Trying To Make The Implicit More Explicit: A Critical Examination Of Carol Dweck's Implicit Theories Of Intelligence In An English Secondary School

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Abstract

Dweck's Implicit Theories of Intelligence (ITsI) suggest that most people either endorse an entity (fixed) theory of intelligence or an incremental (malleable) theory of intelligence (Dweck, 1999). Entity theorists are more likely to engage in helpless responses and give up after difficult learning tasks. Incremental theorists are more likely to persist and engage in mastery-oriented learning (Dweck, 1999). There is limited evidence to suggest that incremental theorists enjoy greater academic progression in terms of their outcomes (Blackwell et al, 2007). Dweck (2007) has suggested that ITsI are highly relevant after a transition to a larger, more competitive school context, (such as the primary-secondary transfer at age 11). ITsI are typically identified by questionnaire and little is known about them. There are concerns in the UK about educational under-achievement (Department for Education, 2012) and also the need to promote effective lifelong learning (Claxton, 1999). Dweck's ITsI have the potential to contribute to responses to both of those concerns. Dweck's ITsI have received limited attention and study in the UK, despite their potential (Dweck, 2007). However, Dweck's ITsI are arguably over-simplistic in their attempt to explain a range of complex human behaviours in learning situations.

This study sought to make the ITsI of eight Year 8 students from a secondary school in England explicit through semi-structured interviews. These students were able to make their ITsI explicit. The findings were analysed by thematic analysis. These students broadly favoured the incremental theory but some students appear to hold both theories in different subjects. They found it difficult to identify what had influenced their ITsI. This study suggested that Dweck's ITsI resonated with these Year 8 students. Individual, discursive approaches with students after their transition to secondary school might be an effective way of capitalising upon Dweck's ITsI. Educational psychologists (EPs) have the skills and research knowledge to mediate Dweck's ITsI in schools in the UK to enhance children's learning.

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I am grateful for all the encouragement and support that I have received from colleagues throughout this work, and to my supervisor, Dr Simon Griffey for his insight and wisdom.

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I started this journey when Josie, my youngest daughter had turned two years of age. I've tried my best to carry out my studies so as to be as present as possible in the waking hours of both of my daughters (Maddie too). Thank you to you both, and crucially to Alix, for her patience, encouragement and support during all of this time. Finally, my thanks to Shaaron, without whose support, I may never have pursued this journey.

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Preface

After several years' practice as an Educational Psychologist (EP), I was fortunate to have a stimulating discussion with a head teacher who spoke persuasively about a vision of encouraging children and young people to challenge notions of a fixed potential to their abilities. Twenty years earlier, that head teacher had taught me in a comprehensive school that had streamed its students on the basis of their prior attainment in English and French. As a child, I had some understanding that such arrangements were somewhat crude. During the intervening years, I have had the opportunity to work with children and young people through my experiences as a teacher and as an EP. Some of these children and young people have appeared to hold beliefs of having some fixed abilities in their lives. I have sought to help these children and young people to challenge those beliefs because I had perceived that those beliefs may have contributed to some disappointing educational outcomes for them. These experiences have shaped a professional interest in understanding the nature and evolution of such beliefs in the current UK educational context. Dweck's (1999) ITsI resonated with my views about the importance of people's beliefs about their ability. I was keen to find out how these ideas could be utilised in a UK educational context.

Chapter One – Introduction

1.1 Introduction

This introductory chapter outlines a summary of this thesis, including the topic, the methodology and a description of the research setting. This summary also incorporates a clarification of the title of this thesis. Some context is then given about both Dweck's ITsI and the evidence of the impact of holding different theories. This introduction also addresses why this topic is being researched. The potential significance of Dweck's ITsI in the UK educational context and also for the role of the EP is outlined. Given the real-world nature of this study and the range of possible areas of study in relation to Dweck's ITsI that have not been pursued, further clarification is provided of my background and interest in this topic. Finally, an overview of the remainder of the thesis is given.

1.1.1 Summary of this thesis and clarification of its title

This study provides a critical examination of Dweck's ITsI (Dweck et al, 1995a) in a UK educational context. Given the suggested implicit nature of these beliefs, this study seeks to develop the understanding of Year 8 students' ITsI within an English secondary school in an attempt to make the implicit more explicit. If ITsI are significant, it would be useful to understand them better in order to inform practices and future research. Much of the existing research in relation to Dweck's ITsI has been done in America, often measuring those beliefs by the use of questionnaires (e.g. Dweck, 1999). The design of those questionnaires implies that people's ITsI are stable across different learning contexts since only one questionnaire tends to be administered to each participant for all learning contexts. Dweck (2007) has since recognised that people might hold different ITsI in different learning contexts. Little is known

about the circumstances in which this might happen, particularly in the UK educational context.

This study critically examines Dweck's ITsI in a UK educational context and investigates, for instance, whether such ITsI are considered by Year 8 students to be stable across different learning contexts. This is done through semi-structured interviews with eight Year 8 students from a comprehensive, co-educational, secondary school in the south-west of England. The choice of an English school was made for reasons of practicality; a school in Wales, for example, would have been equally suitable for this topic. This study is interested in the potential utility of Dweck's ITsI to enhance educational outcomes in the UK. At times, some references will be made to England but the intention is to examine this topic's relevance and utility for the UK educational context. Year 8 students were selected in this study because Dweck has suggested and provided some evidence for the idea that ITsI become more significant for early adolescents in larger, competitive learning environments following a challenging transition (Dweck, 2007; Blackwell et al, 2007). Given the implicit nature of such beliefs, further examination and understanding about them, whilst potentially useful, is likely to be difficult. I shall therefore provide much structure to the interviews, e.g. by using some of Dweck's questionnaire items (Dweck, 1999) as stimuli for discussion. The data are analysed using thematic analysis. A qualitative research paradigm is used, incorporating interpretivist and social constructionist positions. Given my role in leading the discussions in the interviews about ITsI, the process is deductive or theoretical.

1.2 Dweck's Implicit Theories of Intelligence

> "it's not always the people who start out the smartest who end up the smartest"
>
> (Dweck, 2007, page 5)

Dweck (2007) has suggested that people's ITsI will influence their intellectual progression into adulthood. Over the past thirty years, there has been a considerable body of work in relation to Dweck's ITsI. Dweck and colleagues (1995a) have proposed that some people hold an entity view of intelligence (i.e. that intelligence is a fixed trait) whilst other people hold an incremental view of intelligence (i.e. intelligence is not fixed but rather malleable, and hence, can be increased through one's efforts). The terms 'incremental' and 'malleable' are used interchangeably in this thesis as are the terms 'entity' and 'fixed'. Dweck (1999) has suggested that people who hold an incremental view of intelligence are more likely to engage in mastery-oriented responses in learning situations, such as persistence, whilst entity theorists are more likely to engage in helpless responses, such as giving up. Although Dweck and colleagues have conceded that all views have their costs and benefits, they state that there are fewer costs for the incremental view and fewer benefits for the entity view (Dweck et al., 1995b).

Dweck (1999) has suggested that people who endorse an incremental view of intelligence engage in more helpful learning behaviours; for instance, incremental theorists respond more adaptively after a "failure" experience (on an impossible task used in many experiments), make less helpless attributions, become determined to make more effort and implement different strategies (e.g. Henderson and Dweck, 1990; Hong et al, 1999; Robins and Pals, 2002). Many of the studies in relation to Dweck's ITsI focus upon the impact of holding various beliefs on subsequent learning behaviours. In contrast, there are very few studies which have explored the

relationship between holding various ITsI and subsequent academic outcomes. Blackwell et al (2007) provided some evidence to support the view that people's ITsI can have an impact on their subsequent academic attainment. Following the transition to a junior high school in New York, students who held an incremental theory enjoyed an upward trajectory in their maths attainment, whilst students holding an entity theory experienced a flat trajectory in their maths attainment over the next two years. This study had the benefit of occurring in a real-world achievement setting after a challenging transition. Similarly, Aronson et al (2002) found that an intervention that induced a malleable theory orientation resulted in significantly higher academic attainment than for two control groups of American undergraduates.

The research evidence that ITsI can have an impact on academic outcomes is very limited but encouraging. Moreover, the impact of these studies might have been increased if the intervention had also sought to incorporate the influence of key adults such as teachers and parents (e.g. to reinforce the value of holding an incremental view). Instead, they focused solely on students' ITsI. Dweck and colleagues have also discussed how implicit theories can be almost paradoxically stable and yet also relatively changeable, such that if an individual held both theories (entity and incremental) the weaker-held theory is changeable via intervention (Dweck et al, 1995b). This insight is significant for a number of reasons; if ITsI are relatively stable, this suggests they might have a longer-term utility for lifelong learning. For instance, Robins and Pals' (2002) longitudinal study of undergraduates at the University of California at Berkeley provided research evidence to support the view that implicit theories are stable beliefs for older students. The apparent changeable nature of such beliefs, given the right stimuli (e.g. Blackwell et al, 2007) is also very promising; not

only might it be important for some students to change their beliefs about the malleability of intelligence, but it appears that is also relatively easy to do.

1.3 Potential significance of Dweck's ITsI to educational achievement in UK

In England, there is an identified problem regarding under-achievement for some young people aged 16 based on their prior learning and attainment. For instance, about 46% of pupils who had attained the anticipated level 4 in core subjects at the end of Key Stage 2 (i.e. aged 11 years) subsequently failed to make the anticipated amount of progress (to five A* - C grades at GCSE, including English and maths) at aged 16 (Department for Education, 2012). This is an alarming figure, equating to about 120,000 young people aged 16 in 2011 who under-achieved in this regard. Comparisons with other countries are often unfavourable; students in England are estimated to be one and a half years behind their peers in Shanghai-China at age 15 (Department for Education, 2011). In Wales, in 2011, only 21% of children in receipt of free school meals, obtained five or more A* - C grades at GCSE; the figure for children not in receipt of free school meals was 55% (Egan, 2013).

The impact of under-achievement, however difficult to evaluate with precision, is likely to have significant human, social and economic effects. Under-achievement has been linked with youth unemployment, lower output, poorer health outcomes and increased crime (McNally and Telhaj, 2007). The causes of academic underachievement are likely to be multiple, complex and related to a particular historical context (Robinson, 2010). Dweck's ITsI are potentially significant in explaining some of the academic under-achievement in the UK. Arguably, in a world with less job stability and the need for adults to develop their knowledge and skills, the need for effective lifelong learning is more

important than ever (Claxton, 1999). Dweck's ITsI could play an important role in helping children and young people to develop into effective lifelong learners (Claxton, 1999). In addition, some authors argue that here is a need for students to be able to risk 'failure' with their learning.

> *"*if you're not prepared to be wrong, you'll never come up with anything original."
>
> Robinson (2010, page 15)

This view is not new. Henry Ford wrote in his autobiography that,

> "one who fears the future, who fears failure, limits his activities. Failure is only the opportunity more intelligently to begin again."
>
> Ford (2009, page 15)

1.4 Potential significance of Dweck's ITsI to the role of the educational psychologist (EP)

Dweck's ITsI have the potential to have an impact on young people's academic attainment, which has clear resonance in the current social, economic and political climate. This is particularly relevant given the significant number of pupils who failed to make the anticipated amount of progress in their secondary education (Department for Education, 2012).

Since EPs are involved in enhancing children's learning (Beaver, 1996), Dweck's ITsI have clear relevance to professional educational psychology. The exploration of children's beliefs using ideas from personal construct psychology (Kelly, 1963) is a familiar practice used by EPs (Beaver, 1996). This is often done to enhance the understanding of the child's perceptions of their world.

This is significant within personal construct psychology as individuals will often behave in a way in which is consistent with the way that they make sense of themselves and their world (Beaver, 1996). Dweck's ITsI suggest that some children and young people hold unhelpful beliefs about the malleability of their abilities (Dweck, 1999). EPs have the professional knowledge and expertise to both explore children's beliefs and to facilitate interventions, such as through consultative discussions (Wagner, 1995), to challenge such beliefs.

Although personal construct psychology emphasises an individual's unique constructs of the world and their view of themselves within it, EPs also bring a systemic perspective to problem situations (Farrell et al, 2006; Rhydderch and Gameson, 2008). In this way, the EP can have a useful role in working with the systems (such as the school) around the child to help to make necessary changes to those systems (Beaver, 1996). Dweck's ITsI suggest some important common beliefs (i.e. incremental or entity beliefs) that are held by students (Dweck et al, 1995b). Given the suggested commonality of such implicit beliefs, it would be interesting and useful to explore what might have influenced such beliefs. If, for instance, certain educational practices are seen as having influenced an individual's beliefs about the malleability of their intelligence ability, the EP can potentially facilitate change at the level of the school (Farrell et al, 2006).

Surprisingly, given the potential significance of Dweck's ITsI to the practice of EPs, there have been limited references to these ideas within dedicated professional journals for EPs in the UK, such as Educational Psychology in Practice. However, there are various examples of how Dweck's ideas might have influenced educational discourses and practices in the UK. For instance, one author and EP (Maclean, 2003) has incorporated Dweck's ideas to

advance four drivers that impact upon students' mindsets (engagement, structure, stimulation and feedback). This approach has taken Dweck's ITsI with its emerging evidence base and added more theory around it. Arguably, what is needed instead is a greater understanding of Dweck's ITsI in a UK educational context. Therefore, despite their potential, the current application of Dweck's ITsI in the UK appears to be unsystematic and based on an incomplete understanding.

EPs are ideally placed to help to apply research knowledge to inform educational practice (e.g. Fox, 2011). There have been few attempts by EPs to critically examine Dweck's ideas in the UK context. Hence, this study aims to do that. Given the many choices that I have made in regard to this study, some relevant aspects of my professional background and interest in this study are outlined. Research questions do not arise in a vacuum, and the collection and analysis of data require a number of interpretative processes. This section is presented, in part, to acknowledge the complexity of these processes, and to seek to provide useful contextual information for the reader.

1.4.1 The origins of this research study

It is important to recognise the potential complexity of the selection of a thesis subject. This enables the reader to have a fuller understanding of the background that has influenced such complex decisions. There are a number of threads that have contributed to this choice of topic. In my practice as an EP, I have been fortunate to have usually been involved in situations in which my predominant role has been to try to enhance children's learning (Beaver, 1996).

In responding to this role, some of the most helpful insights have come from broad theories of motivation, such as self-efficacy (e.g. Bandura, 1997) and attribution theory (e.g. Weiner, 1985), and from personal construct psychology (e.g. Kelly, 1963). I have also been fortunate to have experienced a range of professional roles as an EP, working with distinct groups of young people, such as young offenders, children in care, adopted children and postgraduates. Across all of these groups, theories of motivation and insights from personal construct psychology have been invaluable to my work. I have also been fortunate to have had the opportunity to employ a coaching model with teachers, which has also influenced my beliefs in the possibilities of growth and development.

I have also been interested in debates about the notion of ability and high performance levels. Gladwell (2009) reported how professional ice hockey players in Canada are disproportionately born in the months of January, February and March. This is related to a 1st January cut-off date during junior competition, such that children born in the earlier months of the year are advantaged, playing alongside younger peers. Therefore, in attempting to select the best ten-year olds, for instance, the oldest children are disproportionately selected. Similarly, Gladwell (2009) commented that professional English football has had a disproportionate number of players born in the months between September and November because of a September cut-off date. These insights serve to illustrate the role of external factors upon people's development, even at an elite level of performance.

Dweck's ITsI have resonated with my personal and professional experiences and hold considerable possibilities to help to enhance children's learning. My own reflections upon my schooling (of having been streamed) may also have

sharpened my awareness of how students' beliefs about their intelligence might be influenced. I have read Dweck's theories and studies with interest over a number of years. I have been surprised at the limited focus upon Dweck's ideas within prominent discourses in professional educational psychology in the UK. I have become increasingly critical about Dweck's ideas during my background reading for this thesis. These criticisms are discussed in the next chapter. However, I have retained my belief in the potential of Dweck's ITsI to contribute to better academic outcomes for children and young people in the UK. Given that background, this study has been a very engaging and interesting one for me. I feel privileged to have studied a topic that has been a professional interest of mine for about twenty years.

1.5 Overview of the remainder of the thesis

Chapter two will examine the literature around Dweck's ITsI and their relevance to the UK educational context. This is intended to explain how the literature review leads to the proposed study. The empirical aspects of this study will be presented in chapters three and four. The methodological approaches, assumptions and ethical considerations will be discussed in chapter three, as will the detail of how this research study was carried out. The findings of the study are presented and discussed together in chapter four to aid clarity. The concluding chapter (chapter five) includes a review of the progress of this study in achieving its aims, reflections upon its limitations, its contribution to knowledge and its implications for professional educational psychology. It will also identify future areas for possible research and include a reflexive account about this research study.

Chapter Two – Literature Review

2.1 Introduction to Literature Review

> "Throughout the world, cultures are changing from automatic to manual in a host of different ways. You need to be able to handle intelligently far greater degrees of responsibility and uncertainty. You need to be a good learner."
>
> (Claxton, 1999, page 245)

The uncertainties of life in the 21st Century have thus made the need for effective lifelong learning ever more important. This context makes it vital that we better understand the relationship between learning and intelligence. Claxton (1999) has suggested that it is perhaps the implicit beliefs that people hold about their ability that have the most dramatic effect on their learning power.

> "Identifying the conditions that best grow good learners in this fundamental sense, is perhaps the most urgent priority of contemporary society."
>
> (Claxton, 1999, page 18)

Carol Dweck has been a significant contributor to our understanding of implicit beliefs about the ability to learn. Most of Dweck's work has been done in America. This study intends to examine Dweck's ideas regarding beliefs about the malleability of intelligence in a real-world UK educational context.

This literature review will initially provide some explanation of the areas covered within this review. It will then detail some key components of the current UK

educational context. These sections will precede the main line of enquiry of this literature review; an examination of Dweck's ITsI. Dweck's ITsI will be explained and illuminated further by comparison with other theories of motivation. Dweck's ITsI will then be critically examined in terms of both its theoretical basis and its evidence base. Finally, the literature review will be summarised and the key conclusions will be related to the research questions of this study.

2.2 Explanation and rationale of areas covered (and not covered) in the Literature Review

This literature review will focus primarily upon Dweck's ITsI in the UK educational context. Neither Dweck's work nor this review examine the concept of intelligence in great depth. Although the meaning of intelligence is much contested and debated, the main focus here is with regard to beliefs about its malleability in the UK educational context. However, it is necessary to identify some of the key areas in which the concept of intelligence is contested and debated in order to better understand beliefs about the malleability of intelligence. The significance of the concept of intelligence within educational psychology in the UK will also be examined briefly, so as to illuminate some of the potential challenges and opportunities of applying Dweck's ideas within professional educational psychology in the UK.

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2.2.1 Introducing the concept of intelligence and some of its key controversies

Intelligence is defined as, 'the ability to acquire and apply knowledge and skills' (Oxford Dictionaries, 2012). However, it is arguable whether a shared view about the meaning of intelligence exists. The intensity of the debate about intelligence increased significantly in America following the publication of The Bell Curve (Hernstein and Murray, 1994) which aimed to explain the variations of intelligence amongst different groups in America. The ensuing debate included misunderstandings about the meaning of intelligence test scores and the nature of intelligence itself (Neisser et al, 1996). These misunderstandings prompted the American Psychological Association (APA) to conclude that there was a need for an authoritative report on these issues that could be used as a basis for discussion. The subsequent APA Intelligence Task Force report (Neisser et al, 1996) recognised that intelligence is the product of both genetic and environmental variables and that much remains unknown about how these variables exert their influence. The report (Neisser et al, 1996) noted that there are multiple definitions and conceptualisations of intelligence, and that within this broad field, the most influential approach has been based on psychometric testing.

Some psychologists (e.g. Gardner, 1983; Sternberg, 1985) have argued that intelligence tests do not capture all of the many ways that there are to be intelligent, tending to emphasise logical, linguistic, and some aspects of spatial intelligence. The concept of multiple intelligences was proposed by Gardner (1983) to include musical, bodily-kinesthetic, and various forms of personal intelligence, attributes that are sometimes considered as talents, rather than forms of intelligence. Gardner's (1983) incorporation of forms of personal

intelligence have since been developed; for example, ‘emotional intelligence’ has been popularised (Goleman, 1996).

Sternberg (1985) proposed a triarchic theory of intelligence, arguing that only one aspect of this theory (analytic intelligence) was typically measured by intelligence tests. Sternberg (1985) argued that there needs to be a greater emphasis on the two other forms of intelligence that he identified, creativity and practical intelligence. Hence, it is important to recognise that different people will have differing views about the nature of intelligence. The APA Intelligence Task Force report concluded that,

> “Because there are many ways to be intelligent, there are also many conceptualizations of intelligence.”
>
> (Neisser et al, 1996, pg 95)

In the UK, the British Psychological Society has not produced a report akin to the APA Intelligence Task Force report, although concerns about the understanding of intelligence continue (e.g. Devonshire, 2013). Arguably, within the UK, there are also many conceptualisations of intelligence. For instance, the Social and Emotional Aspects of Learning (SEAL) programme, which has been implemented in many schools in the UK, particularly of primary age, recognise Goleman’s work in bringing awareness of the importance of emotional intelligence (Department for Education and Skills, 2005).

The APA Intelligence Task Force report also recognised that the concept of intelligence is viewed differently across different cultures, hence making it difficult to compare concepts of intelligence across different cultures (Neisser et al, 1996). Attributions for success and failure in learning also vary across cultures; western cultures focus on ‘ability’ as the major determinant of learning

success, whilst Asian cultures emphasise effort, believing that anybody can learn more or less anything given sufficient effort (Claxton, 1999). Should 'failure' occur, the sense of shame in Asian cultures comes from having let others down by not having tried hard enough; in contrast, in western cultures, Claxton (1999) argues that personal identities are at stake and therefore significant learning challenges are potentially occasions for public exposure of low intelligence. As the UK incorporates a range of cultures and sub-cultures, any general view about a prevailing culture would risk being too crude to discern more subtle, nuanced beliefs. However, that does not negate the important role that cultural factors play in the beliefs about intelligence. The potential influence of cultural variables makes it important to examine Dweck's ITsI in a UK educational context.

Given the context of this study, it is necessary to consider the relevance and utility of these ideas for professional educational psychology in the UK. This will be done more fully towards the end of the literature review. In introducing some of the issues regarding intelligence, a very brief historical context will now be provided of the significance of the notion of intelligence to the educational psychology profession in the UK. This aims to provide a context for better understanding any opportunities and challenges for applying Dweck's ideas to the UK.

The notion of intelligence testing was fundamental to the origins of professional educational psychology in the UK, initially from Burt's appointment by London City Council in 1912 (Arnold, 2013). The relationship with intelligence testing has been a facet of the profession since then with notable milestones such as the wish to reconstruct educational psychology, in part at least, from an emphasis upon an individual, within-child orientation (Gillham, 1978). In a

recent study which reviewed the restructured initial training (from 2006) in England and Wales, recently qualified EPs highlighted the importance of dynamic assessment in comparison to Principal EPs, who emphasised the need for psychometric testing within a range of assessment skills (Pearl Evans et al, 2012). Hence, any useful ideas relating to intelligence or beliefs about intelligence would need careful mediation into professional educational psychology in the UK, so as to maximise their impact.

2.2.2. Systematic Literature Review

It is important that any literature review is carried out in a manner that is transparent and replicable. The searches for this review were intended to provide sufficient breadth and depth of the relevant research literature to ensure a thorough understanding of this topic and crucially, to avoid omitting a key piece of understanding from the existing literature. Key terms that have been used by Dweck (i.e. implicit theories of intelligence; self theories, entity theorists; incremental theorists; fixed intelligence, malleable intelligence; mindset; Dweck) were searched on PsychNET, PsycINFO, ERIC and the British Index of Education. In order to examine the interest of Dweck's ideas with EP practice in the UK, these terms were also searched in some prominent journals for EPs in the UK, Educational Psychology in Practice, Child and Educational Psychology and the Journal of Educational Psychology.

2.3 The UK educational context

In order to understand the current educational context in the UK, it is necessary to have some familiarity with the evolution of education over the past seventy years. The 1944 Education Act introduced universal secondary schooling to the age of fifteen. On the basis of a test at the age of eleven (11+), children were considered suitable for schooling in a modern, technical or grammar school; in

practice, few technical schools were established (Coldron et al, 2009). In 1965, the government requested that local education authorities provide comprehensive places. The 1976 Education Act prevented selection by aptitude or ability which was subsequently repealed in 1980 (Coldron et al, 2009). By 2006, there were 43 local authorities with schools that used academic selection as part of their admissions criteria (Coldron et al, 2009). Since that time, there has been an increase in schools' autonomy in the UK, based in part by a belief that increased school autonomy will yield school improvement (Hoffman et al, 2008). Admission to secondary schools in the UK by academic selection operates in the minority of schools. However, arguably, the selection system that has operated since 1944 (to a greater or lesser extent) on the basis of the 11+ has promoted the narrative of ability as fixed (Coldron et al, 2009).

Streaming (typically from the age of seven) was the principal means by which children were grouped in schools in the UK following the 1944 Education Act (Blatchford et al, 2008). By the 1970s, about 20% of schools employed streaming, declining further to less than 3% by the 1990s (Blatchford et al, 2008). In the 1990s, successive governments promoted ability grouping in efforts to raise standards following the implementation of the National Curriculum (NC) (Blatchford et al, 2008). By 2004, a sample of 2000 primary schools indicated that 52% had introduced ability grouping (Hallam et al, 2004a). In secondary schools, grouping practices have varied across schools and according to subject. In one sample of 45 secondary schools, ability grouping occurred most frequently in maths (33/45 schools), followed by science (26/45) and English (16/45) (Ireson et al, 2001). These studies were done, in part at least, to monitor the impact of governmental recommendations. There have been few, if any, more recent studies to monitor the longer term

impact of governmental recommendations. In likelihood, the practice of ability grouping has probably been maintained if not increased further.

Interestingly, once sets have been established there is limited movement of students, due to social and curricular factors (Ireson et al, 2005; Blatchford et al, 2008). It has also been suggested that ability grouping may promote teachers' beliefs in fixed abilities (Ireson et al, 2005). In contrast to previous research that has highlighted the negative impact on lower-attaining pupils, more recent research has suggested that ability grouping may also have a negative impact on the self-concepts of higher-attaining pupils (Ireson et al, 2001). In practice, even in mixed-ability classes, within-class ability grouping occurs in the majority of schools, typically four or five same-ability groups in an infant classroom (Raveaud, 2004). Primary-aged pupils seem to be aware and accepting of this 'hidden curriculum', possibly due to being socialised into such systems operating in schools (Hallam et al, 2004b).

Children in England are repeatedly assessed in national tests, known as standard attainment tests or standard assessment tasks (SATs). Although these tests are intended to be high stakes for schools rather than children, they can have similar impact upon children as tests which are designed to have high stakes for them, such as the 11+ (Black, P. et al, 2002). Children in England frequently refer to levels that they expect themselves and others to achieve (Reay and Wiliam, 1999). The impact of such assessments might be heightened by the culture of discontinuity of teachers in English schools in which it is unusual to keep the same teacher beyond a year (except for GCSE courses) in comparison to Russian schools in which teachers often keep the same class for a number of years (Hufton et al, 2003). Hence, there is a greater challenge for English teachers to find out about the capabilities of their

students. Within such a context, previous standardised assessments might hold greater value to teachers. At transition to secondary school, many children in England are assessed using the Cognitive Abilities Test (CAT), a series of tests which purport to provide an indicator of children's later educational outcomes (Strand et al, 2006). The Office for Standards in Education have recommended that the data from CAT assessments should be used to put pupils into 'appropriate teaching groups', although no clarification of the meaning of this term was given (OFSTED, 2003). Some key educational practices are now discussed in order to provide some contextual information concerning the current study. Some of the implications of these educational practices will be reviewed, and where possible, will be further illuminated by comparison with other countries.

In England, it can be argued that some teachers effectively receive evaluation by annual assessments (SATs), the results of which are published nationally. Hufton et al.(2003) claims that such standardised assessments occur primarily for school accountability purposes and act poorly as motivators for students. Indeed, the high stakes nature of these assessments can skew the ethos of the school towards performance rather than the process of learning (Black et al, 2002). Some studies have explored the impact of such assessments on children's understanding of themselves as learners. Reay and William (1999) gathered data from a Year 6 class preparing for impending NC tests. Some children in this study conflated cleverness with doing well in the SATs. A teacher in this study highlighted the high stakes nature of the impending NC tests,

> "I was appalled by how most of you did on the science test. You don't know anything…you are judged…by what you get in the SATs."
>
> (Reay and William, 1999, page 346)

This is a somewhat dated and possibly atypical account from a teacher, although it is argued that the importance of SATs for schools remains high. There is a culture in England for teachers to value fairness, individualism and the notion of children fulfilling their potential (Raveaud, 2005). Differentiation of the curriculum is considered essential by English primary school teachers to be fair to pupils; by contrast, French teachers considered it necessary to test a child's limits to establish the extent of such limits even if this means 'failure' for the child (Raveaud, 2005). Hufton et al (2003) have compared the beliefs of teachers about student motivation from England, America and Russia. They noted that the phrase 'teaching and learning' tends to be used in England and America whereas in Russia, the phrase, 'teaching, studying and learning' tends to be used. Hence, in the UK, the significance of students' contribution to the learning process through their efforts might be made less explicit by teachers than that seen in some other countries.

The value placed on education by a community is likely to impact on the motivation of students from that community. The value placed on education by different communities within a country can vary; for instance the relatively high value placed on education in the UK by the British-Chinese community has been contrasted with a lesser value placed by other communities (Frances and Archer, 2005). In discussing the UK educational context, it is necessary to recognise that there is not just one educational context. The UK is a multi-cultural country, incorporating a broad range of beliefs, values and habits. However, for the purposes of this study, it is useful to reflect upon some national characteristics of the educational context.

The UK educational context can include a tension between high academic achievement and popularity (Francis et al, 2010). This tension is such that early adolescent pupils who have managed to achieve both educational achievement and popularity have been deemed worthy of study to explain their success (Francis et al, 2010). Parental support and involvement has been shown to be an important factor of their child's academic success (Siraj-Blatchford, 2010). For such support and involvement to be given, parents need to value education and believe that their own (and the child's) efforts will be worthwhile; they are more likely to involve themselves if they believe their child's educational success to be dependent more upon effort than the child's innate ability (Siraj-Blatchford, 2010). This is potentially significant for Dweck's ITsI because it suggests that parents/carers who endorse an incremental theory are more likely to involve themselves in their child's education. Much of the research on student motivation has focused upon student cognitions in a relatively decontextualised way; arguably research needs to take account of the cultural context in which learning occurs (Hufton et al, 2003). The majority of research relating to Dweck's ITsI has involved laboratory studies, usually in America. There is a need to explore Dweck's ITsI in real-world achievement situations in different contexts. This section has aimed, in part, to illuminate pertinent aspects of the UK educational context.

An interesting and controversial aspect of any educational context is the potential significance of the beliefs of teachers about the abilities of individuals. The significance of teachers' beliefs about the abilities of children has been contested since Rosenthal and Jacobson's (1968) seminal article 'Pygmalion in the Classroom'. This study suggested that teacher expectations about their students' abilities may become self-fulfilling prophecies. A more recent review concluded that self-fulfilling prophecies are real although the effects are

typically small (Jussim and Harber, 2005). These studies did not focus on if and (if so) how teachers' beliefs about the abilities of children might influence children's beliefs.

Yorke and Knight (2004) found that between 25 and 30% of both students and staff in higher education tended towards a fixed view of intelligence. Interestingly, these researchers speculated on the impact of those occasions (estimated at about 10% of all student-teacher interactions) in which a student with a fixed view of intelligence encounters a teacher who also holds a fixed view. Although the direct exploration of the beliefs of teachers about Dweck's ITsI are beyond the scope of this study, they are very interesting and potentially of some significance to the beliefs that students hold about themselves. It has been argued that the term, 'ability' is often used in western educational cultures as a synonym for intelligence, and is used to account for subsequent performance (Claxton, 1999).

2.4 Dweck's Implicit Theories of Intelligence (ITsI)

The primary purpose of this section is to explain Dweck's ITsI. The evolution of Dweck's ITsI will also be outlined to enable the current situation to be fully understood. Carol Dweck is an American social psychologist. Her work over the past thirty years has mainly focused on the motivational processes that influence children's learning. Dweck's earlier work in the 1970s and 1980s focused on trying to understand how different achievement goals influence children's motivation (e.g. Dweck and Leggett, 1988). The model of implicit theories developed, in part at least, from research into the relationship between achievement goals and subsequent behavioural responses (e.g. Dweck, 1986).

Dweck's model of implicit theories suggested that the implicit theories that people hold influence their achievement goals and their subsequent behavioural responses (Dweck et al, 1995a).

Dweck's model of implicit theories suggested that people's implicit theories about human attributes (such as moral character or intelligence) tended to be either fixed or malleable (Dweck et al, 1995a). Dweck has used different phrases to describe implicit theories. For instance, Dweck has applied the same meaning to the phrases 'implicit theories' and 'self theories'. More recently, Dweck has used the term 'mindset' to explain implicit theories (Dweck, 2007). The terms used in this study are 'implicit theories' and more specifically, ITsI. Although Dweck's work has continued to consider the effect of implicit theories on broad human attributes, the primary application of her work has been on how people understand intelligence and achievement (Dweck, 1999). The focus of this study is a critical examination of Dweck's implicit theories in relation to intelligence in the UK context; it is beyond the range of this study to consider the application of Dweck's implicit theories more broadly.

Dweck's ITsI suggest that people tend to understand intelligence in two entirely different ways. Some people have an 'entity theory' of intelligence, believing that their intelligence is a fixed trait and as such can not be changed (Dweck, 1999). Other people hold an 'incremental theory' of intelligence believing that intelligence is not a fixed trait, but is something that is malleable which can be cultivated through effort and learning (Dweck, 1999). Dweck's ITsI suggest that people who hold an entity view of intelligence are more likely to hold performance achievement goals and engage in 'helpless' responses to learning (such as giving up) whilst incremental theorists are more likely to hold learning

achievement goals and engage in ‘mastery-oriented’ responses (such as persistence) (Dweck, 1999).

The belief in fixed versus malleable attributes is regarded as analogous to a super-ordinate construct within personal construct psychology (Dweck et al, 1995a). These contrasting beliefs are viewed as alternative ways of construing reality, each with potential advantages and disadvantages (Dweck et al, 1995a). Although Dweck has asserted that neither belief is the ‘correct’ one, the entity view is regarded as having greater benefits and fewer costs (Dweck et al, 1995a; Dweck et al, 1995b). This is largely because holding an entity view is considered to elicit performance goals which are motivated by seeking to gain positive judgements and to avoid negative judgements (Dweck, 1986). In contrast, holding an incremental view is considered to elicit learning goals which are motivated by seeking to improve your competence (Dweck, 1986).

Dweck’s research has frequently focused on learning situations in which students are encouraged to choose between performance achievement goals and learning achievement goals. Typically, students are invited to choose a task that would allow them to look intelligent (but at the sacrifice of learning something useful) or they must choose a task that would allow them to learn something useful (but at the sacrifice of looking intelligent) (Dweck, 1999). A performance achievement goal focuses students on measuring themselves (and their ability) from their performance; when they do poorly, they may condemn their intelligence and fall into a helpless response (Dweck, 1999). In contrast, a learning achievement goal focuses students on learning new things; when things do not go well, they do not condemn their intellect but instead employ mastery-oriented behaviours such as increased effort and the employment of different strategies (Dweck, 1999). Dweck has argued that

broadly students divide equally between those with performance attainment goals and a clear, helpless pattern in response to difficulty and other students with learning attainment goals and a clear, mastery-oriented pattern in response to difficulty. Dweck had previously suggested that about 15% of students do not fit into either group (Dweck, 1999). More recently, Dweck has argued that about 40% of adults and children endorse a malleable or incremental belief and that about 40% endorse a fixed or entity view, with about 20% undecided (Dweck and Molden, 2007). In essence, Dweck has suggested that the ITsI that students hold will yield very different behaviours in learning situations.

Some work has been done to better understand some of the characteristics of ITsI such as their age of onset, their stability and those learning situations in which holding ITsI are likely to be of most significance. Dweck has suggested that pre-school children differ in their display of mastery-oriented behaviours in role-played scenarios (Smiley and Dweck, 1994). Although it is not possible to meaningfully identify a young child's belief system about a concept such as intelligence, Dweck has suggested that parental feedback might influence the development of children's implicit theories (Dweck et al, 1995b). Subtle differences in the use of language of adults towards pre-school children (e.g. 'you are a good drawer' versus 'you did a good job drawing') have been related to differences in helpless and mastery-oriented behaviour (Cimpian et al, 2007). Young children's behavioural responses have been elicited readily in studies indicating that socialisation practices might play a key role in the development of children's ITsI (Dweck et al, 1995b).

Dweck (2007) has proposed that although very young children display differing behavioural responses to learning, the impact of holding different ITsI is likely to

be significant following the transition to junior high school in America at the age of 12-13 years. Dweck (2007) has suggested several reasons for the significance of the junior high school as a learning context; this environment emphasises competition, heightened self-focus and ability self-assessment. The transition occurs at an age when conceptions of intelligence develop, together with beliefs about effort and responses to challenge (Blackwell et al, 2007). The closest analogy in the UK context is arguably the transition to secondary schooling at the age of eleven. This transition follows national tests (SATs), (often) school-based standardised tests (CATs) and the transition to a much bigger school environment, with the scope for comparison with a larger peer group.

Dweck (2007) has argued that ITsI are stable and continue to be significant in later academic life. A number of studies (e.g. Dweck, 2007) portray undergraduate and postgraduate entity theorists who are concerned that their next level of learning will reveal them to be less intelligent than previously thought. Robins and Pals' (2002) longitudinal study of undergraduates provided research evidence to support the view that ITsI are stable beliefs for older students. An implication of ITsI being stable is that the potential significance for an individual of holding an ITI is increased as its potential effects can reside over a prolonged period of time. Given Claxton's (1999) arguments of the importance of effective lifelong learning, Dweck's ITsI are potentially of high importance.

There has been a limited focus on exploring what might have influenced the ITsI of children. Instead, the thrust of the research has involved categorising students as incremental or entity theorists and observing their behaviours on a range of experimental learning tasks. Dweck (2007) has suggested that

feedback messages from parents and teachers about success and failure can influence children's ITsI. Some studies have indicated that 'process praise' (e.g. 'you worked on that really carefully') has been related to increased levels of mastery-oriented behaviour and lower levels of helpless behaviour on achievable tasks (following 'failure' on an impossible learning task) in comparison with 'person praise' (e.g. 'you're a brilliant mathematician') (Henderlong Corpus and Lepper, 2007; Kamins and Dweck, 1999; Mueller and Dweck, 1998). A recent study in the UK (Skipper and Douglas, 2012) found that children aged 9-11 years who received person praise performed least well in their subsequent efforts than either a control group or a process praise group. There has been limited exploration of if and (if so) how more formal feedback processes in schools (e.g. standardised assessments) might influence a child's ITsI.

Given the potential significance of ITsI, there has been some interest in interventions to change individuals' ITsI. Dweck has carried out a number of studies in which people's ITsI have been influenced by an intervention; for instance, Dweck (2007) has piloted and developed a computer-based intervention called 'Brainology'. This programme seeks to help students to develop a 'growth mindset'. It includes teaching students that the brain is like a muscle that can form new connections when learning takes place (Dweck, 2007). Dweck has argued that although self-theories are relatively stable over time, given that they are knowledge structures, they remain changeable to powerful interventions (Dweck and Molden, 2007). This adds to their potential utility; not only might they be significant factors behind our motivation and, hence, success with learning, but they might also be changeable so as to shape more helpful beliefs (and hence improve our motivation and learning). Dweck's ideas have attracted much interest over the past thirty years. Arguably,

Dweck's ITsI have influenced some of the educational discourses in the UK. Although there have been relatively few empirical studies relating to Dweck's ITsI in the UK, there have been other ways in which Dweck's ITsI have permeated some educational discourses in the UK.

Dweck's ITsI have been summarised on a well known resource website for teachers in the UK (Petty, 2008). This summary provided one of Dweck's questionnaires, containing only entity items. It even suggested to teachers that they could devise their own questionnaire, albeit with a warning that it might not work so well. Teachers are encouraged to use Dweck's questionnaire and to consider 'fixed IQ theorists' as 'at risk'. No guidance is given about issues such as what score might be needed to indicate a 'fixed IQ theorist' or an 'untapped potential theorist'. It is not possible to gauge the influence of such a website, but it does indicate both how Dweck's ideas (however presented) might reach some teachers and, as a result, the need for potentially important ideas to be effectively mediated in the UK to inform practices in schools. There is a clear role here for EPs to help to mediate research evidence to inform practices in schools (Fox, 2003).

There are several other examples that give an indication of the possible influence of Dweck's ITsI upon educational discourses in the UK. Dweck's ideas have already been shown to have impacted on the work of academics in the UK (e.g. Claxton, 1999). Claxton's more recent book (Claxton et al, 2011) draws upon the work of Dweck and is recommended for parents, teachers and EPs by a practising EP (Myszor, 2012). Similarly, Mclean (2003) has postulated a model for how schools can best motivate their students and Dweck's ITsI are a core element of Mclean's theoretical model. Dweck's ideas and resources have also been promoted by other organisations (e.g. Glasgow University

Centre for Confidence and Well-being, 2007, in conjunction with the Scottish Government). All of these examples are provided to give some indication of the possible influence of Dweck's ITsI upon educational discourses in the UK. It is not possible to gauge their precise impact with any confidence. Given the unsystematic and (at times) de-contextualised manner in which Dweck's ITsI have been disseminated, an examination of Dweck's ITsI in the UK educational context could usefully contribute to an improved understanding of them to inform their future use in schools.

2.5 The relationship of Dweck's ITsI to other theories of motivation

The primary purpose of this section is to provide greater contextual understanding of Dweck's ITsI by examining how it relates to some other, related theories of motivation. It is not intended to provide a broad account of theories of motivation. Rather, Dweck's ITsI will be clarified further by exploring its relationship with some selected, related theories, namely, attribution theory, learned helplessness, self-handicapping, deep/surface learning theories and self-efficacy. A rationale will also be provided for the focus of this study upon Dweck's ITsI (rather than any other motivational theories).

Attribution theory seeks to illuminate how people explain the things that they observe and experience. Weiner (1985) argued that the attributions that people make for their successes and failures will determine their impact upon them. Hence, explaining a failure in terms of more stable factors (such as ability or task difficulty) yields less optimism about future success than explaining the failure in terms of more variable factors (such as luck or effort). Weiner's work was influenced by Rotter's (1966) distinction between internal and external perceptions of control.

Dweck (1999) has credited attribution theory for its influence on her earlier work on learned helplessness (and also Seligman's work on explanatory styles, e.g. Seligman, 2007). Dweck's work on learned helplessness (e.g. Diener and Dweck, 1978, 1980) emphasised the advantages of mastery-oriented behaviour over helpless behaviour. For instance, 'helpless children' underestimated the number of successes, overestimated the number of failures and did not view success as indicative of ability (Diener and Dweck, 1980). Dweck has distinguished between her ITsI and both attribution theory and learned helplessness (Dweck, 1999). Dweck's ITsI attempt to explain people's beliefs before encountering a learning task. In contrast, attribution theory and learned helplessness emphasise how people explain a learning outcome after the event. Further, a crucial element of Dweck's ITsI is whether people view ability as stable or acquirable. Ability has tended to be regarded as a stable factor in attribution theory although Weiner has argued that attributional judgements are phenomenological (Graham, 1991). Hence, people might attribute ability differently from one another. Dweck's ITsI provide a model of how this might happen and how it might influence behaviour during learning.

Self-handicapping was first described by Jones and Berglas (1978) to explaine why some people will sometimes engage in apparently self-destructive behaviours, to create doubt amongst an audience about the reason for task 'failure'. An example of self-handicapping might be not studying for a forthcoming exam. Any subsequent poor performance could then be attributed to the lack of studying, rather than a reflection of intelligence. Moreover, any subsequent good performance would be attributed to high intelligence given the lack of studying. Dweck (2007) has made references to the desirability in western cultures of effortless intelligence. Self-handicapping is arguably more

important in performance situations which are more public, such as examinations and physical activity. The utility of self-handicapping is perhaps reduced in other, less public learning situations. Despite the elegance and interest of self-handicapping ideas, Dweck's ITsI arguably have more scope and significance given their potential to influence the behaviour of learners across a broad range of contexts.

Self-efficacy refers to beliefs that individuals have about their capability to learn or perform a specific task. Like Dweck's ITsI, self-efficacy is grounded within social cognitive theory which suggests that achievement depends upon the interaction between an individual (e.g. their beliefs, behaviours) and environmental conditions (Bandura, 1986). Self-efficacy beliefs influence task choice, effort, persistence and achievement (Bandura, 1997). A major source of self-efficacy is mastery experiences, i.e. past successes (Bandura, 1997). The home environment is regarded as important for the development of self-efficacy for a number of ways such as providing mastery experiences and modelling persistence and effort (Bandura, 1997). Self-efficacy has an established evidence base for its role in influencing educational outcomes (Pajares, 1996). In contrast, Dweck's ITsI have a limited evidence base for influencing outcomes. However, Dweck's ITsI have a promising evidence base for influencing learning behaviour, suggesting that in time, it is likely that its role in influencing educational outcomes will be demonstrated. In contrast to self-efficacy where key insights are arguably, reasonably well-understood, such as the value of providing mastery learning experiences, Dweck's ITsI, although discernible in various UK educational discourses, are not perhaps as well understood. Indeed, the insights that do exist from Dweck's ITsI have not been fully examined in the UK context. Dweck's ITsI is a social-cognitive theory, although, despite the emphasis on cognition, Dweck regards emotions as being

significant in the motivational processes set in motion by holding an incremental or entity theory (Dweck, 1999). Dweck has recognised (e.g. Dweck et al, 1995b) that her ITsI could be perceived to have a limited emotional contribution but she has suggested that this perception is a function of the need to portray her ideas clearly and relatively simply.

Several theorists (e.g. Biggs, 1985) have differentiated between learners who tend to adopt a 'surface' approach to learning and those who tend to adopt a 'deep' approach. A deep learning approach involves true engagement with the subject, making links with previous learning, for instance, in the search for meaning. In contrast, a surface learning approach tends not to have the purposes of immersion, interest and deep understanding. Indeed, surface learning can be motivated by a fear of failure. There are clear areas of commonality between the theories of deep/surface learning and Dweck's ITsI, such that deep learners resemble incremental theorists and surface learners resemble entity theorists. However, despite these similarities, whereas Biggs' (1985) ideas tend to focus upon the significance of present learning, Dweck's ITsI suggest that an individual's implicit beliefs will influence their future intelligence. Dweck's ITsI also claim to offer a very broad, explanatory mechanism, suggesting the stability of ITsI and hence their applicability to students at school as well as to later lifelong learning. Dweck's ideas now have a considerable research base and have attracted interest in the UK. For these reasons, the focus of this study is upon the examination of Dweck's ITsI in the UK context.

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2.6 Critical examination of Dweck's Implicit Theories of Intelligence

The theoretical and empirical basis for Dweck's ITsI are critically examined below.

2.6.1 Theoretical examination of Dweck's Implicit Theories of Intelligence

Several commentators (e.g. Schunk, 1995; Harackiewicz and Elliot, 1995) have questioned whether people can hold both entity and incremental theories. Others (e.g. Peterson, 1995) have also criticised the implication that entity and incremental theories are the same super-ordinate constructs for us all, as Kelly (1963) did not expect everyone to have the same super-ordinate beliefs. Dweck has responded that, although logic indicates that these implicit theories are mutually exclusive, people's beliefs are not necessarily logically consistent, and hence it is possible for pupils to hold both theories; Dweck has stated that although people can hold both beliefs to different degrees, one set of beliefs (i.e. an entity or incremental view) is likely to be dominant (Dweck et al., 1995b). More recently Dweck and Molden (2007) have suggested that people may hold both theories and respond to environmental cues to apply either an entity or incremental view to a potential learning situation. Little is understood about how this might operate, yet this might be very important.

Although Dweck's ideas centre around general intelligence, it is intriguing to consider to what extent people think in terms of specific areas of intelligence, particularly in a school context divided into different subject areas. Stipek and Gralinski (1996) found that elementary school age children (from 4th, 5th and 6th grade) in California did not hold subject–specific implicit beliefs when asked about maths and social studies. The researchers hypothesised that as children begin adolescence and encounter more difficult mathematical concepts, they may begin to hold more subject-specific beliefs. The possibility of people

holding different theories across different subject areas is related to Dweck's revised view that people can hold both incremental and entity views although one view is likely to be dominant. More recently, Dweck (2007; Dweck and Molden, 2007) has conceded that people can have different mindsets in different areas (e.g. artistic skills; general intelligence) but there is a paucity of research to explore how this might operate in practice. Dweck and colleagues have concluded that;

> "The possibility that many people actually hold both theories, albeit to differing degrees – suggests that research into the circumstances that might elicit the different theories may well be in a fruitful direction."
>
> (Dweck et al, 1995b, page 324)

Given the influence of cultural factors upon people's beliefs, any research into such circumstances would usefully incorporate the relevant context; in this instance, that would represent a real-world achievement context in the UK.

Dweck's work has not focused greatly on exploring and understanding the nature of ITsI. Instead, Dweck's studies have frequently sought to demonstrate the impact on behaviours of holding an entity or incremental view. The categorisation of people into entity or incremental theorists was initially done by the use of a 3-item questionnaire (of entity items) and has received criticism (e.g. Peterson, 1995) for not including incremental items. Dweck has explained this by suggesting that her earlier incremental items were too appealing to students and subsequently attracted high rates of approval (Dweck, 1999). Most studies have since used a 6-item questionnaire (containing three incremental items and three entity items) to categorise people into entity or incremental theorists. Dweck (1999) has asserted that this questionnaire is not

correlated with a person's cognitive ability, and as such has relevance for all children. The questionnaire (from Dweck, 1999) asks children (aged 10 and older) to read six statements, such as, 'you have a certain amount of intelligence, and you really can't do much to change it' and to rate their agreement with such a statement on a six-point scale (where 1= strongly agree and 6= strongly disagree). Often, the incremental items are reverse scored so that a score of 1 equates to full agreement with an entity theory and 6 equals full agreement with an incremental theory (e.g. Blackwell et al, 2007).

Completing such a questionnaire meaningfully may be a demanding task for some 10-year olds, yet Dweck's studies do not indicate the exclusion of any participants due to their inability to meaningfully access these materials. The only reference to a differentiated approach (e.g. for children with less reading proficiency) is to use a two-page questionnaire with three entity items on the first page and three incremental items on the second page, or alternatively, by using only the entity theory items. An inference from this limited differentiation is that all children aged 10 and above, would have meaningful, measurable ITsI. This suggests that all ten-year olds will have developed such knowledge structures. Dweck has not provided clarity about the relevance of her ITsI for children and adults with varying types and levels of learning difficulties. In the absence of such clarity, an impression is arguably given by Dweck (2007) that ITsI have near universal application and such a view may be unjustified.

Dweck has provided evidence to refute concerns and to defend the validity of these questionnaires (Dweck et al, 1995b). However, the procedures employed do not discuss or seek to define intelligence. The non-provision of a definition may not be an accidental omission but rather a belief in the significance of these views by individuals as self-theories, so that what is important is how

someone individually makes sense of intelligence for themselves, rather than requiring that people work from the basis of a shared definition. Given the influence of ideas from personal construct psychology (e.g. Kelly, 1963), such a position is defensible yet it also arouses curiosity about how someone's views of intelligence might influence the stability of their ITsI. For instance, would someone who subscribes to Gardner's (1983) theory of multiple intelligence have the same level of stability of their ITsI across different learning contexts as someone who holds a narrower view of intelligence? Some researchers (e.g. Schunk, 1995) have questioned the limitations of Dweck's work in exploring and clarifying qualitative aspects of ITsI, such as how they might originate. Dweck (1999) has given some possible explanations such as the importance of feedback by the use of praise. The understanding of how more formal feedback mechanisms (e.g. assessment feedback) might influence people's ITsI is limited. If ITsI are significant, then it is important to establish how they are shaped so that influential factors might be adapted accordingly, so as to promote an incremental theory, given that it holds less costs and greater benefits than an entity theory (Dweck et al, 1995b).

The majority of studies about Dweck's ITsI have been carried out in laboratory contexts in America. There has been only a limited amount of research in real-world achievement contexts. The limited amount of research into ITsI in different contexts is surprising given that Dweck et al (1995b) recognised the significance of cultural differences. For instance, Dweck et al (1995b) noted that Hong Kong students were more likely to be incremental theorists than their American counterparts. Similarly, Indian and Bangladeshi adults have endorsed more incremental theories than their American counterparts (Rattan et al, 2012). Many countries have distinctive educational cultures (Hufton et al, 2003) and hence, potentially important ideas, such as Dweck's ITsI need to be

understood across contexts. Yet, currently, there has been very limited examination of Dweck's ITsI within the UK educational context.

Dweck (1999) has defended the stability of ITsI, despite the apparent ease with which such beliefs can be manipulated in studies. Yeager and Walton (2011) have explained how seemingly 'small' social-psychological interventions can have an impact on students' achievement. They argued that such interventions directly address children's experiences in school and may induce recursive social, psychological and intellectual processes in schools. Dweck has argued that powerful interventions are able to change people's ITsI, given that they are knowledge structures (Dweck and Molden, 2007). In summary, there have been a number of theoretical critiques of Dweck's ITsI, particularly in seeking a fuller understanding of these ideas in real-world achievement settings across different learning contexts, outside of America. The implications of the limited understanding of Dweck's ITsI are significant. For instance little is known about how students' ITsI might differ across learning contexts. Little is also known about the estimated 20% of people who do not strongly endorse either an incremental or entity theory (Dweck and Molden, 2007). Similarly, Dweck's insights about what influences people's ITsI are not extensive. There is also limited understanding of the universality of Dweck's ITsI e.g. in relation to students with learning difficulties.

2.6.2 Examination of the evidence base of Dweck's Implicit Theories of Intelligence

Studies that purport to show evidence of an impact upon academic performance from Dweck's ITsI fall into two main categories, which are examined in turn;

i/ studies that purport to demonstrate a change of learning behaviour.

ii/ studies that purport to demonstrate a change of academic outcome.

i/ studies that purport to demonstrate a change of learning behaviour

The majority of studies that seek to demonstrate the impact of holding either an entity or incremental view fall into this category. These studies are characterised by separating entity theorists from incremental theorists and observing their performances on a number of learning tasks. These studies tend to show that incremental theorists respond more adaptively after a "failure" experience, make less helpless attributions and become determined to make more effort and/or implement different strategies (e.g. Henderson and Dweck, 1990; Hong et al, 1999; Robins and Pals, 2002). Other studies have involved an intervention to induce an incremental or entity theory and then to observe any differences in learning behaviour between the two groups. For instance, undergraduates in Hong Kong who read an incremental article were more likely to take a remedial tutorial after 'failure' and to attribute that 'failure' to effort than undergraduates who had read an entity article (Hong et al, 1999). These studies are very encouraging in offering an explanation for some of the differences in learning behaviours, and suggest that implicit theories could contribute to differing outcomes for students. It is also very encouraging that

people's ITsI can be altered, suggesting that a greater understanding of students' ITsI in the UK might be fruitful. This is particularly pertinent since the evidence basis of such studies in the UK context is very limited.

ii/ studies that purport to demonstrate a change of academic outcome

Blackwell et al (2007) demonstrated that implicit theories can have an impact on academic achievement. In the first of these (two) studies, 373 seventh-grade students in four successive seventh-grade classes from a New York public secondary school were given the six-item questionnaire (Dweck, 1999). Interestingly, no comment was offered on the relatively high mean scores on this questionnaire for each of the four cohorts, ranging from 4.20 to 4.64, with an overall mean score of 4.45. These scores are higher than might have anticipated given Dweck's views about the broadly equivalent number of incremental and entity theorists (Dweck and Molden, 2007). These scores suggest that these students' beliefs were nearer to the incremental theory. Each of these four cohorts was monitored for their next two years in school, i.e. this study took place over a five-year period. Prior test scores in maths were obtained as were subsequent test scores in maths over the following two years. An incremental theory at the beginning of this school transition predicted higher attainment in maths over the next two academic years.

In the second of these studies, the first study was repeated with 99 lower-performing, seventh-grade students (from the same public secondary school in New York), and subsequently, 91 of these students continued their participation during an intervention phase. 48 of these (91) students were placed in an intervention group during the spring term following transition. These students

were taught an incremental theory, whilst the remaining 43 students were placed in a control group, taught useful skills (but not the incremental theory). Both groups received eight sessions, four of which were the same (in relation to the brain and stereotyping). The four distinct sessions for the group in which an incremental theory was taught, covered reading aloud in class (e.g. 'you can grow your intelligence'), an activity and discussions to show that learning 'makes your brain smarter' and discussions around why labels (e.g. 'stupid', 'dumb') should be avoided. Students who participated in the intervention group endorsed an incremental theory more strongly (three weeks) after the intervention (the mean score of this group from the six-item questionnaire increased from 4.36 to 4.95). The control group students' attainment in maths declined over the next two academic years. A similar downward trajectory in maths attainment for the incremental group stopped following the intervention.

These studies had the merit of occurring in a real-world achievement setting after a challenging transition. Students who endorsed a more incremental theory enjoyed a relative increase in their mathematics attainment in comparison to students who endorsed more of an entity view. Prior to this challenging transition, students holding an entity view appeared to be doing fine. This study provided evidence to support the view that divergent patterns in attainment might emerge more clearly after such a challenging transition. These researchers also suggested that such divergent patterns might also emerge at an age when students' beliefs about intelligence might become more coherent (Blackwell et al, 2007). This research is of potentially high significance since it supports the view that students' meaning systems about the nature of their intelligence can have an impact upon subsequent attainment. Moreover, this study supported the view that such meaning systems can be changed. Both of these studies occurred in the same school; future studies would be needed to

explore the effects with different students from different schools. It would also have been interesting to have monitored the ITsI of the students in the second study over a longer period of time. Finally, although this study suggested that student's ITsI influenced their future attainment in maths, any influence upon attainment in other areas is unknown. It might be that there could be different effects for different subjects. Hence, another gap in the research evidence could be addressed by examining the effect of holding differing ITsI upon outcomes across a range of different subjects.

Similarly, Aronson et al (2002) found that an intervention that induced a malleable theory orientation resulted in significantly higher academic attainment than for two control groups of American undergraduates. The results are very encouraging in that ITsI can have an impact on academic outcomes. The research evidence base to suggest that differing theories of intelligence predict differing levels of academic attainment remains limited. However, given the potential significance of Dweck's ITsI, further studies (in different schools and different cultural contexts) are warranted. Moreover, these studies were encouraging despite focusing upon only students and not incorporating teachers and/or parents. Given that EPs have been advised to focus upon influential adults within the child's world, such as parents and teachers, and that EPs have a role in assessing and influencing a child's beliefs (Beaver, 1996), the potential utility of Dweck's ITsI for EPs in the UK is exciting.

2.7 Chapter Summary and Research Questions

This chapter has sought to clarify Dweck's ITsI and to explain their potential significance in the UK educational context. There are a number of issues about

Dweck's ideas that necessitate critical examination to facilitate the potential utility of Dweck's ideas in the UK educational context to be realised. This summary draws upon all of these key issues. Some of the key issues relating to the potential utility of Dweck's ITsI in the UK educational context are summarised below:

- There is an alarming level of educational under-achievement in the UK, particularly between the ages of 11-16. The impact of that under-achievement is likely to have significant effects (McNally and Telhaj, 2007). Although the causes of academic under-achievement are likely to be multiple and complex (Robinson, 2010), the possibility that people's ITsI might contribute to that under-achievement requires further understanding in the UK.
- In a changing and increasingly uncertain world, there is a greater need to be an effective lifelong learner; people's implicit beliefs about their ability potentially have the most important effect upon their future learning power (Claxton, 1999).
- There are many different conceptualisations of intelligence; Dweck's six-item questionnaire (1999) does not define intelligence. It is intriguing whether differing conceptualisations of intelligence might relate to a propensity to a particular theory of intelligence.
- Different cultures have differing beliefs about ability and effort. Western cultures focus on ability, whilst Asian cultures emphasise the importance of effort (Claxton, 1999). Asian cultures are arguably more likely to endorse an incremental theory. The UK comprises a range of sub-cultures, holding differing values and beliefs; for instance, the

British-Chinese community places a higher value on education than many other communities in the UK (Frances and Archer, 2005).

- The UK educational context has evolved significantly over the past eighty years. It is intriguing to consider whether current practices might influence teachers' ITsI and children's ITsI. The ability grouping of pupils, for instance, might promote teachers' beliefs in fixed abilities (Ireson et al, 2005). Children in England are repeatedly assessed in national tests; the high stakes nature of these assessments can skew the ethos of a school towards performance rather than the process of learning (Black et al, 2002). The beliefs of teachers and other adults in schools about Dweck's ITsI might influence differing teaching practices and/or expectations.
- Dweck (2007) has suggested that ITsI become highly relevant after a challenging transition to a larger school in which there is a greater focus on challenge, attainment and competition. In the UK, such a transition might be the one from primary schooling to secondary schooling. Many children will have experienced recent assessments, from SATs and CATs. Dweck (2007) has also suggested that children develop an increased sense of the meaning of intelligence at this time.
- Most of Dweck's studies have taken place in America. These have suggested that people who hold an incremental theory employ more helpful, mastery-oriented, learning behaviours (such as persistence). There is limited evidence to suggest that an incremental view will yield higher levels of academic attainment (Blackwell et al, 2007). This evidence base is limited but promising.
- Dweck has argued that ITsI are both stable over time and accessible to change (e.g. Dweck, 2007). The stability of ITsI is important given

Claxton's (1999) view about the future importance of effective lifelong learning. The possibility of changing people's ITsI is encouraging given that this can be relatively simple (e.g. Blackwell et al, 2007) and could have important effects.

- Our understanding of what have might influenced the ITsI of children is very limited. This is particularly the case in the UK context. This matters because it suggests that greater insights into influences that promote incremental theories might yield some helpful adaptations to current practices in UK schools.
- Dweck's ideas have influenced some educational discourses in the UK. Sometimes, these have been crudely presented or adapted into broader, theoretical frameworks of motivation. It is difficult to guage accurately the extent of the impact of Dweck's ideas, in the UK. It is arguable that Dweck's ideas could and should have a greater influence in the future. An enhanced understanding of Dweck's ITsI in a UK educational context would be helpful.
- Dweck has suggested more recently (Dweck and Molden, 2007) that people might hold both entity and incremental theories. Little is known about the circumstances that might elicit different theories, particularly in a secondary school environment in the UK.
- It is not clear if and how Dweck's ITsI apply to children and adults with different types and levels of learning difficulties. Dweck has not clarified any part of the population to whom ITsI might not be applicable.
- The studies that have provided evidence of the impact of ITsI upon educational attainment (e.g. Blackwell et al, 2007) are encouraging despite only focusing upon students and not

incorporating teachers and/or parents. Given EPs' roles in focusing upon influential adults within the child's world (such as parents and teachers), and in assessing and influencing a child's beliefs (Beaver, 1996), Dweck's ITsI could be highly influential for UK EPs' research, training and interventions.

2.7.1 Current research questions

Potentially, Dweck's ITsI represent a partial solution to key issues in the UK educational context, such as the need for effective lifelong learning and the reduction of academic under-achievement. Given the limited examination of Dweck's ideas in the UK, there are numerous, potential research possibilities, such as examining the impact of the effects of ITsI upon educational outcomes in the UK, considering any contribution (upon practices, beliefs and outcomes) from the ITsI of key adults in schools and examining the influence of ITsI across different contexts and cultures. It is not possible to address all of these areas in this study, necessitating some difficult decisions regarding selection and omission. One way to respond to such wide choice is to ask if some research areas are logically best addressed before other areas. Dweck's ITsI need to be disseminated more accurately and effectively in the UK. A foundation of such dissemination would be a greater understanding of Dweck's ITsI in a UK educational context, such as whether students can hold both incremental and entity theories and if so, when and how this can operate. An improved understanding of Dweck's ITsI in the UK would also inform the design of future longitudinal studies, such as examining the relationship between holding certain ITsI and subsequent academic outcomes. Our understanding of what might have influenced the development of children's ITsI is very limited, particularly in the UK educational context. This suggests that greater insights into influences

that promote incremental or entity theories might yield some helpful adaptations to current practices in UK schools. Some of these practices, such as SATs, might be outside of the control of individual schools, but others, such as setting arrangements, feedback mechanisms and liaison with parents and carers, are within the control of a school. This study seeks to make the nature of these implicit beliefs more explicit. Two pertinent research questions follow:

1. What beliefs do Year 8 students in an English secondary school have about the malleability of intelligence?

2. What do Year 8 students in an English secondary school identify as having been key influences on their beliefs about the malleability of intelligence?

Chapter 3 – Methodology

3.1 Introduction to chapter

> "if an apparently serviceable theory relevant to your proposed study already exists, the sensible task is to test its utility."
>
> (Robson, 2002)

Arguably, Dweck's ITI is a 'serviceable theory', since it has been applied in many studies for about thirty years. However, the previous chapter highlighted a number of concerns about how Dweck's ITsI need to be better understood in the UK educational context. Those concerns related to both the extensive claims for the explanatory powers of Dweck's ITsI and also, arguably, their over-simplicity in seeking to explain complex human behaviour. Therefore, this study seeks to critically examine Dweck's ITsI in a real-world UK educational context to add to the understanding of them. Given the exciting potential of Dweck's ITsI, an improved understanding would provide an important foundation step in helping to realise the potential of ITsI. The research questions for this study are as follows;

1. What beliefs do Year 8 students in an English secondary school have about the malleability of intelligence?
2. What do Year 8 students in an English secondary school identify as having been key influences on their beliefs about the malleability of intelligence?

This chapter aims to provide the reader with a consideration of alternative research paradigms and to explain the rationale for the chosen research paradigm. These considerations will include reflections upon the strengths and

weaknesses of the chosen research paradigm. The selected method for data analysis, thematic analysis (TA), will be critically examined. There will be discussions of key issues related to interviewing and also to threats to validity in qualitative research. A clear description will be given of the methods employed in this study, including the composition of both the sample and also the data collection activities. Finally, an explanation will be given of the ethical considerations and the strategies employed to address ethical concerns.

3.2 Chosen research paradigm

3.2.1 Introduction to this section

It has been argued that alternative paradigms do not tend to co-exist comfortably since emerging paradigms are compared and contrasted with the existing paradigm, often in a competitive context (Hammersley, 2008). Quantitative research and qualitative research are sometimes viewed as paradigms in which epistemological beliefs and methods are regarded as being both inextricably linked and incompatible between paradigms (Bryman, 2001). The polarisation of quantitative and qualitative research approaches has been criticised; whilst certain epistemological and ontological beliefs might be associated with quantitative or qualitative research approaches, the connections are not thought to be deterministic (Bryman, 2001).

In this study, the term ‘research paradigm’ is used to incorporate the philosophical assumptions that were made about ontology (the nature of the world) and epistemology (how we understand the world). Ontology and epistemology will firstly be examined, before reflecting upon the research position in relation to them. A rationale will be given for the chosen research paradigm together with an explanation of how the research paradigm connects

with the aims of this study and the practical methods of collecting and analysing the data.

3.2.2 Epistemology

Epistemology is concerned with the way in which knowledge is studied; it is the philosophical view about knowledge (King and Horrocks, 2010). There has been much debate about whether the social world should be studied through positivist approaches which tend to reflect the beliefs, principles and procedures of the natural sciences (Bryman, 2001). Positivism is an epistemological position which is concerned with seeking knowledge through measurement and the existence of a single, objective reality (Robson, 2002). In contrast, interpretivism is an epistemological position which is concerned with understanding the world through those experiencing it. Interpretivism emphasises multiple realities, due to the distinctiveness of people who see the world from different perspectives (Willig, 2001).

3.2.3 Ontology

Ontology is concerned with the nature of phenomena. Objectivism and constructionism are two principal ontological positions (Bryman, 2001). Objectivism is an ontological position that refers to social phenomena that have an objective reality, beyond the influence of people. In contrast, constructionism emphasises the significance that people have in making meaning through social interactions, denying the existence of objective reality. Social constructionists tend to emphasise both the importance of language in constructing knowledge through social interactions and in regarding understanding to be influenced by the contexts of culture and history (Burr, 2003).

3.2.4 Explanation and justification for the chosen research paradigm of this study

Epistemology and ontology are important to this study. Arguably, much of the previous research in relation to Dweck's ITsI has been influenced by positivist and objectivist stances. In contrast, there has been limited elaboration about individual differences to the overall theories. For instance, Dweck (2007) has accepted that individuals might not hold ITsI across all learning situations but that has not been elaborated upon, nor has an influential measurement tool (Dweck, 1999) been altered to reconcile with this view. Similarly, there has been little, or no attempt to better understand the estimated 20% of the population who do not strongly endorse either theory (Dweck and Molden, 2007).

There are a number of difficulties that arise from past research into Dweck's ITsI. The research approaches that have been used in most of the studies in relation to Dweck's ITsI have arguably reduced the complexity of ITsI through the over-simplification of data collection and the lack of attention paid to situations that do not fit the model. An important, but insufficient rationale for some qualitative research is to capture the complexity of the real world, rather than reduce it to a theoretical model (Hammersley, 2008). It is not possible to fully capture complexity; rather, the focus should be to answer specific questions that arise from critically examining the phenomena in question (Hammersley, 2008). Hence, this study's research paradigm is best described as a qualitative approach which incorporates interpretevist and social constructionist positions in order to focus on extending the understanding of Dweck's ITsI in a UK educational context. Given the implicit nature of Dweck's ITsI and the anticipated challenges of unpicking these ITsI, this research has also taken a theoretical or deductive position. This reflects the focus of the

study which is focused upon my areas of interest as a researcher. Deductive approaches are more analyst-driven and contrast with inductive approaches which are more 'bottom up' and data-driven. However, the differences between the two approaches are not so clearly demarcated in practice; induction often involves some deduction and the deduction process often involves some induction (Bryman, 2001). In this study, whilst a predominantly deductive orientation has been taken because of the implicit nature of the theory that is being examined, some induction will be involved in analysing and interpreting the participants' accounts.

3.2.5 Strengths and weaknesses of this chosen research paradigm

This qualitative research paradigm incorporates interpretivist, social constructionist and deductive positions. A potential strength and weakness of this paradigm is that it differs from the research paradigm for most previous studies in this area. By employing a similar research paradigm to most previous studies, it would have been possible, for instance, to seek to replicate the findings of studies in a UK educational context. For instance, incremental theorists and entity theorists could have been identified by their responses on a questionnaire (Dweck, 1999) and their respective learning behaviours assessed across a range of circumstances. Hence, a weakness of the chosen research paradigm is that it will not be able to offer such insights from replication. Nor will it be possible to generalise the findings from this research study to other students and schools without further studies in different contexts to support this.

However, the chosen research paradigm relates to the critical examination of the literature in the previous chapter. Numerous research possibilities were available, necessitating some difficult decisions. It was argued that the effective dissemination of Dweck's ITsI across UK educational contexts was needed, as

were future longitudinal studies to examine the impact of holding certain ITsI upon academic outcomes. It was concluded that a logical, useful next step would be to seek to improve the understanding of the nature of Dweck's ITsI in a UK educational context as a foundation step to both the effective dissemination of Dweck's ITsI and also future longitudinal research. Hence, the research paradigm for this study has been chosen for the purpose of seeking such knowledge and understanding. That knowledge is intended to come from critically examining Dweck's ITsI. The argument here is that Dweck's ITsI have been over-simplified, perhaps to promote clarity, and, in the process, have lost their ability to sufficiently capture the complexity of reality. Dweck's ITsI have also been studied predominantly outside of real-world, UK educational contexts. This research paradigm has been selected to seek to capture some of the complexity of Dweck's ITsI in a UK educational context. Any findings should not be generalised, but may serve as a foundation step for future work in this area.

A critique of some qualitative research is that the philosophical underpinnings are not always made explicit (Creswell, 2007). The research paradigm in this study has been made explicit to help the reader to understand the different choices and decisions that have been made. Further reflections about the decision-making processes in this study are provided within the reflexive account in chapter five. The choices of methods to collect and analyse the data in this study are connected to the chosen research paradigm. The selection of thematic analysis to analyse the data is discussed in the next section. A range of concerns exist in relation to the trustworthiness of data from some qualitative studies. These will be examined more fully in section 3.5.

3.3 Thematic analysis (TA)

Some qualitative approaches, such as interpretative phenomenological analysis (IPA) are both methods and methodologies. In contrast, TA is an analytical method which can be applied across a range of epistemological and theoretical approaches. Its flexibility allows it to be used with the epistemological and theoretical approaches in this study (Braun and Clarke, 2006). In this section, TA will be described more fully and a rationale given for its selection.

TA is a method used to search for meaningful themes which describe the phenomenon under scrutiny from a research study (Fereday and Muir-Cochrane, 2006). Categorising themes is frequently used in social-science research; without thematic categories, researchers would have nothing to compare nor explain (Ryan and Bernard, 2003). TA is used to help the researcher to interpret and understand the words and accounts of research respondents (Matthews and Ross, 2010). It is a versatile method which can be used to categorise and organise information for further interpretation (Boyatzis, 1998). TA can also be applied within different epistemological positions, able to incorporate positivism and interpretivism alike. TA can also be applied to either deductive or inductive approaches.

TA was selected as an analytic method for this study for a number of reasons. It can be applied to a study such as this which employs a qualitative research paradigm incorporating interpretivist, social constructionist and deductive positions. This study seeks to extend the understanding of Dweck's ITsI in a UK educational context by examining the perspectives of individual Year 8 students. This examination does not require a detailed narrative of their lived experiences. If it did, alternative approaches, such as IPA or narrative analysis would have been considered. Similarly, although this study is interested in how

easy or difficult it is to make implicit beliefs explicit to an interviewer, this is not the primary focus of the study. Had it been, an approach such as conversation analysis, would have been considered. The flexibility of TA enables it to fit the purposes of this study and to incorporate the selected research paradigm. Although TA can be applied in different ways, there are a number of specific guides to using it which include detailed procedures. As well as being helpful for researchers, it is also considered good practice to enhance the transparency of the research process by defining the approach used (Creswell, 2007). This study followed the guidelines of Braun and Clarke (2006), whilst utilising additional, helpful techniques from other researchers (e.g. Ryan and Bernard, 2003). Arguably, TA is a foundational method for qualitative analysis since it includes core skills used by other analytic methods (Braun and Clarke, 2006). Another consideration would have been to use additional approaches. However, it is advised that 'beginning' researchers use one approach and keep the research study clear and concise (Creswell, 2007).

3.4 Interviewing

This study used semi-structured interviews to collect the data in relation to the field of inquiry. Although interviews are a common method to collect data, they are not straight-forward nor without difficulties. The use of interviews will firstly be discussed followed by a discussion about the difficulties associated with interviews and reflections upon how such difficulties might be addressed.

Interviewing is a widely employed method in social-science research, in part at least, because of its flexibility. Interviewing is used in both quantitative research and qualitative research. Kvale (1996) highlighted different types of interview by using the metaphors of a miner and a traveller. The miner metaphor regards knowledge as objective facts that need to be unearthed. In contrast, the

traveller metaphor reflects a constructionist perspective in which the interviewer is a traveller on a journey with a tale to be told on their return home. Mason (2002) has encouraged interviewers to treat the interview as a site of knowledge construction, rather than excavation.

Interviews can be highly structured or less structured and can include a range of open and closed questions. Broadly, qualitative interviews tend to be less structured and more responsive to the interest of the interviewee. A deductive or theoretical approach was used in this study. Given the implicit nature of Dweck's ITsI, this presented considerable challenges for the interviews. A less structured interview approach would run the risk of capturing limited data in relation to the research questions. A more structured approach would reduce this risk, but would still face the obstacle of trying to present quite complex and somewhat de-contextualised concepts in a way that was accessible and engaging. The semi-structured interviews in this study were quite highly structured. Pilot interviews are considered to be sensible to check out how well questions work and to provide interviewers with experience of asking such questions (Bryman, 2001). Therefore, use of these will be discussed later. Whilst interviews have many possibilities, there are a number of potential difficulties associated with them.

One difficulty with interviews relates to the power asymmetry that is inherent in them (Kvale, 2006). Whilst the researcher might have intentions of the interview being worthy, caring and enabling, the purpose of the interview is to obtain information from an interviewee to help the researcher to achieve their goals. The deductive nature of this study meant that the topic for these interviews was determined by the researcher. The power asymmetry in interviews adds to concerns of respondent bias in which the interviewee tries to work out what the

interviewer wants to hear and replies accordingly (Lincoln and Gubba, 1985). Despite these risks, the role of the interviewer tends to be under-reported in the reports of methods and findings from qualitative research studies, with the effect that data from interviews are often presented as if they are not the result of an interaction with the interviewer (Potter and Hepburn, 2005). Moreover, interviews are peculiar situations because they are not like normal conversations in which the listener tends to comment or respond to what they have just heard (Hammersley, 2008). With this research there was also a potential threat that what students say might not accurately represent their beliefs, even if their responses were given openly and honestly. They might, for instance, not clearly understand their beliefs given their stage of development and the implicit nature of their beliefs.

Despite the potential difficulties that are associated with interviews, they can be very useful. It is important therefore to consider how such difficulties and concerns might be addressed. One response is to recognise that interviews are indeed peculiar and do involve power asymmetries (Hammersely, 2008; Kvale, 2006). Such recognition needs action as well as understanding. Firstly, the interactional dynamics of the interview can be presented when findings are written up, rather than an exclusive focus upon the interviewee's words (Potter and Hepburn, 2005; Hammersley, 2008). Secondly, the consistency of the interviewee's talk can be checked by comparing what a person says in one part of the interview with other times (Hammersley, 2008). Another way of exercising necessary caution with interview material (Hammersley, 2008) is to require respondents to ground their thoughts in concrete examples. This study employed all of these strategies to respond to some of the difficulties with interviews. Pilot interviews were also carried out to check out how well

questions worked and to provide experience of asking such questions (Bryman, 2001). These will be discussed in more detail later.

Kvale (1996) has helpfully proposed a range of qualities of a good qualitative research interviewer:

1. knowledgeable – of the topic
2. provides structure – and a clear purpose
3. clear – and simple questions
4. gentle – e.g. does not interrupt
5. sensitive – e.g. active listening
6. open – active listening of what is important to the interviewee
7. steering – aware of what has been covered and omitted
8. critical – tests what has been said where necessary
9. remembers – recalls the breadth and details of the discussion
10. interprets – clarifies and extends the meaning of what the interviewee has said

Arguably, many of these qualities should be core qualities associated with the practice of professional educational psychology, encompassing key ideas such as respect and genuineness (Rogers, 1990). That said, when EPs act as researchers, they need to be aware of the potential impact of holding multiple identities (Lavis, 2010). Other interviewing qualities are likely to be aided by clarity about the aims of the study and knowledge of the topic. Arguably, given the implicit and relatively unfamiliar nature of the topic being studied for the students in this instance, one of the biggest challenges was in trying to ask clear and simple questions.

3.5 The trustworthiness of qualitative research

Some specific threats to validity that arise from the use of interviews were discussed in the previous section. In addition, further threats to validity affect the trustworthiness of qualitative research. These threats will be explained and strategies to address such threats will then be outlined, together with a reflection of the strategies employed in this study.

The trustworthiness of findings from qualitative research is the subject of much debate (Robson, 2002). This relates, in part, to the positions of reliability and validity in much qualitative research. The notions of reliability and validity have different meanings in much qualitative research from that which is often carried out in quantitative research. These different meanings relate to the different epistemological and ontological positions discussed previously. The differences in meanings are such that some researchers regard the terms 'reliability' and 'validity' to be incompatible with the underlying assumptions of qualitative research (e.g. Whittemore et al, 2001). The notion of reliability, which with much quantitative research, is concerned with the stability of findings, has a different meaning with qualitative research in which researchers often do not regard themselves as objective. However, that does not mean that qualitative researchers should ignore concerns about reliability. Rather, reliability in qualitative research should focus upon clarity, thoroughness and transparency (Robson, 2002). The notion of validity relates to truth and accuracy, yet the meaning of this in qualitative research is often different to its meaning when applied to much quantitative research. This is a challenging area for qualitative research because it requires the incorporation of subjectivity, rigour and even creativity into the scientific process (Whittemore et al, 2001).

Some of the principal threats to validity are reactivity, respondent bias and researcher bias (Lincoln and Guba, 1985). Reactivity is important in research studies in which the researcher's presence might alter the behaviour of those in the setting. Respondent bias, previously discussed, relates to the research participant seeking to please the researcher. Researcher bias involves the decisions of the researcher, e.g. in selecting the data to be reported. Despite the incongruence of trying to apply the term 'validity' to qualitative research, there are many useful, translated standards of validity, which tend to focus upon seeking to show rigour to increase both the trustworthiness and the quality of qualitative research findings. These standards have highlighted a range of strategies to enhance the quality of qualitative research. These strategies are presented in table 1 (below), together with a reflection of the strategies that were employed in this study. The strategies (in table 1) are adapted from the ideas of a number of sources (Elliott et al, 1999; Robson, 2002; Whittemore et al, 2001; Meyrick, 2006; Creswell, 2007).

Table 1 – Strategies to enhance the quality of qualitative research

Research stage	Strategies aimed at enhancing the quality of the research	Reflections on this study
Designing the research study	1. provide explicit scientific purpose 2. provide clear aims of study 3. congruence between scientific purpose, aims of study, epistemology, methods and analysis 4. study is transparent and systematic 5. study is ethical, including respect for participants	1. intended 2. intended 3. intended 4. intended 5. intended
Data collection	1. sampling decisions are congruent with aims of study, epistemology and ethical considerations 2. transparency of sample –details of sample are described 3. methods of data collection are congruent with aims of study, epistemology and ethical considerations 4. methods of data collection are clearly described 5. data collection is systematic and the process, including the use of any frameworks, is clearly described 6. data is collected accurately, e.g. audio recorded; verbatim transcription which is checked	1. intended 2. intended 3. intended 4. intended 5. intended 6. done
Data analysis	1. data analysis is congruent with aims of study and epistemology 2. data analysis is systematic and the process, including the use of any frameworks, is clearly described 3. member checking (i.e. with participants) 4. peer checking/debriefing (i.e. with peers) 5. a reflexive diary is kept 6. all cases are included, including 'negative cases' 7. triangulation, e.g. of methodology	1. intended 2. intended 3. not done 4. done 5. done 6. done 7. not done
Presentation	1. presentation is systematic and clear 2. findings are grounded with examples from the data 3. situating the sample (of participants and their context to aid the reader in judging the range of people and situations to which the findings might be relevant) 4. a reflexive account is provided 5. an audit trail is provided throughout (of what was done and how it was done) 6. a coherent narrative is achieved (whilst preserving nuances in the data). 7. acknowledges the researcher's perspective	1. intended 2. done 3. done 4. done 5. done 6. intended 7.done * intended = best judged by the reader

Such lists are intended to be neither exhaustive nor act as a rigid checklist (Elliott et al, 1999). It has been included above to enhance clarity for the reader both of such strategies and the researcher's reflections upon this study. Yardley (2011) has also argued that such lists should be seen as highlighting quality issues, rather than as a rigid, restrictive framework. Instead, Yardley (2011) has emphasised the importance of core principles for evaluating the validity of qualitative research. These principles are sensitivity to context, commitment and rigour, coherency and transparency and impact and importance. Most of these principles are reflected in the strategies in table 1. However, the principles relating to impact and importance are not reflected, which is surprising, given the value of real-world research (Robson, 2002). This study was concerned with both its impact and importance; its focus was to extend the understanding of a potentially important theory in a real-world, UK educational context, in order to help that theory (Dweck's ITsI) realise its potential.

3.6 Sample

The sample for this study consisted of eight Year 8 students from an English secondary school. The intention was to apply the insights from key studies (e.g. Blackwell et al, 2007) and interview students who had recently made an arguably challenging transition to a competitive, secondary environment. Such students were also likely to be developing their conceptions about the notion of intelligence (Dweck, 2007). They had all been assessed via SATs and CATs and been placed into sets, which may have sharpened their perspectives about intelligence. The timing of the data collection influenced the choice of the selection of the students. Originally, it was anticipated that the data collection would take place in the summer term with Year 7 students. As events unfolded,

the data collection took place in the following autumn term. Given this timing, it was decided that it was more sensible to interview Year 8 students, since Year 7 students were, in some senses, still in the process of their transition.

In deciding upon a sampling strategy, a number of other considerations were taken into account:

- An aim of the study was to capture some of the complexity of Dweck's ITsI in a UK educational context with different students.
- Dweck (1999) has suggested that ITsI apply similarly to children with differing levels of attainment.
- In qualitative research employing small samples, it is desirable to achieve some aspects of breadth within the sample (Bryman, 2001).
- There were ethical considerations to avoid causing discomfort to students with significant special educational needs (SEN) in the context of these interviews, e.g. children with significant language difficulties.

Hence, the only exclusion criterion for this sample related to students with significant SEN, (with a Statement of SEN), with areas of need that would make such an interview situation very challenging for them. The guidance that was given to the school was to exclude any such children with areas of need such as significant language difficulties whom they considered might experience difficulty and discomfort in the interviews, because of the nature of their difficulties in that context (i.e. requiring the use of language skills).

Given a strong response rate, purposeful sampling to maximise breadth in terms of gender and form class grouping was employed. Given that all these children had experienced a transition (from Year 6 to Year 7), purposeful

sampling to maximise breadth in terms of the ages of these students within their academic year grouping was not used. The composition of the sample is presented in table 2 below.

Table 2 – composition of the sample in this study

Gender	Year Group	Tutor Group Number
Male	8	1
Female	8	2
Male	8	3
Female	8	4
Male	8	3
Female	8	5
Male	8	2
Female	8	6

The sampling strategy was the same for the two pilot interviews. That sample consisted of two Year 8 students from differing tutor groups, one female student and one male. The guidance to the school about the sample was given to two key contacts at the school, a vice principal and a member of the support staff. Written and verbal information about the study was given to the vice principal and information and consent letters were given out to Year 8 students by their form tutors during their form group time. The vice principal discussed the research study with form tutors and the member of the support staff managed the process of receiving completed consent forms from the form tutors and liaising with me to organise dates for the interviews to take place. The response rate was low but sufficient to enable eight interviews to take place with equal

numbers of male and female students who were in six different form tutor groups (out of a total of eight groups).

3.6.1 Relationship between the sample and the parent population

The epistemological and theoretical underpinnings of this research study are such that it does not make claims to generalise the findings to the broader population. Hence, the question of the extent to which the sample represents the parent population is less acute. This study does, however, seek to improve the understanding of Dweck's ITsI in a UK educational context by capturing some of the complexity of this theory that has been perceived to be missing. Given that aim, it was desirable to achieve some breadth within the sample. Explicit attempts have also been made to situate the sample (Elliott et al, 1999) to aid the reader to judge the range of people to which the findings might be relevant. This has also been done in the next chapter when the context of the school has been discussed to situate the sample within their educational context (Elliott et al, 1999).

A number of ways were considered to extend the breadth of the sample. Firstly, the purposeful selection of students to include those with significant SEN was considered. This would have increased the ability of this study to critically examine the resonance and utility of Dweck's ITsI across a broader range of student profiles. However, such a strategy would have caused a potential risk to the psychological well-being and dignity of such students (British Psychological Society, 2010). Secondly, the purposeful selection of students according to their success in school in terms of their academic attainment was considered. However, Dweck (1999) has argued that ITsI apply similarly to students with different levels of attainment. Thirdly, extending the breadth of the sample by incorporating students from different secondary schools was considered. Given

the epistemological and theoretical underpinnings of this research, the emphasis was upon situating the sample to allow the reader to judge the range of people and situations to which the findings might be relevant (Elliott et al, 1999). It was judged therefore that there was limited benefit in seeking a similar sample size from several schools instead of the one school that took part in this study. Students could have been purposefully selected to reflect a range of cultural backgrounds. This might have extended the utility of this study and has been discussed as a limitation in chapter five since there is an established relationship between culture and ITsI (Dweck, 2007).

3.7 Data collection process

Careful consideration was given to preparing the format of the semi-structured interviews. Given the deductive position and the implicit nature of Dweck's ITsI, these students might find it difficult to understand and engage with the topic under discussion. The use of simple and clear questions is advised in such interviews (e.g. Kvale, 1996), but this was a challenge given the nature of the topic being studied. Simple and clear questions in this context ran the risk of eliciting limited data in relation to the research questions. It was decided to apply Kvale's (1996) advice to seek to be as clear as possible and to provide a clear structure to the interviews by employing a logical sequence to the interviews as follows:

- Asking students about their conceptions of intelligence
- Outlining Dweck's ITsI
- Asking students to explain their beliefs about the malleability of intelligence in general

- Asking students to explain their beliefs about the malleability of intelligence across different learning situations
- Asking students to identify what has influenced their beliefs about the malleability of intelligence

Outlining Dweck's ITsI clearly was a significant challenge given the conceptual detail that it involves. It was decided that the clearest method would be to use two statements from Dweck's (1999) questionnaire as a stimulus. One of these statements endorsed an incremental theory ('no matter how much intelligence you have, you can always change it quite a bit') and the other statement endorsed an entity theory ('you have a certain amount of intelligence and you really can't do much to change it'). An open question was then asked to gauge students' responses to those statements. These responses were followed up with probes to elaborate and clarify the students' meaning (King and Horrocks, 2010). It was difficult to predict how successful this prepared format might be. Hence, two pilot interviews were carried out in the school to check out how well the questions and prompts worked and to provide experience of asking such questions (Bryman, 2001). The findings from the pilot interviews and the subsequent adaptations to the semi-structured interview format are discussed in the next chapter.

A number of revisions were made to the semi-structured interview format and the interviews for the study were scheduled. Each interview was scheduled to take place for the duration of no more than one lesson (an hour). Some time was given at the beginning of the interviews to clarify the context of the interview, to check to see if the student wanted to continue with the interview, to explain the anonymity processes, to thank the student and to discuss some general rapport-building topics such as how their day had proceeded thus far.

The interview was then audio-recorded after these introductory discussions. The duration of the individual, recorded interviews ranged from 25-41 minutes. The semi-structured interview format is shown in table 3 below.

Table 3 Semi-structured interview questions informed by research questions

Research Question	Semi-structured interview prompts
RQ 1 What beliefs do Year 8 Students in an English secondary school have about the malleability of intelligence?	• What does intelligence mean to you? Give prompt statements "***You have a certain amount of intelligence and you really can't do much to change it***", and ***"no matter how much intelligence you have, you can always change it quite a bit"*** • What do you think of those statements (that idea)? (that intelligence is fixed or changeable) • Can you tell me a bit more? How come you think that? • What do you think of that idea (one statement)? How come? • What do you think of that idea (2nd statement)? How come? • I'm guessing that you have lots of different subjects. You said before…/You seemed to be leaning towards….Do you have the same beliefs about (the nature of) intelligence in different subjects/learning situations? If not, when and how does this work? • Can you tell me how your beliefs about intelligence affect your learning (in different situations)?
RQ 2 What do Year 8 students in an English secondary school identify as having been key influences on their beliefs about the malleability of their intelligence?	• What have been the key influences upon your beliefs (about the nature) of intelligence? • And what else? • You may not have thought about this before? • When did you first think that? Have your beliefs about (the nature of) intelligence changed over past months/years…..if so, how so

The interviews were transcribed within 48 hours. Transcription can be done in different ways (Mclellan et al, 2003) and is sometimes done by a third party. I transcribed the interviews to aid familiarisation with the data (Braun and Clarke, 2006). The interviews were transcribed verbatim, adding basic punctuation. Inaccurate and/or incomplete data poses a threat to the validity of a study. Hence, after transcription, proof-reading was undertaken as suggested by Mclellan et al (2003) and then in addition, the audio recording replayed to check the proof-read transcript against it. The same semi-structured interview format (as in table 3) was employed for all of the interviews.

This study followed the guidelines of Braun and Clarke (2006), whilst utilising additional, helpful techniques from other researchers (e.g. Ryan and Bernard, 2003). It was helpful to follow a detailed guide, although it is important to note that such guides are not intended to be strict rules. It is considered good practice to enhance the transparency of the research process by defining the approach used and describing that process clearly (Creswell, 2007). The process of analysing the data is presented in detail in the next chapter. The six-step guide described by Braun and Clarke (2006) is as follows:

1. Familiarisation with the data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

Hence, given the lack of agreement about what thematic analysis is and how it should be carried out (Braun and Clarke, 2006), there were a number of

advantages in relation to the transparency of the research process of following the detailed guidelines of Braun and Clarke (2006). The aim of this approach is to tell a compelling story of the data in a convincing manner (Braun and Clarke, 2006). Hence, the emphasis is upon the overall narrative. In contrast, other researchers seek greater meaning from the elements of the thematic map, such as the identification of themes (e.g. Ryan and Bernard, 2003).

3.8 Ethical considerations

The breadth of research approaches and topics makes it very difficult to produce universal, detailed and specific regulations to guide ethical research practice. The British Psychological Society (2010) has therefore elucidated core principles for ethical research practice. These principles are as follows:

- Respect for the autonomy and dignity of persons
- Scientific value
- Social responsibility
- Maximising benefit and minimising harm

Respecting the autonomy and dignity of persons includes allowing participants to withdraw their data. It also requires researchers to respect the privacy of people by respecting confidentiality and by anonymising data. In this study, participants were reminded that their participation was voluntary, confidential and anonymous. They were told in writing and verbally that they had the right to withdraw from any part of the research. The data was collected confidentially and anonymised within the next two days.

There are a number of ethical issues for research that is carried out in school settings, such as the involvement of multiple stakeholders and the management of the consent process (Felzmann, 2009). Research with children is considered to involve more than minimal risk (British Psychological Society, 2010). Researchers need to give clear information about the nature, purpose and outcomes of any research participation to children to enable their consent to be informed (British Psychological Society, 2010). Research with children also requires the consent of their parents or legal guardians; these practices are based on an assumption that children's understanding and decision-making capabilities are not equivalent to adults' (Felzmann, 2009). In this study, informed consent was obtained from the children's parents or legal guardians. There was also a potential confusion of multiple identities in this research as I was both a researcher and an EP (Lavis, 2010). To address this concern, this research study was conducted in a school in which I had not worked as an EP. Research that may cause the participant to consider themselves 'stupid' or 'not normal' is also considered to involve more than minimal risk (British Psychological Society, 2010). This was not the intended topic in these interviews, but such topics are not too distant from discussions about the malleability of intelligence. A reasonably high level of structure was employed to reduce this risk (see appendix G).

There are several other ethical considerations that are pertinent to children. Research should achieve proportionality between the expected benefits of the research and the burden placed on participants (Felzmann, 2009). In this instance, the burden represented missing a lesson to participate in the interview. Much school-based research (including this study) does not offer a potential, immediate benefit to the child. The consideration of proportionality was one reason why this study did not employ member checking, i.e. checking

out interpretations of what students had said with them at a later point (this decision also reflected the epistemological and theoretical perspectives underpinning this study which considered any such interpretations to be subjective). Given the implicit nature of Dweck's ITsI, it was likely that the interviews would make students' implicit beliefs more conscious to them. Whilst this might represent a potential benefit to the students, care was needed not to imply judgement upon their beliefs. The students were also debriefed at the end of the study to provide them with further information and to show value for their participation. The information letters, consent letters, gate-keeping letter and debriefing letter are appended to this thesis (appendices A-F).

Given the recognition that interviews are peculiar and do involve power asymmetries (Kvale, 2006; Hammersley, 2008), a number of important steps were taken throughout the process of this research study to deal with the ethical issues that can arise from this. It is intended to summarise this work in the future and make it available to the school. This reflects several of the core principles for ethical research practice (British Psychological Society, 2010) in seeking to maximise the positive impact of this research knowledge for the benefit of the school community. More broadly, a future aim is to disseminate this research knowledge more broadly within the community of educational psychologists in the UK, for the same reasons.

Chapter Four – Presentation and Discussion of Findings

4.1 Introduction to presentation and discussion of findings chapter

This chapter presents the findings of this study which sought to examine Dweck's ITsI in an English secondary school through the use of TA. The data are presented in relation to the two research questions (RQs):

1 What beliefs do Year 8 students in an English secondary school have about the malleability of intelligence?

2 What do Year 8 students in an English secondary school identify as having been key influences on their beliefs about the malleability of intelligence?

This chapter incorporates both the findings and their discussion. The presentation of qualitative data and its subsequent discussion can present the researcher with the challenge of effectively conveying quite large extracts of data and signposting the subsequent discussion for the reader. This challenge is a very real one in the current study, given the nature of the data extracts. These extracts are (often) necessarily quite long passages of conversation in order to convey the nuances of meaning and the effects of the interactions within the conversation (Hammersley, 2008). An approach of presenting the data in one chapter and the discussion of it in the next (chapter) could potentially create difficulties for the reader. The reader is faced with the challenge of trying to maximise their understanding of the potential significance and coherence of a large amount of data and the subsequent discussion which is intended to link the findings to the literature

reviewed in chapter two. Hence, this chapter incorporates both the presentation of findings and their discussion in order to seek to maximise clarity for the reader. The next chapter (chapter 5) will present the conclusions that arise from this study.

The findings are presented, firstly from the two pilot interviews and secondly, in relation to the six phases of analysis that were articulated by Braun and Clarke (2006). The findings are then presented in relation to the three themes and their related sub-themes (see table 4). Those findings are then discussed at the end of each of the three themes. Finally, a summary is given at the end of this chapter of the key points from the discussion in relation to both of the research questions. The presentation and discussion is therefore as follows:

- Findings of theme 1
- Discussion of theme 1
- Findings of theme 2
- Discussion of theme 2
- Findings of theme 3
- Discussion of theme 3
- Summary of key points from the discussion in relation to the RQ

Table 4 – Overview of themes and sub-themes

Theme	Sub-theme
1. Confusion about notion of intelligence	1.Intelligence means different things to different people 2. Relationship between learning and intelligence 3. Different kinds of intelligence
2. Broadly endorse malleable view	1. Why fixed view is wrong and malleable view is right 2. This is how malleable intelligence works 3. Qualifications to broadly endorsing malleable view
3. Difficulties in identifying influences	1. Life is about learning new things 2. Experiential influences

Firstly, however, it is important to provide some context about the school from this study, such that the reader can interpret the findings accordingly (particularly in relation to any aspects of its ethos and practice that relate to the field of inquiry of this study), whilst protecting the school from identification. This is an extension of the aim in the previous chapter to situate the sample (Elliott et al, 1999).

4.2 Context of the school (x) from this study

The secondary school from this study is based in the south west of England, within a non-urban local authority. The school is mixed and serves over a thousand pupils aged between 11-16 years. It is now an academy. The most

recent OFSTED inspection judged it to be a good school. The most recent GCSE results were above the national average. The percentage of children entitled to free school meals (6%) is below the national average (21%). The proportion of children with special educational needs (16%) is also below the national average (24%).

The school uses key stage (KS) 2 data (i.e. from Year 6 SATS) and CATs data from Year 7 to inform the setting of group and individual targets for the end of KS3 (i.e. at the end of Year 9). Pupils are placed in sets (based primarily on their attainment in KS 2 SATS) for all subjects except technology. Setting arrangements are reviewed on a termly basis. Pupils are expected to focus not just on the intended learning objectives of each lesson but also on the skills and qualities they will be developing through learning. All pupils have been introduced to these skills and qualities; these relate to being able to work independently as well as with others, to be organised, reflective and creative. It was verified with the school's senior management that neither the staff nor the pupils have collectively been introduced to Dweck's ITsI. It is possible that individual members of staff will have encountered Dweck's ITsI given its place within some educational discourses.

4.3 Pilot interviews

Given the implicit nature of the ITsI under examination, two pilot interviews were carried out in the same school as that for the study, in order to allow reflection and review of the semi-structured interview prompts. All of the prompts for the pilot interviews are shown in Appendix G. These pilot interviews offered a number of learning points for the study, namely:

1. It was possible, but not easy to make Dweck's ITsI more explicit with these Year 8 students from an English secondary school.

2. The prompts from Dweck's (1999) questionnaire ('you have a certain amount of intelligence and you really can't do much to change it' and ' no matter how much intelligence you have, you can always change it quite a bit') were useful in engaging these two Year 8 students and in starting a focused conversation on the topic being studied. It was then helpful to be prepared to follow up on each statement separately, so these prompts were added.

3. The intended rapport and introductory prompt about 'learning in Year 8' added little and was potentially confusing for Year 8 students' understanding about the main focus of the interview. This was discarded. Rapport prompts were kept to a more general nature, e.g. thanking students, asking them about their day etc.

4. The intended rapport and introductory prompt requiring Year 8 students to present how they thought other students might define intelligence was difficult and unhelpful in diverting the focus from self-theories. Indeed, Dweck (1999) has adapted questionnaires to distinguish between self views and perceptions of the views of others. This prompt was discarded.

5. It appeared difficult to make the link between discussion of the statements and learning in different situations. A prompt about having different lessons and an explicit prompt about the student's reply to Dweck's questionnaire items appeared to help to mediate the link. These prompts were added.

6. Responses to questions regarding RQ2 indicated that this was not easy, e.g. by students' admission of not knowing what might have influenced their ITsI. Several changes were made. An earlier prompt regarding whether someone's views had changed was linked with a prompt asking when they had first believed that and together, these were focused more clearly in regard to RQ2. Time for thought was given and a solution-focused prompt, 'and what else?' (Rhodes and Ajmal, 1995) was added. Recognition that this might be a new line of thought was added.

The pilot interviews were therefore very important for helping to review the prompts to facilitate the interviews. This was particularly significant since such methods have been used very little and not described, other than in the most general terms (e.g. Dweck, 2007). The adapted semi-structured interview prompts are subject to further development but they represent a working structure for professionals such as EPs to use in any attempts to explore Dweck's ITsI with individual students of this age.

4.3.1 Presentation of findings over six phases of analysis

Braun and Clarke (2006) have clarified six phases of Thematic Analysis (TA). These phases or stages are intended to occur in a recursive rather than a linear process. These six phases are as follows:

1. Familiarisation with the data
2. Generating initial codes
3. Searching for themes

4. Reviewing themes

5. Defining and naming themes

6. Producing the report

To maximise clarity and transparency, the findings from all six phases will be presented in detail. The main findings from this study will be presented under phase 5 above. These findings will be presented in relation to the three themes and their related sub-themes (see table 4).

1. Familiarisation with the data

This was a vital phase. Having conducted the interviews, some initial familiarity with the data was gained. This was enhanced by time well spent in transcribing the interviews, checking the transcripts back against the audio recordings, repeated reading of the data and marking some initial ideas (Braun and Clarke, 2006).

2. Generating initial codes

This phase involved coding the extracts. The analysis was theoretically driven, in analysing the responses from the transcripts in relation to aspects of Dweck's ITsI. The nature of the theoretically-led interviews was such that some areas logically needed coverage before others. For instance, students needed to respond to Dweck's ITsI in general before considering their applicability across different subject areas. Hence, there was a recognisable pattern to many of the interviews. That said, this phase was a challenging and complex task. This complexity reflected the view that coding qualitative data using TA is a lengthy process (Fereday and Muir-Cochrane, 2006). Seemingly different words or phrases, particularly in relation to intelligence, might actually mean very similar things and vice versa. It is recommended

good practice to carry out credibility checks of data analysis in qualitative research (Elliott et al, 1999). In this study, peer debriefing support was employed so as to counter the threat of researcher bias and hence validity (Robson, 2002). A transcript was randomly chosen and coded, and a colleague (an EP) did likewise. Table 5 below shows how a colleague and I coded the same extracts from the interview.

Table 5 A comparison of coding by another EP and by myself

Extract	My codes	Colleague codes
Uhm, I think it's mostly maths because I was in set 1 and then I was, I was underachieving really and I was finding everything really hard and I was moved down and then I saw a like massive because we were doing like simple stuff	I didn't think I could do this Used to have a fixed view	Less fixed in lower set

Given that this study involved theoretical TA, this peer debriefing support was extended given the need for specific theoretical insights about Dweck's ITsI. Therefore, a sample from another transcript was selected and used as a basis of discussion at a supervision meeting with my supervisor. This was useful in reinforcing the countering of threats to validity from researcher bias by comparing perspectives with a colleague with specialist knowledge of Dweck's ITsI upon a sample extract.

3. Searching for themes

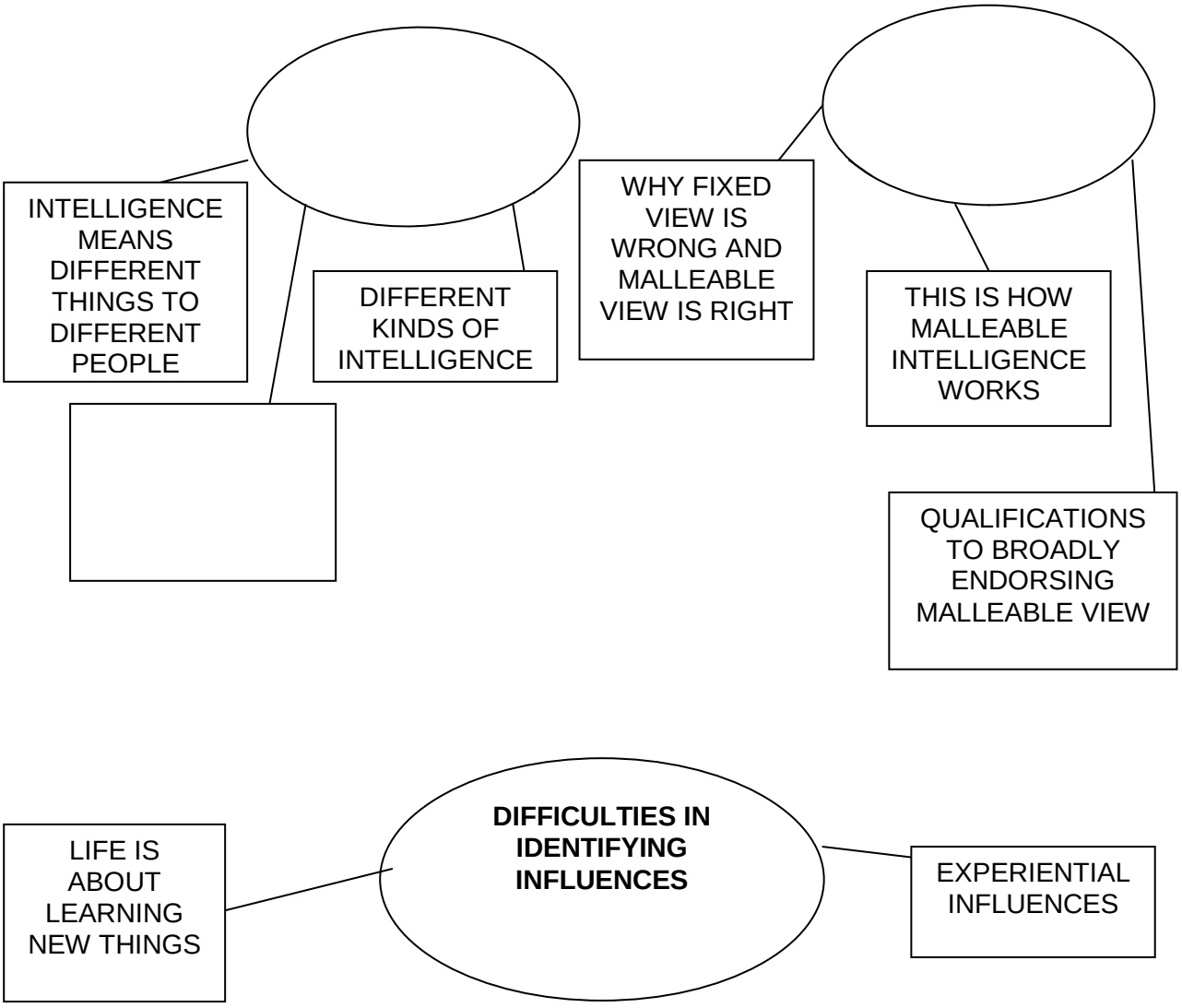
This phase involves sorting the different codes into potential themes and representing all of the coded items within the identified themes (Braun and Clarke, 2006). During this phase, some codes may be discarded whilst others might form themes. In this study, for instance, the code 'different kinds of intelligence' became a sub-theme at this time. Ryan and Bernard (2003) recommended a number of techniques to identify themes in qualitative research, such as looking out for repetitions and considering what data might be missing. Such techniques were used without significant success, due perhaps to the specific focus of this study upon implicit beliefs. However, their recommendation to look for similarities and differences across units of data proved very useful (Ryan and Bernard, 2003). For instance, this method was used in comparing students' perspectives about the meaning of intelligence. By the end of this stage, an initial thematic map was drawn (Appendix I), with four themes; 'understanding intelligence', 'key influences on beliefs', 'opinion about fixed/malleable view', and 'nuanced view'.

4. Reviewing themes

This phase involves the refinement of themes in order that there is sufficient data to support them and also so that the themes are sufficiently coherent and distinctive (Braun and Clarke, 2006). The first stage is to ensure that the collated extracts for each theme form a coherent pattern; the second stage is considering the validity of individual themes in relation to the data set (Braun and Clarke, 2006). The developed thematic map (Appendix J) was refined to three themes. A number of refinements were necessary. For instance, two themes ('opinion about fixed/malleable view' and 'nuanced view') were collapsed to form another theme ('broadly endorse malleable view'). Further refinement helped to adapt the titles of themes and sub-themes, such that

they more accurately reflected their meaning in relation to the data set. For instance, the theme, ‘different kinds of intelligence’ was refined to ‘confusion about notion of intelligence’. These changes are reflected in the final thematic map (see Map 1).

Phase 5 – Map 1 - Defining and Naming Themes



5. Defining and naming themes

This phase begins with a settled thematic map of the data (see Map 1). The themes are then further defined and refined to capture the essence of each theme, by organising the data extracts into a coherent and consistent account with accompanying narrative (Braun and Clarke, 2006). This is the intention of the sections below.

6. Producing the report

The data are presented below in relation to the following themes and sub-themes (in Table 4 and re-stated below, to aid clarity). Its presentation is intended to be coherent, logical, clear and interesting.

Theme	Sub-theme
1. Confusion about notion of intelligence	1.Intelligence means different things to different people
	2. Relationship between learning and intelligence
	3. Different kinds of intelligence
2. Broadly endorse malleable view	1. Why fixed view is wrong and malleable view is right
	2. This is how malleable intelligence works
	3. Qualifications to broadly endorsing malleable view
3. Difficulties in identifying influences	1. Life is about learning new things
	2. Experiential influences

4.4 Theme 1 - Confusion about the notion of intelligence

This theme relates to the variation in responses to direct questions about the meaning of 'intelligence', such that there was not a shared understanding of the term 'intelligence'. The data will be presented within the three sub-themes below;

1. Intelligence means different things to different people
2. Relationship between learning and intelligence
3. Different kinds of intelligence

1. Confusion about the notion of intelligence - intelligence means different things to different people

When asked to define intelligence, the eight students in this study gave a range of different words or phrases, including, 'clever', 'knowledge and experience', 'smart', 'learning new things', 'common sense', 'creativity' and 'adaptability'. Sometimes, different students used the same word to mean different (or at least, additional) things.

R:	What is intelligence?
Sarah:	Someone who is clever, has a general wide knowledge of everything.
R:	Ok and how would you know if someone is clever? What would that be?
Sarah:	They just show their intelligence. They have more common sense and think beyond normal.
Amanda:	If you're really clever then you probably have a higher intelligence whereas if you weren't you'd probably have a lower intelligence I think.
R:	And being clever would be what? How would you know someone was being clever?
Amanda:	Well maybe because like the way that they speak, if they know lots of different things. They're good at some

of the subjects in school, they're an interesting person.

Equally, sometimes, different students used different words to mean similar things. For instance, even when words, such as 'smart' and 'clever' were used by different students, they could mean similar things.

R: What is intelligence?
Simon: Isn't it really a matter of how smart you are?
R: Ok, can you say a bit more, what does smart mean in that way?
Simon: That you know quite a bit about quite a lot and well, if you're not very smart, then you don't know very much.

R: What is intelligence?
Richard: The maximum of what you have in your brain and if its comparing to other people, if you know more stuff you've got more intelligence than them.

The multi-dimensional aspects of intelligence were reflected by the variation in responses by individual students. For instance, having given the initial response (above) to explain the term 'intelligence', Richard later expressed his understanding differently.

Richard: Intelligence is just the way you think and the level you are at thinking.

Such variations in response by individual students might reflect other possibilities, such that the nature of the conversation itself acted as a prompt to develop students' thinking and understanding about the notion of intelligence. One of the commonest forms of understanding about the term 'intelligence' of the students in this study related to the concept of knowledge.

Paul: How much you know about something.
R: Yeah, ok so would it be knowledge really?
Paul: Yeah, how much knowledge do you have on something

R: What is intelligence to you?
Claire: Like when you know something.

Hence, there were many variations to the meanings that these students ascribed to the term 'intelligence.' This suggests that these students do not have a shared understanding of the term 'intelligence' – they defined it in different ways. Thus, when students in this study were presented with items from Dweck's questionnaire (Dweck, 1999), they seemed to have brought with them their own distinct meanings of the term intelligence.

2. Confusion about the notion of intelligence - relationship between learning and intelligence

Given that this study focused on Year 8 students and took place in a school, it is perhaps, unsurprising that students frequently used the word 'learning' to highlight an apparent development in their intelligence, seeming to use the (broad) terms 'change your intelligence' and 'learn' interchangeably. For instance, in explaining his belief about the limitless nature of intelligence, Mike illustrated his view by referring to learning.

Mike: Because there's always something new to learn and you can learn more and more about it.

Paul also used the broad terms 'change your intelligence' and 'learn' interchangeably but when questioned replied that they were not interchangeable.

R: This is saying that you have a certain amount of intelligence and you really can't do much to change it.
Paul: No, because you can always learn new things
R: Ok
Paul: So, you can, so uhm, I could suddenly learn about Lord of the Rings or something like that
R: Yeah
Paul: And basically try to learn everything about it so I can always kind of change what I know about
R: Yeah, and would that be the same as changing your intelligence?
Paul: Not changing it really cos you already know the stuff you did before, it's more like adding onto it, adding bits on

Taken literally, the above dialogue might reflect some confusion about this discussion. Perhaps, this dialogue supports the value of emphasising the individuality inherent in personal construct psychology (Kelly, 1963). Paul appears to reject the specific language from Dweck's (1999) questionnaire item relating to 'changing your intelligence' because it does not capture his meaning which relates to 'adding to your intelligence.' Arguably, given the subtleties about beliefs such as these, it is preferable to explore them through discussion rather than to rely on non-discursive methods such as questionnaires.

Several of the students attempted to explain the relationship between learning and intelligence. Some students saw the relationship as being one-directional (the experience of learning increasing your intelligence).

Mike: Because if you're learning you take on some knowledge and like I said it fuels your intelligence and you can use it at a later date.

Simon: Well because intelligence I think is where if you've learnt a lot then you're going to be quite intelligent.

Paul: And teachers always say that you're learning all the time so it kind of makes sense that you can change it.

R: Yeah and when they say learning, do you think that in a way that's similar or the same as intelligence?

Paul: Well that's how you gain intelligence, you learn about it then you get more intelligent because you know about it.

Other students considered that the relationship was two-directional (the experience of learning increases your intelligence and your level of intelligence affects your ability to learn) and dependent upon the chosen definition of intelligence.

Amanda: I think if intelligence is how clever you are, then learning makes you more intelligent, because you know more stuff but if intelligence wasn't how clever you were then it could not be linked.

Further in the conversation, Amanda considered whether intelligence might influence the ability to learn.

Amanda: I don't know, it depends how they (other people) looked at intelligence and what they thought it was because if they thought it was like the ability to learn then they might see it differently. They might say, you have an ability to learn and you use that to learn.

Hence, given the location of this study within the context of a school, in the discussions around the malleability of intelligence, there were numerous references to 'learning.' These references to 'learning' were interesting given that this study sought to explore Dweck's ITsI in the real-world context of an English secondary school. If some students think of the malleability of intelligence in terms of learning, then this might influence their views about the malleability of intelligence. It might, arguably, suggest that developing

your intelligence related to developing your learning, and as such, reflected time and anticipated general development. In those instances in which the relationship between learning and intelligence were explored further, there was variation in both the view of whether the broad terms, 'change your intelligence' and 'learn' were interchangeable and also in the view regarding the directionality of the relationship between learning and intelligence. Hence, even when different students have appeared to use the broad terms, 'change your intelligence' and 'learn' interchangeably, this might mean different things to different students.

3. Confusion about the notion of intelligence - different kinds of intelligence

Chapter two examined the literature in relation to multiple forms of intelligence. One area of inquiry within the first research question (what beliefs do Year 8 Students in an English Secondary School have about the malleability of intelligence?) related to whether students hold the same beliefs about the malleability of intelligence across different subjects and learning situations. Given this context, it is perhaps, unsurprising that there was much discussion around different kinds of intelligence. I facilitated some of these discussions explicitly, often when focusing on students' beliefs about the malleability of intelligence across different subjects and learning situations.

R:	Uhm, are those things, singing, art like you said, are they forms of intelligence?
Simon:	Well isn't everything?
R:	I don't know, what do you think?
Simon:	Well I think, yes it is everything.
R:	And are you saying something about how broad it is here, that it's a lot of different things, it's art, it's
Simon:	Yeah, it's every subject really
R:	Is it?
Simon:	It comes into everything.

Other discussions about different kinds of intelligence emerged from discussing the nature of intelligence in general terms.

Mike:	Well you can't really call someone more intelligent than another person because you can get someone who is brilliant at drawing but the person who isn't good at drawing, they say he is more intelligent than the other, but it depends how you're intelligent
R:	Yep, ok.
Mike:	Because people are better than others at different things, so just because you're better than other people at more things doesn't mean you're actually better cos it's hard to explain really cos, it's quite hard to explain really.

In response to reading the two items from Dweck's questionnaire (Dweck, 1999), Mike extended his explanation about different kinds of intelligence.

Mike:	I mean you get different kinds of intelligence, like some people are smart in different ways like some people who work by diagrams and drawings or charts but some people just prefer to do the written kind of direction, so that's what I kind of believe.

Some students discussed the relationship between a skill and intelligence, making some distinction between the two concepts. For some students, qualities such as art or music would represent a skill, whereas for others, it would represent intelligence. Amanda concludes that musical talent is a skill.

Amanda:	I think you have to be very clever and you have to be able to concentrate and focus to play the flute because you've got to read the music and to be with people you have to know quite a lot of stuff because you have to make conversation, you have to you know be normal and not stutter or whatever
R:	Yeah
Amanda:	So I think it is a useful skill.

Sarah's reflections upon the relationship between a skill and intelligence in relation to art are similar but she concludes that art is both a skill and a form of intelligence.

R:	And what about art? You would include art as being a form of intelligence, is that right from what you said?
Sarah:	Yeah, I guess it is but then you need the skill to be able to do it as well as the intelligence to back it up
R:	What's the intelligence part of it?
Sarah:	Like to be able to know what, how to do it and how to go about it, that kind of thing.

Distinctions between whether something such as art is a skill or a form of intelligence matter, in theory, because it might affect how people think about the malleability of intelligence across different learning situations. Those students who regard talents such as art as a form of intelligence might believe broadly that intelligence is malleable but might then make qualifications to that broad view, since learning situations such as these might represent an exception to their broad view that intelligence is malleable. Students, however, who regarded art as a skill might regard any fixedness as being unrelated to any view about the malleability of intelligence. However, from these discussions, it appeared that any distinctions between skill and intelligence tended not to be clear-cut. As such, it is arguable that, if students broadly believe that intelligence is malleable, they are likely to make qualifications to that broad view for learning contexts such as art. This matters (e.g. Dweck, 2007) since it is likely to affect their thoughts, feelings and learning behaviour in such situations. It also suggests that it is possible that some students' ITsI might not be as stable across all learning contexts as Dweck had previously suggested (e.g. Dweck, 1999).

This first theme – confusion about the notion of intelligence incorporates three sub-themes:

1. Intelligence means different things to different people
2. Relationship between learning and intelligence
3. Different kinds of intelligence

Chapter two highlighted the typical methodological approaches employed by Dweck and examined some pertinent issues in relation to the concept of intelligence. Dweck's six-item questionnaire (Dweck, 1999), which has been used to distinguish those students with a malleable view of intelligence from those with a fixed view, does not define intelligence. The omission of a definition might reflect a belief that people have a shared understanding about intelligence and/or perhaps, a belief that any variation in understanding would not be relevant. This study has sought to examine Dweck's ITsI in a real-world context for Year 8 students in an English secondary school. These students do not seem to have a shared understanding about what intelligence is. These findings reflect previous understandings that there are many conceptualisations of intelligence (e.g. Neisser et al, 1996). These implications will now be discussed in relation to the literature review of these areas from chapter 2.

4.4.1 Discussion of theme 1 – confusion about the notion of intelligence

The literature review highlighted a range of possible areas of study in relation to Dweck's ITsI, in order that they can be better understood and effectively applied to the UK context, so as to help key educational issues such as the need for effective lifelong learning (Claxton, 1999) and the reduction of academic under-achievement (Department of Education, 2012). A better understanding of Dweck's ITsI would assist the design of future research studies and interventions. This study's methods have contrasted with those typically employed by Dweck. By so doing, it was hoped that this study might illuminate some insights about the possible utility of Dweck's ITsI in the UK educational context. This study has contrasted to most of those done by Dweck (1999) by firstly asking students to define intelligence. Dweck's questionnaires (e.g. Dweck, 1999) do not provide a definition of intelligence. This omission may reflect a view that what matters is a person's own construct about intelligence. If that was the case, it is arguable that any definition is secondary. Of primary importance are people's beliefs about the malleability of intelligence. For instance, given a group of incremental theorists, such a view would suggest that what matters is their incremental view rather than the possibility that they might define intelligence differently. Given that this study involved attempting to discuss Year 8 students' ITsI, it seemed naturalistic to firstly ask people how they might understand the concept of intelligence. In so doing, has asking students to define intelligence in this study illuminated any issues about trying to apply Dweck's ITsI in the UK educational context?

Arguably, this study has highlighted a number of issues in relation to the potential relevance about the concept of intelligence in regard to Dweck's ITsI. Firstly, the Year 8 students in this study did not have a shared understanding about the meaning of intelligence. These students defined intelligence differently and held different conceptualisations about it, reflecting the findings from the APA Intelligence Task Force report (Neisser et al, 1996). Some of these students held views closer to some psychologists (e.g. Gardner, 1983) that intelligence is a broad concept encompassing a range of domains such as music. None of this is surprising since our knowledge about the many ways in which intelligence is understood is well established. However, given the insight that intelligence is viewed differently across different cultures (Neisser et al, 1996), it was interesting to explore how intelligence was viewed by these English secondary school students. Given that these students' views reflect many of those from America (Neisser et al, 1996) where Dweck has not focused upon individuals' constructs of intelligence, have any insights been gained that might question the application of Dweck's methods in the UK educational context?

It is important to recognise that these students were not selected to try to represent all Year 8 students in the UK. There is a range of cultures within the UK and different communities hold differing views about education (Frances and Archer, 2005). Thus, an attempted application of Dweck's ITsI in a school or area of the UK can not assume a generic set of values and beliefs about education and about the malleability of intelligence. For instance, Asian cultures often place a higher emphasis upon effort than some other communities (Claxton, 1999; Rattan et al, 2012). A recognition of cultural differences might be important for several reasons. Firstly, it is reasonable to expect that the beliefs and values of a community group will have some

influence upon the beliefs and values of individual students from that community. This has not been established thus far although Dweck (2007) has argued that cultural factors are likely to influence people's ITsI. Secondly, it is important to take cultural factors into account because it has been recognised that parental support and involvement are important factors of a child's academic success (Siraj-Blatchford, 2010); such involvement is more likely to take place if parents believe their child's educational success to be dependent more upon effort than their child's innate ability (Siraj-Blatchford, 2010). There has been little linkage between Dweck's ITsI and this insight about parental involvement. Although not the focus of this study, the notion of utilising insights about the advantages of incremental self-theories to promote parental engagement and involvement is an interesting one. The evidence base that exists about the impact of Dweck's ITsI does not involve studies that include an intervention aimed to increase parental engagement and involvement in their child's education. It is anticipated that such an intervention might add to the positive impact of Dweck's ITsI upon educational outcomes.

Arguably, students' constructs about the nature of intelligence are less significant than their ITsI. However, exploration and discussion about students' constructs of intelligence in this study offered several insights that would not have become apparent by using a questionnaire without discussion. One such insight is that a person's way of construing intelligence may relate to the ITsI that they then hold. This study employed TA and so did not look at detailed, personal narratives about intelligence. However, despite not using a methodology to look for such a pattern, it appeared that some students who defined intelligence in terms of knowledge, might then have held an incremental theory of intelligence, in part at least, on the basis that

someone can always know more. Hence, two students, student A and student B may both hold an incremental theory of intelligence, yet student A may have defined intelligence as knowledge whereas student B may have defined intelligence as 'the ability to acquire and apply knowledge and skills' (Oxford Dictionaries, 2012) which may have very different repercussions for the ITsI they hold.

Dweck's ITsI are not sufficiently well understood to know if such a distinction would matter. An impression from this study is that the way that a student construes intelligence might influence the nature of their ITsI. Dweck (2007) has argued that ITsI are stable beliefs, citing evidence from studies into the beliefs of older (undergraduate and postgraduate) students (Robins and Pals, 2002). However, it was not unexpected that these Year 8 students described differing constructs of intelligence, appearing to vary in sophistication and depth of understanding. It is possible that the stability of a student's ITsI might depend, in part at least, upon the stability of the way in which they have construed intelligence. What, for instance, might happen to Paul's incremental theory as he gets older and develops a differing understanding of intelligence. Such a possibility is not necessarily a challenge to Dweck's (2007) assertion that ITsI are relatively stable. It might just be that the manner in which a Year 8 student construes intelligence might influence the subsequent stability of their belief. Hence, any instability of Dweck's ITsI that exists might result, in part at least, as a result from differing constructs about intelligence.

This seems a more relevant possibility given that such students are at an age in which they will be developing their understanding of what intelligence means. 12-13 year-old, post-transition students were considered to be a very relevant group because of the nature of the new learning environment and

since the transition occurs at an age when conceptions of intelligence develop (Blackwell et al, 2007). Arguably, given that such beliefs are likely to have been recently developed, it might not be sensible to assume their stability (for all students) as the students' constructions of intelligence may develop further. One possibility of asking Year 8 students to explain their construction of intelligence is that it helps to identify those students whose constructions appear less sophisticated and perhaps, might be less stable as a result. A related insight from this study was that some of the students in this study linked learning with intelligence, such that it seemed that since learning is developmental, then so is intelligence. For these students, it seemed that their real-world context might have helped to shape their incremental theories.

Given the encouraging possibilities of the contribution that Dweck's ITsI could make both to address educational achievement in the UK (Department for Education, 2012) and to contribute to the need for us to become effective lifelong learners (Claxton, 1999), this study has offered some insights about the advantages of taking a more individual, explorative approach. One method of countering the possibility that students' constructions of intelligence matter, would be to give a definition of intelligence on a questionnaire. The discussions that took place in this study suggested that such an approach would not fully capture the complexities and contradictions of students' constructs about intelligence. Discussion allowed some apparently contradictory views to be tested and checked out. Dweck and colleagues (1995b) suggested that people's constructs were not necessarily always rational, consistent and coherent. This might be particularly true for relatively implicit, complex and recently-acquired beliefs such as conceptions of intelligence (Blackwell et al, 2007). The logic of Dweck's reliance upon ideas from personal construct psychology (Dweck, 2007) would suggest that

explorations and interventions in relation to a student's beliefs would be best done on an individual, differentiated basis. As suggested before, two students, student A and student B may have reached the same conclusion about their theories of intelligence for different reasons. This implies that any intervention would need to be differentiated accordingly. Intriguingly, Dweck's views on this aspect of her ITsI remain somewhat unclear.

4.5 Theme 2 – Broadly endorse malleable view

This theme relates to the broad view of these students that intelligence is malleable. This theme reflects that view that intelligence is malleable, explains it and qualifies it. The data will be presented within the three sub-themes below:

1. Why fixed view is wrong and malleable view is right
2. This is how malleable intelligence works
3. Qualifications to broadly endorsing malleable view

1. Broadly endorse malleable view - why fixed view is wrong and malleable view is right

The Year 8 students in this study were shown two statements from Dweck's questionnaire (Dweck, 1999) and asked for their reaction to them. The statement relating to a belief in a fixed view of intelligence was:

> 'You have a certain amount of intelligence and you really can't do much to change it.'

The statement relating to a belief in a malleable view of intelligence was:

‘No matter how much intelligence you have you can always change it quite a bit.’

The task was intentionally different from that used by Dweck in her studies in which people are typically asked to respond to such statements on a six-point scale (strongly agree to strongly disagree), to encourage some explanation for any opinions given. These students broadly disagreed with the statement relating to a belief in a fixed view of intelligence and/or agreed with the statement relating to a belief in a malleable view of intelligence. Some students gave very clear views, stating a strong preference for the malleable statement.

Paul: Well, you can’t really have a limit to your intelligence really, you can’t just, because there’s always things to discover so basically, yeah, you can always change it.

Mike: I think number one’s just…..you don’t have to stick to the same intelligence for the rest of your life.

Richard: I don’t really think much about that one (fixed statement) but that one (malleable statement) is true.

Simon: I think that well, statement 2 (malleable statement) is true and statement 1 is false.

Claire: The second one (malleable statement). Like cos if you work at something you can change it.

The other students gave clear views, but perhaps adopted a more comparative and less dichotomous approach.

Amanda: I think the second one (malleable statement) is more

true because you learn things as you go along in life.

Rachel: The bottom one (malleable statement) makes more sense to me.

Sarah: I think the second one (malleable statement) is more accurate.

This task is perhaps similar to Dweck's studies insofar as the students were not prompted to consider these two statements (fixed and malleable) in depth at this stage. The elaboration of their thinking about the malleability of intelligence was expressed as the discussions developed. Quite reasonably and helpfully, these students gave their initial responses to these statements, which they elaborated upon through discussion. These elaborations are discussed in the next section.

2. <u>Broadly endorse malleable view - this is how malleable intelligence works</u>

Some of the students' explanations for their broad endorsement of a malleable view of intelligence echoed much of the literature from Dweck's studies (e.g. Dweck, 2007) that such a malleable view would elicit qualities such as effort, concentration and persistence.

Claire: You just keep on trying and then you might get it a bit more, you keep on practising.
R: Yeah, so it's really about practice and effort?
Claire: Yeah.
R: Ok, and what's your experience been of practice? What's that taught you? Can you think of an example?
Claire: Uhm, maths, when you're in primary school and you're adding up things, you're like practising how to add and that.

Richard: You can change your intelligence by concentrating

more and you can just change your background.

Some of the students made explicit reference to important attitudinal factors that could help a person to increase their intelligence. Dweck's ITsI (Dweck, 1999) emphasise how a person's self theories about the malleability of intelligence might influence their attitude towards learning. Some of these students made reference to people's attitudes to learning without having Dweck's ITsI (Dweck, 1999) as at least a partial understanding of such an attitude.

Paul: It's all a matter of attitude of whether you want to learn or whether you want to sit around doing nothing.

Sarah: If you're inclined to learn, then you will but if you have a negative attitude, you're not going to learn.

The level of interest in a particular area was an important factor for several students in determining the extent of the malleability of their intelligence.

Sarah: Like some lessons I just think, they don't interest me so I kind of switch off and then I just think, don't get very far in it.

R: Ok, ok, and what about the ones that you do, find interesting, how's that?

Sarah: I don't know, I kind of try harder, if I don't get something then I will try and find out more rather than just leaving it and forgetting, so…

R: You were saying that you feel closer to that idea (points to latter questionnaire item, no matter how much intelligence you have you can always change it quite a bit), do you take that with you to different learning situations or does it vary?

Mike: It varies, because, I mean if you're not interested in something, you're not really going to learn much about it if you know what I mean.

R: I do, can you think of an example?

Mike: If you don't like Maths, you can learn about it but you don't actually take it in because you're not interested in it because sometimes you have to be interested in things to learn about it.

R: So the more interested you are

Mike: The more you can learn about it, because if you're interested, you're intrigued and you can listen more. Sometimes it's the subject in the subject, like in maths, tessellations, really interesting because it's creative and it's more to get your imagination into it and that makes you learn more but if it's like decimals or something like that, it's not very interesting and you're kind of like uugh and you're not going to learn much.

These extracts suggest that the level of interest someone has in a particular learning task can impact upon the extent to which they can change their intelligence in that area. Some learning still takes place according to these students. These extracts are illuminating for their focus upon interest (and not any other factors such as ability). The level of interest that someone has, for a particular learning task might, of course, be related to someone's abilities to perform that task, or perhaps to someone's self beliefs about their abilities to perform the task. These extracts relate to students who have not made such a link, or if they have, did not express that in the context of this study. As such, they appear similar to attitudinal factors in that a relatively unchangeable level of intelligence in a particularly domain might occur as a result of disinterest. The next section will examine the ways in which a broad endorsement of a malleable view of intelligence has been qualified by the students.

3. Broadly malleable view - qualifications to broadly endorsing malleable view

Although the students' responses were broadly supportive of the malleable statement in this study, there were a number of qualifications. Some of these qualifications came from reflections about the stability of ITsI across different

domains. Other qualifications seemed to reflect internal conflicts that some students had about their ITsI. For instance, Sarah had expressed a broadly malleable view of intelligence (as long as someone was inclined to learn) but qualified her view as follows:

Sarah:	I think sometimes people physically can't you know more.
R:	Sometimes they physically can't?
Sarah:	Yeah.
R:	Yeah, ok so ok, so sometimes that's the case for some people?
Sarah:	Yeah.
R:	Did you have something in mind?
Sarah:	I know, like people with dyslexia sometimes can't do some things that other people can so they can't go further than that until they've learnt to get across it.

The extract (below) is interesting because although it appears to relate directly to an anticipated response of a malleable theorist, namely that of persistence, Mike's earlier comments resonate with that of a fixed view and an apparent, ensuing internal dialogue to respond positively and to persist with his efforts.

Mike:	I always kept thinking negative that this is too advanced for me and I couldn't do it but I looked at the things that I could possibly do and I thought that's awesome, I wish I could do that so I had a go at it (using software to make maps for a game) and kept going at it, I was quite persistent, just over and over and I learnt new things as I went along and I started to use it a lot more and well, I came from someone who didn't think they had a chance and now look, I'm brilliant at it.
R:	And what's that taught you, that experience?
Mike:	Well, if you're persistent, then you might actually get somewhere with it.
R:	Uhm, and what's it taught you about the nature of intelligence?
Mike:	It's like the overall thing isn't it.
R:	What's that for you?
Mike:	How positive you are about these things, that can fuel intelligence.

R: Uhm…
Mike: Your interest and uhm your persistence as well.

Mike later clarified his view about how significant the level of interest was, such that this could lead to examples in which an entity view of intelligence resulted for him.

R: Ok, so this is saying for different subjects (points to first item you have a certain amount of intelligence and you can't do much to change it, or to this one, pointing to second questionnaire item no matter how much intelligence you have you can always change it quite a bit).
Mike: Sometimes your friends can kind of stick to the first one and it catches onto you.
R: What do you mean, that's interesting?
Mike: Like DT, if you're in a lesson and you're trying to learn and your friend keeps talking to you and your friend is more interesting than this is, I'll keep talking to you and because of that, that thought, my friend's more interesting, that isn't, you might have the same amount of intelligence because you're not listening.

Paul also appeared experienced a degree of an internal conflict, broadly concurring with a malleable view but questioning the validity of his belief.

Paul: You can't really have a limit, the trouble is you focus on one thing the rest of it kind of drifts away, kind of becomes disconnected.

Later, Paul clarified his thinking further about this qualification of his initial broadly malleable view to the extent that it seemed as close (or perhaps closer) to an entity view.

Paul: So you may get all of the ground stuff like 1+1= 2, but anything other information (sic), when you go onto another subject will get vanished, so, you kind of have a certain amount of intelligence but it's constantly changing.

Paul also suggested that in some areas he had held a fixed view of intelligence but that subsequent progress had altered his view.

Paul:	Well, I started off with French, I didn't know a lot about it but over the course of actually, when I actually had to like speak a paragraph actually realised I could understand it, speak it so I was actually getting quite good at it.
R:	Yeah, so is that something that initially you thought was difficult and then surprised yourself, sorry not surprised yourself.
Paul:	Well I didn't think it could change, I would always be rubbish at French but when I actually realised I could change my intelligence if I enjoyed French and put a lot of effort into it, I could become completely fluent.

All of the students were asked if their ITsI varied across different subjects and learning contexts. Most of the students reported that their ITsI were stable across different subjects and learning contexts although several students indicated that they carry differing beliefs to different learning situations.

Simon:	Well, yes I practically do always change my intelligence quite a bit, so…
R:	Do you, yeah. Are there some that you don't then?
Simon:	Er, yes well art because I never really thought I was good at art.
R:	Ok
Simon:	And also French because I think I'm absolutely rubbish at French. I just think like with art if you think you're not very good at drawing and things like that, unless you really think you can do it, then you're not going to get any better at it and in art and French I'm quite negative about myself.

Later, after Simon had indicated that a broad malleable view was almost an inevitable development as part of life, I asked him to reconcile these seemingly conflicting points of view.

R:	Ok and so, that makes me even more interested in the Art and the French given, that you know.

Simon: Yeah
R: That example, so how comes they're different given that it's?
Simon: Well it's just well I can't really say that much about them but I mean art in particular, face it, I think some people are born with a skill to do art and some aren't.

Sarah also appeared to hold differing ITsI across different subject areas.

R: Ok, so do you think that, do you have that opinion malleable view) in all those different situations?
Sarah: No, like things you need a skill for, like art and PE, I think if you can't physically do better then I think that's your ability but some people naturally can draw and naturally can do sport. Some people just can't however much they try.
R: Ok.
Sarah: So but then maths, English and science I think if you try your hardest you do always learn more.
R: Ok.
Sarah: Yeah.
R: Oh that's great so maths, English and science you could, you can do that, you can change and improve.
S: Yeah.
R: Art and PE you can't?
Sarah: Yeah I think you can but not as much as if you're, so if you do sports outside of, if you do sports a lot then obviously you can be good and if you're interested in it but some people just physically can't push themselves to that limit.

As the discussion developed, Sarah seemed to have similar (more fixed) views about languages, although when pushed, she appeared to marginally reach a malleable view in conclusion.

R: Ok, yeah, any others that you have? You have a full week, don't you? What else do you have?
Sarah: Uhm, languages so German and French. I think, I don't know because we're used to English, it's kind of like doing two or three at a time so differentiating between the two is quite hard so then it kind of confuses you even more so then having to broaden all of your ideas in languages is quite hard and some people naturally get along with it and some people don't.
R: Ok.
Sarah: So.

R: So what's your conclusion about languages? Can you change your intelligence in that regard quite a bit?

Sarah: I think you can change it, yeah, quite a bit but then like you get to a certain limit and then it stops and you have to think about it a lot more.

The thoughts of these students are interesting as they suggest that some people's ITsI differ across different learning contexts. The tools that are typically used by Dweck (e.g. Dweck, 2007) to measure people's ITsI might not be sensitive enough to ascertain all of the pertinent beliefs of some Year 8 students in a real-world educational context in England. It is possible that students who seem to hold differing ITsI across different learning contexts may have fallen outside of the usual populations studied by Dweck, in that her studies tend to include those people with relatively strong incremental or fixed views, discarding those people with less strong views. Even in such a scenario, there is still a need to know more about the beliefs and learning behaviours of people with more nuanced ITsI.

Some students in this study suggested that a person's ITI would be influenced by their definition of intelligence.

Amanda: I don't know, it depends how they looked at intelligence and what they thought it was because if they thought it was like the ability to learn then they might see it differently. They might say, you have an ability to learn and you use that to learn but you can't change how much you can learn whereas some people might see it as I don't know, maybe something within you that is just there that helps you through life but you don't know what it is as such, it's just there.

Mike: And it depends what kind of intelligence he's talking about.

To conclude, these Year 8 students from an English secondary school broadly endorsed a malleable view of intelligence and were able to explain how such a view works in practice. A number of students, however, qualified their broad endorsement of a malleable view in several interesting and possibly important ways such as considering learning situations (such as art) in which their broad malleable view was not maintained. Given the potential utility of Dweck's ITsI, such qualifications are important as they suggest that any interventions by schools to alter students' ITsI might need to incorporate greater complexity and subtlety than previously understood, especially in relation to the curriculum domain; it does not seem that ITsI can be assumed to be consistent across all domains. These findings are discussed below to consider their significance in relation to the literature reviewed in chapter two.

4.5.1 Discussion of theme 2 – Broadly endorsing malleable view

This theme is central to the (first and) main research question of this study, 'what beliefs do Year 8 students in an English secondary school have about the malleability of intelligence'. This theme builds upon the foundations of the previous main theme. The implications of the first theme of this study ('confusion about the notion of intelligence') were discussed previously (in section 4.4.1). A primary implication from the first theme was to highlight the advantages of an individualised, discursive approach in considering students' emerging conceptualisations of intelligence.

An interesting aspect of this study was that all of these Year 8 students offered a broad endorsement of a malleable or incremental theory. Although interesting, this is not necessarily significant. There is no suggestion, for instance, that such a finding could be applied to represent Year 8 students in the UK more generally. However, since it represents an interesting aspect of

this study, it is worthy of further reflection. Dweck (1999) has argued that an incremental theory might be more socially desirable when using that argument to support the non-inclusion of incremental items on some versions of the questionnaire. Given the general danger of reactivity in qualitative research studies (Robson, 2002) whereby the researcher's presence changes the behaviour of those in a setting, and the particular dangers inherent in interviews (Kvale, 2006; Potter and Hepburn, 2005), the potential dangers of these students offering socially desirable answers constitute a significant threat to validity.

One response to such a threat is to recognise that interview situations are peculiar in that they differ from normal conversations since interviewers do not usually offer comment upon the answers given, other than for the purposes of clarification or elaboration (Hammersley, 2008). Hence it is important to take account of the interactional dynamics of an interview when interpreting any data from it (Hammersley, 2008). For that reason, in this study, when presenting extracts of data to illustrate findings, my questioning is often included to facilitate the reader's interpretation of the data. Another recommended precaution was to compare what a student said in one part of the interview with other times (Hammersley, 2008), such as the applicability of their ITsI across contexts. Finally, in exercising necessary caution to the responses (Hammersley, 2008), students were asked to ground their thoughts in concrete examples. Therefore, although all of the students in this study endorsed an incremental view, later comments were sometimes more nuanced, such that the main theme reflects this by its wording as 'broadly endorsing malleable view', incorporating the sub-theme 'qualifications to broadly endorsing malleable view'. Although it is suggested that certain safeguards and criticality have been applied to this study, such characteristics

would also need to be applied in any future discussions to explore students' ITsI. Hence, any recommendation to carry out such work would also need to explicitly state the necessary cautions of such interviews, together with some thoughts and strategies to help to manage such cautions.

Another possibility illuminated by this study is that Dweck's estimated ratio of 40% of people endorsing an incremental theory and 40% endorsing an entity theory, with about 20% undecided (Dweck and Molden, 2007) might not apply to all communities in the UK. The UK has its own history of education with significant elements such as selection, streaming, setting and high-stakes assessment. This study was situated in a school which emphasises the importance of the student's contribution to their learning, by virtue of their success in being able to work independently as well as with others, to be organised, reflective and creative. This school also enjoys higher than average levels of attainment. Hence, within-school factors might contribute to the finding of the broad endorsement of a malleable view. This finding needs further examination however, to consider how it relates to other empirical studies.

Perhaps the most relevant comparative empirical study (Blackwell et al, 2007) asked similar aged students in American for their ITsI. As highlighted in chapter two, the beliefs of the American students from this study were closer to the incremental theory (than the entity theory). If students of this age are indeed more likely to hold incremental theories than the general population, this suggests a number of implications. It might, for example, emphasise the importance of the newly-acquired nature of these beliefs. It also suggests that some of these students might alter their theories to hold an entity view over time. If so, this situation demands that more attention is given to nurture these

students' emerging incremental theories. This study suggests a difference between Dweck's estimate about the proportions of different kinds of theorists and the findings from a prominent study (Blackwell et al, 2007). This apparent contradiction could usefully be investigated to assist our understanding of Dweck's ITsI.

The sub-theme 'this is how malleable intelligence works' echoed much of the research literature which has focused upon the behavioural effects of holding particular theories (Dweck, 2007). The students in this study highlighted learning behaviours such as persistence, practice and effort. This is neither surprising nor new. However, it is useful to note that the established findings of repeated research studies (mostly from America) were reflected in this study. It adds weight to the suggestion that this aspect of Dweck's ITsI are applicable across contexts, albeit with the need to apply these ideas sensitively to cater for cultural influences (Dweck, 2007).

Dweck (2007) has revised her view and now claims that people can hold both incremental and entity views although one is likely to be dominant. Dweck and colleagues (Dweck et al, 1995b) had earlier recognised that a greater understanding was needed about the circumstances that might elicit the different theories. This is particularly pertinent when seeking to apply Dweck's ITsI to real-world achievement contexts in the UK. This study has illuminated some of those possible circumstances that might elicit different theories and hence, has highlighted some areas that future studies might usefully investigate. This study has also indicated some considerations that might need to be taken into account when seeking to apply Dweck's ITsI in the UK context.

Dweck has asserted that 20% of the population is undecided and does not hold a sufficiently strong theory (e.g. Dweck and Molden, 2007). People who fall within this stated 20% tend to be excluded from Dweck's research studies as the learning behaviours of incremental theorists are compared to the learning behaviours of entity theorists. Hence, little is known about how Dweck's ITsI apply to a stated 20% of the population. In contrast, this study has not assessed people's theories in the same way as in most past research studies, which have tended to exclude those termed as 'undecided' (Dweck, 2007). This study may well contain several students who might otherwise have been viewed as 'undecided'. However, given the methods used in this study, it is not possible to assert with confidence which students might be 'undecided'. However, it is possible that the sub-theme 'qualifications to broadly endorsing malleable view' reflects a rich range of circumstances that might illuminate some of the views of the 'undecided'. This sub-theme might also illuminate some of the possible circumstances that might elicit different theories (Dweck et al, 1995b).

The findings from this study indicated a number of qualifications in relation to endorsing a broadly malleable view. One suggestion from some of the students in this study appeared to relate to their level of interest in the learning topic, such that the level of interest would influence their listening, attention and subsequent growth in intelligence. In one example, Mike appeared to hold an entity theory in a particular situation ('this is too advanced for me') but his high level of interest ('I thought that's awesome, I wish I could do that') elicited learning behaviours associated with someone holding an incremental theory (e.g. persistence). This suggests that the student's attitudes towards a learning activity would need to be taken into account, in order to increase the likelihood of the occurrence of more helpful

learning behaviours associated with the incremental theory, such as effort and persistence. This is interesting if unsurprising. It also reflects something of a challenge.

This appeared to be even more complicated for some students given the real-world context of this study. In such a situation, learning tasks take part in a social and cultural context. One aspect of that context is the necessary foundation of friendships and the sense of belonging within that social context (Maslow, 1954) before self-actualisation can be attempted. Taken literally, Maslow's view can be criticised; how does a person know if they have reached their potential and achieved self-actualisation? Nevertheless, Maslow's theory does illustrate how a person's theories might affect their learning in real-world learning contexts (Maslow, 1954). For instance, the benefits of an incremental theory might not hold unless and until someone feels a sense of belonging (Maslow, 1954). Dweck rejected any interpretation of her ITsI as being a purely cognitive theory with a limited role for emotions (Dweck et al, 1995b). However, little is known of how emotions might affect a person's ITsI in real-world contexts. This study focused upon students' cognitions about their ITsI, yet within such a focus, students still discussed their emotions and sense of belonging when learning, suggesting that Dweck was correct to recognise the contribution of emotions to students' learning behaviours (Dweck et al, 1995b).

Several students in this study noted that someone's ITsI would depend upon their definition and construction of intelligence. This reinforced the points made in the discussion of the first main theme that suggested that the definition and construction of intelligence has relevance for their subsequent ITsI. In so doing they captured some of the key common debates about

intelligence (Neisser et al, 1996). For instance, one student focused on the significance of the definition of intelligence whilst another student reflected Gardner's (1983) view of multiple intelligences ('it depends what type of intelligence he's talking about'). Given the theory-driven perspective of this study, the spontaneous nature of these comments was notable and adds weight to the argument to attend more to students' definitions and constructs of intelligence as well as their ITsI.

Another key way in which some students in this study added qualifications to their endorsement of a malleable view related to the variation of their ITsI across different learning contexts. In this study, differing ITsI occurred for some students in subjects such as PE, art and languages. This suggests that for some students in this study, the subject is one of the circumstances that elicits a particular ITI. This finding reflects Dweck's (2007) revised view that people can have different mindsets in different areas. However, the questionnaire method employed by Dweck (1999) does not reconcile with this revised view. This suggests that any exploration and intervention in relation to a student's ITI is likely to be partial for some students if it does not incorporate a consideration of that student's ITsI across different contexts. This study has provided support for Dweck's (2007) revised view that people can hold both entity and incremental views. Dweck's (2007) revised view, supported by this study, suggests that learning outcomes might be influenced across different subjects according to the ITsI that students hold for each subject. However, the principal study offered by Dweck to indicate the outcomes of holding different theories (Blackwell et al, 2007), examined only maths, rather than outcomes across a broader range of subjects.

The second research question in this study sought to establish what these Year 8 students identified as having been key influences upon their beliefs in relation to Dweck's ITsI. These findings are presented in the next section.

4.6 Theme 3 – Difficulties in identifying influences

Given that people's beliefs about the malleability of intelligence are theorised by Dweck to be implicit (e.g. Dweck, 1999), it is unlikely to be straightforward for students to identify such key influences. Indeed, several of these students indicated that these discussions were relatively new to them.

R:	Yeah, and I was going to ask, Claire, has your view that intelligence is changeable, have you always had that?
Claire:	I don't know because I've never really thought about it.

R:	Anything else that's influenced your opinion that you can change your intelligence quite a bit?
Richard:	Not really because I haven't really thought about this much.

However, the influences upon Year 8 students' ITsI in an English secondary school context are important to try to examine further because they might illuminate potential ways in which more helpful beliefs can be shaped about the malleability of intelligence. As such, in this study, the key influences upon students' ITsI were explored, necessarily in a direct manner given their implicit nature. Despite the difficulties that students experienced, they did offer some insights. The data will be presented within the following two sub-themes:

1. Life is about learning new things
2. Experiential influences

1. Difficulty in identifying influences– life is about learning new things.

The sub-theme 'life is about learning new things' relates to a view expressed by some students that life involves learning. The clearest example that was given was considering how much (or little) a very young child had learnt. In this way, this sub-theme relates to an earlier sub-theme ('relationship between learning and intelligence').

Claire: You can't like spell when you're little.

R: And what's influenced that opinion, what's shaped that opinion that you can change it quite a bit? You talked about science, what else has, you know, made you have that opinion?
Simon: Well because it's like Albert Einstein, he was probably quite dumb to start with but now, he's well, I can't, I don't know if he's dead but he's quite smart now or at least he would have been.
R: Yeah and what do you mean by that, he was probably quite dumb?
Simon: Well because when you're born you know absolutely nothing other than breathing but.
R: Ok, ok, ok, yeah, so, it's (sic) looking at people like that, how would you describe Albert Einstein now?
Simon: Well that he's smart and intelligent.
R: He's someone that's like smart and intelligent in that way?
Simon: Yeah.
R: Oh, ok, what else has influenced your opinion that you can change your intelligence quite a bit?
Simon: Well because if you didn't when you're born, then well if your intelligence didn't change by that much you probably wouldn't know what five times five was, well five plus five is when you're older.

Another illustration of this sub-theme 'life is about learning new things' was shown by the example of parents as role models of lifelong learning.

Paul:	Well my dad's quite intelligent and uhm it's actually a couple of months ago when they did something like twenty five years of the Falklands?
R:	Ok.
Paul:	And he got really interested in that, getting books and stuff so he learnt quite a bit about the Falklands so it's changeable. He's about 48 now so he's, even though he's learnt a lot he can still kind of learn some more.

The view of some students that 'life is about learning new things' appeared to have been directly influenced by parental messages.

R:	What do you think's influenced that opinion that you have got that you can change your intelligence?
Richard:	My parents.
R:	How have they done that?
Richard:	Talking to me and saying like it's the most important time of your life.

R:	Yeah, and do you know how you've reached that idea (malleable view of intelligence)?
Amanda:	Well I don't know, I think I might have been influenced by my parents because my mum was a teacher and she was always telling me to try my best and I kind of struggled with my times tables at primary school and I thought I'll never be able to do these and she said no, you can change that you can't do these so I think that might have influenced me.

2. <u>Difficulty identifying influences – experiential influences</u>

This sub-theme relates to the significance of experience. A key influence upon the broad endorsement of a malleable view by some students appeared to be from their reflections upon past experiences and subsequent development.

Paul: When I do something like maths, I just kind of actually look back to when I was before (sic) and realise I've come so far.

Paul later illustrated an example of this within maths.

Paul: Well, in French, in maths because we're doing algebra and when I was in primary school we used to go on visits to secondary school and I remember seeing practically the same equation on the board but kind of going what is that, I have no idea but then I realised actually now I can do it so.

Some students reflected on how their improved results and subsequent move to a higher set had influenced their views about the malleability of intelligence.

R: Is there anything else that's influenced your opinion that you can change your intelligence?
Richard: Umh, my, uhm, my results from the past.
R: Ok.
Richard: Like if I got a lower result in say a science test my science teacher would say what I need to do to increase my grade to be in the higher sets so basically my teachers have influenced me.
R: Ok so you've got a kind of lower grade than you wanted, your teachers have said something to you about how to get better.
Richard: Uhm.
R: And then what's happened, have you?
Richard: Uhm I've gone away and done that, got higher results.
R: What do you think about it when you look back on that?
Richard: Uhm I'm glad I done it because if not I would still be in the lower sets and not boosting my intelligence.

R: Brilliant, ok and any other ways that has (sic) influenced your opinion?
Sarah: Uhm, I guess English because like last year I was in set 2 and this year I was moved up to set 1 so it's kind of like I have improved.
R: Has anything else influenced you?
Sarah: Uhm, I guess if teachers tell you if your work's good then you feel that you've reached something, then you look back and see that how much you've improved and I guess that makes you feel you can improve a lot.

Some of the examples that illuminated this sub-theme resonated with ideas from self-efficacy, particularly Bandura's view that mastery experiences are a key source of self-efficacy (Bandura, 1997). One possibility is that Dweck's ITsI help us to better understand the significance of how such mastery experiences might influence students to hold malleable beliefs. These experiences appeared to have a higher significance if some adversity had been overcome and/or a previously-held pessimistic view had proven to be incorrect.

Sarah spoke about the positive changes that had occurred having been moved down a set in maths.

> Sarah: Uhm, I think it's mostly maths because I was in set 1 and then I was, I was underachieving really and I was finding everything really hard and I was moved down and then I saw a like massive (sic) because we were doing like simple stuff, well less complicated stuff and like we'd been taught it better then I saw a massive increase so I thought that like if you change the way that you think about it because I used to walk into maths and think I can't do this, now I walk in like with an open mind like I will be taught it and I think, I don't know if you believe in yourself, you can.

Amanda spoke about the importance of family, and then explained how different kinds of experiences can shape your beliefs about the malleability of intelligence.

> R: Yeah, ok, and so if you had to pick out the main influences on your beliefs that have made you lean towards that one, no matter how intelligent you are you can always change it.
>
> Amanda: I think it's probably family and the way they support you that lifts your confidence and also experiences and what you've done and if you've struggled with learning or if you've just found it really easy.
>
> R: And what would your key experiences be that have taught you that?

Amanda: I think that struggling and then being able to overcome it and say I know this now, this is good, I feel like I've crossed that barrier and it's sorted but then I also think that understanding it straight away and being able to see how you got that answer because you can see that link and you can remember that link.

4.6.1 Discussion of Theme 3 - Difficulties in identifying influences

The impression from carrying out these interviews was that these parts of the discussions were difficult for these students. That is unsurprising, given that these students were being asked to draw out key influences (which are likely to be varied and multiple) on beliefs that are implicit. This resonates with ideas from personal construct psychology (Kelly, 1963) that people can find it difficult to illuminate information about their belief system. Despite these difficulties however, any useful information would constitute some significance; any identified influences are potentially important for revealing how the environment might be adapted to help shape incremental theories. Two sub-themes were identified ('life is about learning new things' and 'experiential influences'). This section will discuss the utility of these findings in relation to the literature that was reviewed in chapter two. This review (of the literature) recognised that our understanding of what might have influenced the ITsI of students is very limited, particularly in the UK context. Given that the history of education in the UK has its own distinct characteristics, our understanding of key influences in the UK context is pertinent. Moreover, since schools and parents can adapt many of the methods and messages that they use, any insights regarding key influences upon students' ITsI might indicate some possible alterations to environmental factors, such as those from home and from school.

The sub-theme ‘life is about learning new things’ illuminated some ideas that might help to shape incremental theories. The first of these was similar to the relationship noted earlier for some students in this study between the notions of learning and intelligence. This relationship seemed to reflect a developmental perspective; since learning is developmental, then so is intelligence. This tended to be illustrated in this study by contrasts between what a baby and an adult can do. One student extended this view to give an explicit example of learning beyond life at school. This thought seemed to have been influenced by a specific activity by a parent which demonstrated lifelong learning (‘even though he’s learnt a lot he can still kind of learn more’). This is a limited example but it does indicate the potential value of watching other people, as indicated by Bandura’s social learning theory (Bandura, 1986). Give the need for effective lifelong learning, this example also illustrates the potential utility of influential adults modelling such learning. This could also be used to model effective learning habits such as effort and persistence. This might be demonstrated in a school, for example, by key adults modelling their difficulties with, and subsequent progress in, learning a musical instrument. This sub-theme relates to one thread of Dweck’s commercial application of her ITsI, ‘Brainology’ (Dweck, 2007) which highlights how the brain works as a muscle, growing with exercise.

Past research evidence has indicated that even fairly subtle linguistic cues can elicit differing behavioural responses in young children (Cimpian et al, 2007). Dweck has also suggested that parental feedback might influence the development of children’s implicit theories (Dweck et al, 1995b). There was some evidence from this study to support the view that parental messages can influence the development of children’s implicit theories. The parental

messages cited in this study referred to trying your best, school is the most important time of your life and that with persistence, you can achieve tomorrow what you struggle with today. This suggests the potential power of interventions that involve parents in giving such incremental messages. In contrast, the students in this study suggested that any influence from teachers tended to come from their support in learning something and feedback which supported a comparative reflection between present learning performance and past learning performance.

The second sub-theme, 'experiential influences' illuminated the importance of reflecting upon past experiences. It is possible that the nature of the interview itself facilitated such reflection. This sub-theme indicated that experiential influences might not, by themselves, be sufficient to impact upon students' ITsI. Such experiences need to be reflected upon to maximise their full meaning. The implication of this is that students may need to be taught skills and habits of reflection as well as being given opportunities to practice these skills and habits.

These students made little mention of key educational practices such as reasonably recent assessments (CATs and SATs) that they would have taken. Although these students were not asked directly about the impact of educational practices, it is perhaps surprising how few references were made. The most common reflection in terms of educational practices by these students was in relation to their experiences of being placed in sets. Whether being moved up or down a set, reflections centred around the positive improvements of the current setting situation in comparison to the former situation. This explanation might reflect the view of some educational researchers (e.g. Hallam et al, 2004b) that children become socialised into

the systems operating in schools. However, it is also entirely possible that such practices actually have little effect upon students' ITsI. Perhaps an interesting way to investigate this further would be to explore the perceptions of key adults (such as teachers and parents) of the impact of key practices in schools and their ITsI.

Hence, despite the difficulty of the task, these students managed to articulate some of the key influences upon their ITsI. These influences will not have the same impact upon all students. More likely, certain influences resonate with an individual for a range of reasons such as the significance of a relationship, a message and/or the timing of such an influence. This study illuminates some possible ways in which home and school might seek to influence students' ITsI, such as modelling lifelong learning, emphasising the developmental aspects of life and learning, parental messages about an incremental theory and guided reflection (including feedback), given the potential role played by socialisation into school practices (Hallam et al, 2004b).

4.7 Reflections upon the contributions of these Year 8 students to the data set

Finally, it is possibly noteworthy that the contributions to these themes have come predominantly from 7 of the 8 students. One of the students appeared to have difficulty in understanding some of the questions asked during the semi-structured interview. Given the near-universal claims of Dweck's ITsI, only those students with significant SEN were excluded, as denoted by them having a statement of SEN and significant difficulties relevant to this task, e.g. significant language difficulties. This exclusion was for ethical reasons to

avoid such individuals becoming confused and/or uncomfortable. Nevertheless, one of the students in this study (who did not have a statement of SEN) did appear confused at times, for instance, defining intelligence as, 'meeting new people'. Further descriptions will not be given, primarily to protect the anonymity of that student. Whilst it is, of course, entirely possible to have a significant level of SEN without having a statement of SEN, the decision to exclude those students with a statement of SEN went beyond anything that Dweck has suggested. The difficulties faced by this student should not be generalised but they raised some doubts about the universality of Dweck's ITsI amongst this group of early adolescents, and helped to emphasise the need for further research about any groups of students for whom Dweck's ITsI either do not apply or require significant differentiation.

4.8 Summary of the key points of the discussion in relation to the RQs

The data have been presented in relation to the two research questions. The three main themes were as follows:

- Confusion about notion of intelligence
- Broadly endorse malleable view
- Difficulties in identifying influences

The opening theme (confusion about notion of intelligence) illustrated that these Year 8 students from an English secondary school did not have a shared understanding about what intelligence is. The second theme (broadly endorse malleable view) reflects the findings from this study that these students broadly endorsed a malleable view. They explained those views and

gave some potentially important qualifications to that view such as not necessarily holding that view across all learning situations. The final theme (difficulties identifying influences) indicated that it was not easy for these Year 8 students to identify the influences upon their ITsI. These influences are potentially important for revealing how the environment might be adapted to help shape the most helpful beliefs.

This study examined Dweck's ITsI given the need to reduce educational under-achievement and to enhance effective lifelong learning. A range of relevant and potentially useful research possibilities was considered in relation to Dweck's ITsI . The chosen priority areas of study were to explore Dweck's ITsI in the UK context given the need to better understand them so as to inform future research and interventions to address educational under-achievement and the need for effective lifelong learning. For clarity, a summary of some of the key findings are given below:

1. ITsI appeared relevant to these Year 8 students and it was possible to make the implicit somewhat more explicit. This study has learned lessons about how that might be achieved and has a usable product of semi-structured interview prompts.

2. This study has illuminated some advantages of an approach that is individualised and exploratory in discussing students' ITsI. This might help to unpick confusion, contradictions and the degree of sophistication of individuals' thinking. Such an approach, however, needs safeguards, criticality and understanding.

3. The students in this study defined and construed intelligence in a variety of ways similar to past understandings (Neisser et al, 1996). Some of these students suggested that a person's definition of intelligence might influence their ITsI. Given that this age range (approximately 12-13 years) is recommended by Dweck (2007) as a good one to intervene upon given their developing conceptualisation of intelligence (and post-transition, competitive experiences), this raises a question of whether the stability of ITsI might be influenced by a student's chosen definition of intelligence.

4. This study has illuminated some of the circumstances in which people might hold both theories yet yield to the more dominant one (Dweck, 1995b). This might include the 'undecided' 20% of the population (Dweck and Molden, 2007). The circumstances are likely to be different for different students but could include the subject, level of interest and the social context. This highlighted the contradiction between Dweck's (2007) revised view that people can hold differing beliefs across different subject areas and her main measurement tool, a questionnaire that does not differentiate by subject (Dweck, 1999).

5. This study highlighted several areas of Dweck's ITsI that would benefit from clarification. For instance, Dweck and Molden (2007) suggested that 40% of people hold an incremental view, 40% of people hold an entity view and 20% are undecided. The findings from this study resonated with past studies that have yielded apparently different ratios (e.g. Blackwell et al, 2007), thus highlighting the apparent contradiction between Dweck and Molden's (2007) view and the findings of a key study (Blackwell et al, 2007) which indicated that 12-13 year olds from New York leaned towards incremental views. Given the small sample in this study, no conclusions

can be made about the potential significance of this apparent contradiction. This situation needs to be better understood as it has a number of implications such as our understanding of the stability of ITsI.

6. Another area of Dweck's ITsI that would benefit from further clarification relates to its suggested (or at least implied) universal relevance. This study found a student who had difficulty understanding these concepts. Are there students for whom Dweck's ITsI do not apply, or apply differently or perhaps, require significant differentiation? Little is also known about the 'undecided' 20%; how do their beliefs operate, to what effect?

7. It was difficult but possible to discern some influences upon students' ITsI. These included the value of modelled lifelong learning, the potential power of parental messages, the significance of reflections on key experiences, the limited references to school practices and the potential of analogies of the developmental aspects of intelligence.

Hence, these students have indicated that Dweck's ITsI are more complex in a UK educational context than they have been presented (e.g. Dweck, 2007). This suggests that their implementation requires more individual, differentiated approaches than previously suggested. Finally, the literature review has clearly indicated the need to apply these ideas thoughtfully to the cultural context. It has also indicated the potential of utilising Dweck's ITsI to promote parental engagement in their children's learning (Siraj-Blatchford, 2010). The implications of these findings will be discussed in the next chapter.

Chapter Five – Conclusions

5.1 Introduction to chapter

This concluding chapter has a number of functions. Firstly, it will provide a review of the progress in achieving the aims of this study. This will be followed by a reflection upon both the limitations of this study and also upon its contribution to knowledge. Consideration will be given to both the implications for professional educational psychology and also to the future areas of possible research. After a reflexive account about the research process, some final comments will be given.

5.2 Review of the progress in achieving the aims of this study

The purpose of this section is to provide a review of the progress in achieving the aims of this study; it will provide a thread of some of the key elements of this work in order to provide a clear context to understand this review. These key elements will include;

- Key conclusions from the literature review
- Research aims and research questions
- Summary of the main findings

5.2.1 Key conclusions from the literature review

There are at least two key aspects to the current educational context in the UK, namely academic under-achievement (Department for Education, 2012) and the need for effective lifelong learning (Claxton, 1999). People's implicit beliefs about their ability potentially have the most important effect upon their future learning power (Claxton, 1999). Dweck's ITsI (Dweck et al, 1995a) therefore have a potentially important role in such circumstances. Yet, there are many gaps in our

knowledge about Dweck's ITsI, particularly if applied to a real-world achievement context in the UK. These gaps include the need to:

- Examine Dweck's (2007) suggestion that ITsI become highly relevant after a challenging transition to a larger school in which there is a greater focus on challenge, attainment and competition. In the UK context, such a transition might be the one from primary schooling to secondary schooling. Dweck (2007) has also suggested that children develop an increased sense of the meaning of intelligence at this time.

- Examine studies regarding the relationship between ITsI and subsequent attainment in the UK context; Dweck (1999) has suggested that people who hold an incremental theory employ more helpful, mastery-oriented, learning behaviours, such as persistence. There is limited evidence to suggest that an incremental view will yield higher levels of academic attainment (e.g. Blackwell et al, 2007). This evidence base is limited but promising.

- Examine Dweck's view that ITsI are both stable over time and accessible to change (e.g. Dweck, 2007), in the UK context.

- Increase our understanding of what have might influenced the ITsI of children. This is particularly necessary in the UK context.

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- Examine Dweck's suggestion (Dweck and Molden, 2007) that people might hold both entity and incremental theories. Little is known about

the circumstances that might elicit different theories, particularly in a secondary school environment in the UK.

- Understand if and how Dweck's ITsI apply to children and adults with different types and levels of learning difficulties. Dweck has not fully clarified any part of the population to whom ITsI might not be applicable, or else to whom, significantly differentiated approaches will be required.

- Explore the effect that ITI interventions have when they incorporate adults in school and/or parents/carers.

Hence, given the limited exploration of Dweck's ideas in the UK, there were numerous, potential research possibilities. It was not possible to address all of these areas in this study. It could be argued that Dweck's ITsI need to be disseminated more accurately and effectively in the UK. A foundation of such dissemination would be a greater understanding of Dweck's ITsI in the UK educational context. Such an understanding might clarify whether Dweck's ITsI resonate in an English secondary school with Year 8 students following a challenging transition in Year 7 from primary school. A greater understanding might also incorporate how ITsI operate across different learning situations for students. An improved understanding of Dweck's ITsI in the UK would also inform the design of further longitudinal studies, such as examining the relationship between holding certain ITsI and subsequent academic outcomes. The understanding of what might have influenced the ITsI of children is very limited, particularly in the UK context. This suggests that greater insights into influences that promote incremental or entity theories

might yield some helpful adaptations to current practices in the UK, in order to extend more incremental views.

5.2.2 Research aims and research questions

This study aimed to increase the understanding of Dweck's ITsI in the context of an English secondary school by making the nature of these implicit beliefs more explicit, through semi-structured interviews; for instance do ITsI resonate with these students? Are students' ITsI necessarily the same across all learning situations? Can people hold both theories and if so, when and how can this operate? Within the English educational and social context, what have been the key influences upon students' beliefs in regards to ITsI?

The research questions were as follows;

1. What beliefs do Year 8 students in an English secondary school have about the malleability of intelligence?
2. What do Year 8 students in an English secondary school identify as having been key influences on their beliefs about the malleability of intelligence?

5.2.3 Summary of the main findings

The summary of the main findings (from the previous chapter are summarised further and) are presented below;

1. ITsI appeared relevant to these Year 8 students and it was possible to make the implicit somewhat more explicit, via semi-structured interview prompts.
2. Some advantages were observed of an approach that was individualised and exploratory in discussing students' ITsI. Such an approach, however, needs safeguards, criticality and understanding.
3. The students defined and construed intelligence in a variety of ways and some students suggested that a person's definition of intelligence might influence their ITsI. This is an interesting perspective and a potentially useful insight in itself. Given that this age range (approximately 12-13 years) reflects a developing conceptualisation of intelligence, this raises the question of whether the stability of ITsI might be influenced by a student's chosen definition of intelligence.
4. This study illuminates some of the circumstances that people might hold both theories yet yield to the more dominant one (Dweck, 1995b). This might have included the 'undecided' 20% of the population (Dweck and Molden, 2007). The circumstances are likely to be different for different students but could include the subject, level of interest and the social context. This finding highlighted the contradiction between Dweck's (2007) revised view that people can hold differing beliefs across different subject areas and her main measurement tool, a questionnaire that does not differentiate by subject (Dweck, 1999).
5. The findings from this study resonate with past studies that have yielded greater endorsement of the incremental theory (e.g. Blackwell et al, 2007), highlighting the apparent contradiction between Dweck and Molden's (2007) view that 40% of people endorse an incremental theory and 40% of people endorse an entity theory (with 20% of

people undecided) and such findings. Given the small sample size of this study, this situation needs to be better understood in the UK as it has a number of implications such as our understanding of the stability of ITsI.

6. One student had difficulty understanding these concepts. Are there students for whom Dweck's ITsI do not apply, or apply differently or perhaps, require significant differentiation? Little is also known about the 'undecided' 20%; how do their beliefs operate, to what effect?
7. It was difficult but possible to discern some influences upon students' ITsI. These included the value of modelled lifelong learning, the potential power of parental messages, the significance of reflections on key experiences, the limited references to school practices and the potential of using analogies to demonstrate the developmental aspects of intelligence.

5.2.4 Review of progress in achieving the aims of this study

This study has managed to increase the understanding of Dweck's ITsI in the context of an English secondary school by making the nature of these implicit beliefs more explicit through the use of semi-structured interview prompts. Dweck's ITsI resonated with these Year 8 students. The semi-structured interview process required knowledge, criticality and self-reflection. The interviews held a number of advantages over the use of questionnaires in that they facilitated the unpicking of any confusion and contradictions. The interviews also enabled an understanding of the sophistication of students' thinking about intelligence and ITsI. All of these insights were interesting as they illuminated the complexity of the implicit beliefs for these students. This complexity included some potentially useful insights about the circumstances

that people might hold both theories, yet yield to the more dominant one (Dweck and Molden, 2007). For instance, this study supports the view (e.g. Dweck, 2007) that some people can hold differing beliefs across different subject areas. Hence, this study highlights the contradiction between this view and the use of questionnaire measurement that does not differentiate by subject (Dweck, 1999).

This study also highlights the apparent contradiction between the view that the numbers of students holding incremental and entity theories are approximately equal in number (Dweck and Molden, 2007) and those studies that have indicated a greater endorsement of the incremental theory (e.g. Blackwell et al, 2007). The students in this study also favoured the incremental theory. This study makes no claims to generalise this finding to other students from the UK. However, it does illuminate an area of potentially useful further study, to investigate the ratio of incremental and entity theorists in the UK. The difficulty that one student experienced in this study in understanding the concept of intelligence and ITsI illuminated questions about the universality of Dweck's ITsI and highlighted the need for greater understanding and clarity about those for whom ITsI do not apply, or apply differently or perhaps require differentiation.

The second research question was an important one in seeking to understand how the real-world achievement context in the UK might influence the ITsI of these Year 8 students. Insights of any relevant policies, practices or other interventions in this area could lead to positive shaping of the learning environment. Although Dweck and colleagues have conceded that all views have their costs and benefits, they argue that there are fewer costs for the

incremental view and fewer benefits for the entity view (Dweck et al., 1995b). Hence, the general promotion of an incremental view is desirable.

These students appeared to find discussions related to the second research question difficult. These appeared to be reasonably novel discussions about a subject that might be complex, multi-faceted and even subtle. It might also be the case that some of these students had become socialised to some school practices (Hallam et al, 2004b). Despite these challenges, the students in this study did highlight some possible ways in which school and home might influence students' ITsI, such as parental messages about an incremental theory, guided reflection and an emphasis upon the developmental (and lifelong) nature of learning. These insights offered potential foci of future studies to further the understanding of key influences upon ITsI. This study also questioned whether other approaches might be tried, such as asking key adults about influences upon ITsI.

5.3 Limitations of this study

There are a number of limitations to this study which need to be addressed. This study focused upon Year 8 students (with limited exclusion criteria) from one English secondary school. The cultural backgrounds of these children were not known and they may not have represented a broad range of cultural backgrounds. Given the complexity of schools, it is not possible to generalise the findings from this school to other schools in England. It is not possible to know how different students from a different school might explain both their ITsI and the influences upon those beliefs. However, it was recognised from this study's inception that the research findings would not be generalisable; indeed, it was not intended for them to be generalised. Rather, it was hoped that the insights from this study would be useful in enriching our understanding of Dweck's ITsI (Whittemore et al, 2001) with a view to

informing future studies. The sample in this study was situated to help the reader to judge the situations and people to which these findings might apply (Elliott et al, 1999). This was one intention of this study; numerous other research possibilities were identified but were not prioritised for this study given this rationale to establish an improved understanding of Dweck's ITsI both as a foundation and identifier for further, necessary work.

Whilst this study has demonstrated that it was possible to make the implicit beliefs of these students somewhat more explicit, it was not straightforward and required safeguards, criticality and understanding. This study deliberately took place in a school where I had not worked before allowing an identity as a researcher. Arguably, some aspects of practitioner interviewing skills were helpful, such as familiarity with seeking to build rapport with students and some comfortableness with persisting with a particular line of inquiry. However, practitioner interviewing skills alone are insufficient. It is also necessary to have a high level of awareness of issues in research interviewing situations, such as reactivity and the potential in this study of the social desirability of endorsing an incremental view (Dweck, 1999). It is also possible that what some students said in their interviews might not necessary represent their beliefs (Hammersley et al, 2008). Hence, there is a need to take great care with how the interviewer contributes to the discussion and to present such data in the context of that conversation. Hence, whilst individual discussions with students about their ITsI were possible in this study, such discussions would not be easily replicable on a large scale, without risks to the validity of such information. Such replication would require a thorough understanding of Dweck's ITsI in addition to relevant research knowledge and skills (Kvale, 2006). There is an inherent danger that ideas such as Dweck's ITsI which can arguably seem straightforward and universal, can be

misapplied and misunderstood. This study has helped to illuminate the need for care, precision and criticality, but in so doing, has arguably illustrated a significant challenge to the broader dissemination of Dweck's ITsI.

This study did yield a semi-structured interview format that enjoyed some success in these interviews with these students. The pilot interviews were necessary and useful in developing this semi-structured interview format and in giving experience in holding these interviews (Bryman, 2001). Depending on the purpose of future work, further pilot interviews within a particular context, might be useful. If Dweck is correct about the social desirability of endorsing an incremental view (Dweck, 1999), then interviews might increase that risk given that interviews obviously involve more social influences than the use of questionnaires. This study also asked students to respond to two sample statements from Dweck's (1999) six-item questionnaire. This approach might have had the effect of creating a false decisiveness for some students who might have inferred that the demand characteristics of the situation were to choose one of the statements. This contrasts with the use of a six-point rating scale with questionnaires in many previous studies. This possibility was considered in advance and was one reason why concrete examples were later asked for. However, despite such an approach, it is possible that some students were initially, falsely decisive and then were able to offer evidence to rationalise their original decisions.

The findings for the second research question were more limited, which might reflect the level of difficulty of this task for students. It was clearly challenging to ask students to identify the source of their beliefs; those beliefs had perhaps only just been made explicit. Identifying the sources of personal beliefs is, arguably, also difficult given that they are likely to have been

influenced by social, home and cultural factors which people perhaps become accustomed to such that they might be socialised to them. Given the likely difficulty of this task, it might be sensible to seek a broader range of data, for instance seeking the perspectives of a range of key people, such as adults in schools and parents/carers as well as the students themselves.

In this study, a specific detailed approach to thematic analysis was chosen. Arguably, this aided the transparency of the research process. The aim of this approach is to tell a compelling story of the data in a convincing manner (Braun and Clarke, 2006). Hence, the emphasis is upon the overall narrative. In contrast, other researchers seek greater meaning from the elements of the thematic map, such as the identification of themes (e.g. Ryan and Bernard, 2003). Hence, although this approach seeks to provide sufficient evidence of the themes within the data, other researchers using thematic analysis employ methods which focus upon the elements of the data in more detail. By selecting this approach to thematic analysis, it is possible that some of the detailed richness may have received less emphasis than some other approaches to thematic analysis (e.g. Ryan and Bernard, 2003).

Research in schools can be ethically challenging given issues such as the presence of multiple stakeholders (Felzmann, 2009). This research was similar to much school-based research in not offering a definitive, immediate benefit to the participant. An important ethical consideration in seeking consent to involve school students in research is the learning that they will be missing in order to take part. That was an important factor in the decision in this study to avoid excessive demands on these students to get respondent validation for my interpretation of the data. That would have been interesting although the explicit research paradigm employed in this study emphasised

interpretivism. This study was not unusual in involving many decisions, often difficult ones. It has been an intention of this study not only to make purposeful, coherent and sensible decisions, but also to detail the critical choices that have been made to allow the reader to evaluate this work in its full context (O'Day and Killeen, 2002). Many of the limitations are thus conscious ones, deriving from active choices that have been made, often from forgoing one possibility because of a decision to prioritise another.

5.4 Contribution to knowledge

This study has been carried out because of the potential significance of Dweck's ITsI in the UK educational context. A number of areas in relation to Dweck's ITsI needed to be better understood, in order that further work may help to realise its possible potential. This section will outline the ways in which this study has contributed to our knowledge of Dweck's ITsI, particularly in the UK context.

This study employed a different approach from most previous approaches in seeking a more detailed understanding of students' ITsI. Despite the inherent difficulties in asking students to make their implicit beliefs more explicit, this study has shown that such an approach is possible in a UK educational context. Despite the acknowledged difficulties associated with these interviews (highlighted in the above section), with necessary safeguards and criticality, this approach does offer some advantages over the use of questionnaires. These advantages have allowed the knowledge of Dweck's ITsI to be better understood, in a UK context. This knowledge challenges previous assertions which suggest that ITsI serve as a model to sufficiently explain a range of complex, individual beliefs and behaviours (Dweck, 2007).

This study has supported the notion that individualised adaptations to the general model of ITsI are likely to be beneficial.

The social context of an interview emphasised the logic of placing the discussions in a context whereby the students had initially defined intelligence. This enabled an enhanced understanding of an individual student's ITsI. Given that this age range (12-13 years) reflects a developing conceptualisation of intelligence (Blackwell et al, 2007), an enhanced understanding of a student's ITsI might offer significant advantages. For instance, as some of the students in this study suggested, a person's definition of intelligence might influence their ITI. This study did not seek to directly examine the relationship between students' definitions of intelligence and their subsequent ITsI. However, it has illustrated the potential significance of the individuality of students' beliefs in relation to ITsI. For instance, differing definitions of intelligence might influence the subsequent stability of that belief. Hence, whilst a questionnaire might suggest, for instance, that two students hold the same ITI, the nature of their beliefs might be different. This is unsurprising given our understanding from personal construct psychology (Kelly, 1963) of the importance of the individuality in construing meaning. This study has highlighted the advantages of utilising this understanding from personal construct psychology when seeking to apply Dweck's ITsI to students in school.

This study has not shown which individual differences between students matter, but, rather, by taking an individualised approach, it has highlighted some individual differences in relation to the nature of students' ITsI that might matter. This study has suggested that there were individual differences in the generality of these students' ITsI. Some students, for instance,

appeared to have differing ITsI in different subjects. Dweck (1999) has argued that this is likely to matter, since such differing ITsI would predict different learning behaviours across those different subjects. Hence, in this UK educational context, this study has illuminated some of the circumstances in which people might hold both theories yet yield to the more dominant one (Dweck, 1995b). This might have included the 'undecided' 20% of the population (Dweck and Molden, 2007).

This study has illuminated some advantages of adopting a more individualised, explorative approach (across different subject areas), but it might be argued that Dweck's studies (e.g. Dweck, 2007) have shown important effects anyhow, without usually adopting such an individualised, explorative approach. However, the studies that have illustrated a different outcome as a result of holding particular theories (e.g. Blackwell et al, 2007) have not explored the effects across different subject areas. Arguably, the effects of Dweck's ITsI could be even more significant if individualised, explorative approaches were taken. Most of the interventions in the key studies that Dweck has highlighted (e.g. Blackwell et al, 2007) are group ones, without any element of individualised differentiation. Arguably, these interventions reflect an approach of differentiation by outcome, and hence risk reducing their potential impact. It could also be argued that Dweck (2007) had already reached a revised view that people can hold different beliefs across different subject areas. This study has endorsed that view in a UK context and highlighted the contradiction between that view and the use of a questionnaire (Dweck, 1999) that does not differentiate by subject. This study has also illuminated how it might be possible to ascertain students' beliefs across different subjects in a UK educational context.

This study has illuminated the possibility that Year 8 students in the UK might not equally endorse the two theories (incremental and entity) as suggested by Dweck and Molden (2007). It is important to recognise that this is only a possibility. However, it does resonate with past studies of students of this age (e.g. Blackwell et al, 2007) who also offered a greater endorsement of the incremental theory. This study has highlighted an important area that needs to be better understood in the UK educational context, since it raises questions about the stability of ITsI as students' conceptions of intelligence develop as they mature. This might illustrate the importance of taking an individualised approach that incorporates students' conceptions of intelligence.

The individualised, interview approach in this study highlighted the difficulty for one of these students to understand these concepts. This would probably not have been as evident had questionnaires been used. This study has therefore highlighted important problems that need to be better understood. How do ITsI apply to students with differing learning strengths and difficulties and how might ITsI be best differentiated for all students? It has also highlighted the weaknesses of adopting a collective, questionnaire approach with very limited differentiation (Dweck, 1999). Given the potential importance of Dweck's ITsI, an individualised approach is likely to enhance our understanding of the 'undecided' 20% of the population (Dweck and Molden, 2007). This study has helped to illuminate this significant omission in our understanding of Dweck's ITsI. Given that it is highly probable that at least some of this 20% of people will not hold optimal beliefs about the malleability of intelligence in all situations, an individualised approach offers the possibility of enhancing our understanding of their beliefs and behaviours across different subjects.

This study has found that it was difficult but possible to identify some influences upon these students' ITsI. This highlighted some potentially important areas, such as the influences of parents/carers and adults in school and how these need to be better understood; such understanding might be facilitated by additional approaches that incorporate the views of key adults as well as of students. However, it is likely that home and school will be significant influences. Arguably the potential of Dweck's ITsI to effect outcomes for students in the UK has been under-estimated since Dweck's studies have not usually employed interventions which incorporate influential adults. Arguably their impact could be strengthened by interventions which include influential adults at home and in their learning (Siraj-Blatchford, 2010; Yorke and Knight, 2004). This study has given some limited evidence to support such a view. Given the current state of our knowledge about Dweck's ITsI, further research areas will be highlighted (in section 5.6.). In the interim, the following model is suggested for consideration for secondary schools in the UK in applying Dweck's ITsI.

Table 6 - Model of Considerations for secondary schools in applying ITsI

Individual discussions with students towards the end of Year 7 with adults with specialist skills and knowledge to identify students' ITsI across all subject areas. This could be used in a number of ways;
1.Information from those discussions shared with the students, all of their teachers and support staff, and their parents/carers. This suggests that some information about Dweck's ITsI will need to be communicated to the whole school community at the very least. Preferably, the school's leadership will communicate its vision of why this matters (Kotter, 2012). Consideration will need to be given to the prevailing ethos of the school so as to inform the nature of any interventions with adults at school, at home and from the community.
2.Information from the discussions with students used to inform any differentiated interventions aimed at promoting an incremental theory.
3.Subject teachers have records of the individual students' ITsI for that subject and consider that information to inform their interventions with students.
4.Ongoing discussions are held with students to monitor their ongoing ITsI, including the identification of perceived factors that have contributed to changing any ITsI, so as to update the ethos, policies and practices of the school.

5.5 Implications for professional educational psychology

This study has a number of interesting and potentially exciting implications for professional educational psychology. The literature review highlighted the need for Dweck's ITsI to be better disseminated in the leading professional journals in the UK. This study has added to our understanding of Dweck's ITsI in a UK educational context. The effective dissemination of Dweck's ITsI within professional educational psychology in the UK would support EPs to mediate these theoretical ideas and research evidence into practice in schools (Fox, 2011). Such dissemination would need to be carefully managed given the historical relationship between professional educational psychology

and the notion of intelligence. Some of the practical implications for professional educational psychology are discussed below:

One implication of this study for EPs is to inform individual work with children and young people. A key role for EPs is in enhancing children's learning (Beaver, 1996). EPs are sometimes asked by schools to aid their understanding and interventions of children and young people who appear to be under-achieving (in comparison to their projected progress). Identifying a student's personal constructs (Kelly, 1963) can be a useful approach in illuminating their perspectives on their world. It offers insights for intervention since such beliefs are theorised to lead to behaviours that are in accordance with those beliefs. The updated understanding of Dweck's ITsI in a UK educational context offers another useful aspect of such exploration. Given the difficulties of interviewing techniques (Kvale, 2006), particularly in relation to this topic in which incremental theories might be socially desirable (Dweck, 1999), EPs have a range of knowledge, skills and experience which enable them to be well-equipped to utilise the implications of Dweck's ITsI. This study enhances the awareness of necessary safeguards and criticality in any such work. The semi-structured interview format provides a helpful starting point from which to adapt plans for such work. Skilled EPs, with experience of using ideas from personal construct psychology (e.g. Beaver, 1996) might be able to suggest further techniques to help to make ITsI more explicit. EPs are then well-placed to evaluate such casework to add to the evidence base and understanding of the utility of Dweck's ITsI in the UK context.

It has been argued that the most productive focus of an EP with such individual work is to seek to influence what the systems of key adults in that child's life can do to help the child to maximise their learning (Beaver, 1996).

EPs are well-placed to utilise the insights from this study to influence key adults at school and at home. This could be achieved by consultative discussions (Wagner, 1995) with key adults. Such conversations with adults at home could have the added benefit of promoting the involvement of those adults with their child's education, since more incremental views allow adults to see the efficacy of such involvement (Siraj-Blatchford, 2010). Interventions with such embedded layers of support are examples of how seemingly simple and limited psychological interventions can have significant effects (Yeager and Walton, 2011).

Consultative discussions with adults in school can have effects at the level of the school (Wagner, 1995). This might operate at the level of seeking to influence one or two key adults in school from a piece of individual casework. Such work might facilitate more explicit systemic work in the school, as indicated earlier (in table 6). EPs do have knowledge and skills to work at such a systemic level that aims to alter the ethos, knowledge and practices of the whole school community (Fox, 2009). Such systemic change is not straightforward, however (Kotter, 2012). Indeed, in the current educational environment with an increase in trading by EPs (Allen and Hardy, 2013), there might be an argument for EPs to specialise more to best meet the demands of the market, despite their common generic knowledge base. This study has added to the understanding of Dweck's ITsI in a UK educational context, with a number of exciting and interesting practical implications for EPs. Given the increased level of skills and knowledge in research skills (Frederickson, 2013), EPs are also well-equipped to contribute to the future areas of possible research that are outlined in the next section.

5.6 Future areas of possible research

This section is intended to provide an outline of future areas of possible research. Some of these areas were identified within the literature review of this study. This study has highlighted a number of other useful areas and also some necessary adaptations to those areas previously identified.

These possibilities are outlined below in table 7in order to enhance clarity. They are not intended to necessarily be exhaustive, but are rather intended to identify a range of potentially useful areas for further research.

Table 7 – Future areas of possible research

Possible area	Brief description of the nature of a future area for possible research	Rationale
1	Replication of this study in different schools in the UK	To critically examine the understanding of Dweck's ITsI from this study with different students from different schools and test the generalisability of the current findings.
2	Replication and necessary adaptations of this study to incorporate different students, e.g. those from different year groups, differing attainments, differing cultural backgrounds	To extend the understanding to a broader student population and also to incorporate the significance of cultural variables.
3	To adapt this study so as to apply it to Year 6 children in primary schools.	To better understand the potential applicability of Dweck's ITsI to younger students.
4	To examine the effect of holding different theories upon learning behaviour in the UK context	Most of the existing research base is from outside of the UK context.
5	Longitudinal studies in different schools with a broad range of students to examine the effect of holding different theories upon learning outcomes in the UK across different subjects.	To verify the limited research base of the impact of holding different ITsI upon academic outcomes.
6	Examining the ITsI of adults in schools and of influential adults at home	To extend our understanding of the significance of teachers' and parents' ITsI on children's developing ITsI.
7	To examine how best to change the ITsI of influential adults in school, at home and in the community, perhaps through case studies and/or action research.	To add this important understanding of how best to bring about change.
8	To examine the effects of interventions designed to change the ITsI of students and influential adults at home and school	To better understand how interventions work in changing students' ITsI and influential adults' ITsI
9	To examine what might have influenced the ITsI of students, by incorporating the perspectives of influential adults.	To better understand this area, so as to make further adaptations to the environment.
10	Longitudinal studies to examine any relationship between conceptions of intelligence and ITsI.	To establish if such a relationship exists, and if so, to find out how it can operate.
11	Longitudinal studies to examine the stability of ITsI in the UK context.	To better understand the nature of ITsI as students mature.

5.7 Reflexive account

The primary focus of this account is to discuss some of the routes that I have taken in selecting this specific area of study (Oliver, 2008), to show how the evolution of my thinking affected the research process (Shaw, 2010). This is particularly pertinent given the broad range of possible research areas that were identified in the literature review. This account is also intended to capture some learning and understanding about the nature of the research process in this study. Engaging with other people's language is a privilege that brings with it the responsibility of reflexivity (Shaw, 2010). Reflexivity relates to the maintenance of high professional standards of research (Payne and Payne, 2004).

Before starting this research study, I recall holding a number of key thoughts. Firstly, I was surprised that Dweck's ITsI had seemed to have limited impact upon professional educational psychology in the UK, given its potential significance. Secondly, I considered the urgent necessity of longitudinal studies in the UK context to examine the effect of holding different theories upon academic outcomes (but was concerned that the necessary time span of about five years was unrealistic for this study). Thirdly, I was interested how Dweck's ITsI might apply to the UK, particularly given the historical context of education in the UK. Since I started this study, I have kept a diary of my thinking over time. This was useful in illustrating the range of different ideas that I have considered during the process of this study.

There are several threads to the evolution of my thinking during this study. The first of these threads was a developing sense of what realistically could

be achieved within the scope of this study, given the multiple possible areas that I had identified for research. I considered action research within a school, with a focus upon adapting school practices, as well as other research ideas that considered the involvement of key adults at school and at home. For instance, I considered adapting Dweck's (1999) questionnaire and comparing the perspectives of students and adults. The second of these threads was an emerging criticality about the reliance upon questionnaire methods to measure students' ITsI. Prior to this criticality, for instance, I had considered interviewing some students and administering the questionnaire to all students from that year group. This was an interesting lesson for me in research practice. A widely used and accepted questionnaire was available for me to use, but as my criticality developed about this approach, I increasingly reached the view that although this would have been the easy thing to do, it would not have fitted with my emerging realisation that these students' ITsI needed to be identified in a different manner.

I relied on advice and support during this process. For instance, although the aims of the study became more focused, I had several doubts about my decision to focus on interviewing students about their implicit beliefs and their thoughts about the influences upon such beliefs. Those doubts related to concerns about how difficult it was likely to be to illuminate such implicit beliefs. My interest and experience in ideas from personal construct psychology (Kelly, 1963) and family therapy (Dallos and Draper, 2000) highlighted to me that illuminating such implicit beliefs might not be an easy task. I doubted the wisdom of this choice given my limited research experience. The support that I received at this stage was pivotal in helping me to manage my doubts. Perhaps the most helpful advice that I received in this regard was to 'have a go' at several pilot interviews and then to reflect upon

them so as to review my approach. The pilot interviews were encouraging and also offered some clear ways to improve my approach. It was both useful and uncomfortable to listen to the recordings of my interviewing. This discomfort and learning was extended as I transcribed and then incorporated my questioning in the findings of this work.

I had previously under-estimated just how iterative the process of conducting such a research study is. For instance, I considered that I had a reasonable foundation of knowledge and understanding of the research literature in relation to Dweck's ITsI. However, as my criticality developed, I realised that there were gaps in the criticality of that knowledge and understanding; I realised that I needed to pay much closer attention to what wasn't discussed in such studies, such as the unremarked finding that students from America in one study appeared to favour the incremental theory (Blackwell et al, 2007).

5.8 Final comments

Being an EP is a privilege. It is privilege to be able to talk to people about important aspects of their lives with the aim of trying to help them. From this privileged position of being able to access such insights from people's lives, I have learnt a lot about the limits that I have perceived that people have placed upon their future development. Given these observations and my interests in personal development and growth, it is unsurprising that Dweck's ITsI resonated so strongly with me. This level of personal and professional interest has helped me greatly in this work. My reflections include both a sense of satisfaction and urgency. I am pleased that I have been able to identify a range of interesting, significant and useful knowledge from the work of this study. Yet, I am also left with a sense of urgency about the amount of

work that still needs to be done such that Dweck's work can be accurately understood and well applied.

References

Allen, A. and Hardy, J. (2013). The future of educational psychology. In C. Arnold and J.Hardy (Eds.), *British Educational Psychology: The First Hundred Years* (pp 141-166). Leicester: The British Psychological Society.

Arnold, C. (2013). *Origins*. In C. Arnold and J.Hardy (Eds.), *British Educational Psychology: The First Hundred Years* (pp 1-11). Leicester: The British Psychological Society.

Aronson, J., Fried, C. and Good, C. (2002). Reducing the Effects of Stereotype Threat on African American College Students by Shaping Theories of Intelligence. *Journal of Experimental Social Psychology*, 38, 113-125.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. New Jersey: Prentice Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.

Beaver, R. (1996). *Educational Psychology Casework: A Practical Guide*. London: Jessica Kingsley.

Biggs, J. (1985). The role of metalearning in study processes. *British Journal of Educational Psychology*, 55(3), 185-212.

Black, P., Broadfoot, P., Daugherty, R., Gardner, J., Harlen, W., James, M. et al. (2002). *Testing, Motivation and Learning*. Assessment Reform Group. Cambridge: University of Cambridge.

Blackwell, L., Trzesniewski, k. And Dweck, C. (2007). Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention. *Child Development* 78(1), 246-263.

Blatchford, P, Hallam, S, Ireson, J. and Kutnick, P., with Creech, A. (2008). *Classes, Groups and Transitions: structures for learning and teaching (Primary Review Research Survey 9/2*), Cambridge:

University of Cambridge Faculty of Education.

Boyatzis, R (1998). *Transforming Qualitative Information: Thematic analysis and code development*. London: Sage.

Braun, V. and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.

British Psychological Society (2010). *Code of Human Research Ethics*. Leicester: British Psychological Society.

Bryman, A. (2001). *Social Research Methods*. Oxford: Oxford University Press.

Burr, V. (2003). *Social Constructionism* Hove: Routledge.

Cimpian, A., Arce, H, Markman, E. and Dweck, C. (2007). Subtle Linguistic Cues Affect Children's Motivation. *Psychological Science*, 18(4), 314-316.

Claxton, G. (1999). *Wise Up: The Challenge of Lifelong Learning*. London: Bloomsbury.

Claxton, G., Chambers, M. Powell, G. and Lucas, B. (2011). *The learning powered school.* Bristol: TLO.

Coldron, J., Willis, B. and Wolstenholme, C. (2009). Selection by attainment and aptitude in English secondary schools. *British Journal of Educational Studies*, 57(3), 245-264.

Creswell, J. (2007). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. London: Sage.

Dallos, R. and Draper, R. (2000). *An introduction to family therapy*. Buckingham: Open University Press.

Department for Education (2010). *Guide to SEN and LDD progression data*. London: Department for Education.

Department for Education (2011). *PISA 2009 Study: How big is the gap?* London: Department for Education.

Department for Education (2012). *2011 School Performance Tables*. London: Department for Education.

Department for Education and Skills (2005). *Social and Emotional Aspects of Learning*. *Primary National Strategy*. London: HMSO.

Devonshire, P. (2013). IQ – a potent meme. *The Psychologist*, 26(1), 2.

Diener, C. and Dweck, C. (1978). An Analysis of Learned Helplessness: Continuouse Changes in Performance, Strategy and Achievement Cognitions Following Failure. *Journal of Personality and Social Psychology*, 36(5), 451-462.

Diener, C. and Dweck, C. (1980). An Analysis of Learned Helplessness: II The Processing of Success. *Journal of Personality and Social Psychology*, 39(5), 940-952.

Dweck, C. (1986). Motivational Processes Affecting Learning *American Psychologist*, 41(10), 1040-1048.

Dweck, C. (1999). *Self Theories: Their role in Motivation, Personality, and Development*. Philadelphia: Psychology Press.

Dweck, C. (2007). *Mindset: The New Psychology of Success*. New York: Random House.

Dweck, C. (2008). Can Personality Be Changed? The Role of Beliefs in Personality and Change. *Current Directions in Psychological Science,* 17(6), 391-394.

Dweck, C., Chiu, C. and Hong, Y. (1995 a). Implicit theories and their roles in Judgements and reactions: A world from two perspectives. *Psychological Inquiry*, 6(4), 267-285.

Dweck, C., Chiu, C. and Hong, Y. (1995 b). Implicit Theories: Elaboration and Extension of the Model. Psychological Inquiry, 6(4), 322-333.

Dweck, C. and Leggett, E. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*. 95, 256-273.

Dweck, C. and Molden, D. (2007). Self theories: their impact on competence motivation and acquisition. In A. Eliot and C. Dweck (Eds.), *Handbook of competence and motivation* (pp122-140). London: The Guilford Press.

Egan, D. (2013). *Poverty and Low Educational Achievement in Wales: Student, Family and Community Interventions.* York: Joseph Rowntree Foundation.

Elliott, R., Fischer, C. and Rennie, D. (1999). Evolving guidelines for publication of qualitative research in psychology and related fields. *British Journal of Clinical Psychology*, 38, 215-229.

Farrell, P., Woods, K., Lewis, S., Rooney, S., Squires, G. and O'Connor, M. (2006). *A review of the functions and contributions of educational psychologists in England and Wales in light of "Every Child Matters: Change for Children"*. London: Department for Education and Skills.

Felzmann, H. (2009). Ethical issues in school-based research. *Research Ethics Review*. 5(3), 104-109.

Fereday, J. and Muir-Cochrane, E. (2006). Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development. *International Journal of Qualitative Methods*, 5(1), 80-92.

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford: Stanford University Press.

Ford, H. (2009). *My Life and Work: An Autobiography of Henry Ford*. New York: Classic House Books.

Fox, M. (2003). Opening Pandora's Box: Evidence-based practice for educational psychologists. *Educational Psychology in Practice*, 19(2), 91-102.

Fox, M. (2009). Working with systems and thinking systemically: disentangling the crossed wires. *Educational Psychology in Practice*, 25(3), 247-258.

Fox, M. (2011). Practice-Based Evidence: Overcoming Insecure Attachments. *Educational Psychology in Practice*, 27(4), 325-335.

Francis, B. and Archer, L. (2005). British-Chinese pupils' and parents' constructions of the value of education. *British Educational Research Journal*, 31(1), 89-108.

Francis, B., Skelton, C. and Read, B. (2010). The simultaneous production of educational achievement and popularity: how do some pupils accomplish it? *British Educational Research Journa*l. 36(2), 317-340.

Frederickson, N. (2013). The move to doctoral training: A study in systems change. In C. Arnold and J.Hardy (Eds.), *British Educational Psychology: The First Hundred Years* (pp 115-127). Leicester: The British Psychological Society.

Gardner, H. (1983). *Frames of Mind: The theory of multiple intelligences*. New York: Basic Books.

Gillham, B. (Ed.) (1978). *Reconstructing educational psychology*. London: Croom Helm.

Gladwell, M. (2009). *Outliers: The Story of Success.* London: Penguin.

Glasgow University Centre for Confidence and Well-being (2007). *Mindset: The Psychology of Learning and Achievement.* Retrieved May 5 2009, from http://www.centreforconfidence.co.uk

Goleman, D. (1996). *Emotional Intelligence: Why It Can Matter More than IQ*. London: Bloomsbury.

Graham, S. (1991). A Review of Attribution Theory in Achievement Contexts. *Educational Psychology Review*, 3(1), 5-39.

Hallam, S., Ireson, J., and Davies, J. (2004a). Grouping practices in the primary school: what influences change? *British Educational Research Journal*. 30(1), 118-140.

Hallam, S., Ireson, J. and Davies, J. (2004b). Primary pupils' experiences of different types grouping in school. *British Educational Research Journal*. 30(4), 516-533.

Hammersley, M. (2008). *Questioning Qualitative Inquiry – Critical Essays.* London: Sage.

Harackiewicz**,** J. and Elliot, A. (1995). Life is a Roller Coaster When You View the World Through Entity Glasses. *Psychological Inquiry,* 6(4), 298-301.

Henderson, V and Dweck, C. (1990). Achievement and motivation in adolescence: A new model and data. In S. Feldman and G. Elliott (Eds.), *At the Threshold: The developing adolescent. Cambridge*, Ma: Harvard University Press.

Henderlong Corpus, J. and Lepper, M. (2007). The Effects of Person Versus Performance Praise on Children's Motivation: Gender and age as moderating factors. *Educational Psychology*. 27(4), 487-508.

Hernstein, R. and Murray, C. (1994). *The bell curve: Intelligence and class structure in American life*. New York: Free Press.

Heyman, G. and Dweck, C. (1998). Children's Thinking about Traits: Implications for Judgements of the Self and Others. *Child Development*. 69(2), 391-403.

Hoffman, R., Hoffman, W. and Gray, J. (2008). Comparing key dimensions of schooling: towards a typology of European school systems. *Comparative Education*. 44(1), 93-110.

Hong, Y., Chiu, C., Dweck, C., Lin, D. and Wan, (1999). Implicit Theories, Attributions, and Coping: A Meaning System Approach. *Journal of Personality and Social Psychology*, 77(3), 588-599.

Hufton, N., Elliott, J. and Illushin, L. (2003). Teachers' Beliefs about Student Motivation: similarities and differences across cultures. *Comparative Education*, 39(3), 367-389.

Ireson, J., Hallam, S. and Hurley, C. (2005). What are the effects of ability grouping on GCSE attainment? *British Educational Research Journal*. 31(4), 443-458.

Ireson, J., Hallam, S. and Plewis, I. (2001). Ability grouping in secondary schools: Effects on pupils' self-concepts. *British Journal of Educational Psychology*, 71, 315-326.

Jones, E. and Berglas, S. (1978). Control of attributions about the self through self-handicapping strategies: the appeal of alcohol and the role of underachievement. *Personality and Social Psychology Bulletin*, 4, 200-206.

Jussim, L. and Harber, K. (2005). Teacher Expectations and Self-Fulfilling Prophecies: Knowns and Unknowns, Resolved and Unresolved Controversies. *Personality and Social Psychology Review*. 9(2), 131-155.

Kamins, M. and Dweck, C. (1999). Person Versus Process Praise and Criticism: Implications for Contingent Self-Worth and Coping. *Developmental Psychology*. 35(3), 835-847.

Kelly, G. (1963). *A Theory of Personality: The Psychology of Personal Constructs*. New York: Newton**.**

King, N. and Horrocks, C. (2010). *Interviews in Qualitative Research*. London: Sage.

Kotter, J. (2012). *Leading Change*. Boston: Harvard Business Review Press.

Kutnik, P., Hodgkinson, S., *Pupil grouping strategies and practices at Key*

Sebba, J., Humphreys, S., Galton, M., Steward, S. et al. (2006). *Stage 2 and 3: case studies of 24 schools in England*. Research Brief RB796. Nottingham: Department for Education and Skills Publications.

Kvale, S. (1996). *Interviews: An Introduction to Qualitative Research Interviewing*. London: Sage.

Kvale, S. (2006). Dominance Through Interviews and Dialogues. *Qualitative Inquiry*. 12(3), 480-500.

Lavis, V. (2010). Multiple Researcher Identities: Highlighting Tensions and Implications for Ethical Practice in Qualitative Interviewing. *Qualitative Research in Psychology*. 7, 316-331.

Lincoln, Y. and Guba, E. (1985). *Naturalistic Inquiry*. London: Sage.

Maslow, A. (1954). *Motivation and personality*. New York: Harper.

Mason, J. (2002). Qualitative Interviewing: Asking, listening and interpreting in T. May. (eds.), *Qualitative Research in Action (chapter 10)*. London: Sage.

Matthews, B. and Ross, L. (2010). *Research Methods: A practical guide for the social sciences*. Harlow: Pearson Education.

Mclean, A. (2003). *The Motivated School*. London: Paul Chapman.

Mclellan, E.; Macqueen, K. and Neidig, J. (2003). Beyond the qualitative interview: Data Preparation and Transcription. *Field Methods*. 15(1), 63-84.

McNally, S. and Telhaj, S. (2007). *The Cost of Exclusion: Counting the cost of youth disadvantage in the UK*. London: Prince's Trust.

Meyrick, J. (2006). What is Good Qualitative Research? A First Step towards a Comprehensive Approach to Judging Rigour/Quality. *Journal of Health Psychology*. 11(5), 799-808.

Mueller, C. and Dweck, C. (1998). Praise for Intelligence Can Undermine Children's Motivation and Performance. Journal of Personality and Social Psychology, 75(1), 33-52.

Myszor, P. (2012). The learning powered school *Educational Psychology in Practice*. 28(3), 332-333.

Neisser, U., Boodoo, G., Bouchard Jr., T., Wade Boykin, A. Brody, N., Ceci, S., et al.(1996). Intelligence: Knowns and Unknowns *American Psychologist*, 51(2), 77-101.

O'Day, B. and Killeen, M. (2002). Reseach on the Lives of Persons with Disabilities: The Emerging Importance of Qualitative Research Methodolgies. *Journal of Disability Policy Studies*, 13(1), 9-15.

Oliver, P. (2008). *Writing Your Thesis* London: Sage.

OFSTED (2003). *Good assessment in secondary schools*. Manchester: OFSTED.

Oxford Dictionaries (2012). Retrieved 17 May 2012 from oxforddictionaries.com

Pajares, F. (1996). Self-Efficacy Beliefs in Academic Settings. *Review of Educational Research*. 66(4), 543-578.

Payne, G. and Payne, J. (2004). *Key Concepts in Social Research.* London: Sage.

Pearl Evans, S., Grahamslaw, L., Henson, L. and Prince, E. (2012) Is the restructured initial professional training in educational psychology fit for purpose? Educational Psychology in Practice, 28(4), 373-393.

Peterson, C. (1995). Entity and Incremental World Views: some Lessons From Learned Helplessness Theory and Research. *Psychological Inquiry*, 6**(**4), 307-310.

Petty, G. (2008). *Dweck's Theory of Motivation*. Retrieved September 30, 2009 from teacherstoolbox.co.uk

Potter, J. and Hepburn, A. (2005). Qualitative interviews in psychology: problems and possibilities. *Qualitative Research in Psychology*, 2, 281-307.

Rattan, A., Naidu, N., Savani, K. and Dweck, C. (2012). Can Everyone Become Highly Intelligent? Cultural Differences in and Societal Consequences of Beliefs About the Universal Potential for Intelligence. *Journal of Personality and Social Psychology*, 103(5), 787-803.

Raveaud, M. (2005). Hares, Tortoises and the Social Construction of the Pupil: Differentiated Learning in French and English Primary Schools. *British Educational Research Journal*, 31(4), 459-479.

Reay, D. and Wiliam, D. (1999). 'I'll be a nothing': structure, agency and the construction of identity through assessment. *British Educational Research Journal*, 25(3), 343-354.

Rhodes, J. and Ajmal, Y. (1995). *Solution Focused Thinking in Schools*. London: BT Press.

Rhydderch, G. and Gameson, J. (2008) The Constructionist Model of Informed and Reasoned Action (COMOIRA). In B. Kelly, L.Woolfson and J. Boyle (Eds.), *Frameworks for Practice in Educational Psychology. London*: Jessica Kingsley.

Robins, R. and Pals, J. (2002). Implicit-Self-Theories in the Academic Domain: Implications for Goal Orientation, Attributions Affect, and Self-Esteem Change. *Self and Identity*, 1(4), 313-336.

Robinson, K. (2010). *Bring on the Learning Revolution*. TED 2010

Robson, C. (2002). *Real World Research*. Oxford. Blackwell.

Rogers, C. (1990). *The Carl Rogers Reader*. London: Robinson.

Rosenthal, R. and Jacobson, L. *(1968).* Pygmalion in the Classroom. *The Urban Review,* September, 16-20.

Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monograph*, 80, 1-28.

Ryan, G. and Bernard, H. (2003). Techniques to Identify Themes. *Field Methods*, 15(1), 85-109.

Schunk, D. (1995). Implicit Theories and Achievement Behaviour**.** *Psychological Inquiry*, 6(4), 311-314.

Seligman, M. (2007). *What you can change…and what you can't*. London: Nicholas Brealey Publishing.

Shaw, R. (2010). Embedding Reflexivity Within Experiential Qualitative Psychology. *Qualitative Research in Psychology*, 7, 233-243.

Siraj-Blatchford, I. (2010). Learning in the home and in school: how working class children succeed against the odds. *British Educational Research Journal,* 36 (3), 463-482.

Skipper, Y and Douglas, K. (2012). Is no praise good praise? Effects of positive feedback on children's and university students' responses to subsequent failures. *British Journal of Educational Psychology*, 82(2), 327-339.

Smiley, P. and Dweck, C. (1994). Individual Difference in Achievement Goals among Young children. *Child Development*, 65, 1723-1743.

Sternberg, R. (1985). *Beyond IQ: A Triarchic Theory of Intelligence* Cambridge: Cambridge University Press.

Stipek, D. and Gralinski, J. (1996). Children's Beliefs About intelligence and *School Performance*. 88(3), 397-407.

Strand, S., Deary, I. and Sex differences in Cognitive Abilities Test

Smith, P. (2006). scores: A ENGLISH national picture. *British Journal of Educational Psychology*. 76, 463-480.

Wagner, P. (1995). *School consultation: frameworks for practising educational psychologists – a handbook*. Kensington and Chelsea Educational Psychology Service.

Weiner, B. (1985). An Attributional Theory of Achievement Motivation and Emotion. *Psychological Review*. 92(4), 548-573.

Weiner, B. (1995). Lessons From the Past. *Psychological Inquiry*, 6**(**4), 319-321.

Whittemore, R., Chase, S. and Mandle, C.L. (2001). Validity in Qualitative Research *Qualitative Health Research* 11(4), 522-537.

Willig, C. (2001). *Introducing Qualitative Research in Psychology: Adventures in theory and method*. Buckingham: OU Press.

Yardley, L. (2011). Demonstrating Validity in Qualitative Research in J. Smith (eds.), *Qualitative Psychology: A practical guide to research methods* (pp 234-251). London: Sage.

Yeager, D. and Walton, G. (2011). Social-Psychological Interventions in Education: They're Not Magic. *Review of Educational Research*, 81(2), 267-301.

Yorke, M. and Knight, P. (2004). Self-theories: some implications for teaching and learning in higher education. *Studies in Higher Education*. 29(1), 25-37.

Appendices

Appendix A

Debriefing about Study Trying to make the implicit more explicit: An Exploration of the Utility of Carol Dweck's Implicit Theories of Intelligence in an English Secondary School

School of Psychology
Cardiff University
Cardiff

Date

Dear …….,

Thank you for very much for taking part in this study.

As you know, the purpose of this study is to better understand students' views about the nature of intelligence.

The semi-structured interviews have been carried out to explore students' beliefs about the nature of intelligence (e.g. is intelligence believed to be fixed or changeable; are those beliefs about intelligence consistent across different learning situations), and to explore key influences upon those beliefs.

Thanks for taking part and helping my understanding of these ideas in the context of an English Secondary School.

The information has been gathered confidentially and will be anonymised within two days, so that it is impossible to trace this information back to you individually. This information may be retained indefinitely. You can withdraw this data up until the point that it is anonymised.

In case of any complaints, these could be sent to the Ethics Committee, School of Psychology, Cardiff University, Tower Building, 70 Park Place, Cardiff, CF10 3AT.

Many thanks once more,

Rob Green
Doctoral Student in
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Appendix B

Gatekeeper letter to Headteacher

School of Psychology
Cardiff University
Cardiff

Date

Dear (Headteacher)

I am a postgraduate student in the School of Psychology, Cardiff University. As part of my degree I am carrying out a study on student's views about *the nature of* intelligence. I am writing to enquire whether you would be interested in and willing *for your school* to participate in this research.

Identifying and changing students' beliefs about the nature of intelligence could potentially help to increase the academic attainment of students. The purpose of this study is to better understand the nature of these ideas in the UK context via semi-structured interviews with (6-10) Year *8* students. I will receive supervision for this research from Dr Simon Griffey from Cardiff University.

If you were interested in this research taking place in your school, I would be able to forward you some briefing information about the study that I would *like* to be disseminated to Year *8* students and their parents/carers, to equip them with sufficient information to decide whether they wanted to take part. I would *like* to organise and carry out the interviews on the school premises. I would firstly *like* to meet a focus group of 5-8 Year *8* students to discuss the issues within this study so as to refine the interview prompts for your students. The information from the interviews would be anonymous; participating students will be debriefed at the end of the interview, which I will also show to you.

Many thanks in advance for your consideration of this project. Please let me know if you require further information.

Regards

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Appendix C

School of Psychology, Cardiff University
Consent Form – Parents/carers- Semi-structured interviews

I understand that my child's participation in this project will involve them taking part in a semi-structured interview of up to an hour. This will be a discussion of students' views about the nature of intelligence.

I understand that their participation in this study is entirely voluntary and that they can withdraw from the study at any time without giving a reason. I understand that they are free to ask any questions at any time. You are free to discuss any concerns with Dr Simon Griffey, Supervisor, Cardiff University.

I understand that the information will be gathered confidentially and anonymised within two days, so that it is impossible to trace this information back to them individually. I understand that this information may be retained indefinitely. You can withdraw this data up until the point that it is anonymised.

I also understand that at the end of the study my child will be provided with additional information and feedback about the purpose of the study.

I, _____(NAME) consent for my child _____(NAME) to participate in the study conducted by Rob Green, School of Psychology, Cardiff University with the supervision of Dr Simon Griffey.

Signed: Date

Please return this form to your child's Form Tutor.

Appendix D

Information sheet for Parents/carers – Semi-structured interviews

School of Psychology
Cardiff University
Cardiff

8 October 2012

Dear parents/carers,

I am a postgraduate student at Cardiff University, undertaking a study of students' views about the nature of intelligence.

This will be done via semi-structured interviews. These will take no more than an hour, and will take place in the school. I will receive supervision for this research from Dr Simon Griffey from Cardiff University. In case of any complaints, these should be sent to the Ethics Committee, School of Psychology, Cardiff University, Tower Building, 70 Park Place, Cardiff, CF10 3AT.

The purpose of this letter is to ask if you are willing for your child to take part in this study. It would involve them being interviewed by me about these ideas for up to an hour in school.

Thank you for your consideration; I attach consent forms in relation to this study. If you agree and your child is willing to participate, you would both need to complete the consent forms. Can you please return these consent forms to your child's Form Tutor. Thank you

Yours faithfully,

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Appendix E

School of Psychology, Cardiff University
Consent Form – Student- Semi-structured interviews

I understand that my participation in this project will involve taking part in a semi-structured interview of up to an hour. This will be a discussion of students' views about the nature of intelligence.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason. I understand that I am free to ask any questions at any time. I am free to withdraw or discuss my concerns with Dr Simon Griffey, Supervisor, Cardiff University.

I understand that the information provided by me in an interview will be gathered confidentially and anonymised within two days, so that it is impossible to trace this information back to me individually. I understand that this information may be retained indefinitely. You can withdraw this data up until the point that it is anonymised.

I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

I, _____(NAME) consent to participate in the study conducted by Rob Green, School of Psychology, Cardiff University with the supervision of Dr Simon Griffey.

Signed: Date:

Please return this form to your Form Tutor.

Appendix F

School of Psychology, Cardiff University
Information sheet for students – Semi-structured interviews

School of Psychology
Cardiff University, Cardiff

8 October 2012

Dear Year 8 Student,

I am a postgraduate student at Cardiff University, undertaking a study of students' views about the nature of intelligence.

This will be done via semi-structured interviews. These will take no more than an hour, and will take place in the school. I will receive supervision for this research from Dr Simon Griffey from Cardiff University. In case of any complaints, these could be sent to the Ethics Committee, School of Psychology, Cardiff University, Tower Building, 70 Park Place, Cardiff, CF10 3AT.

The purpose of this letter is to ask if you are willing to take part in this study. It would involve being interviewed by me about these ideas for up to an hour in school.

Thank you for your consideration; I attach consent forms in relation to this study. If you and your parents/carers were both willing for you to participate, you would both need to sign the consent form and return it to your Form Tutor.

Many thanks for your help.

Yours faithfully,

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Appendix G

Prompts for semi-structured pilot interviews

Introduction

1. Thanks for help, participation, rapport- how's your day
2. Me-name, role as researcher into nature of intelligence
3. Anonymity, right of withdrawal; recording

Introductory Prompts

- What's it learning like in year 8?
- If I was to ask the children in this school, what is intelligence, what do you think they would say?
- What would you say that intelligence is?

RQ 1 What beliefs do Year 8 Students in an English Secondary School have about the malleability of intelligence?

Give prompt questions "***You have a certain amount of intelligence and you really can't do much to change it***", and ***"no matter how much intelligence you have, you can always change it quite a bit"***

- What do you think of those statements (that idea)? (that intelligence is fixed or changeable)
- What does your experience of learning tell you (about this idea)?
- Can you tell me (a bit more) about your beliefs about (the nature of) intelligence?
- Do you have the same beliefs about (the nature of) intelligence in different subjects/learning situations? If not, when and how does this work?
- Can you tell me how your beliefs about intelligence affect your learning (in different situations)?
- Have your beliefs about (the nature of) intelligence changed over past months/years…..if so, how so

RQ 2 What do Year 8 students in an English Secondary School identify as having been key influences on their beliefs?

- What influences people's beliefs (about the nature) of intelligence?
- What have been the key influences upon your beliefs (about the nature) of intelligence?

Appendix H

Transcript – Sarah

Transcript		Researcher Codes	Colleague Codes
R	I'm going to start by just asking what is intelligence, what would you say it is?		
S	Uhm, someone who is clever, has a general wide knowledge of everything.	Someone who is clever	Intelligence defined
R	Ok and how would you know if someone is clever? What would that be?		
S	They just show their intelligence. They have more common sense and think beyond normal.	Someone who is clever	Intelligence defined
R	Ok, keep going, you've got an idea there haven't you?		
S	They think outside of the box and have wider, broad aspects of knowledge.		Intelligence defined
R	Ok, ok so they're quite good at thinking but they also have some breadth to it, is it?		
S	Yes.		
R	Yeah, ok, ok, and would it be that you have to be intelligent in lots of areas or can you be intelligent in just some? How does that work?		
S	You can be, I don't know, you can be specialise in one thing. Yeah but you can be clever in everything.		Intelligence explained
R	Ok, that's a really helpful start because what I want to show you, Sarah, is just these statements (points to two Dweck questionnaire		

	items) and tell me what you think of these. We can take them together if you want. So the first one is you have a certain amount of intelligence and you really can't do much to change it, so you have a certain amount of it and you really can't do much to change it and the second statement there is saying no matter how much intelligence you have you can always change it quite a bit so no matter how much intelligence you have you can always change it quite a bit. Have some time to think about them. I'm just going to ask you what your reaction is to it? What do you think of those?		
S	Pause		
R	So you have a certain amount of it and you really can't do much to change it and then this one is saying no matter how much you have you can always change it quite a bit.		
S	Yeah.		
R	What do you think?		
S	I think the second one is more accurate because if you're inclined to learn, then you will but if you have a negative attitude, you're not going to learn but I think sometimes people physically can't you know more.	Agree with malleable view Attitude a factor	Incremental view
R	Sometimes they physically can't?		
S	Yeah.		
R	Yeah, ok so ok, so sometimes that's the case for some people?		
S	Yeah.		
R	Did you have something in mind?		

S	I know, like people with dyslexia sometimes can't do some things that other people can so they can't go further than that until they've learnt to get across it.	Contradictory view	Within person
R	Ok, ok and what about for you, what is your experience, would it be that, is that what you've kind of learned from your experience about intelligence?		
S	Yeah cos like some lessons I just think, they don't interest me so I kind of switch off and then I just think, don't get very far in it.	Depends on interest	Interest a factor
R	Ok, ok, and what about the ones that you do, find interesting, how's that?		
S	I don't know, I kind of try harder, if I don't get something then I will try and find out more rather than just leaving it and forgetting, so..		
R	So thanks for that, so what you think then, Sarah, most of the time is that, is more this statement that no matter how much intelligence you have you can always change it quite a bit?		
S	Yeah.		
R	Apart maybe some odd times with particular needs. Uhm but that's your experience?		
S	Yeah.		
R	That you can always change it quite a bit, can I ask you because you'll go to lots of different bits of learning, won't you, let me guess, you'll probably have english, and languages and maths and art and PE and all sorts of things?		
S	Yeah.		

R	Ok, so do you think that, do you have that opinion in all those different situations?		
S	No, like things you need a skill for, like art and PE, I think if you can't physically do better then I think that's your ability but some people naturally can draw and naturally can do sport. Some people just can't however much they try.	Can't do PE/art.	Incremental does not apply to all subjects.
R	Ok.		
S	So but then maths, english and science I think if you try your hardest you do always learn more.		Incremental some subjects
R	Ok.		
S	Yeah.		
R	Oh, that's great so maths, english and science you could, you can do that, you can change and improve?		
S	Yeah.		
R	Art and PE you can't?		
S	Yeah I think you can but not as much as if you're, so if you do sports outside of, if you do sports a lot then obviously you can be good and if you're interested in it but some people just physically can't push themselves to that limit.		Incremental does not apply to all subjects.
R	Yeah, ok, so it is about this bit here where it says change it quite a bit?		
S	Yeah.		
R	That's, it feels like that's close, so sometimes it might be hard, it depends how you define that?		
S	Yeah.		
R	So are you saying art and PE you can change it a bit but maybe it's got		

	limits?		
S	Yeah.		
R	Is that what you mean?		
S	Yeah.		
R	Oh, ok, what about, what else have you got, can I ask about other subjects then, how would you think about those?		
S	Uhm, what do you mean, like DT?		
R	Yeah we've done, what have we done, english, maths, science, art, PE, what about the others?		
S	Uhm, there's DT which is kind of like art but you're, I dunno, you're physically doing stuff like making.		
R	Would you say in DT you feel you could change your intelligence quite a bit?		
S	Yeah I think so because you have something physical that you can say oh I did this wrong so next time I can, so you can see what you did wrong and see what you can improve on.		Incremental some subjects
R	Ok, yeah, any others that you have? You have a full week, don't you? What else do you have?		
S	Uhm, languages so german and french. I think, I don't know, I don't know because we're used to English, it's kind of like doing two or three at a time so differentiating between the two is quite hard so then it kind of confuses you even more so then having to broaden all of your ideas in languages is quite hard and some people naturally get along with it and some people don't.	Languages difficult	

R	Ok.		
S	So.		
R	So what's your conclusion about languages? Can you change your intelligence in that regard quite a bit?		
S	I think you can change it, yeah, quite a bit but then like you get to a certain limit and then it stops and you have to think about it a lot more.	Languages difficult	Incremental some subjects
R	Ok.		
S	So.		
R	So what is it about art and PE, they feel different?		
S	Yeah.		
R	Can you say a bit more about those?		
S	I don't know, you need a skill, you need to have that skill to be good at it to like show the difference between being good at it and just knowing how to do it.		Why incremental view does not apply to all subjects
R	Yeah.		
S	So cos like anyone can draw but like then there's, you can tell between someone who can draw properly and someone who has just drawn a picture so you need that specific thing to be good at it.	Can't do PE/art	Why incremental view does not apply to all subjects
R	Ok, so I'm not very good at drawing so is there any hope for me? Could I learn? What could I learn?		
S	I don't know because I'm not good at art either. I'm not good at art or PE so.		
R	Ok, does it change how you are in		

	those situations, so your belief if I've got it right, when you're in all those other situations, english, maths, whatever, you're perhaps not thinking it but what you do believe is that you can change your intelligence quite a bit in those situations but art and PE you think a bit differently, you're a bit closer to this one, you can't do much to change it?		
S	Yeah.		
R	You're a bit closer to this one. So does it affect you in how you are in those, if I was to see how you are in those situations? Does that make sense? How are you different?		
S	Yes, like your attitude is less like you get to a limit where you are drawing something and you just can't get it right. You kind of give up because you believe that there is no hope whereas like if you're in maths and you don't quite get something I think you know you can do it in some way so then you are inclined to kind of find out and you feel like you can so you just give up.	Can't do PE/art	Give up if entity
R	That's fascinating, ok and do you know where these beliefs have come from, your opinions have come from like this?		
S	I don't know. I think it's because I'm not very good at these things so I've built up a big like, I don't know, it's because I'm not good at it so I've kind of like experienced it.	Experienced difficulties	
R	For art and PE?		
S	Yeah so I'm not very good at art but because I'm in set 1 for English I'm in set 1 for art so everyone around me is pretty good at art and then I'm there, like, I just can't, sometimes I	Opinion about sets Can't do PE/art	

	can't, picture things and I kind of.		
R	Visually you can't?		
S	Yeah, yeah and you get so far and you feel it's the end, like you've tried so many times and it's like, I don't know you give up kind of thing and you just have the attitude that you don't want to do it.	Can't do PE/art	Give up if entity
R	Ok.		
S	So then you don't do it.		
R	Yeah, yeah, so in that way I haven't got much better at it because I didn't practice probably as much, I don't know?		
S	Yeah.		
R	Oh, ok and what about those subjects that you think you can change it quite a bit, you know, most of the stuff for you, where's that come from? You know, what's influenced you to think that?		
S	Uhm, I think it's mostly maths because I was in set 1and then I was, I was underachieving really and I was finding everything really hard and I was moved down and then I saw a like massive because we were doing like simple stuff, well less complicated stuff and like we'd been taught it better then I saw a massive increase so I thought that like if you change the way that you think about it because I used to walk into maths and think I can't do this, now I walk in like with an open mind like I will be taught it and I think, I don't know if you believe in yourself, you can.	I didn't think I could do this Used to have a fixed view I didn't think I could do this	Less fixed in lower set
R	So did you go from set 1 to set 2 and back to set 1?		

S	No, I'm still in set 2, but I'm like at the top really.		
R	Brilliant, ok, and any other ways that has influenced your opinion?		
S	Uhm, I guess english because like last year and year 7 I was in set 2 and this year I was moved up to set 1 so it's kind of like I have improved.	Influence of results	Moving up a set influences incremental view
R	Yeah.		
S	And now I see what I have to do to maintain this level so you know what you have to do to achieve so then you can set that goal.		Set myself goal
R	I see and do you know, Sarah, when you first had this opinion about that generally you can always change your intelligence apart from what you've said about art and PE. Looking back, do you know when you first kind of came to that?		
S	I think it was when I first came to x school.		
R	Was it?		
S	Yes, because like in primary things weren't so serious, they were just teaching you the basics but here it's kind of like you're getting to the end so you need to learn more.	Transition secondary school	Primary school less serious
R	Ok.		
S	And then you kind of see what your abilities are and what your weaknesses are so.		
R	Sorry, I interrupted you, how do you get to see what your abilities and weaknesses are?		
S	Like with sets and like your test scores and they give you predicted grades and stuff so.		Sets and tests indicate abilities

R	Ok, how does it work?		
S	They, the predicted grades are done on computers, they get your average score and see how far you can achieve so that's how they do the predicted grades.		
R	And how does that affect your opinions about the nature of intelligence? Do you understand?		
S	I don't know, it gives you a goal that you know, you don't have to reach it but if you reach it then you normally stay in your set so it kinds of and you know what to aim for so then I don't know, you know you have to be that good.		
R	Yeah.		
S	So then you can change it so that you're better.		
R	Ok, so, I'll try to sum up what you've come to conclude here. You think that intelligence is quite a big thing about different sorts of understanding and thinking out of the box as well as the common sense stuff and you think for most things you can always change it quite a bit, maybe some skill-based things like art and PE less so and it might be nearer to this idea of being fixed but for most things you can change it and what's influenced your opinions is about experience really of being in different sets and getting feedback from assessments and targets, is that about right?		
S	Yeah.		
R	Anything else that's influenced you, do you think?		
S	I guess it's other people, what		Compare with

	they're achieving and you kind of compare it so if you get a lower score than someone you think, oh I'm not clever but if you get better than them you think they're not clever or you're clever.		others
R	Ok.		
S	So then, if someone gets higher than you, you try and achieve that so then you're wanting to change so then you have a positive attitude and you can change it.		Compare with others
R	Yeah and what about art and PE in that way, it sounds like you've come to a conclusion that you can't change that very much?		
S	Yeah.		
R	How do you come to terms with that, what do you do?		
S	I think It's cos if you've always been bad at a skill then you feel it gets to some point that you feel you really can't do it and it's impossible so then you just turn away from it and give up.	Can't do PE/art	Give up if entity
R	Ok, so can I ask you directly then in terms of something like art or PE. I mean would you see that you certainly see that as a skill or a large part of it as a skill?		
S	Yeah.		
R	Would you see them as forms of intelligence?		
S	Uhm, I think art, yes, but I don't think PE.	Different kinds of intelligence	Art is an intelligence PE not intelligence
R	How so?		
S	I don't know like, the physical not the practical, no the practical not the		

	knowledge because like anyone can run, it's just some people's bodies can run faster and further so I don't think it's knowledge or intelligence that makes you do that.		
R	No.		
S	I think it's like willpower and strength, and agility.		
R	I can see that and what about art? You would include art as being a form of intelligence, is that right from what you said?		
S	Yeah, I guess it is but then you need the skill to be able to do it as well as the intelligence to back it up.		Art is an intelligence
R	What's the intelligence part of it?		
S	Like to be able to know what, how to do it and how to go about it, that kind of think.	Different kinds of intelligence	
R	Oh, ok, that's really interesting, is there anything else because what you've said that has influenced you has been a lot about experience really and your reflections on those experiences such as moving sets and things. Uhm, do you get spoken to at home or at school about any of these ideas? Has anything influenced you in terms of messages, really or any other way?		
S	Uhm, I guess if teachers tell you if your work's good then you feel that you've reached something, then you look back and see how much you've improved and I guess that makes you feel you can improve a lot but then if someone says like you're not good at this or something you feel that you haven't changed and like again there's no way of you changing it.	Influence of results	Teachers influence

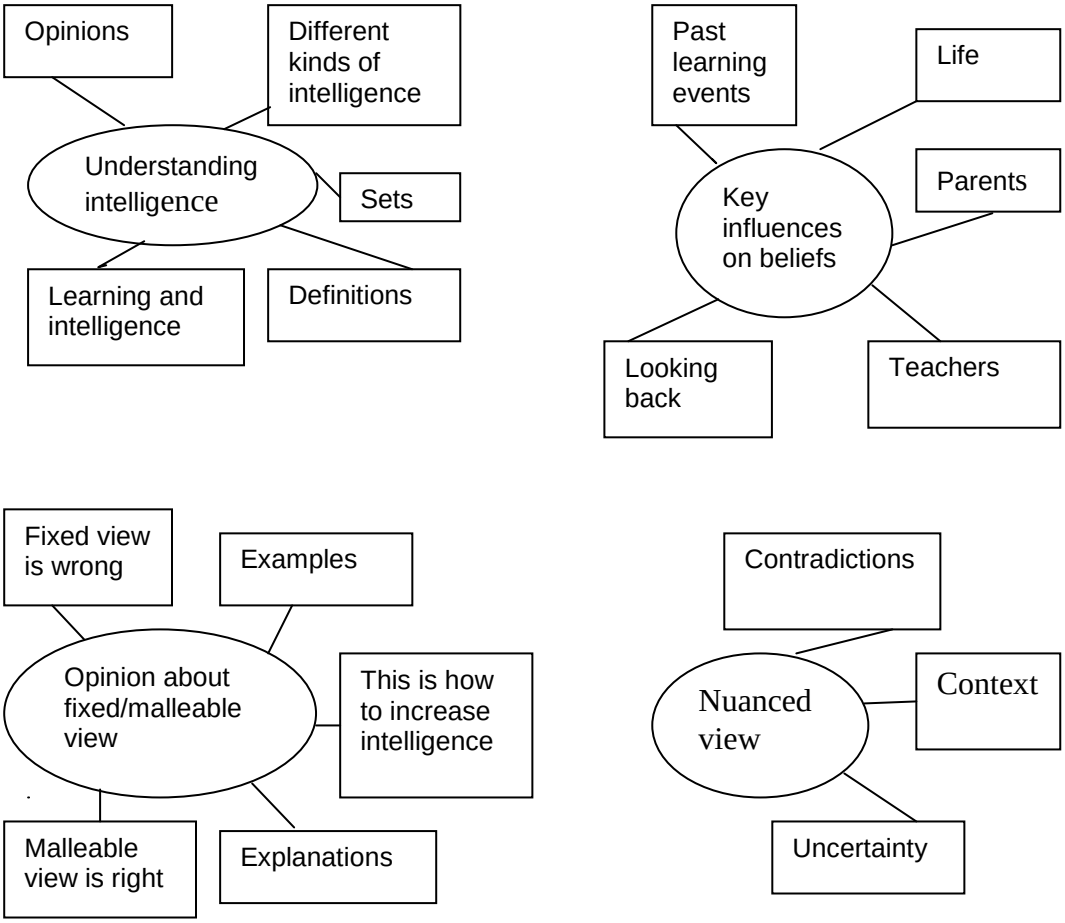
R	Oh, ok, it feels a bit stuck.		
S	Yeah.		
R	Not much you can do about it, out of your control, really interesting. If I was to ask you if we had all the Year 9's here, say, how would they define intelligence do you think? How do most people in your school define intelligence?		
S	I think they'd probably say like if they knew pretty much everything about everything I think they'd just say if you know a lot, then that would be intelligence.		Peers view of intelligence
R	Ok and are there things that you are interested in?		
S	Music really.		
R	Ok let's take the example of a concert musician and let's say they're brilliant, you know top ten in the world at whatever it might be, how would you understand that in terms of their intelligence, would you see that as being relevant to understanding someone's intelligence?		
S	Yeah, I think music again is a skill and an intelligence kind of thing because some people can get it and some people can't, like I think you have certain things in you say like some people have art in them and they naturally can do it and some people have music.	Different kinds of intelligence	Music an intelligence
R	Yeah.		
S	But then again it is intelligence like knowing all of the different aspects.		
R	Yeah.		
S	So I guess it would be more		

	intelligence that you see then underneath it would be skill.		
R	Yeah, yeah, is there anything I've not asked you that you think I should have done?		
S	I don't think so.		
R	Let me see if I've missed anything, you've told me about this all really clearly, let me stop.		

Appendix I

Initial Thematic Map

Initial Thematic Map



Appendix J

Developed Thematic Map

Developed Thematic Map