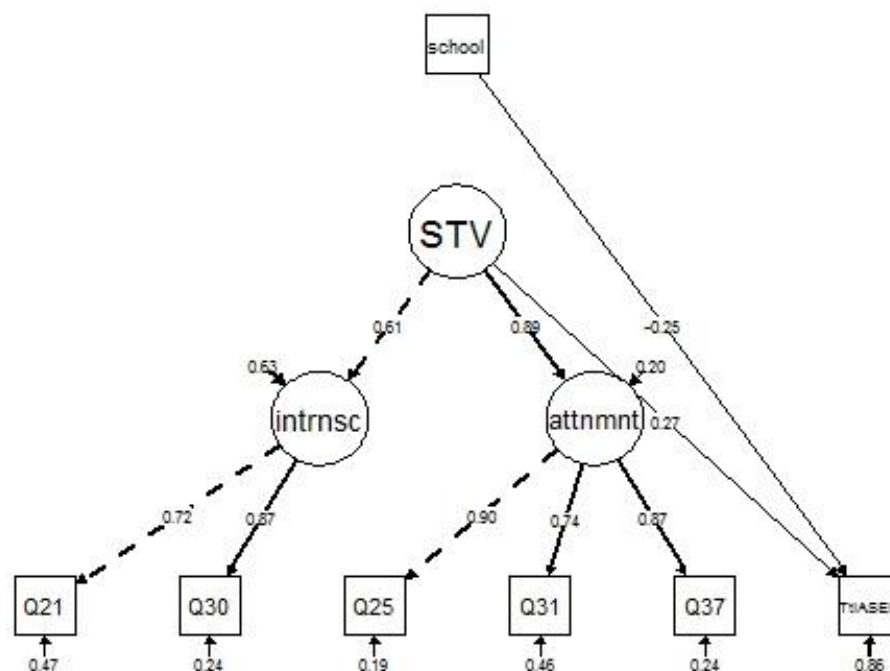


Figure K4 A Path Diagram of the Relationship between STV and AS level Achievement

Table K26 CFA Standardised Factor Loadings for SES and Expectations in Year 12 Sample

Latent construct & Item		Item Stem	Loading* Year 12
Expectations			
Q26		How well do you think you will do in your A-levels this year?	0.85
Q24		Compared to other students, how well do you expect to do in your A-levels this year?	0.84
Q28		How good are you at A-levels?	0.83
Q32		If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.77
Q36		How have you been doing in your A-levels this year?	0.76
SES			
Mother's education		What is the highest level of schooling achieved by your mother?	0.71
Father's education		What is the highest level of schooling achieved by your father?	0.62
Home possessions		Which of the following do you have in your home? How many of these do you have at home?	0.61
ISEI father		What is your father's main job?	0.60
ISEI mother		What is your mother's main job?	0.55
Number of books		How many books are there in your home?	0.50

Note: Scale of items ranged from 1-7 *p<0.001

Table K27 Regressions between SES, Gender, School Sector and Expectations in Year 12 Sample

	Unstandardised B	Standardised β	Standard Error
SES	0.26**	0.26**	(0.12)
Girl	-0.37*	-0.19*	(0.11)
School	-0.10*	-0.03	(0.20)

* $p < 0.05$ ** $p \leq 0.001$

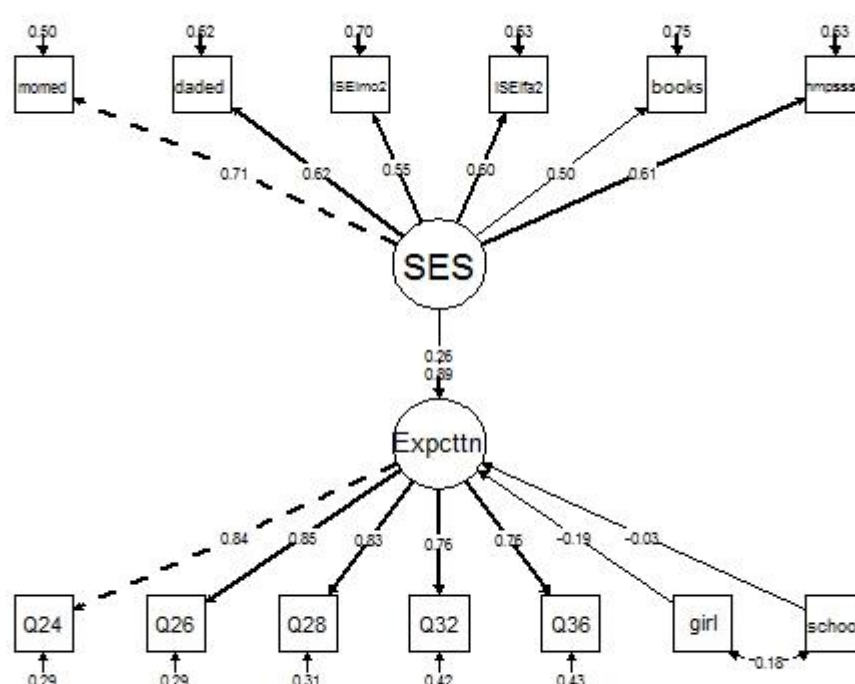


Figure K5 A Path Diagram of the Relationship between SES, Gender, School Sector and Expectations for an AS level Student Sample

Table K28 Regression of Achievement on SES, Gender and School Sector in Year 12 Sample

	Unstandardised B	Standardised β	Standard Error
SES	0.49	0.36*	(0.14)
Girl	0.19	0.07	(0.12)
School	-0.89	-0.18*	(0.16)

* $p < 0.001$

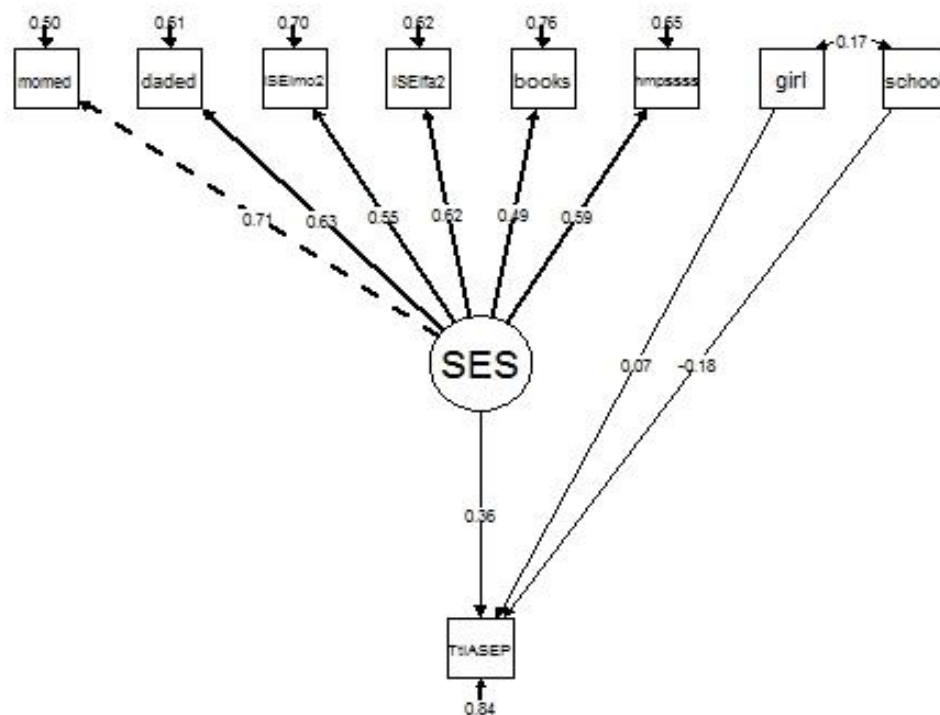


Figure K6 A Path Diagram of the Relationship between SES, Gender, School Sector and AS Achievement

Table K29 Standardised Factor Loadings for Overall Expectancy-Value Model for the AS Sample

Latent construct & Item	Item Stem	Loadings In Overall Model	Loadings in Individual Models	Eccles & Wigfield (1995)
Expectations^				
Q24	Compared to other students, how well do you expect to do in your A-levels this year?	0.84*	0.84-0.85	0.83-0.85
Q26	How well do you think you will do in your A-levels this year?	0.84*	0.83-0.84	0.78-0.84
Q28	How good are you at A-levels?	0.83*	0.83	0.80-0.82
Q32	If you were to order all students in your year group from best to worse academically, where would you put yourself?	0.77*	0.75-76	0.86
Q36	How have you been doing in your A-levels this year?	0.76*	0.76-0.77	0.80-0.83
Intrinsic Value^				
Q30	I like doing A-levels?	0.88*	0.84-0.87	0.85-0.88
Q21	In general I find working on A-level assignments?	0.72*	0.72-0.75	0.70-0.73
Attainment Value^				
Q37	How important is it to you to get good grades in your A-levels?	0.87*	0.87-0.90	0.57-0.66
Q25	For me, being good at my A-levels is?	0.90*	0.87-0.90	0.67-0.71
Q31	Is the amount of effort it will take to do well in A-levels worthwhile to you?	0.74*	0.74	0.75-0.81
STV^				
Attainment	Q25 + Q31 + Q37	1.82	0.61-0.65	
Intrinsic	Q21 + Q30	0.30*	0.89-0.90	
SES				
Mother's education	What is the highest level of schooling achieved by your mother?	0.70*	0.71	
Father's education	What is the highest level of schooling achieved by your father?	0.62*	0.62	
Home possessions	Which of the following do you have in your home? How many of these do you have at home?	0.60*	0.61	
Number of books	How many books are there in your home?	0.50*	0.50	
ISEI mother	What is your mother's main job?	0.55*	0.55	
ISEI father	What is your father's main job?	0.62*	0.60	

Note: Scale of items ranged from 1-7^ **factor loadings are significant ($p < 0.001$)

Table K30 Regressions in the Overall Model in the Year 12 Sample

	Unstandardised B	Standardised β	Standard Error
<i>Expectations</i>			
SES	-0.27	0.27*	(0.13)
Girl	-0.38	-0.19*	(0.11)
School	-0.10	-0.03	(0.20)
<i>STV</i>			
SES	0.03	0.03	(0.06)
Girl	0.19	0.09	(0.14)
School	0.02	0.01	(0.03)
<i>Achievement</i>			
Expectations	0.49	0.36*	(0.06)
STV	0.07	0.05	(0.14)
SES	0.37	0.27*	(0.12)
Girl	0.38	0.14*	(0.13)
School	-1.80	-0.17*	(0.17)

*p<0.001

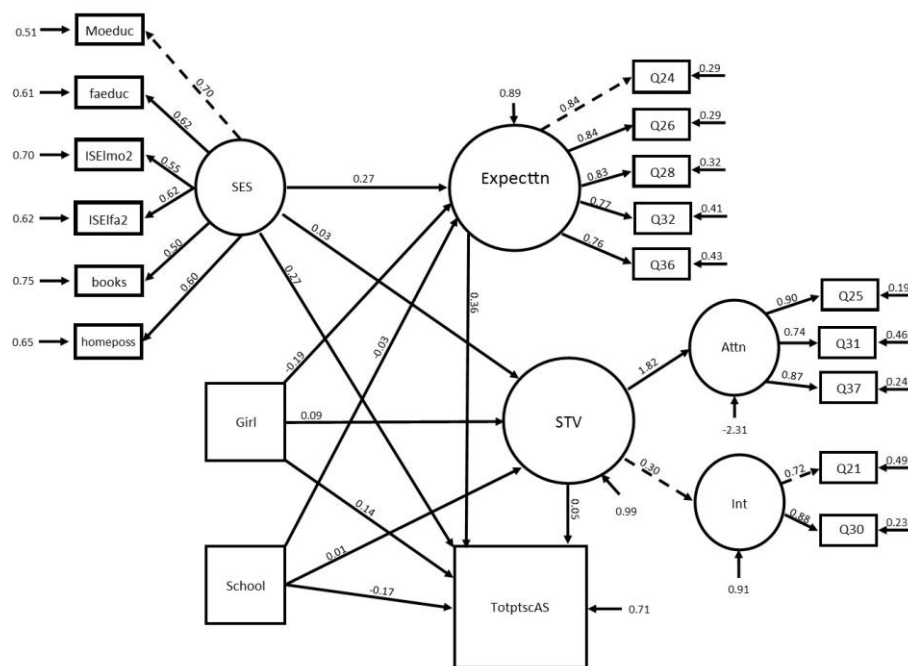


Figure K7 A Path Diagram of an Overall Expectancy-Value Model of AS-level Achievement

Appendix L: Correlations between Expectations and STV

Table 1: *Correlations between Expectations and STV in Main Sample*

	Expectations	Intrinsic Value	Attainment Value	Utility Value	STV
Intrinsic Value	0.28				
Attainment Value	0.39	0.59			
Utility Value	0.45	0.68	0.93		
STV	0.43	0.65	0.90	1.04	
Girl	0.42	0.64	0.89	1.02	0.93

Table 2: *Correlations between Expectations and STV in Year 12 Sample*

	Expectations	Intrinsic Value	Attainment Value	Utility Value	STV
Intrinsic Value	0.39				
Attainment Value	0.42	0.60			
Utility Value	0.59	0.84	0.90		
STV	0.54	0.77	0.82	1.15	
Girl	0.54	0.77	0.82	1.15	1.10