

The Effects of Schooling and Education Policy on the Subjective Well-Being of Children: A Comparative Study

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Abstract

There has been increasing interest in subjective well-being, including child subjective well-being, in recent years. However there has been comparatively little work considering the impact of school and education policies on children's subjective well-being, despite the important roles these areas play in children's lives. This thesis aims to reduce this gap in the literature by investigating the relationship between schools and children's subjective well-being through the quantitative analysis of a range of secondary datasets from England and the USA.

The thesis first presents analysis demonstrating a generally positive relationship between subjective well-being and school performance reiterating evidence from elsewhere that subjective well-being is important to objective outcomes. The remainder of the thesis presents analyses investigating the extent and nature of the influence of the school a child attends on their overall subjective well-being. It is the results of these analyses that provide the original contribution to literature of this thesis. This analysis both quantifies the amount of variance in subjective well-being explained by the school a child is attending and demonstrates which areas of children's lives are influenced by schools. It finds that schools play an important social and supportive role in children's lives, explaining considerable proportions of the variance in subjective well-being. The comparison between England and the US in this regard demonstrates that schools play an important role in children's lives in both nations, but in different forms. Results for England emphasise a more emotional and supportive role for schools, while in the US the social role of school appears more critical for children's subjective well-being.

The results of this thesis therefore support calls for a change in approach to education policy in England and the US from an almost exclusive focus on attainment towards a more holistic approach, considering the impact of schools on the whole child, as well as highlighting schools as an important area of research for those concerned with children's well-being.

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Author's Declaration

A chapter related to the work presented in Chapter 4 of this thesis is currently under review for inclusion in a book:

Clair, A. (forthcoming) 'Conceptualising Child Versus Adult Well-Being: Schooling and Employment', in Graf, G. and Schweiger, G. *The Well-Being of Children: Philosophical and Social Scientific Approaches*. De Gruyter.

All work presented here is my own and has not been previously submitted for an award at the University of York or any other institution.

Chapter 1: Introduction

1.1: Overview

This thesis investigates the impact of schools and education policies on children's subjective well-being. Schools are a key area of children's lives, somewhere the majority of children will spend a significant proportion of their childhood, while education policy is considered one of the most significant ways in which governments intervene in the lives of children. As such, at a time when subjective well-being is receiving a considerable amount of policy attention, schools and education policy would appear to be a key area of concern for governments and policy makers seeking to maximise subjective well-being. However education policy in England during the last 30 years has been characterised by frequent and considerable change with little regard for impacts on children's subjective well-being. The nature and extent of these changes has caused commentators and experts to raise concerns about the changes and their impacts on children's lives. Despite this there has been little, if any, shift in policy direction. Those in favour of the changes have argued that they are both necessary and desirable as they will maximise educational attainment and ensure better lives for children as they become adults.

Such future oriented priorities have been emphasised as global forces in education, such as the OECD (Organisation for Economic Co-operation and Development) PISA (Programme for International Student Assessment) surveys, have created an environment of perceived competition between nations in relation to their educational output. The near exclusive emphasis on attainment and the methods that have been adopted in pursuit of attainment in England and other nations, most noticeably standardised testing, accountability policies, and market driven reforms, have all come under criticism for their detrimental impact on children's learning and well-being. This thesis aims to add to this critical literature by demonstrating the importance of schools to children's wider lives; here assessed by considering the impact of schools on children's subjective well-being, and the relationship between subjective well-being and educational performance.

Subjective well-being is a key aspect of overall well-being, which itself is a measure of quality of life. It is considered important because it reflects an almost universal goal for both individuals and, to a more debateable extent, governments (Diener, 1984; Larsen and Eid, 2008; Lucas, 2008; Stiglitz, 2009; Layard, 2011; Layard, 2012). As suggested by the name, subjective well-being relates to people's own perceptions of their life, rather than comparing objective measures of their lives to predetermined thresholds. Ed Diener is one of the most influential authors in the field of subjective well-being and

it is his definition that is used throughout this thesis. Diener (1984) defines subjective well-being as the combination of life satisfaction and affective well-being. Life satisfaction is a cognitive evaluation of one's life overall while affective well-being refers to emotional experiences, which are a combination positive and negative affect relating to positive and negative emotions. A more detailed definition is given in the following chapter; however one of the key differences between this thesis and work elsewhere that investigates the relationship between education and well-being is the focus in this thesis on overall subjective well-being. Much of the existing research in the well-being field relating to schools has focused on domain specific subjective well-being, for example school satisfaction or school well-being. The research presented here varies from this in that it investigates the impact of schools and education beyond its immediate surroundings, considering how children's interactions with education affect their whole lives: their overall subjective well-being.

This thesis analyses the amount of variance in children's subjective well-being explained by the school that a child attends. It hypothesises that a considerable amount of variance will be explained at the school level given the prominence of schools in children's lives, as well as the arguably challenging policy environment in which schools are operating, referred to briefly above and discussed in more detail in the Literature Review. It will also investigate the relationship between subjective well-being and educational performance, which existing evidence suggests is statistically significant and positive. The investigation of this relationship is included in this thesis in order to provide additional evidence to encourage those who maintain a strict attainment focus to consider the other impacts of education policy, even if it is only to ultimately improve attainment.

The primary reasons for the interest in the relationship between subjective well-being and education are twofold, both normative and instrumental. Firstly, if we are truly interested in children's subjective well-being, which as a universal good we should be, then we cannot ignore the potential role education and school plays in this. Schools are one of the largest influences in children's lives and somewhere where they spend a considerable proportion of their lives. Secondly, we know that high subjective well-being is associated with a range of positive outcomes, potentially including academic attainment as well other important outcomes such as health. Therefore understanding children's subjective well-being can lead to improved attainment in schools, better health, reduced engagement in risky behaviours, and other benefits for children and more society more broadly.

1.2: Aims and objectives of this thesis

In light of the above, this thesis is guided by the following primary research questions:

- What is the relationship between subjective well-being and educational performance (educational achievement/attainment)?
- How important is the school a child attends to their subjective well-being?
 - How do schools influence children's subjective well-being?
- Is the relationship between school and subjective well-being similar in England and the USA?

The first research question investigates the relationship between subjective well-being and academic performance on the basis that by demonstrating a connection it may be possible to encourage greater support of a well-being approach. Specifically, it is hoped that by demonstrating that subjective well-being is positively related to achievement, those for whom academic performance has until now been the sole focus of education policy may be persuaded to consider broader policy outcomes and considerations.

The second question aims to quantify the important role school plays in young people's subjective well-being. In doing so it is intended to demonstrate clearly that schools play an important role in children's lives, beyond their school lives and academic achievement. Thus this thesis will provide evidence to support the argument for greater consideration of schools and education policy in child well-being research and the inclusion of well-being perspectives in education policy. By investigating how schools influence children's subjective well-being it will be possible to give more specific policy suggestions and implications, as well as guide direction for future research. It will be able to highlight the areas of children's lives most influenced by their interactions with school and schooling and consider this in relation the existing evidence regarding the impact of schools and education policies on children's lives.

These questions relating to the relationships between educational performance, schools and subjective well-being will be considered in relation to children England and the USA. Comparisons across the nations will be made in order to investigate the universality of the importance of schools to children's subjective well-being, as well as to investigate the implications of the academic performance and market-driven policy focus of education policy in these nations. More details about the comparative approach are given below in section 1.3.

These questions are considered important because while there has been little focus on broader child outcomes in education policy, there has also been little interest in the

relationship between education and well-being in the well-being literature, although recent cross-national research has established a school-level effect on children's subjective well-being (Klocke et al., 2013). As discussed in more detail in the literature review, well-being studies tend to consider education in terms of participation and outcomes, which as with the approach taken by policy makers emphasises the role of schools on children's future lives. While high levels of educational participation are of course important and well-becoming a consideration, this approach fails to consider the important role that school plays in children's lives in the present, and the important impacts beyond ensuring participation to the consideration of the impacts of participation on children's lives. Although there have been brief periods when education policy has showed interest in child well-being, this thesis again takes a different approach. It considers how policy itself affects the well-being of children, rather than amending the curriculum to include lessons about well-being. Teaching children about their well-being is not the same as nurturing and promoting their well-being.

1.3: Approach taken in this thesis

The research in this thesis is conducted using quantitative analysis of secondary data sources from England and the USA. First, the relationship between educational performance (attainment and achievement) and subjective well-being in both nations as well as internationally is investigated using a range of methods, including non-linear regression and multilevel analysis. Then three datasets from England and four from the US are analysed, primarily using multilevel modelling, to investigate the proportion of variance in children's subjective well-being that is explained at the school level. Random coefficients are included in these multilevel models where appropriate in order to investigate the nature, as well as size, of any school-level influences on children's subjective well-being. These results are considered across nations and, for the USA where three surveys from the same data source are available, across time. The investigation of the research questions in the USA as well as England is considered useful because of the parallels in education policy in these nations in recent years, discussed in more detail in Chapter 8, as well the prominence of schools in children's lives in both nations. The consideration of a time aspect to the analysis in the US datasets allows the investigation of the potential changes in the relationship between school and subjective well-being after a change in policy, discussed in more detail in Chapter 8. England is considered in isolation from the UK due to devolution of education policy across countries.

This thesis is by necessity and intention interdisciplinary in approach. It crosses the borders of social policy and education because of its focus. However in seeking to establish and answer the objectives of the research literature from fields including sociology, management and business, and psychology are included. From the field of sociology, contributions regarding the theory of subjective well-being, its definition, as well as children's position in society and social research are considered. Theories on work engagement and the relationship between subjective well-being and employee performance are drawn from the business and management literatures, with the aims of exploring parallels between adults and children in work and education respectively. Finally, definitions of subjective well-being and evidence regarding its causes and consequences are drawn from the field of psychology. It is hoped that by drawing on such diverse literature this thesis has been able to more accurately reflect the importance of education and subjective well-being to children's whole lives, as well as the wide ranging causes and consequences of subjective well-being. Similarly, the thesis takes a life course approach, using data sources that cover children from age 7 to 17, recognising that the experience of young children is different to that of teenagers for example. The use of multiple datasets in this way also improves the robustness of study, by potentially demonstrating the existence of a relationship between school and subjective well-being, and subjective well-being and academic performance, in multiple sources.

1.4: Data sources

This thesis uses a range of secondary micro-level data sources in order to investigate the research questions. Micro-level data were essential in order to answer the research questions: 'How important is the school a child attends to their subjective well-being?' and 'How do schools influence children's subjective well-being?' as they require the use of multilevel modelling with children grouped into the schools that they attend. Because the main method of analysis is multilevel modelling only datasets which included a school identifier variable could be used, limiting the potential datasets suitable for inclusion quite significantly. This identifier variable allows children to be grouped in the analysis into the school that they attend so that variance in subjective well-being may be partitioned to the school and individual levels. The Millennium Cohort Study, the Children's Society Well-Being Survey and Understanding Society are used to investigate the relationship between school and child well-being for England. These datasets cover children aged 7, 8-15, and 10-15 respectively and are social surveys. The version of the Millennium Cohort Study used has additional administrative data linked to the survey, providing extra information including academic attainment and school characteristics not available in the standard survey. Add Health (The National Longitudinal Study of Adolescent Health) and the three most recent

Health Behaviours in School-aged Children (HBSC) surveys are used to investigate this same question for the USA with the datasets covering children aged 12-17 and 10-17 respectively. Only those datasets with educational performance information could be used to investigate the relationship between educational performance and subjective well-being, these were the Millennium Cohort Study, the Children's Society Well-Being Survey and Add Health. These micro-level data were complemented by international macro-level data from the international Health Behaviours in School-aged Children survey and OECD Programme for International Student Assessment (PISA) to see whether the relationship existed across nations.

1.5: Structure of this thesis

The structure and contents of the thesis is given below. It can be considered as three sections. The first section consists of Chapters 2 and 3, this section introduces and justifies the study, as well as describing how it will be conducted. The second section is made up of Chapters 4 through 9, these chapters included the original empirical work of this thesis. Finally, Chapter 10 discusses and concludes the thesis.

Chapter 2: Literature Review – This chapter gives an overview of the relevant literature, giving a more detailed definition of subjective well-being, the frameworks guiding the approach taken and theory used throughout the thesis. A brief overview of education policy in England is given (education policy in the USA is described in Chapter 8). The existing literature documenting the detrimental school and education policies on children's well-being is then summarised in order to provide justification for the hypotheses relating to the impact of education on children's subjective well-being alongside information relating to the important role school plays in children's lives more generally. This chapter also discusses the related concepts of the happy-productive worker hypothesis and student and employee engagement in order to understand the potential relationship between educational performance and subjective well-being. The poor performance of England and the UK in comparative studies of child well-being, as well as the relative absence of, particularly subjective, educational considerations in these studies is also highlighted in order to demonstrate the place of this thesis in relation to the literature. Studies of child subjective well-being in the UK, including the Children's Society work on subjective well-being and school are also summarised and discussed.

Chapter 3: Methods and Data – Chapter 3 introduces the datasets used throughout the thesis and elaborates on the approach taken to the selection of these datasets and the variables within them. It also introduces and justifies the statistical methods used within the thesis, the main method being multilevel analysis. This chapter makes

transparent the ways in which these methods were applied to the data. Some of the main limitations of the study are also discussed here as well as ethical considerations.

Chapter 4: The Relationship between Subjective Well-Being and Educational Performance – This is the first analytical chapter. It investigates the relationship between subjective well-being and educational performance using both macro- and micro-level data. Results are compared to the relationship between subjective well-being and employee performance for adults. Similarly the relationship between subjective well-being and performance is compared with that between school satisfaction and performance. The results show a mostly positive relationship between subjective well-being and educational performance, while school satisfaction measures were also found to be positively related to performance where they were available. The results suggest that the happy-productive worker hypothesis is applicable to children.

Chapter 5: Schools and Child Affective Well-Being in England at Age 7 – This chapter is the first to investigate the relationship between child subjective well-being and school attended. Using data from the Millennium Cohort Study (Linked Education Administrative Dataset) the importance of the school a child attends to the level of affective well-being that they report is investigated. It finds that schools explain almost a quarter of the variance in children's affective well-being, with significant school-level effects relating to children's emotional experiences.

Chapter 6: Schools and Child Life Satisfaction in England at Ages 8-15 – This chapter continues with the analysis of the relationship between the school a child attends and their subjective well-being using data from The Children's Society, this time considering older children's life satisfaction. School-level effects are found to explain almost a third of children's life satisfaction, with significant school-level effects relating to enjoyment of school and difficulties in children's lives.

Chapter 7: Schools and Child Life Satisfaction in England at Ages 10-15 – Similarly to the previous chapter, this chapter predicts children's life satisfaction, here using data from the Understanding Society (special access) survey. As well as investigating the relationship between the school a child attends and the level of life satisfaction a child reports this chapter also makes a direct comparison between the amount of variance explained by schools and the amount of variance explained by household. This type of analysis is unique to this chapter as Understanding Society was the only available dataset to include both a school identifier and a household identifier, with multiple children in households. In the analysis considering only the school-level, school attended was found to explain nearly 40% of children's subjective

well-being. The school-level influences were similar to those in Chapter 6. The model comparing school and household level influences on children's life satisfaction found that school actually explained slightly more variance in child life satisfaction than the household level, giving credibility to the argument for greater consideration of schools in well-being research.

Chapter 8: Schools and Child Positive Affect in the USA at Ages 12-17 – This chapter is the first to present analysis of the relationship between school and subjective well-being in the USA. It uses data from the Add Health survey which allows for longitudinal analysis of the relationship between the school attended and positive affect. This is the only dataset used in the thesis which allows for longitudinal analysis. Before introducing the analysis however, an overview and justification of the comparative approach is given, alongside a summary of education policy in the USA. The Add Health analysis found a considerably smaller amount of variance explained at the school level, less than 3%. Reasons for this comparably small amount of variance are discussed in the chapter, as well as the discussion in Chapter 10, but likely include the focus on positive affect as the outcome variable as well as the age and longitudinal nature of the data.

Chapter 9: Schools and Child Life Satisfaction in the USA at Ages 10-17 – This is the final analytical chapter. It includes analysis of the three most recent Health Behaviour in School-aged Children surveys conducted in the USA. The results are considered across time in the context of the changes in education policy discussed in Chapter 8, as well as in relation to the results from other chapters. Additionally, a direct comparison with England is conducted using data from the Children's Society Well-being Survey. In contrast to the findings in the previous chapter, the analysis in this chapter found a very large amount of variance explained at the school level: between 68% and 82% of the variance in life satisfaction. The comparison between England and the USA highlighted interesting differences in the predictors of children's life satisfaction across nations, particularly gender differences.

Chapter 10: Discussion and Conclusion – Each of the analytical chapters includes a small discussion and conclusion, however the discussion section of this chapter presents a more in-depth discussion of results. It considers in more detail the results of the analyses in relation to the evidence discussed in Chapter 2 and the research questions. It brings together the results from the chapters to give a broader picture of their findings, also considering their policy implications. Ideas for future research and the limitations of this research are included in the conclusion, while the original contributions of this thesis are highlighted.

Chapter 2: Literature Review

2.1: Summary

England performs poorly in international comparisons of child well-being. More generally, the role that schooling and education plays in the subjective well-being of children has been under-researched. This thesis will research the effects of education and schools on children's subjective well-being. This chapter will introduce the relevant theoretical approaches, frameworks and existing evidence, providing justification for the study.

2.2: Child well-being

Well-being is a multidimensional construct that is considered similar to quality of life (Rees et al, 2010). In recent years it has increasingly come to be studied from a policy perspective, indeed, the Office for National Statistics now has a Measuring National Well-Being Programme (Hicks et al., 2013), with similar approaches being taken in other nations including France and Canada (nef, n.d.; CMEPSP, 2009). The focus on well-being in policy follows the Istanbul declaration in 2007 (OECD, 2007) which implores nations to move beyond economic measures and use a wider range of indicators to measure progress and well-being. This can be seen as a response to the Easterlin paradox, which demonstrates that increased economic prosperity has not led to a corresponding increase in happiness or well-being in wealthy nations (Cummins et al, 2009; Pugno, 2009; The Children's Society 2011), instead ill-being, such as depression, has increased (Diener and Seligman, 2004). As such, objective measures of growth such as GDP are no longer seen as sufficient measures of national progress.

More specifically in relation to children, the United Nations Convention on the Rights of the Child (UN, n.d.) (UNCRC) compels nations to improve the well-being of their children. There is often much concern expressed about childhood in the UK (The Children's Society, 2006), and the UK and England's performance in international comparisons of child well-being (which are discussed later in the chapter) are often poor. This is important because high levels of well-being "precede diverse positive personal, behavioural, psychological, and social outcomes" (Proctor et al, 2010, pg 520) with poor well-being having the opposite effect (Cummins et al., 2009), as well as well-being being important in its own right. Therefore, improving children's well-being in England is important for more reasons than simply adhering to the requirements of the UNCRC. As such, well-being should be considered when making policy decisions (Diener and Seligman, 2004, Diener et al., 2009).

Approaches

Well-being has numerous definitions and approaches (Bradshaw et al., 2007b). The most important and relevant of these are outlined below before being discussed in relation to the approach to well-being taken in this thesis.

Objective and Subjective well-being

Well-being can be studied from both a subjective and an objective perspective. Large-scale studies often utilise both approaches (e.g. Bradshaw et al., 2007a; UNICEF, 2007; Bradshaw and Richardson, 2009), although typically including more objective measures.

Objective measures of child well-being focus on indicators that reflect observable aspects children's lives, for example their educational attainment, health status, or participation in risk behaviours (e.g. smoking). They are useful because they give insight into children's lives in a way that is replicable. However, they have been criticised for "treating children as passive objects that are acted upon by the adult world" (Ben-Arieh et al., 2001, pg 44; also Ben-Arieh and Frønes, 2011). It is therefore important to include measures of children's perceptions of their lives, as Bronfenbrenner (1979) has argued it is how children experience their environment that is significant, and Diener et al (2009) have argued that well-being is inherently a "subjective phenomenon" (pg 11) (also Ben-Arieh et al., 2001; Ben-Arieh, 2006).

Subjective well-being is "concerned with how and why people experience their lives in positive ways" (Diener, 1984, pg 542) and is therefore related to the "fuzzy" (pg 543) concept of happiness. It is broadly accepted, following Diener's (1984) highly influential work, that subjective well-being consists of "three general components...: life satisfaction..., positive affect, and negative affect" (Diener, 1984, pg 547). Life satisfaction is "a cognitive judgement" (Larsen and Eid, 2008, pg 4) or evaluation of life overall while positive and negative affect refer to peoples' "emotional experiences" (Pavot, 2008, pg 129) and moods (Eid, 2008). Positive and negative affect have been identified as being independent of each other (Diener, 1984; Huppert and Whittington, 2003), meaning that positive subjective well-being relies on more than the absence of negative affect (Diener, 1984; Cacioppo et al, 2008).

Historically, the study of subjective well-being has been neglected due to the perception that it is not something that can be measured accurately (Larsen and Eid, 2008; Diener et al, 2009) and that individual subjective well-being levels are stable, set by personality and heritability, and as such not policy salient (Headey, 2008). However, it has now been established that subjective well-being, including that of

children, is something that can be measured accurately (Cummins et al, 2009; Pavot, 2008) and that varies and adapts over people's lives (Diener, 1984; 2008; Larsen and Eid, 2008). As such it is recognised that subjective well-being can be influenced by policy and there has been a resulting increase in the use of subjective measures in well-being research (Ben-Arieh and Frønes, 2011; Boarini et al., 2013). Indeed the importance of subjective well-being is coming to be emphasised, as evidenced by quotes such as this from UNICEF (2013): subjective well-being "overlaps with and transcends all other dimensions of child well-being" (pg 38)

Another argument in favour of subjective well-being is that its value is almost universal (Diener, 1984; Larsen and Eid, 2008; Lucas, 2008). In terms of children's well-being, the inclusion of subjective measures is also important as it "is partly rooted in children's rights to a voice, and... children's life world is doomed to be skewed, as long as the children's own perspectives are lacking" (Ben-Arieh and Frønes, 2011, pg 470). This is particularly relevant in the context of schools and education policy, where children's voices are rarely heard. However, while subjective measures are essential, "their relativity and contextual sensibility illustrate the need for more objective models of a well-being and the ensuing development objective indicators" (Frønes, 2007, pg 11).

Well-being and Well-becoming

Another consideration in the study of children's well-being is the balance between studying their present well-being, and their well-becoming i.e. future well-being (Ben-Arieh, 2006; Frønes, 2007). This division represents the sometimes conflicting concerns for children's lives as they are experiencing them in the present and the lives they are likely to have as adults, with objective measures tending to focus on child well-becoming.

Well-being and well-becoming are not mutually exclusive, and when considered together represent a child's 'total well-being' (Ben-Arieh and Frønes, 2011). Neglecting to consider both being and becoming means neglecting the interrelationship between the two and will compromise children's total well-being. While it is not acceptable to exclude measures of becoming completely, "the "under development" status of children does not legitimize poor conditions in the present" (Frønes, 2007, pg 9) therefore it is unacceptable to neglect well-being. These issues are highly relevant to children's educational well-being and this study. Many changes have been made to education policy in England with little regard for how they impact on the well-being of children (Reay and Wiliam, 1999; Barker, 2008). This has been justified by policy makers who argue that the changes will improve the well-becoming of children. This is arguably well illustrated by the Every Child Matters framework discussed below, which, though it

is supposed to be a measure of child well-being uses many future-focussed objective indicators. However, this is a flawed argument, as children's perceptions and enjoyment of school have been positively linked to their attainment (and therefore well-becoming) (Suldo et al., 2006; Best, 2008). Failing to consider the interrelationship between being and becoming in this way undermines the policy objectives.

It is also important to note that the perceived conflict between well-being and well-becoming is unlikely to be limited to children. Adults also must consider the interrelationship between their being and becoming, this is evident for example in the decision to reduce income in the present in order to attempt to ensure a comfortable old age through pensions.

Eudaimonic and hedonic definitions

A key philosophical distinction in the conceptualisation of well-being is that made between eudaimonic and hedonic well-being. The approaches differ in how they frame what well-being, or a 'good life', is. From a hedonic perspective well-being is about enjoyment and pleasure, and as such emphasises the subjective, whereas eudaimonic perspectives emphasise meaning and purpose in life and are often measured using objective indicators (Kahneman, 1999; McMahan and Estes, 2011). Therefore a single action may have a contradictory impact on a person's well-being depending on the approach taken, for example it might be pleasurable for a person to have a lie-in but in doing so the person is not pursuing a purpose. Similarly, donating blood may not be a pleasant experience but it has significant meaning. However, these two approaches are rarely considered completely separately, rather the level of emphasis given to one over the other varies (McMahan and Estes, 2011). This more accurately reflects the nature of people's actions in reality, that it is not straightforward to separate these two aspects of well-being. For example, one might seek to maintain and build strong relations with relatives for the pleasure it gives the individual as well as being a 'good' thing to do. As such, it is not enough to simply argue that the hedonic approach will necessarily lead to the pursuit of negative or risk behaviours. Looking at this from the opposite perspective, using the well-known phrase if 'there is no such thing as a selfless act', then no activity pursued could improve a person's well-being only from a eudaimonic perspective. That is, an activity can be seen as solely hedonic but not solely eudaimonic.

While it has been argued that hedonic measures alone are not adequate (Kahneman, 1999) there are also a number of concerns about eudaimonic measures and the way that they are treated. While subjective well-being itself is obviously subjective and there is some evidence of cultural sensitivity issues (e.g. Senik, 2012), eudaimonic

well-being is of increased concern in these respects because someone claiming to be satisfied with their life despite an objective observer suggesting that they should not be or vice versa is not in itself hugely problematic. However there are cases where people may consider themselves to be living fulfilling, purposeful lives while pursuing activities that the majority of people would find repugnant and/or widely damaging. This is a more problematic prospect than simply someone with low income reporting high life satisfaction. Similarly, but less dramatically, eudaimonic approaches to well-being raise concerns about whose definition of a 'good' or 'purposeful' life should be used. This has obvious class implications as well as being culturally sensitive (Huppert and So, 2013).

Eudaimonic definitions sometimes include aspects of whether people feel they have autonomy, or control over their lives. This is likely very important for well-being but here is treated as a predictor of subjective well-being rather than an aspect of it. This is justified by the extrinsic nature of many aspects of autonomy. Children in a society that is less meritocratic than another have less autonomy over their future than those in an alternative, more meritocratic, society. As such, policy makers can provide autonomy directly.

Child centred approaches

The emergence of child centred approaches to research highlighted a number of issues with the way that child well-being was being considered.

Concern for children's well-being originally developed from adult anxieties about children as simultaneously vulnerable and deviant (Ben-Arieh et al., 2001). These adult concerns have often been reflected in research, as "government tends to value children in terms of future human capital (becoming) over the present (being)" (Morrow and Mayall, 2009, pg 219). This led to children's well-becoming, their development and socialisation, being measured and studied more frequently than their well-being, i.e. how they are experiencing childhood as children (Ben-Arieh et al., 2001). Similarly, "the standards for development are based on a preferred adolescent or adult outcome" (Ben-Arieh, 2006, pg 2) in many studies of child well-being. Likewise, adult concerns with deviant youth have led to a tendency to focus on at-risk children (Ben-Arieh et al., 2001) which is evident in the choice of indicators in many studies, resulting in them overlooking how children flourish and lead fulfilled lives (Ben-Arieh et al., 2001). It has also led to the "politicization" (Ben-Arieh et al., 2001, pg 48) of children's well-being which negates from the purpose of its study in the first place.

Another issue in the study of children's well-being highlighted by child centric approaches is that, in terms of data, children were often lost in families and households, rarely the units of observation themselves (Qvortrup, 1993; Ben-Arieh and Frønes, 2011). This often has the result of assumptions about children's well-being being made without any information from the children themselves considered. People important to children such as teachers, friends and extended family are often excluded from consideration when data is used in this way. More generally, studies of children's well-being often focus on what the adult researchers perceive to be important, rather than what is important to the children themselves (NicGabhainn and Sixsmith, 2006; Land et al., 2007).

Movements such as the New Sociology of Childhood (Qvortrup, 1993) have, promoted the consideration of children as a separate social group and thus a group whose needs, welfare, time and activities should be acknowledged and considered in their own right. This perspective argues for children's involvement and say in their well-being, recognising that their needs and priorities may vary from those of adults, even their parents (Ben-Arieh et al., 2001; Ben-Arieh, 2005; NicGabhainn and Sixsmith, 2006). The increased recognition of children's rights has enabled this shift as it has allowed children to be recognized as human beings in their own right, rather than the property of their family (Ben-Arieh et al., 2001). Indicators of children's well-being should therefore be child-centred, rather than at the level of the parent or family/household, as is often the case (Ben-Arieh et al., 2001). This is not problematic as some have suggested, as research has found that "children as young as 5 or 6 can be used as reliable sources of information" and therefore be included in surveys (Ben-Arieh, 2006, pg 21; also Ben-Arieh and Frønes, 2011).

The study of children's well-being does however involve a number of additional considerations compared to the study of adult well-being. Identifying and measuring the well-being of children is "more complex" (Frønes, 2007, pg 6) than for other groups as "for children, the indicators of well-being vary not only by context but also by life phase, making theorization, conceptualization, and measurement extremely complex" (Frønes, 2007, pg 11). Children are also likely to be affected by changes and developments differently to adults. As such it is important to study children's well-being separately from that of adults (Ben-Arieh et al., 2001; Ben-Arieh, 2006; Frønes, 2007), while also considering that adult perspectives such as those of researchers are likely to differ to children's. There is evidence that the objective measures selected by adult researchers do not consistently and accurately reflect the preferences and perceptions of children (Ben-Arieh, 2005; NicGabhainn and Sixsmith, 2006).

Positive and negative measures

When measuring well-being, particularly objective well-being, choosing whether an indicator or approach should be positive or negative is another consideration. A negative indicator is one that measures the extent of an undesirable outcome in a nation, often focused on survival, for example the extent of mental health problems or the infant mortality rate. These measures have been criticised for undermining the effort to improve children's well-being by focusing on minimum standards (Lippman et al., 2009). Positive measures, on the other hand, hold governments to a greater level of accountability than negative measures (Ben-Arieh et al., 2001), more than just "the safe warehousing of children and youth" (Ben-Arieh, 2006, pg 8) showing instead where children are able to "flourish" (Lippman et al., 2009, pg 1). Positive measures include educational attainment and positive relationships with peers (Lippman et al., 2009). Sen (1993), however, has argued that negative measures are useful as they reflect the impact of public policies on people's freedom to live the life they choose, free of negative influences, for example transmittable illnesses such as malaria. Such negative measures are likely to be important when considering children's educational well-being because factors such as leaving school with no qualifications or illiterate for example are likely to have an extensive impact on children's well-being and becoming. While it is important to consider where children are 'flourishing', overlooking the children left behind is irresponsible.

Frameworks

There are also a number of frameworks that can be utilised when studying children's well-being, these are detailed below. A strong framework is important for guiding decisions about child well-being measures (Frønes, 2007).

United Nations Convention on the Rights of the Child

The United Nations Convention on the Rights of the Child (UNCRC), having been signed by almost all nations, is considered "universally binding" and is said to provide "a very useful framework for monitoring children's rights and well-being" (Ben-Arieh et al., 2001, pg 35; also UNICEF, 2007). Although it should be noted that there is still some disagreement about the appropriateness of bestowing children with rights (Archard and Macleod, 2002).

The UNCRC rights based approach includes measures of well-being and well-becoming due to its focus on children's quality of life in the present as well as their ability to reach their potential (UN, n.d.; Ben-Arieh and Frønes, 2011). Inclusion of the UNCRC in a framework provides an indicator of how well considered children are in

policy making (UNICEF, 2007). Article 12 of the UNCRC gives children the right to have their voices heard in matters that affect them (UN, n.d.), suggesting the inclusion of subjective well-being measures is necessary. It should be noted however that the UNCRC is not ideal as a well-being framework as its purpose is the protection of rights rather than the development of well-being, with rights representing a minimum standard, well-being an ideal.

The UNCRC also includes two articles relating specifically to children's education:

“Article 28

1. States Parties recognize the right of the child to education, and with a view to achieving this right progressively and on the basis of equal opportunity”

(UN, n.d., pg 8)

and:

“Article 29

1. States Parties agree that the education of the child shall be directed to:
 - (a) The development of the child's personality, talents and mental and physical abilities to their fullest potential;
 - (b) The development of respect for human rights and fundamental freedoms, and for the principles enshrined in the Charter of the United Nations;
 - (c) The development of respect for the child's parents, his or her own cultural identity, language and values, for the national values of the country in which the child is living, the country from which he or she may originate, and for civilizations different from his or her own;
 - (d) The preparation of the child for responsible life in a free society, in the spirit of understanding, peace, tolerance, equality of sexes, and friendship among all peoples, ethnic, national and religious groups and persons of indigenous origin;
 - (e) The development of respect for the natural environment.” (UN, n.d., pg 9).

While these are limited in terms of their assistance in the maximising of subjective well-being they, particularly article 29 1a, highlight the importance of considering the broader impact of education on children.

Capabilities

Another framework that has increasingly come to be used in the study of well-being is the capabilities approach proposed primarily by Sen (1979; 1993). Capabilities are

defined as a person's "actual ability to achieve various valuable functionings" (Sen, 1993, pg 30). Functionings are the things that people are able to do or be that affect their well-being, for example being well-nourished (Sen, 1993). The value of a functioning is likely to vary between individuals, and a person's capability reflects their preferences, making capabilities a therefore more useful measure, compared to opportunities for example. Similarly, people can have the same state but different capabilities, for example the rich person fasting and the poor person unable to acquire food are both starving, but one is able to improve their state while the other isn't – they have different capabilities (Sen, 1993). From this perspective well-being cannot be considered as only access to goods (including rights) as this overlooks what goods can do for individuals which is likely to vary between people and cultures (Sen, 1979). Such an approach stresses the inclusion of indicators which represent the life a person lives rather than the opportunities or lives available to them, thus incorporating "personal choices, constraints, circumstances, and abilities to achieve a preferred living standard" (Ben-Arieh et al., 2001, pg 39). This again implies the use of indicators at the level of the child, rather than using parent or household level indicators or averages (Ben-Arieh et al., 2001).

The capabilities approach also "blurs present and the future, being and becoming; the present represents both the quality of life in the present and the capabilities developing towards the future" (Ben-Arieh and Frønes, 2011, pg 472). This makes the inclusion of measures of both well-being and well-becoming necessary and also argues for the inclusion of both objective and subjective measures (Ben-Arieh and Frønes, 2011). It is important to note that using the capabilities approach in the study of well-being does not mean producing a selection of indicators on capabilities – rather it means including a selection of indicators on children's well-being within a capabilities framework (Ben-Arieh and Frønes, 2011).

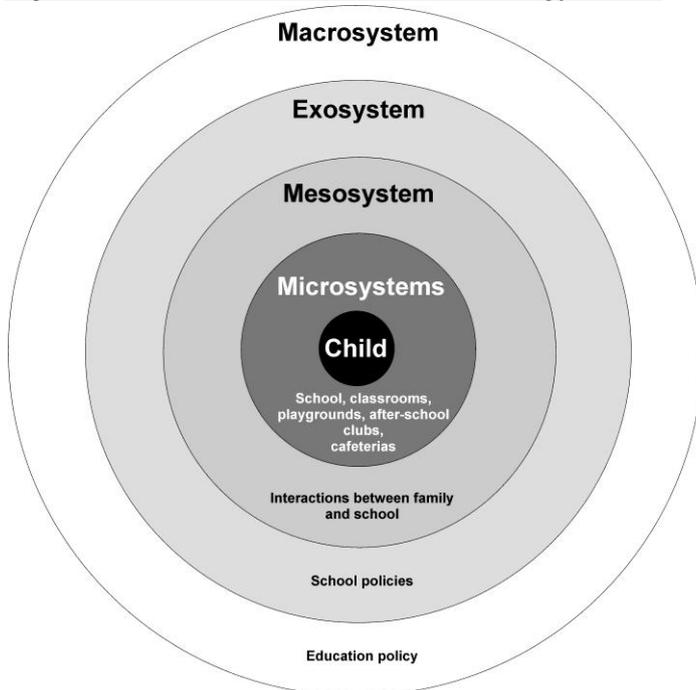
Ecological

An ecological framework is interested in the influence of children's different environments on their development and the interactions between them (Bronfenbrenner, 1979). It is argued that it is children's perceptions of their environments that matter for their development. As such this perspective, like others mentioned previously emphasises that children are not passive agents in an objective environment and therefore also emphasises their subjective well-being (Bronfenbrenner, 1979). Children's environments consist of nested settings: the microsystem, mesosystem, exosystem and macrosystem, illustrated in Figure 2.1 with education related examples. Children's awareness of the different settings increases

outwards with age. The microsystem has the greatest direct influence on the development of the child (Bronfenbrenner, 1979; Bradshaw et al., 2007a), it relates to the immediate settings of the child and includes the school a child attends. The mesosystem is the collection of microsystems in which a child is part, and also includes the interactions between the different microsystems (Bronfenbrenner, 1979). The exosystem is “one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person” (Bronfenbrenner, 1979, pg 25). Macrosystems are “manifestation of overarching patterns of ideology and organization of the social institutions common to a particular culture or subculture” (Bronfenbrenner, 1979, pg 8) and includes social policies.

Research has tended to consider individuals separately from their environment, and similarly has failed to consider the interconnectedness between environments however “development never takes place in a vacuum; it is always embedded and expressed through behaviour in a particular environmental context” (Bronfenbrenner, 1979, pg 27). As such the influence of the school is likely to be important on the well-being of the child, as are more broad educational influences, such as education policies.

Figure 2.1: Bronfenbrenner’s social ecology model



Based on Bronfenbrenner (1979) using education related examples.

2.3: The child well-being approach used in this thesis

The definition of child well-being used in this work is influenced by the frameworks and perspectives discussed above, but also by practical limitations. A number of the approaches and frameworks discussed above emphasise the subjective aspects of

well-being, a previously under-studied area particularly in relation to education. However, considered in isolation the subjective is likely to be considered inadequate. This work will therefore focus on the subjective while also considering an important objective aspect of well-being, that of educational performance. The term educational performance, rather than educational achievement or attainment, is used frequently in this thesis. Educational (or academic) achievement and attainment refer to the outcomes of education, although somewhat different aspects, and definitions of these terms are inconsistent. Here academic achievement refers to 'achieving' a level of understanding, reflecting for example a results in OECD PISA (Programme for International Student Assessment), whilst attainment refers to 'attaining' a grade or level in an assessment, for example GCSE grade. Both measures of achievement and attainment are used in this thesis, as such the overarching term performance is used.

The consideration of subjective well-being and educational performance concurrently is additionally beneficial as it may make the well-being focus of this work more appealing to policy makers who prioritise such objective outcomes over measures of well-being. The thesis therefore attempts to marry the concerns regarding well-being and well-becoming by illustrating that subjective well-being and educational achievement go hand-in-hand. The definition of subjective well-being used is taken from Diener's (1984) work, as described above. The emphasis on the subjective is further justified by the influence of the New Sociology of Childhood approach on this work, as well as the emphasis regarding ensuring children's voices are heard in the UNCRC. It considers school as central to the lives of children in a similar way to how employment is studied in regard to adults. It is therefore moving beyond considerations of education on children as solely achievement related.

Although eudaimonic well-being is not included as such in the subjective well-being definition, life satisfaction will be used where possible. Life satisfaction measures include, to an extent, eudaimonic well-being in that a person is more likely to report being satisfied with their life if they feel that it is meaningful and have purpose where this is important to them. Additional eudaimonic measures are not included for two reasons. The first is the concerns about eudaimonic approaches given above, the second is the absence of eudaimonic measures in datasets on children's well-being. The absence of such measures is perhaps telling in terms of how children's lives and feelings are viewed by adults, suggesting that, although there has been improvement in the inclusion of children's voices in surveys, there is still some way to go.

As noted in the introduction, one of the differences between the work presented here compared to much existing research is the focus on educational influences on

children's overall subjective well-being, rather than domain specific well-being such as school satisfaction or school well-being. While such approaches are useful it is felt that it is important to take this approach here because it reflects the interconnected nature of children's different environments, demonstrating better the significant impact that schools have on children's whole lives, beyond simply their experiences when they are physically in school. Children here, as in other work (e.g. Ben-Arieh et al., 2001) and in the UNCRC (UN, n.d.), are considered as those aged under 18 years-old. It should also be noted that this research focuses on children in school in England due to the differences in education policy across the nations of the United Kingdom due to devolution.

2.4: Education

The Education System and Policy in England

Education is compulsory for children aged 5 to 17 (16 pre-2013, raising to 18 in 2015). There are approximately 8.1 million children in schools in England, with around 576,200 of these children in independent schools (Clarke, 2011, n.p.). Between 20,000 and 80,000 additional children are thought to be educated outside of schools, although an accurate estimate is difficult to obtain (Badman, 2009, pg 2). Schools must be open for 380 half-days per school year (DfE, 2011, n.p.), although this doesn't apply to academy or Free Schools. The suggested minimum weekly lesson time was as follows:

- 5- to 7-year-olds (Key Stage 1) – 21 hours
- 8- to 11-year-olds (Key Stage 2) – 23.5 hours
- 12- to 13-year-olds (Key Stage 3) – 24 hours
- 14- to 16-year-olds (Key Stage 4) – 25 hours (DfE, 2011, n.p.).

with the school day typically lasting between 9am and 3.30pm (6.5 hours per day, 32.5 hours per week) (INCA, 2009). However the Department for Education no longer provides recommendations for weekly lesson time (Eurydice, 2013) and as such the above times do not include older aged children for whom education is now compulsory. Appendix 1 shows the types of schools in England and gives a brief overview of their characteristics for reference.

The focus of education policy in England since the 1970s has been economic, with an emphasise on individual achievement and obtaining employment, with the two main political parties (Labour and the Conservatives) taking markedly similar approaches (Chitty, 2009). As such the economic function of education has been stressed, businesses and industry became increasingly critical of school "output" (Chitty, 2009,

pg 34) and teachers increasingly blamed for social and economic problems (Nicaise and Smyth, 2000; Ward and Eden, 2009). The media has also become increasingly critical of schools and teachers, with moral panics regarding boys “underachievement” (Chitty, 2009, pg 243), especially that of working class boys, reflecting economic anxieties. The similar difficulties faced by working class girls has, however, been overlooked. Large-scale educational reform has been pursued consistently since the late 1980s focusing on increasing achievement through market forces such as choice and competition, operationalised using “open enrolment, published performance tables and the promotion of faith, specialist and academy status” (Barker, 2008, pg 670) schools. The increasing legislation in education associated with declining trust between politicians and teachers (Chitty, 2009).

Evidence suggests that these changes have led to schools and teachers increasingly engaging in tactics to enhance results, such as teaching to the test, focusing on borderline pupils and switching students to courses with the best chance of achieving a high grade to name a few. Likewise, activities which are not assessed but nonetheless important are neglected (Reay and William, 1999; Barker, 2008). These changes also led to increased expulsions as difficult children increasingly became seen as a burden on schools eager to improve their results (Gipps, 1993; Coles and Richardson, 2005). Disadvantaged students have suffered, being left behind and neglected when it becomes evident that they are unable to meet the desired criteria (Barker, 2008). This has exacerbated the disadvantages faced by a significant minority of students from more difficult areas leading to increased inequality (Ranson, 1990; Barker, 2008). However, those schools in less disadvantaged areas have been able to benefit from the system, also exacerbating inequality. Their intake makes it easier to attract more able teachers, thus improving their results, making attracting students and teachers easier, creating a “virtuous circle” (Barker, 2008, pg 675). Some have gone so far as to argue that the resulting system is incompatible with equality and social inclusion (Barker, 2008).

These criticisms of education policy are central to the hypothesis of a relationship between education and well-being and the need to consider the impact of education on children more broadly, as investigated in this thesis. The following sections introduce more direct evidence relating to this hypothesised relationship.

2.5: Education and child well-being

As noted above, there are 8,123,865 young people in 24,507 schools in England (Clarke, 2011, n.p.) spending around 32.5 hours per week there. Therefore investigating children’s experiences of schooling and education is likely to make a

significant contribution to understanding children's well-being. Despite this, research investigating the influence of schools on subjective well-being has been neglected, resulting in piecemeal information about aspects of the education system as experienced by children, which are often reliant on macro level data or small qualitative studies (Suldo et al., 2006).

In order to improve children's well-being, it is essential to know what influences it and how (NicGabhainn and Sixsmith, 2005). It has been suggested that schooling is "perhaps the most important way" (Ward and Eden, 2009, pg 1) in which the state intervenes in children's lives, and that "school is central to the daily life of many youths" (Willms, 2003, pg 8). Research by The Children's Society (2012) identified school as key to children's well-being in England as reported by children themselves. Similarly, a survey conducted by the charity Mindfull (2013) found that approximately one fifth of children have symptoms of depression while almost one third had thought about or attempted suicide and a similar proportion have self-harmed (pg 5), with over half of young people reporting stress at school being one of the causes of their negative feelings (YouGov, n.d., n.p.). This is perhaps unsurprising given that, as noted above, Bronfenbrenner (1979) identified schools as part of children's microsystem, that is the part of their environment with the most influence.

There was somewhat of a consensus in England for a period that schools should consider the well-being of the children in their care. Ofsted inspections were widened to include the impact of schools on children's well-being with a consultation showing that the majority of respondents (75%) agreed that schools could influence children's outcomes beyond achievement (Ofsted, 2009, pg 6). Consideration of well-being in schools usually took the form of teaching children about avoiding risk behaviours and promoting social and emotional well-being. There was, however, little concern with how education policy itself impacted on the well-being of children in schools. The interest in well-being in schools has diminished under the current coalition government who have, among other things, removed assessment of pupil well-being from Ofsted criteria, considering it a "peripheral issue" (Harrison, 2010, n.p.). This is arguably detrimental to the pursuit of standards that characterises current education policy, as well-being and educational achievement are positively linked (Kirkcaldy et al., 2004; Suldo et al., 2006). It is nonetheless indicative of the place of well-being in current education policy.

2.6: Evidence of the impact of schooling and education policies on child well-being

There are a number of pieces of evidence that can be used to justify further interest in education from a well-being perspective. The following sections illustrate a number of ways in which education policies have been identified as impacting on the well-being of children as well as links with educational achievement. These are detailed below:

Standardised assessment

Standardised assessments accompanied the introduction of the national curriculum and the wider market based reforms of the late 1980s, and are known as SATs (Standard Assessment Tasks or Standard Attainment Tests). Originally intended to be low key, formative assessments the SATs developed into a high stakes accountability tool (Connor, 2001). The increased use of high stakes, standardised assessment in England has led to a perception that there is pressure on schools to improve their results at “at almost any price” (Reay and Wiliam, 1999, pg 344) leaving children “subsumed as a means to an end” (Reay and Wiliam, 1999, pg 345), “the unwitting victims” (Connor, 2003, pg 101) of the pursuit of accountability and improving standards.

It is argued that this has meant that children are under increasing pressure at increasingly young ages (Locker and Cropley, 2004). Research has also found that children’s identities are being shaped by their perception of their ability to do well in these standardised assessments, with significant negative impacts on those who feel less likely or able to achieve (Reay and Wiliam, 1999). Those who feel unlikely to achieve high grades have been found to associate this, even at a young age (year 6, age 10-11) with future failure and hardships – “to perform badly is ‘to ruin one’s chances’” (Reay and Wiliam, 1999, pg 347), reflecting adult well-becoming concerns. Such pressure may be having a negative effect on achievement as those children with less confidence or who feel anxious are likely to perceive their ability as lower which in turn may affect their test performance (Connor, 2001; Locker and Cropley, 2004).

As well as affecting children’s perceptions of themselves, they have affected how children perceive and interact with each other. Researchers using observational methods noted increased hostility between pupils during the build up to the SATs, and a breakdown in the relationship between teacher and pupils (Reay and Wiliam, 1999) suggesting that policy is even having an impact on childhood relationships. Work in class is also more likely to be individual rather than group work, with increased competitiveness between pupils noted.

More generally, the effect of the SATs has also been to narrow the definition of academic success, limiting it to success in areas that are assessed; “cleverness is very clearly conflated with doing well in the SATs” (Reay and Wiliam, 1999, pg 348). Such testing is also associated with teachers focusing on assessed topics and on borderline students (Reay and Wiliam, 1999; Goldstein, 2001; Barker, 2008). Focus on borderline students is problematic not only due to the potential neglect of other students, but is also likely to impact on the self-perception of those borderline students and increase their anxiety (Connor, 2001). Increased anxiety associated with the demand for increasing achievement has been identified as likely to have a negative impact on children’s psychological and emotional well-being (Connor, 2001). Anxiety and depression regarding assessment has been found to be greater in girls than boys (Reay and Wiliam, 1999; Locker and Cropley, 2004). For children who are sensitive or prone to worry, the high pressure associated with SATs may be enough to exacerbate their worry and anxiety to an unacceptable level (Connor, 2003). Pupils have even been found to have physical reactions to the stress associated with assessment including vomiting and losing sleep (Connor, 2001).

Ability grouping

Ability grouping usually takes one of two forms: streaming is a form of ability grouping where children are taught in the same class for all subjects based on overall ability, setting is grouping by ability for individual subjects (Harlen and Malcolm, 1997; Boaler et al., 2000). The focus on academic excellence in education policy, as evident in the other policies, and the perception that ability grouping improve results has meant that ability grouping is prevalent (Boaler, 1997; Harlen and Malcolm, 1997; Boaler et al., 2000; Ireson et al., 2001). Some have argued that the national curriculum introduced to the education system in the late 1980s made mixed ability teaching impossible while the market forces introduced mean that schools were encouraged to adopt policies attractive to middle-class parents, ability grouping being one (Boaler, 1997; Boaler et al., 2000).

Historically, working class students have been found to be overrepresented in lower sets and streams, even when their ability is taken into account (Harlen and Malcolm, 1997; Boaler et al., 2000). This issue is then compounded by the fact that lower ability groups are typically given less experienced and qualified teachers than the higher groups and have higher staff turnover, despite evidence that the best teachers are of most benefit to lower attaining groups (Boaler et al., 2000; Gamoran, 2002). Unsurprisingly, ability grouping has been “found to increase existing social divisions” (Smyth and McCabe, 2000, pg 19) and is linked to working class underachievement

(Harlen and Malcolm, 1997; Boaler et al., 2000; Gamoran, 2002; Hallam et al., 2004; Ireson et al., 2005).

However, setting has been found to have negative impacts on children and their achievement at all ability levels. For children in high ability groups, high expectations and pressure cause them disadvantage, especially girls, with this being suggested as one of the primary causes of girls underachievement in mathematics (Boaler et al., 2000). The nature of teaching in high sets is felt by children to impede their ability to understand their topic in depth (Boaler et al., 2000). Children in top sets characterise their learning experience as “fast, pressured and procedural” (Boaler et al., 2000, 637), with top set students less likely to report enjoying lessons. Such approaches lead to top set students prioritising “memory over thought” (Boaler et al., 2000, pg 637) to a greater extent than those in other sets or those taught in mixed-ability settings.

Low sets on the other hand are often given too little work at too low of a level compared to children in mixed ability classes, causing boredom and frustration (Harlen and Malcolm, 1997; Boaler et al., 2000). This low level work is likely to impact on the ability of children in low sets to change sets in future as they fall behind (Harlen and Malcolm, 1997; Boaler et al., 2000). These findings suggest that setting will reduce academic achievement as well as having negative effects on children’s well-being. Children in lower sets are also disadvantaged by the “limits placed upon their attainment” (Boaler et al., 2000, pg 633). Children in lower sets may find themselves entered into exams where the potential grade of the student is restricted, including examinations in which results are limited to a grade D at GCSE (not considered high enough for further study) potentially leading to frustration and detachment among students (this situation has changed to grade C since 2006). Due to the difficulties associated with changing sets, this also means that the maximum grade a student can get is effectively decided 3 years before the assessment or possibly even sooner. In 2002 it was predicted that 88% of children placed in an ability group at 4 and a half would remain in the same ability group until they left school (Dixon, 2002, pg 1).

This process, it is argued, means that children come to be defined by the set that they are in rather than their individual capability despite the fact that ability grouping is often promoted on the basis that it allows children to work on tasks that are more appropriate for their ability (Boaler et al., 2000). Setting “creates” (Boaler et al., 2000, pg 645) academic success and failure, as children are confined to the level of success deemed appropriate for their set. There is also evidence that this affects parent aspirations (Hallam and Parsons, 2012) and it has been argued that such approaches are socially exclusionary in nature (Klasen, 2000).

Ability grouping is also unpopular among pupils. Boaler et al. (2000) interviewed children who had moved from mixed-ability to set mathematics classes and the vast majority (83%) wanted to return to mixed-ability teaching or to change the set they were in, claiming that their learning and attitude towards the subject had suffered (pg 635). A 2010 survey found that 94% of 11-16 year olds reported being taught in sets for at least one of the core subjects (English, mathematics or science), and 64% reported being taught in sets for all three (Ipsos MORI, 2010, pg 5). Fewer students (32%) reported being taught in streams although a large proportion reported being unfamiliar with the term (Ipsos MORI, 2010, pg 13). Ability grouping is less common in other nations, in Sweden for example it is illegal while in the USA parents have brought lawsuits against schools using ability grouping (Boaler, 2005).

Overall, research suggests a minimal impact of ability grouping on attainment for pupils in higher sets. Students in lower sets are found to benefit from mixed ability teaching, and to suffer significantly in set classes (Boaler, 1997; Harlen and Malcolm, 1997; Ireson et al., 2001).

Breaktimes

Breaktimes, also known as recess and playtime, have been at risk because of the perception that they are not important, and therefore detract from the more 'serious' business of schooling (Pellegrini, 2005; 2008). This approach has been linked to the increased importance of standardised testing in both England and the USA, and the introduction of the National Curriculum in England, with increased demands tempting schools to reduce the amount of time spent on 'less important' activities in order to maximise teaching time (Blatchford and Sumpner, 1998; Blatchford and Baines, 2006; Pellegrini, 2008). Some have also argued for a reduction in breaktimes because of the perception that they are times of increased bullying and poor behaviour (Blatchford and Sumpner, 1998; Pellegrini, 2005; 2008).

As such, breaktimes in England have reduced over time. Thirty-five percent of secondary schools in England reduced their lunchbreaks between 1990/91 and 1995/96, while 27% of junior schools abolished afternoon breaks (Blatchford and Sumpner, 1998, pg 85). During this time many schools also increased the length of the school day (18% of infant schools, 21% of junior schools and 25% of secondary schools) (Blatchford and Sumpner, 1998, pg 85). Reductions in breaktimes continued between 1995 and 2006 with afternoon breaks virtually nonexistent in secondary schools by 2006 (Blatchford and Baines, 2006).

Breaktimes, like breaks for adults, are important in order to avoid fatigue. Research shows that children's attention to their school work is improved after a break and reduces the longer a child goes without a break (Pellegrini, 2005; 2008). As such, reducing breaktimes is unlikely to have the desired effect of improving attainment, as children's attention is likely to be impaired (Pellegrini, 2008). In terms of the criticisms of breaktimes regarding increased bullying and poor behaviour, it is considered a flawed criticism as bullying and poor behaviour are not limited to breaktimes and the playground, and therefore will not be stopped by reducing or removing breaktimes (Pellegrini, 2008). As such it should be argued that supervision at breaktimes be improved rather than breaktimes reduced (Pellegrini, 2005; 2008). This argument is further undermined by evidence that reductions in breaktimes have happened despite the vast majority of teachers surveyed reporting that they felt behaviour at breaktime had either improved or stayed the same (40 and 41% respectively) (Blatchford and Baines, 2006, pg 4).

Similarly, breaktimes have an important positive social function for children and are a time when they learn important social skills not gained in the classroom (Pellegrini, 2005; 2008). This is of increasing importance as evidence suggests that a child in England's time with their peers outside of the school setting is reducing while group work in school is also reduced, making breaktimes their primary place of social interaction (Blatchford and Sumpner, 1998; Blatchford and Baines, 2006). Such interaction is important for children's wider personal development and well-being (Blatchford and Sumpner, 1998; Pellegrini, 2005). Likewise, evidence suggests that children are progressively losing their independence, as, for example, they are increasingly driven to school by parents rather than walking (Blatchford and Baines, 2006). As such, breaktimes offer children ever more important moments of independence during which they can develop (Blatchford and Baines, 2006). More recently, breaktimes have been encouraged in order to increase the physical exercise and outdoor activities in order to help reduce obesity and mental health concerns respectively (Pellegrini, 2005; Blatchford and Baines, 2006).

Research has found that the "great majority" (Blatchford and Sumpner, 1998, pg 92; also Blatchford and Baines, 2006) of children of a range of ages value breaktimes. Over half of students felt that lunch times were not long enough in 2006, rising to nearly two-thirds of older students (year 10, aged 14-15) with some of this age group reporting not even having adequate time to eat and drink (Blatchford and Baines, 2006, pg 4).

Evidence from employment research

There has been a considerable amount of research investigating the effect of employment on well-being in adults. This may be relevant to the study of child well-being as schooling for children is in some ways equivalent to employment for adults. Therefore evidence regarding the importance of positive subjective well-being to performance is discussed here with the intention of using this evidence to support arguments suggesting the importance of child subjective well-being to the educational setting. Most notable among this research is the happy-productive worker hypothesis and the research regarding job quality and engagement on mental health.

Happy-productive worker hypothesis

The happy-productive worker hypothesis postulates that happy workers will have higher levels of job performance than less happy ones, and as such organisational productivity can be improved by increasing and maintaining worker happiness (Daniels and Harris, 2000; Wright et al., 2002; Lucas and Diener, 2003). The way happiness has been operationalized in such research has varied, developing initially from research into the effects of boredom, happiness has been frequently considered as job satisfaction. More recently happiness in this context has been considered as subjective well-being, or components of subjective well-being (Wright, 2006), as it came to be recognised that job satisfaction is not equivalent to happiness (Wright and Cropanzano, 2000). This supports the focus on overall subjective well-being used in this thesis, rather than school related well-being (school satisfaction for example). Similarly, productivity has also had varying definitions depending on the type of work and reflecting subjective and objective productivity (Lucas and Diener, 2003; Xanthopoulou et al., 2009).

The happy-productive worker hypothesis is of interest to both employers and employees alike, as employers are interested in ways of improving productivity and staff retention, therefore avoiding the costs of training new staff (Harter et al., 2002; Lucas and Diener, 2003; Wright, 2006). Likewise employees benefit as they have been able to argue for improvements in their working lives stating that “that increased pay and working conditions will be repaid in subsequent performance” (Wright and Staw, 1999b, pg 31). It is therefore of interest to schooling research as a similar argument could be made that increasing child subjective well-being will improve educational achievement. A link between subjective well-being and productivity seems likely due to the evidence that positive affect “is strongly associated with feeling energetic and active” (Lucas and Diener, 2003, pg 39). The following sections briefly discuss the existing evidence relating to the happy-productive worker hypothesis.

Evidence relating to the happy-productive worker hypothesis has historically been mixed, however the low correlations found in some research may be attributed to the use of an overall, single-item (rather than composite), measure of job satisfaction as the happiness measure (Judge et al., 2001). However, more recent research that has used measures of subjective well-being, particularly affective aspects, have had more consistent and significant findings at the individual level, suggesting that this conception of the happy-productive worker hypothesis is supported by evidence (including longitudinal studies) (Cropanzo and Wright, 1999; Wright et al. 2002). These studies found that “well-being did account for a significant proportion of the variance in composite performance” (Wright et al., 2002, pg 149; also Harter et al., 2002). It is thought, however, that the relationship between subjective well-being and productivity is curvilinear, rather than linear, with declining returns for increasing subjective well-being after a certain point (Mishra and Smyth, 2012). Interestingly, research on a Chinese sample, has suggested that there may be a gender dimension to this relationship, finding a stronger relationship between subjective well-being and performance (measured as wages) for men than for women (Mishra and Smyth, 2012).

A number of explanations for the relationship between happiness and productivity some of which undermine the importance of subjective well-being have been posited. One example is the halo effect which suggests that, rather than happy people being more productive, happy people are more positive themselves and perceived more positively by others. However, findings by Staw and Barsade (1993) undermine the halo effect argument. Another explanation is the effect of affective state on mental performance. For example, depressed people have been found to “demonstrate poorer recall of difficult (high-effort) material and no loss in recall from low effort materials” (Harter et al., 2002, pg 5) while positive affect is associated with improved creativity and greater problem solving (Staw and Barsade, 1993; Staw et al., 1994). Similarly, it has been suggested that those who have high positive affect are more likely to attempt difficult tasks and persist at tasks for longer, an important trait for academic achievement and success (Wright and Staw, 1999) and therefore that affective states cause behaviours that either improve or hamper performance behaviours (Cropanzano and Wright, 1999). The alternative hypothesis that negative affect/depression may be associated with improved decision making was not supported by research, which instead found better decision making among those with high positive affect (Staw and Barsade, 1993).

Instead of arguing for improved conditions, the happy-productive worker hypothesis could be used to argue that employers could improve productivity by making hiring decisions based on the positive affect levels of applicants (Cropanzano and Wright,

1999). This presumably would not be an option for schools, however evidence suggests that the benefits of selecting based on affective well-being would reduce over time if effort was not made to maintain or improve positive affect (Cropanzano and Wright, 1999; Xanthopoulou et al., 2009). This is because positive affect has been found to be influenced by the work environment and characteristics, discussed in more detail in the following section, and so cannot be considered as simply an individual characteristic (Xanthopoulou et al., 2009). Therefore suggesting that children's school environment is likely to be of importance to their subjective well-being.

The happy-productive worker hypothesis was investigated in relation to university students in Australia (Cotton et al., 2002). This study suggests that the work of a student at university is similar to that of someone in employment, they argue that "like many paid workers, students work in hierarchical structures, with defined job tasks and variable levels of control and support" (Cotton et al., 2002, pg 148). Younger students in schools, such as those that are the focus in this thesis, similarly work in such structures. The university students were found to have higher levels of stress and lower levels of satisfaction than the occupational groups studied in previous research, however, the researchers still found a strong relationship between well-being and performance (here measured as academic achievement) (Cotton et al., 2002).

Employment quality and engagement

It is often assumed that any employment is better than unemployment for subjective well-being. However research investigating the effects of the quality of employment on well-being has found that this is not the case and has identified ways in which employment varies and affects subjective well-being and performance. Employee engagement research is similar to that investigating the Happy-Productive Worker hypothesis but focuses to a greater extent on the work environment. Engagement has multiple related definitions which are discussed briefly below.

The results of a longitudinal study using Australian panel data found that poor quality employment had a negative effect on mental health to a greater extent than unemployment and was associated with a continuing decline in mental health over the period of study (Butterworth et al., 2011). The quality of jobs was assessed according to their reported demands and complexity (including stress), the autonomy respondents felt that they had, their security, and whether respondents felt that they were adequately rewarded for their work. It can be hypothesised that similar aspects of children's schooling, such as perceived autonomy, relationships with teachers and feeling rewarded for their work, might equally be linked to outcomes such as mental health, or in the case of this research, subjective well-being. Engagement is

considered to have physical, emotional and cognitive components and relates to “a positive affective/motivational reaction towards the job that is characterized by vigour, dedication, and absorption” (Xanthopoulou et al., 2009, pg 184; also Bakker and Demerouti, 2008). Recent research has suggested that engagement with employment is significant for a number of important outcomes aside from, although likely to be related to, productivity including health outcomes (Butterworth et al., 2011).

A similar, but cross-sectional, study conducted in the USA found that workers who were disengaged with their work, that is “emotionally disconnected from their work” (Harter and Agrawal, 2011, n.p.), were less likely to consider themselves to be “thriving” and more likely to be struggling than those engaged with their work, and less likely to consider themselves as thriving than even those who are unemployed (and looking for work). Controlling for a range of demographic factors they found that 54% of disengaged workers reported themselves as struggling compared to 28% of engaged workers and 49% of unemployed respondents (Harter and Agrawal, 2011, n.p.). Only 42% of disengaged workers reported thriving compared to 71% engaged workers and 48% unemployed people (Harter and Agrawal, 2011, n.p.). Engaged workers were described in the research as “involved in and enthusiastic about their work” (Harter and Agrawal, 2011, n.p.) while those who were not engaged were less likely to put in additional effort, a characteristic likely to be important for success in school. Those who are “actively disengaged are emotionally disconnected from their work and workplace and jeopardize the performance of their teams” (Harter and Agrawal, 2011, n.p.). An alternative definition of work engagement is “positive, fulfilling, work-related state of mind” (Bakker and Demerouti, 2008, pg 209). Those who reported not being actively engaged with their work were as likely as those who are unemployed to report daily negative experiences such as pain, worry, sadness, stress and anger (Harter and Agrawal, 2011). From these findings it can be hypothesised that where children feel engaged and enthusiastic about school are more likely to report high levels of subjective well-being. The similar concept of student engagement is discussed below.

Similarly to the results found regarding positive affect and productivity discussed above, Bakker and Demerouti (2008, pg 210) found that “engaged employees have high energy and self-efficacy”, potentially making them more effective in their work. However, they stress that being an engaged employee is not the same as being a workaholic, engaged employees go above and beyond in their work because they want to and enjoy it, rather than feeling compelled to. Importantly, workaholicism does not share the positive relationship with productivity that engagement does (Bakker and Demerouti, 2008) and so encouraging workaholic tendencies in children will not

improve their well-being or academic achievement in the same way as encouraging engagement and pursuing engaging education policies. This positive engagement effect is also thought to be 'contagious' within the workplace, spreading positive behaviours among staff (Bakker and Demerouti, 2008) and improving performance across employees (Xanthopoulou et al., 2009). Similarly, engagement and positivity has been found to be contagious between managers and employees suggesting that teacher subjective well-being may be important for child subjective well-being (Bakker and Demerouti, 2008). Unfortunately lack of data means that such a hypothesis cannot be investigated in this thesis.

Student engagement

Similar to the study of employee engagement and relevant for this research is the concept of student engagement. Definitions and operationalizations of student engagement vary but it is considered to be a multidimensional construct, which has been studied as an overall measure and as a range of individual components (Fredricks et al., 2004). Components of engagement vary according to data availability and theoretical differences. Fredricks et al (2004) identify three aspects of school engagement: behavioural, emotional and cognitive, while Willms (2003), for example, uses two: psychological and behavioural. Behavioural engagement relates to participation in school and extracurricular activities; emotional or psychological engagement relates to affective reactions to teachers, schools and other pupils, and is associated with a feeling of bonding to school; finally, cognitive engagement relates to ideas of involvement with work, whether students are willing to apply themselves in a meaningful way to acquire and master skills (Fredricks et al., 2004; Willms, 2003). Definitions can be more broad, behavioural engagement has also been considered to include good behaviour, asking questions and talking in class discussions, while some make the distinction between simply following rules and good attendance and students who independently adopt positive academic conduct (Fredricks et al., 2004).

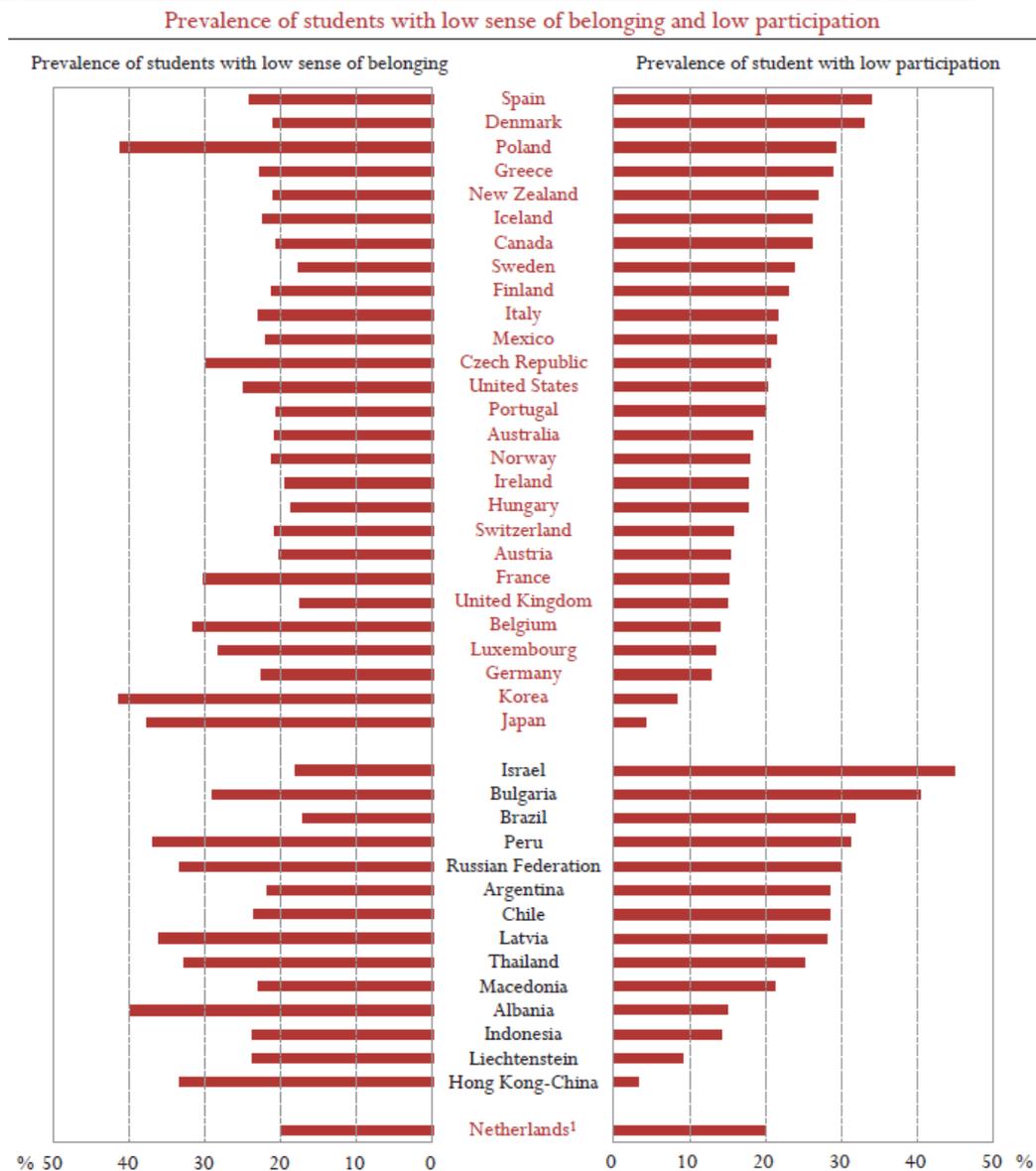
These different aspects of engagement can vary in terms of their depth, they are not considered in a binary 'not engaged/engaged' fashion. Behavioural engagement can vary from attending school because it is compulsory and doing minimal work to participating in a range of extracurricular activities and taking on extra work for example (Fredricks et al., 2004). Similarly engagement can be short-term, in order to pass an exam for example, or long-term and constant, Nystrand and Gamoran (1991) refer to this as "procedural" and "substantive" (pg 262) engagement respectively (also Fredricks et al., 2004).

The literature on cognitive engagement is associated with the motivation literature which highlights different approaches to learning. Students might be more inclined to performance related goals, where enough is done to simply achieve a certain goal, for example a passing grade. Alternatively, students may have learning goals and be more interested in improving understanding than being perceived to be intelligent or achieving a certain grade. It has been suggested that “students who adopt learning rather than performance goals are focused on learning, mastering the task, understanding, and trying to accomplish something that is challenging. Intrinsically motivated students prefer challenge and are persistent when faced with difficulty” (Fredricks et al., 2004, pg 64). This suggests that aspects of education policy that have led to a proliferation of targets and exercises that are seen as ‘box-ticking’ may be having an impact on the long-term engagement of students and the way in which they learn. Similarly, the promotion of a curriculum which encourages memorisation of dates and facts rather than in-depth understanding requires students to only engage with work on a superficial level and therefore limits their cognitive engagement.

Engagement has been demonstrated to be associated with academic achievement in number of studies, although it is possible that this has been overstated as the association between behavioural engagement and test results is likely to be high as tests often require only low-level behavioural and cognitive engagement – attendance and memorisation of facts (Fredricks et al., 2004). It is also difficult to know the causal nature of the relationship between engagement and achievement. It is often thought that low engagement causes low achievement, however it is equally plausible that low achievement may cause low engagement. It has been suggested that early and consistent negative experiences and a lack of positive feedback can lead to low engagement (Willms, 2003). This can be associated with the findings reported above regarding children’s experiences with SATs, and more general concerns about the increased testing of students at increasingly young ages. If students are being tested at younger ages, increasingly at risk of being told that they are failures or not up to standard, this might impact on their engagement with school. Willms (2003) has also suggested that low engagement may be associated with other aspects of school life, such as friendships, feelings about their appearance and their perception of ability in other areas, such as sports. Engagement, defined in these ways, has also been associated with the risk of dropping out. Improving behavioural engagement has been shown to reduce dropping out risk, as has good emotional engagement and feelings of connectedness to school (Fredricks et al., 2004).

Willms' (2003) study using PISA 2000 used two measures of engagement: sense of belonging¹ and school attendance². The potential responses to the sense of belonging questions was a four-point scale ranging from strongly disagree to strongly agree. Compulsory school attendance was studied despite it being desirable to include measures of extracurricular attendance because of the difficulties with measuring extracurricular attendance across countries (Willms, 2003). Figure 2.2 shows the prevalence of students with low engagement across countries, showing quite considerable differences across countries.

Figure 2.2: From Willms (2003) prevalence of students with low engagement



1. Response rate is too low to ensure comparability.
 Source: OECD PISA database, 2003. For data see www.pisa.oecd.org.

Source Willms (2003) pg 22

¹ School is a place where: I feel like an outsider (or left out of things), I make friends easily, I feel like I belong, I feel awkward and out of place, Other students seem to like me

² How many times in the previous two weeks did you...: Miss school?, Skip classes?, Arrive late for school? (Willms, 2003, pg 64)

Willms (2003) investigated student and family characteristics associated with low engagement and found no difference between genders in terms of sense of belonging, but boys were more likely than girls to have low participation (attendance)³, this was found to vary across schools and countries. One of the most important characteristics was coming from a low socio-economic background with Willms (2003, pg 39) noting that “in virtually every country students from poor families are more likely to feel lonely or feel like an outsider at school”. Being born in a country other than the one in which you live, and being from a single parent background all also increased the odds of a child reporting low engagement with school. Being from a high socio-economic background significantly reduced the odds of having a low sense of belonging, but not low participation.

Across the OECD nations an average of approximately 25% of students have a low sense of belonging, and around 20% report very low levels of participation (Willms, 2003, pg 25). Averages were not found to vary significantly across countries for sense of belonging, but did for level of participation. In all countries, there was evidence of variation across schools in terms of the number of students reporting low engagement, suggesting a potential role for schools in student engagement rates (Willms, 2004). Students’ participation was not found to be strongly related to their sense of belonging.

Fredericks et al. (2005) have developed a School Engagement Scale which is summarised below. Possible answers are never, on occasion, some of the time, most of the time, all of the time.

- Behavioural Engagement
 - I pay attention in class
 - When I am in class I just act as if I am working
 - I follow the rules at school
 - I get in trouble at school
- Emotional Engagement
 - I feel happy in school
 - I feel bored in school
 - I feel excited by the work in school
 - I like being at school
 - I am interested in the work at school
 - My classroom is a fun place to be

³ Participation here refers to school attendance and is the terminology used by Wilms (2003) who uses the two terms somewhat interchangeably. This usage is in contrast to the more broad definition of participation often used in the child rights and well-being literature, see for example the United Nation Convention on the Rights of the Child.

- Cognitive Engagement
 - When I read a book, I ask myself questions to make sure I understand what it is about
 - I study at home even when I don't have a test
 - I try to watch TV shows about things we are doing in school
 - I check my schoolwork for mistakes
 - I read extra books to learn more about things we do in school
(Fredericks et al., 2005, pg 319)

Research by Gallup (Busteed, 2013) conducted in 2012 using a convenience sample, found evidence of an age-related 'cliff' in student engagement in the USA. Their sample included almost 500,000 students from grades five to 12 in approximately 1,700 public schools covering 37 states. The results show that, as with subjective well-being (Bradshaw and Keung, 2011b), engagement with school decreases with age. During elementary school 76% of children were found to be engaged, dropping to 61% in middle school and 44% in high school (Busteed, 2013, n.p.).

The results are calculated based on the five questions which form the Engagement Index. Possible results are five-point Likert scale where 1 equals a response of "strongly disagree" and 5 "strongly agree" (Gallup, 2012). The questions are: I have a best friend at school; I feel safe in this school; My teachers make me feel my schoolwork is important; At this school, I have the opportunity to do what I do best every day; In the last seven days, I have received recognition or praise for doing good schoolwork (Gallup, 2012, pg 27). Some high schools in the sample were found to have 70% of students engaged (Busteed, 2013, n.p.), suggesting that low engagement at later stages of education is not inevitable and is something that can be changed.

A similar concept to school engagement is that of school connectedness. Connectedness to school, also known as social membership or belonging relates to "perception[s] of safety, belonging, respect, and feeling cared for at school" (McNeely, 2005, pg 289). It is therefore arguably very similar to the concept of emotional engagement, although it is typically discussed as a precursor to engagement. As with engagement, connectedness is thought to, and has been shown to, improve academic outcomes and reduce engagement in risk behaviours (McNeely et al., 2002; McNeely and Falci, 2004; McNeely, 2005). Connectedness has multiple definitions and is constructed of several different components: "belonging, social support, and engagement" (McNeely and Falci, 2004, pg 5). As well as feeling connectedness to school itself, children may also feel connectedness to their peers, known as

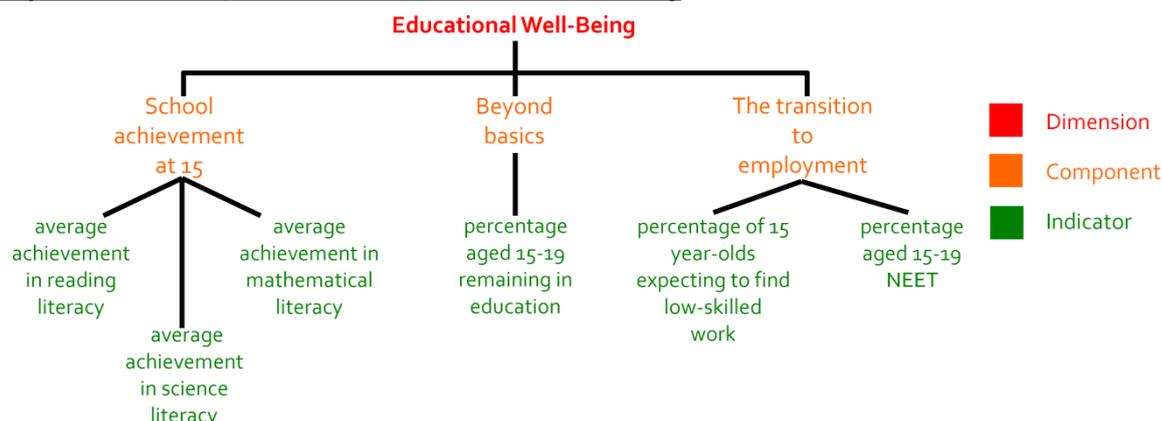
“unconventional connectedness” (McNeely and Falci, 2004, pg 4) the effect of which on behaviour etc. depends on the behaviour of the peer group.

The similarities between student and employee engagement are relevant to this research because it highlights the similarities between adult and child relationships with their places of work, employment and school. This demonstrates the lifecourse element of subjective well-being and its influences. However, the relationship between child well-being and schooling and adult well-being and work is likely to vary somewhat as there are some differences. Perhaps most importantly children are not financially remunerated for attending school unlike adults attending work. Given the absence of monetary reward it could be hypothesised that other rewards, such as time with peers or praise from a teacher, might be of more importance than the equivalent for adults.

2.7: Education in existing studies of child well-being

Large studies of children’s well-being typically include five dimensions; “physical, psychological, cognitive, social, and economic” (Frønes, 2007, pg 10) which are often related to administrative/governmental structures. As such, educational (cognitive) well-being is frequently included in well-being studies. Figure 2.3 below demonstrates how children’s well-being is operationalised in many of these studies using UNICEF (2007) as an illustration. As discussed above, children’s well-being is initially broken down into around 5-7 main dimensions (also known as domains, the average number of domains was identified as 5.5 in a review of such studies (O’Hare and Gutierrez, 2012)), for example educational well-being. These dimensions are in turn broken down into components which are represented by a number of indicators. It is these indicators that can vary in the ways discussed previously, for example they can be positive or negative, represent well-being or well-becoming, etc. Indicators can also be direct or indirect - direct indicators relate directly to the child while indirect indicators reflect the wider situation in which the child is living, for example government expenditure on education or health (Ben-Arieh and Frønes, 2011). The way in which the dimensions and components are defined influences the selection and interpretation of indicators (Frønes, 2007, pg 11).

Figure 2.3: The operationalisation of child well-being



Based on UNICEF (2007).

This is an example of a 4-tier approach. Many studies instead use a 3-tier approach, which does not include a component level, instead grouping indicators directly into dimensions (O’Hare and Gutierrez, 2012). The use of indicators is often limited by the availability of data, and there are also issues around the prioritisation of certain components or indicators through the use of weighting. Similarly, indicators are often not disaggregated by the sex, age, ethnicity or other characteristics of the child, potentially overlooking inequalities.

International studies

The development of indicators of children’s well-being allows the status and experience of children around the world to be compared, as well as allowing comparison over time (Ben-Arieh et al., 2001). This has led to a range of publications comparing children’s well-being in different nations (e.g. Bradshaw et al., 2007a; UNICEF, 2007, Bradshaw and Richardson, 2009; OECD, 2009; UNICEF, 2013). These publications have consistently found the UK to be performing poorly in terms of children’s well-being across a range of dimensions of children’s well-being, although this has improved slightly in the most recent report (UNICEF, 2013).

These publications, often referred to as ‘State-of-the-Child’ reports, are usually organised in a way that reflects policy-making structures (e.g. government departments), although some newer approaches have developed. Such publications and comparisons allow policies to be evaluated in terms of their impact on children’s lives and have increased as the emphasis on accountability in social policies has amplified (Ben-Arieh et al., 2001). The following summarizes the main international reports of children’s well-being in recent years, focusing on the performance of the UK (England is not considered separately in these studies) in educational and subjective dimensions of well-being, the two main areas of interest to this thesis.

UNICEF (2007) Child poverty in perspective: An overview of child well-being in rich countries

Figure 2.4 shows the findings for all domains of well-being in all of the nations included in UNICEF (2007). The UK was found to have performed worst out of all of the nations overall, ranking 17th out of 21 for educational well-being and 20th out of 20 for subjective well-being.

Figure 2.4: UNICEF (2007) findings

		Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5	Dimension 6
Dimensions of child well-being	Average ranking position (for all 6 dimensions)	Material well-being	Health and safety	Educational well-being	Family and peer relationships	Behaviours and risks	Subjective well-being
Netherlands	4.2	10	2	6	3	3	1
Sweden	5.0	1	1	5	15	1	7
Denmark	7.2	4	4	8	9	6	12
Finland	7.5	3	3	4	17	7	11
Spain	8.0	12	6	15	8	5	2
Switzerland	8.3	5	9	14	4	12	6
Norway	8.7	2	8	11	10	13	8
Italy	10.0	14	5	20	1	10	10
Ireland	10.2	19	19	7	7	4	5
Belgium	10.7	7	16	1	5	19	16
Germany	11.2	13	11	10	13	11	9
Canada	11.8	6	13	2	18	17	15
Greece	11.8	15	18	16	11	8	3
Poland	12.3	21	15	3	14	2	19
Czech Republic	12.5	11	10	9	19	9	17
France	13.0	9	7	18	12	14	18
Portugal	13.7	16	14	21	2	15	14
Austria	13.8	8	20	19	16	16	4
Hungary	14.5	20	17	13	6	18	13
United States	18.0	17	21	12	20	20	–
United Kingdom	18.2	18	12	17	21	21	20

Source: UNICEF (2007) pg 2

Educational well-being is included because “a measure of overall child well-being must include a consideration of how well children are served by the education systems in which so large a proportion of their childhood is spent and on which so much of their future well-being is likely to depend” (UNICEF, 2007, pg 19). Table 2.1 shows the indicators and components that go into the educational well-being dimension. The components cover educational achievement towards the end of compulsory education, the percentage of young people who continue education beyond a basic level, and measures of the success of young people’s transitions to employment. As such the dimension refers solely to the later stages of childhood, with no measures of educational well-being for those younger than 15 years old. The indicators used are both of well-being and well-becoming, positive and negative, but only objective

measures are used with subjective well-being considered separately. The data used for the indicators are taken from OECD PISA (Programme for International Student Assessment) and OECD Education at a glance.

Table 2.1: UNICEF (2007) Educational well-being

School achievement at age 15	Average achievement in reading literacy
	Average achievement in mathematical literacy
	Average achievement in science literacy
Beyond basics	Percentage aged 15-19 remaining in education
The transition to employment	Percentage aged 15-19 not in education, training or employment [NEET]
	Percentage of 15 year-olds expecting to find low-skilled work

Source: UNICEF (2007) pg 18

A measure relating to children’s subjective experiences of school was included in the subjective well-being dimension (which also included their perceptions of their health, their life satisfaction, and their personal well-being) the data for which was taken from the HBSC (Health Behaviour in School-Aged Children) survey. The consideration of the subjective and objective experiences of children in education separately disguises the fact that Finland is found to have excellent educational well-being, particularly achievement, but to have comparatively very few children who enjoy school. This highlights that a country or system may be found to produce objectively good results but may be perceived as poor by the children. If, as suggested by Bronfenbrenner (1979), it is children’s perceptions of their situation that matter most for their development, then considering objective and subjective well-being separately in this manner is likely to be flawed.

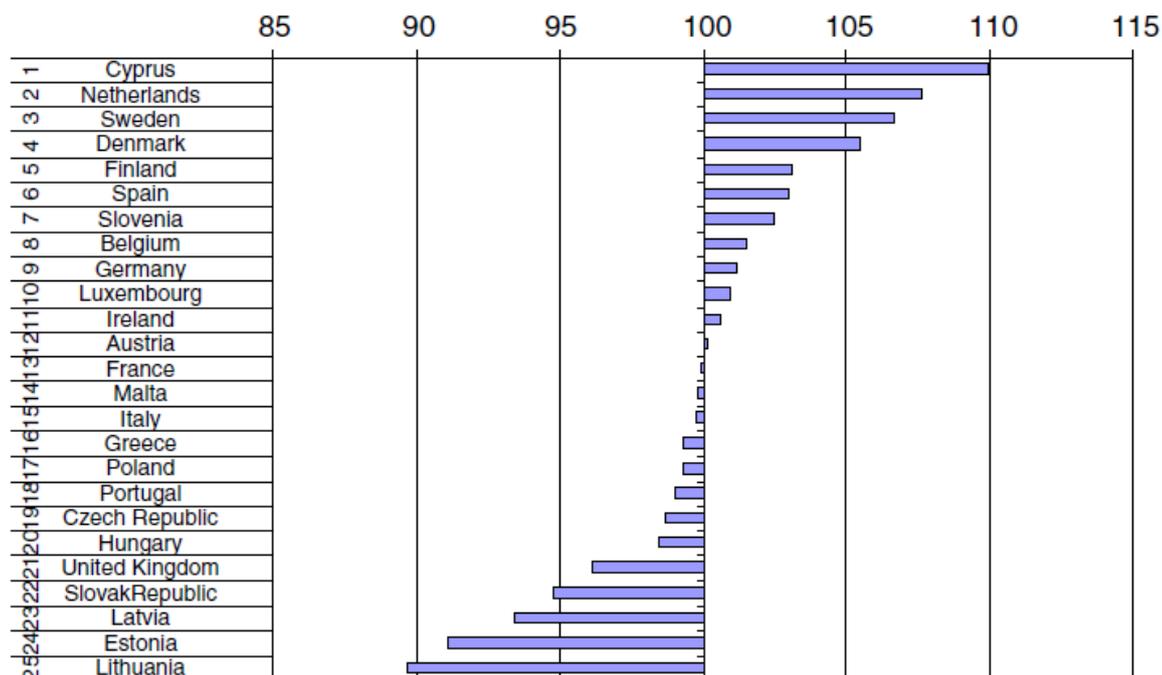
Bradshaw et al. (2007a) An Index of Child Well-Being in the European Union (EU)

Figure 2.5 shows the performance of EU countries for children’s well-being. The UK is found towards the bottom of the table, ranked 21st out of 25.

In this study the inclusion of education is justified as follows: “As children get older, school becomes another major factor in children’s life. Education is... relevant for children’s wellbeing today but also decisive for their future life chances” (Bradshaw et al., 2007, pg 137). The indicators and components are outlined below in Table 2.2. They are very similar to those used in UNICEF (2007), the difference being the inclusion of an indicator of the number of young children in childcare. This does mean that this study includes a broader age range, however the educational well-being of

children aged 3-14 is not covered reflecting difficulties in accessing data covering the different stages of childhood.

Figure 2.5: Bradshaw et al. (2007a) findings



Source: Bradshaw et al. (2007a) pg 170

The information is taken from PISA, the OECD (Organisation for Economic Co-ordination and Development), and OECD Education at a Glance. The UK is found to perform better for the education domain than it does overall, although still below average.

Table 2.2: Components and indicators for education in Bradshaw et al. (2007a)

Component	Indicators
Educational attainment	Reading literacy attainment
	Mathematical literacy attainment
	Science literacy attainment
Educational participation	Children aged 0-2 in registered childcare recent year
	Percentage of 15-19 year olds in education
Youth labour market outcomes	Percentage of the youth population NEET (not in education, employment or training) 15-19
	Percentage of pupils aged 15 years aspiring to low skilled work

Source: Bradshaw et al. (2007a) pg 149-151

Again a component, called well-being at school, relating to children's subjective perceptions and experiences of school was included in the subjective well-being dimension, separate from the objective measures relating to education. Again, using data taken from the HBSC survey, this component included the percentage young people feeling pressured by schoolwork and the percentage of young people liking school a lot. The UK was ranked 18th out of 22 for this dimension.

Bradshaw and Richardson (2009) An Index of Child Well-Being in Europe

Figure 2.6 shows the performance of European countries in terms of their child well-being. As with the UNICEF (2007) report, rankings for individual dimensions are also shown. The UK is ranked 24th out of 29 countries overall, 22nd for Education and 21st for subjective well-being. Table 2.3 below shows the components and indicators for the Education dimension. The measures used are similar to the previously mentioned studies, using primarily OECD data. Again, the focus is on early and later education. As in the other studies, a component called ‘well-being at school’, with indicators ‘children who feel pressured by schoolwork’ and ‘young people liking school a lot’, is included in the subjective well-being dimension (alongside personal well-being and perceived health) using data from the HBSC survey.

Figure 2.6: Bradshaw and Richardson (2009) findings

Rank	Country	Child well-being in the EU 29	Health	Subjective	Relationships	Material	Risk	Education	Housing
1	Netherlands	117.3	2	1	1	7	4	4	9
2	Sweden	114.8	1	7	3	10	1	9	3
3	Norway	114.8	6	8	6	2	2	10	1
4	Iceland	112.7	4	9	4	1	3	14	8
5	Finland	111.0	12	6	9	4	7	7	4
6	Denmark	109.6	3	5	10	9	15	12	5
7	Slovenia	107.1	15	16	2	5	13	11	19
8	Germany	106.1	17	12	8	12	5	6	16
9	Ireland	105.3	14	10	14	20	12	5	2
10	Luxembourg	104.8	5	17	19	3	11	16	7
11	Austria	104.2	26	2	7	8	19	19	6
12	Cyprus	103.7	10			13			11
13	Spain	103.6	13	4	17	18	6	20	13
14	Belgium	103.0	18	13	18	15	21	1	12
15	France	100.9	20	14	28	11	10	13	10
16	Czech Republic	98.9	9	22	27	6	20	3	22
17	Slovakia	98.7	7	11	22	16	23	17	15
18	Estonia	96.9	11	20	12	14	25	2	25
19	Italy	96.1	19	18	20	17	8	23	20
20	Poland	94.6	8	26	16	26	17	8	23
21	Portugal	94.5	21	23	13	21	9	25	18
22	Hungary	94.3	23	25	11	23	16	15	21
23	Greece	94.0	29	3	23	19	22	21	14
24	United Kingdom	92.9	24	21	15	24	18	22	17
25	Romania	87.0	27	19	5		24	27	
26	Bulgaria	84.9	25	15	24		26	26	
27	Latvia	84.1	16	24	26	22	27	18	26
28	Lithuania	82.3	22	27	25	25	28	24	24
29	Malta	81.9	28	28	21		14		

Source: Bradshaw and Richardson (2009) pg 324

Table 2.3: Bradshaw and Richardson (2009) Education components and indicators

Component	Indicators
Achievement	Reading literacy achievement
	Mathematical literacy achievement
	Science literacy achievement
Participation/enrolment	Full-time and part-time students in all institutions (per cent of 15-19-year-olds)
	School enrolment, pre-primary (per cent gross)
Youth inactivity	Inactive youth (NEET) age 15-19 (per cent)

Source: Bradshaw and Richardson (2009) pg 323

OECD (2009) Doing Better for Children

Figure 2.7 shows the overall findings for the OECD (2009) study of children's well-being. Unlike in the previous studies, children's well-being is ranked in each dimension but an overall rank for each country is not included. The UK is found to perform poorly in terms of educational well-being (ranking 22nd out of 30) but to perform quite well in terms of quality of school life (4th out of the 25 countries for which data was available). The educational well-being and quality of school life indicators are given in Table 2.4. In this study children's experiences of school are included in a separate section rather than in a subjective well-being section as in the other studies. This does not reflect the perceived importance of school but instead that subjective well-being was not included in this study as it was not considered policy salient. Also unlike other studies, there is no measure of participation included in this measure of educational well-being.

The UK is found in this study to perform quite well in terms of children enjoying school and experiencing bullying. However, these findings, which contrast to those in UNICEF (2007) for example despite using the same data source (but at different times) highlight the issues of relying on cross-sectional data. It also highlights the significance of indicator choices, as 'feeling pressured by schoolwork' another variable available from the HBSC used in other well-being studies finds the UK to be doing comparatively poorly, its inclusion here therefore may have led to a less positive ranking for the UK.

Figure 2.7: OECD (2009) Child well-being in OECD countries

	Material well-being	Housing and environment	Educational well-being	Health and safety	Risk behaviours	Quality of school life
Australia	15	2	6	15	17	n.a.
Austria	5	9	18	27	27	11
Belgium	11	11	20	26	13	19
Canada	14	n.a.	3	22	10	16
Czech Republic	18	24	19	5	23	17
Denmark	2	6	7	4	21	8
Finland	4	7	1	6	26	18
France	10	10	23	19	12	22
Germany	16	18	15	9	18	9
Greece	26	19	27	23	7	24
Hungary	20	21	12	11	25	7
Iceland	8	4	14	2	8	1
Ireland	17	5	5	25	19	10
Italy	19	23	28	17	11	20
Japan	22	16	11	13	2	n.a.
Korea	13	n.a.	2	10	2	n.a.
Luxembourg	3	8	17	7	14	23
Mexico	29	26	29	28	30	n.a.
Netherlands	9	17	4	8	9	3
New Zealand	21	14	13	29	24	n.a.
Norway	1	1	16	16	4	2
Poland	28	22	8	14	20	15
Portugal	25	20	26	18	6	21
Slovak Republic	27	25	24	1	22	25
Spain	24	13	21	12	16	6
Sweden	6	3	9	3	1	5
Switzerland	7	n.a.	10	21	5	13
Turkey	30	n.a.	30	30	29	12
United Kingdom	12	15	22	20	28	4
United States	23	12	25	24	15	14

Source: OECD (2009) pg 23

Table 2.4: OECD (2009) Educational well-being and quality of school life indicators

Dimension	Indicators
Educational well-being	Average mean literacy score
	Literacy inequality
	Youth NEET [Not in Education, Employment or Training] rates
Quality of school life	Bullying
	Liking school

Source: OECD (2009) pg 31

UNICEF (2013) Child well-being in rich countries: A comparative overview

UNICEF (2013) presents an updated version of UNICEF (2007). Unlike in UNICEF (2007), in this study subjective well-being is treated entirely separately as “subjective well-being overlaps with and transcends all other dimensions of child well-being and is therefore best considered as a separate measure in its own right rather than as one component of an index” (UNICEF, 2013, pg 38). The overall results are given in Figure 2.8, while the subjective well-being results are discussed below.

Figure 2.8: UNICEF (2013) findings

		Overall well-being	Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5
		Average rank (all 5 dimensions)	Material well-being	Health and safety	Education	Behaviours and risks	Housing and environment
			(rank)	(rank)	(rank)	(rank)	(rank)
1	Netherlands	2.4	1	5	1	1	4
2	Norway	4.6	3	7	6	4	3
3	Iceland	5	4	1	10	3	7
4	Finland	5.4	2	3	4	12	6
5	Sweden	6.2	5	2	11	5	8
6	Germany	9	11	12	3	6	13
7	Luxembourg	9.2	6	4	22	9	5
8	Switzerland	9.6	9	11	16	11	1
9	Belgium	11.2	13	13	2	14	14
10	Ireland	11.6	17	15	17	7	2
11	Denmark	11.8	12	23	7	2	15
12	Slovenia	12	8	6	5	21	20
13	France	12.8	10	10	15	13	16
14	Czech Republic	15.2	16	8	12	22	18
15	Portugal	15.6	21	14	18	8	17
16	United Kingdom	15.8	14	16	24	15	10
17	Canada	16.6	15	27	14	16	11
18	Austria	17	7	26	23	17	12
19	Spain	17.6	24	9	26	20	9
20	Hungary	18.4	18	20	8	24	22
21	Poland	18.8	22	18	9	19	26
22	Italy	19.2	23	17	25	10	21
23	Estonia	20.8	19	22	13	26	24
23	Slovakia	20.8	25	21	21	18	19
25	Greece	23.4	20	19	28	25	25
26	United States	24.8	26	25	27	23	23
27	Lithuania	25.2	27	24	19	29	27
28	Latvia	26.4	28	28	20	28	28
29	Romania	28.6	29	29	29	27	29

Lack of data on a number of indicators means that the following countries, although OECD and/or EU members, could not be included in the league table of child well-being: Australia, Bulgaria, Chile, Cyprus, Israel, Japan, Malta, Mexico, New Zealand, the Republic of Korea, and Turkey.

Source: UNICEF (2013) pg 2

It shows an overall improvement in performance for the UK, although performance in educational well-being has changed from ranking 17th out of 21 to 24th out of 29. The Netherlands, Belgium and Germany perform best for educational well-being. Previously it was Belgium, Canada and Poland. The changes in ranks may be due to policy changes in these countries, however it should be noted that the indicators used to create this study are somewhat different from those included in UNICEF (2007).

In this study, subjective well-being was measured using Cantril's Ladder, a single-item measure of life satisfaction. This is in contrast to UNICEF (2007), which used four indicators to measure children's subjective well-being. The UK performs better here, ranking 14th compared to 20th in 2007. The Netherlands, Iceland, Spain and Finland are found to perform best, while the four lowest ranked are Romania, Poland, Lithuania and Hungary (UNICEF, 2013, pg 39). The report did also include a measure of

children’s perceptions of their relationships including those with their classmates. Some of these measures were included in the 2007 report card within the ‘Relationships’ dimension. The UK ranks 17th here, with the Netherlands again performing best, followed by Iceland, Sweden and Denmark. France, the United States, Greece and Canada had the worst results (UNICEF, 2013, pg 41).

Table 2.5: UNICEF (2013) education components and indicators

Component	Indicators
Participation	Participation rate: early childhood education
	Participation rate: further education, age 15-19
	NEET rate (% age 15-19 not in education, employment or training)
Achievement	Average PISA scores in reading, maths and science

Source: UNICEF (2013) pg 5

National studies

Included below are a range of the similar large scale studies that have been conducted on child well-being but relating to the UK only.

Bradshaw (ed.) (2011) The Well-Being of Children in the UK

This book on children’s well-being in the UK includes a chapter on Education (Keung, 2011). It focuses on educational attainment (educational achievement in key stage tests and educational competencies (PISA scores)), children’s well-being at schools (children enjoying school), and educational disaffection (truancy rates, exclusions, NEET young people, and children with special educational needs (SEN)). Data are collected from the Department for Education (DfE), Office for National Statistics (ONS), PISA, The Children’s Society Child Well-Being Survey in England and the HBSC survey. The chapter on subjective well-being and mental health also includes a measure of children’s happiness with school work (Bradshaw and Keung, 2011a) using data from the British Household Panel Survey (BHPS). It is therefore very similar to the international studies described above.

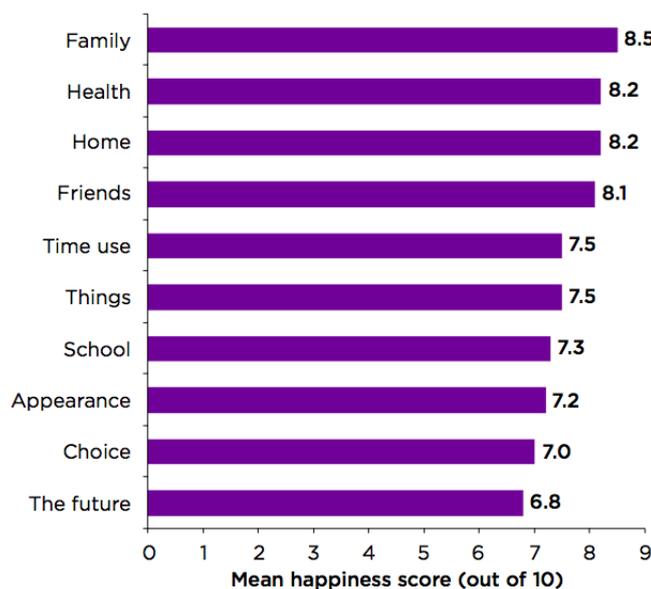
The Children’s Society (2012) The Good Childhood Report 2012: A review of our children’s well-being

This study is one of the most recent in a series by The Children’s Society investigating child well-being in the UK and is the only study included to use primary data, meaning that they have been able to include a wider range of ages than the other studies. Also unlike the other studies it focuses solely on children’s subjective well-being (although it includes no measures of affective well-being, focusing solely on satisfaction measures) and covers ten aspects of children’s lives: relationships with family, relationships with friends, time use, health, the future, home, things (money and possessions), school,

appearance and amount of choice in life (The Children’s Society, 2012, pg 13). Figure 2.9 shows how happy children have reported they are with each of these dimensions.

School is included in the survey based on the findings of an earlier consultation with children: “School was one of the key factors identified by children as being important to a good childhood. In our consultations with children there has been a huge number of comments about the ways that school can affect children’s well-being, both positively and negatively. This is a multi-faceted topic with comments about school as an environment, the significance of relationships with teachers and with other children at school, and the importance of learning for children’s sense of current and future well-being” (The Children’s Society, 2012, pg 35).

Figure 2.9: The Children’s Society (2012) Mean happiness with aspects of life



Source: The Children’s Society (2012) pg 13

The Children’s Society have found that children are consistently less happy with their experiences of school than they are with other aspects of their life and that their happiness decreases with age (The Children’s Society, 2012). It shows that there is a drop in children’s school well-being of 10% between the ages of 8 and 15, compared to 5% for family, 7% for health, 8% for friends, 15% for appearance and 18% for future. Of the 10 item the drop in happiness with school was the fourth largest, showing that, like engagement with school, happiness with school declines with age. This is in contrast to findings from Germany for example, which found that between the (slightly different) ages of 11 and 16 satisfaction with family relationships contributed most to the decline in children’s life satisfaction (Goldbeck et al., 2007).

The Children’s Society (2012) surveys used Huebner’s Satisfaction with School scale, the responses are shown in Table 2.6 below. It refers primarily to school engagement

and satisfaction rather than overall subjective well-being, the responses are from children aged 12 to 15. Notable findings include that 42% of children wish that they did not have to go to school with only a little over a third saying that they look forward to going to school. For 49% of the children surveyed there were many things about school that they didn't like and less than half found school interesting.

Other questions asked in survey are: 'How important is it to get good marks in school work?' (97% very or quite important), 'How well do you feel you are doing at school at the moment?' (89% very or quite well), 'I feel safe at school' (almost 75% agree or strongly agree) (The Children's Society, 2012, pg 36-37).

Table 2.6: The Children's Society (2012) School well-being responses

	Disagree	Neither	Agree
I look forward to going to school	27%	37%	36%
School is interesting	21%	38%	42%
I like being in school	18%	36%	46%
I enjoy school activities	11%	26%	63%
I learn a lot at school	9%	19%	72%
I wish I didn't have to go to school	42%	29%	29%
There are many things about school I don't like	25%	26%	49%
I feel bad at school	69%	23%	8%

Source: The Children's Society (2012) pg 36

As part of their survey series The Children's Society introduced the Short Index of School Well-being which consisted of the following questions answered on a scale from 0-10: how happy are you with how safe you feel at school?; how happy are you with how you are doing with your school work?; how happy are you with your relationships with other young people at school?; how happy are you with your relationships with your teachers?; how happy are you with how much you are listened to at school? (The Children's Society, 2012, pg 38). They argue that "developing a schools well-being index of this kind could have particular value in understanding the particular aspects of school life which are most important for children and are most likely to affect their overall feelings about school" (The Children's Society, 2012, pg 38). While this measure is useful, it is similar to measures of school satisfaction used previously in that it focuses on well-being in the school environment, it does not consider how school relates to overall well-being. The results are shown below in Table 2.7. Responses were from children aged 8 to 15.

Table 2.7: The Children’s Society (2012) Happiness with aspects of school

	Mean score	% with low happiness
How safe you feel at school	7.9	5%
How you are doing with your school work	7.3	10%
Your relationships with other young people at school	7.7	6%
Your relationships with your teachers	7.2	10%
How much you are listened to at school	6.7	15%

Source: The Children’s Society (2012) pg 39

Analysis of these results looking at age and gender found that happiness with all aspects declines with age but most so for relationships with teachers and being listened to (The Children’s Society, 2012). In terms of gender “males had significantly lower happiness than females with school work, relationships with teachers and, to a lesser extent with feeling listened to and safety” (The Children’s Society, 2012, pg 35), there were no gender differences for the other measures. The five items were found to explain 65% of the variation in overall happiness with school (The Children’s Society, 2012, pg 39).

As with much of the data used in this area, the data for this study is cross-sectional.

Every Child Matters

Although not a study, Every Child Matters is an example of one of the primary ways the government has become involved in the well-being of children in the educational setting. It was introduced by the Department for Children, Schools and Families, now the Department of Education, in 2003.

The outcomes of the Every Child Matters framework are below:

1. Be Healthy
 - a. Physically healthy
 - b. Mentally and emotionally healthy
 - c. Sexually healthy
 - d. Healthy lifestyles
 - e. Choose not to take illegal drugs
2. Stay Safe
 - a. Safe from maltreatment, neglect, violence and sexual exploitation
 - b. Safe from accidental injury and death
 - c. Safe from bullying and discrimination
 - d. Safe from crime and anti-social behaviour in and out of school
 - e. Have security, stability and are cared for

3. Enjoy and Achieve
 - a. Ready for school
 - b. Attend and enjoy school
 - c. Achieve stretching national educational standards at primary school
 - d. Achieve personal and social development and enjoy recreation
 - e. Achieve stretching national educational standards at secondary schools
4. Make a Positive Contribution
 - a. Engage in decision making and support the community and environment
 - b. Engage in law-abiding and positive behaviour in and out of school
 - c. Develop positive relationships and choose not to bully and discriminate
 - d. Develop self-confidence and successfully deal with significant life changes and challenges
 - e. Develop enterprising behaviour
5. Achieve Economic Well-Being
 - a. Engage in further education, employment or training on leaving school
 - b. Ready for employment
 - c. Live in decent homes and sustainable communities
 - d. Access to transport and material goods
 - e. Live in households free from low income

However, nearly all of the measures included in Every Child Matters are objective measures and therefore do not reflect the effects of schooling on children in terms of their effects on the subjective well-being of children, highlighting the limitations of previous conceptualisations of well-being from an education perspective.

Limitations of current studies

These examples have given an overview of education from a well-being perspective thus far. As well as highlighting the positives and importance of education from a well-being perspective it has illustrated some of the limitations which this research will attempt to address. These are outlined below:

- The data used focuses on teenagers, with a small amount relating to pre-school-aged children. As such studies are only relevant to a limited part of childhood. This work will attempt to ensure that it is relevant to as much of childhood as possible, taking a life-course approach.
- Despite there being “no universal agreement on choice of indicators” (Ben-Arieh and Frønes, 2011, pg 468) there is lots of similarity across studies in terms of the measures used for educational well-being: achievement/literacy, length of education (extended participation), NEET, expecting low skilled work, early

years participation, experiences of bullying, liking school (feeling pressured by school work). However many of these measures are flawed. Average achievement ignores inequality across social groups (Nicaise and Smyth, 2000), NEET (Not in Education, Employment or Training) measures are flawed because they reflect the economic situation as much, if not more, than the effects of schooling and education while also emphasising economic function of education. Academic achievement is also partially explained by the economic resources available to the child (Hampden-Thompson, 2013) and as such is arguably another economic measure. This is inappropriate given the potential of subjective well-being as a means of complimenting economic measures (Pugno, 2009).

- Relatedly, the main focus in all studies is on objective outputs, with little to no consideration of subjective measures or the way in which children are treated in schools or by the educational system more broadly. There is a tendency to consider children's perceptions and feelings about school separately to their educational achievement. This is flawed as research has showed that educational outcomes are positively related to subjective experiences and well-being (Kirkcaldy et al., 2004; Suldo et al., 2006). It has been argued that "Treating children as a form of human capital focuses our attention on outcomes rather than on the quality of the everyday life of the child, and treats the stage of childhood as a time to get through or even endure for the sake of certain preferred adult gains" (Ben-Arieh et al., 2001, pg 38).
- The tendency to focus on at-risk children (Ben-Arieh et al., 2001) is evident in the choice of indicators, for example regarding the popularity of indicators of NEET young people. This overlooks the majority of children.
- These studies use aggregate level data which are only useful in a limited way as they "often obscure the relationship of interest by suppressing variations in the variables across individuals by aggregating across individuals" (Ben-Arieh et al., 2001, pg 102), this also disguises inequality in outcomes which was only considered in one study. Individual level data will be used throughout this thesis.
- Most studies include subjective well-being as a single separate domain. As such subjective well-being is given less weight than the other aspects of well-being. This overlooks how the objective and subjective relate to one another. As mentioned previously, Finland has very good objective outcomes in relation to education but comparatively poor subjective ones. Why this should be the case is of interest but investigation of this interaction is limited by the consideration of subjective well-being as totally separate from objective well-

being. This thesis will consider how they relate to one another, although focusing primarily on subjective well-being.

- It is hard to see how these studies cover the aspects of schooling said to be affecting the subjective well-being of children as outlined in the evidence section of this chapter, for example relating to the effects of assessment and associated difficulties. The evidence discussed above in relation to this will guide the selection of predictor variables in the analysis of this thesis.

2.8: Street level bureaucracy

In order to understand the effects of education policy on children's subjective well-being it is important to hypothesise how policy will affect the day-to-day lives of children. The hypothesis used here is based on Lipsky's (2010) Street-Level Bureaucracy theory.

Lipsky's (2010) work suggests that policy is most commonly experienced and encountered by individuals through interactions with street-level bureaucrats and street-level bureaucracies. Street level bureaucrats and bureaucracies are public service workers and agencies that, through their actions and decision making, create policy (Lipsky, 2010). As such it is logical to consider the impact that education policy has on the subjective well-being of children by considering the differences in children's subjective well-being according to the school that they attend – or the street-level bureaucracy that they interact with. From this perspective, the impact of education policies on child well-being discussed previously can be considered in terms of the way in which schools deal with the pressures associated with the SATs, or the way in which they enact setting and streaming policies (Reay and William, 1999; Ireson et al., 2005). It has been argued that the discretion available to teachers and schools through which they may create street-level bureaucracy has been limited in recent years by an increasingly prescriptive education policy with significant focus on teacher and school accountability, however Ollin (2005) argues that teachers are by no means "powerless victims of forces beyond their control" (pg 152). Instead, despite limitations, they continue to 'subvert' policy in their everyday practices. As such, it appears likely that there is a school-level effect on children's subjective well-being.

A study using the Avon Longitudinal Study of Parents and Children examined school effects on 8 and 10 year-old children's well-being⁴ and Key Stage 2 achievement (Morrison Gutman and Feinstein, 2008). This study found only small school effects for the well-being measures (maximum 3% of the variance explained) (Morrison Gutman

⁴ Operationalized as a combination of external locus of control, competence, depression, victimisation, bullying, antisocial behaviour, antisocial behaviour among friends, talking to teacher, liking school, and satisfaction with friends.

and Feinstein, 2008, pg 17). However, the approach to child (subjective) well-being differs from that used in this research and in other well-being research. As demonstrated by the components shown in the footnote on the page above, the definition of subjective well-being used included experiences and behaviours such as bullying and antisocial behaviour, rather than focusing on affective well-being and life satisfaction as this research does. It also uses data which is not nationally representative, and is now out of date (collected between 1999 and 2001) (Morrison Gutman and Feinstein, 2008). As such, a more up-to-date and nationally representative study of the relationship between the school a child attends and the level of well-being that they report is desirable.

2.9: Direction for research

This thesis takes the position that subjective well-being offers an alternative benchmark against which education policy can be assessed, one that is particularly pertinent given the difficulties of using preference based approaches with children. It seeks to provide evidence for this by establishing a link between education and subjective well-being utilising the street-level bureaucracy theory which places schools in role of policy maker. It will therefore investigate the relationship between the school a child attends and the level of subjective well-being a child reports. This is an intentionally structural approach to subjective well-being, focusing on what policy makers can do to maximise well-being rather than focusing responsibility for subjective well-being on individual choices, which is the focus on much well-being work in government departments. It will use a range of datasets, with the evidence discussed above guiding the choice of predictor variables. It will also consider the relationship between subjective well-being and educational achievement where the data allows. Such a relationship is of interest because of evidence in the literature and interest in establishing the applicability of the happy-productive worker hypothesis to children. The result also has the potential to increase policy interest in the area of subjective well-being in schools at a time when attainment is central.

2.10: Primary research questions

Following on from the evidence discussed in this chapter, the primary research questions are:

- What is the relationship between subjective well-being and educational performance (educational achievement/attainment)?
- How important is the school a child attends to their subjective well-being?
 - How do schools influence children's subjective well-being?

- Is the relationship between school and subjective well-being similar in England and the USA?

2.11: Summary

Schools are likely to play an important role in child subjective well-being because they are a large and significant part of children's lives, taking up a lot of their time and representing the main way in which they engage with policy. However evidence from existing research suggests that education policies and the practices that such policies encourage schools to adopt are likely to increase the effect of schools on children's subjective well-being. This thesis investigates the relationship between the school a child attends and the level of subjective well-being that they report while providing evidence to support arguments a new approach towards education policy.

Chapter 3: Data and Methods

3.1: Introduction

This chapter gives an overview of the data and methods used throughout the thesis. Because of the range of datasets used, each of the analytical chapters contains more specific detail about the methods used, as well as any additional information about the datasets.

3.2: Data

One of the main difficulties in relation to answering the research questions in this thesis is finding data that includes both objective data about children, for example their attainment and school characteristics, typically available in administrative data sources, and subjective data collected from children themselves, typically collected in social surveys. As multilevel modelling is the primary method used throughout the thesis (discussed below) a school identifier variable is also essential for all of the datasets used. Datasets were therefore selected on the basis of these criteria: inclusion of a school identifier, a subjective well-being variable(s), and additional information about children including at least one measure of relationship with school. Because of data availability objective data regarding attainment and school characteristics were desirable but could not be considered essential.

The requirement of a school identifier variable alongside social survey data (rather than administrative data) was the most limiting of the requirements. Some social surveys do collect school identifiers but do not make them available to the public, the Fragile Families survey in the USA for example. Similarly, the need for school identifiers meant that the datasets used tended to be more sensitive in nature and subject to stricter access requirements than standard datasets, particularly for the English datasets. Another consideration was the need for data that was comparable across two nations. It was originally intended to use a single international dataset, the Health Behaviour in School-aged Children international survey, but access issues prevented this. Because of this comparability in terms of ages and outcome variables is an additional consideration in the selection of the datasets. Another issue with datasets was that for some of the data used the sampling structure did not match the analysis design. That is, in some of the datasets used schools were not part of the sampling frame, rather area information was (for example postcodes or households). This causes issues for weighting data, as discussed elsewhere, however schools were still used as a grouping characteristic for analysis.

The following sections introduce the datasets used through the analytical chapters in this thesis.

Chapter 5: The Millennium Cohort Study

The Millennium Cohort Study (MCS) is a longitudinal study following children in the UK born in the 12 months following September 2000 (in England and Wales, November 2000 for Scotland and Northern Ireland) (Johnson and Rosenberg, 2011). A multi-stage stratified sample using Child Benefit records to identify children born in the appropriate time frame within randomly selected electoral wards was used to identify participants (Hansen et al., 2010a; Johnson et al., 2011). Electoral wards, although selected randomly, were chosen in order to over-represent ethnic minorities (in England) and areas of high child poverty (as defined in the Index of Deprivation 2000) (Hansen et al., 2010a). The first wave included 18,818 children (18,552 families) in 398 wards across the UK, with 11,695 children (11,533 families) in 200 wards (110 advantaged, 71 disadvantaged and 19 ethnic wards) in England (Hansen et al., 2010a, pg 38).

The 4th wave of the MCS, in which the children are aged 7, was the first to include a child self-report questionnaire which allows the study of children's subjective well-being and perceptions of school (Collingwood and Simmonds, 2010; Hansen et al., 2010a). This thesis uses the Linked Education Administrative Dataset, which is available from the Secure Data Service⁵ and subject to strict access requirements. This dataset includes information linked to children in the MCS from the National Pupil Database (NPD), an administrative dataset maintained by the Department for Education (DfE), and The School Census (Johnson and Rosenberg, 2011). As such the dataset includes a range of variables relating to schooling not included in the standard MCS datasets, including school type and Key Stage 1 attainment. Anonymised codes identify schools, providing a variable which allows children in the dataset to be grouped by the school they attend, permitting the use of multilevel analysis. Linked data is not yet available for wave 5. The administrative data is only available for children attending schools in England. In England at wave 4 there were 12,225 total cases, 8,839 of which responded to the survey (a response rate of 72.3%) (Hansen et al., 2010b, pg 28). The survey also includes a teacher questionnaire, which is administered separately from the survey of children and parents. This is sent directly to schools and collects information about the child's class and school policies. While this information would be very useful it unfortunately suffers from a very high number of missing cases and therefore was not used in the analysis.

⁵<http://ukdataservice.ac.uk/get-data/secure-access.aspx>

The dataset used in this thesis was constructed by linking data from wave 4⁶ wave 3⁷, and wave 2⁸ together using the MCS longitudinal family file. Due to issues relating to identifying the correct responses for twins and triplets in the different datasets, twins and triplets were removed from the dataset (428 twins, 33 triplets). All cases from outside of England were then dropped; this resulted in 8721 children remaining in the dataset (a reduction of 4953). Children who had changed school since wave 3 of the survey (at age 5) were also removed from the dataset in order to ensure the validity of the study, that the school effects, if any are identified, relate to the school the child is currently attending and that the child has been attending that school long enough for any school effects to have had time to occur. This resulted in a further 1446 children being dropped from the sample, leaving 7282 children. Finally, children for whom school data were not available (due either to a failure to link data or the parents' refusal to grant permission to link data) were removed. Linked data were not available for 1266 children. It is not possible to include these children in the analyses as it is the school data which provides the grouping variable. The final sample size was therefore 6016 children attending 2360 schools with between 1 and 25 children in each school. While the small within-school sample size is a limitation of this analysis and a larger sample size would be desirable schools with few children were not excluded from the sample due to the absence of a legitimate reason to do so (Rasbash, 2008). In this analysis it is the number of schools in the sample, rather than the number of children in each school, that is important as the focus is on between-school, rather than within-school, variance (Paterson and Goldstein, 1991).

The MCS includes weights that control for attrition in the sample and that account for the unequal probability of an individual being sampled due to the sample design (Hansen et al., 2010a). However, there is a mismatch between the sample design and the model design in this research. Sampling takes place at the ward and household level, while the children in the analysis are grouped at the school level, thus weighting is not feasible. Instead, at all stages the strata used in the sampling process (ethnic, disadvantaged and advantaged) are included in the fixed part of the multilevel model (Pfeffermann et al., 1998).

Chapter 6: The Children's Society Well-being Survey

Because this data is not publically available there is comparatively little information about it available, what information there is is given here. Data for this survey was

⁶ Child self-completion, parent interview, geographically linked data and education administrative data surveys. Teacher survey data was not included due to a high level of missing data

⁷ Parent interview

⁸ Child assessment

collected in 2010-11, forming the second collection of data for the survey. The children were sampled through schools, based on NFER's (National Foundation for Educational Research) own Register of Schools and Colleges. A sample stratified by the size of school, proportion of students eligible for Free School Meals, and Government Office Region was used (Jupp and Kelly, 2011). Children completed the questionnaires online. The complete dataset includes 5444 children in 106 schools (schools containing between 1 and 282 children, only 4 schools had a sample size of 5 or lower). Of these 5444 children, 1129 answered the primary school questionnaire, 1906 answered secondary questionnaire A, and 2409 answered secondary questionnaire B. Only children given secondary questionnaire B were asked if they had changed school in the past year. Those that reported that they had changed school ($n = 196$) were excluded from analysis. This reduced the number of schools in the sample to 101. Unfortunately whether the child had recently changed school could not be considered for the other samples of children. No weighting information was provided with this dataset.

Chapter 7: Understanding Society

The dataset used in Chapter 7 is the Understanding Society Wave 1 Special Licence Access: School Codes dataset (University of Essex, 2013). This is the first wave of the Understanding Society dataset (collected in 2009/10) and currently the only one that has been linked to an anonymised school identification variable. It is intended to link Understanding Society to education administrative data (as with the Millennium Cohort Study data used in Chapter 5) in future but this is not currently available, as such this dataset does not include the detailed educational information included in the MCS dataset. However, the inclusion of the school identifier codes in this version of the dataset makes multilevel analysis, and therefore answering the research questions, possible.

Understanding Society is a large-scale survey of around 40,000 households which developed from the British Household Panel Survey (BHPS) (McFall, 2013). It is a panel survey with waves lasting 24 months covering those aged 10 and over. Children aged between 10 and 15 fill in the youth questionnaire, a paper and pencil self-completion questionnaire, while older respondents have a computer aided interview and self-interview (McFall, 2013). The sample is made slightly more complex because it has developed from the BHPS with sample members belonging to 3 subsamples: BHPS participants, those who form the ethnic minority boost sample, and the general sample referred to as the General Population Sample (McFall, 2013). Previous BHPS participants were only included in Understanding Society from wave 2. The general

sample used stratified sampling based on postcodes, which were grouped into 10 regions in England. The ten regions were then split into sub-strata based on information about the proportion of non-manual workers and then ethnic minority people. Systematic random sampling was then used to select households from these groups (McFall, 2013). The ethnic minority boost sample was sampled from areas with high populations of ethnic minorities. These areas were placed into strata based on the expected number of ethnic minority households. Wave 1 had an individual response rate of 87.3% (including proxy interviews) in Great Britain (McFall, 2013).

The dataset comes as a number of separate files. A number of these files, including the school codes, data on the household, information from the children themselves, and data from adults were combined for this thesis. This involved matching children to their parents (both mothers and fathers) or the adults that they lived with. This gives added depth to the data and greater potential to the analysis.

The Understanding Society dataset includes children from all over the UK. The sample sizes for Wales, Northern Ireland and Scotland are much smaller than that for England (212-321 compared to 4145). However, England is the focus of this study. Of the 4145 children in England, 278 had not been assigned a school identification code, 168 cases were missing their school code and another 22 were coded as not attending school. These cases were dropped. As with the Millennium Cohort Study, children in Understanding Society were not sampled through the schools leading to a much more dispersed sample in terms of clustering within schools. Children in the sample were grouped into 2194 schools, although at this stage 206 children are clustered within a single school code used to identify private schools. These children were spread across the country and therefore clearly not clustered in the same school(s). Because it was not possible to identify the individual schools for this section of the sample they were removed from the sample. This meant that the remaining 3471 children were grouped into 2193 schools, with between 1 and 12 children in each school. At this stage in the analysis the average number of children in each school is 1.6, too low to be reliable. Therefore the following analyses investigate the plausibility of improving school group size by removing cases where they are the only person in their school, potentially improving average group size to 2.7. In order for removing single cases to be plausible those children who make single cases must not be significantly different from those who are not single cases. Because of the sampling method used this should not be likely, however it was investigated using Chi Square tests, T-tests and ANOVA shown in detail in Appendix 5. The variables compared were: life satisfaction (the outcome variable), number of friends, how the child feels about their school work, how the child feels about their school, age, gender, whether the child has siblings in their home,

whether they have ever smoked, whether they have ever truanted, whether they feel supported by their family, arguing with mother, arguing with father, race, religion and importance of doing well in exams. Significant differences were found in the number of friends, children in single case schools reported fewer friends (difference in mean of .945, $p < .001$); age, single case children were younger (mean difference 1.105, $p < .001$); whether there were siblings in the home, which was less likely for single cases (Pearson's $\chi^2 = 29.190$, $p < .001$); single case children were less likely to report doing well in exams as important/very important ($F = 7.30$, $p < .01$); and there was a difference in the racial diversity in the groups ($F = 8.49$, $p < .01$). A basic multilevel model including these variables in the fixed part of the model found that of the variables that varied across groups only number of friends and age were significant. Most importantly however, there was no significant difference in the outcome variable for the two groups (the outcome variable is described in Chapter 7). As such all analysis will be limited to schools with two or more children in the sample. Therefore the analysis is conducted on a sample of 2030 children clustered in 752 schools.

However, as well as giving the opportunity to replicate the previous analysis this dataset has the potential to allow for the use of a cross-classification multilevel models simultaneously investigating the impact of school and household/family on child subjective well-being. There are 1610 children in the dataset who live in homes where 2 or more children have completed the survey. These children are clustered into 758 homes (averaging 2.1 children per home). When this is limited to only those children also in schools where the sample size is greater than 1 the number of children is reduced to 1171 grouped into 638 homes (mean 1.8 per home) and 559 schools (mean 2.1 per school). Without the emphasis on homes with multiple children, the number of children per home in the sample would be 1.4. Schools are drawn from between 1 and 5 families, while within households children attended between 1 and 3 different schools, although 3 was rare (88.4% of households had all children attending the same school). The inclusion of this additional analysis gives further depth to the investigation of school effects by allowing direct comparison between school and household level influences on children's well-being.

Chapter 8: Add Health

Add Health is a nationally representative sample of adolescents in the USA which includes questions regarding schooling and subjective well-being (Mullan Harris, 2011; Mullan Harris and Udry, n.d. a; n.d. b). Waves one and two of Add Health, collected when the participants were attending school in 1994-1995 and 1996 respectively (Add Health, n.d. b) are used. It was necessary to focus on the first two waves of the

dataset only, as in the later waves participants are increasingly too old for inclusion (aged 18 or over) in the analysis. Focusing only those who were under the age of 18 in three or more datasets would have resulted in a considerably smaller sample size for analysis. The publicly available dataset includes a random sample of half of the core sample, half of the oversample of African-American adolescents with a parent who has a college degree (Add Health, n.d. a). There are 6504 cases and 4834 cases in the publicly available datasets at wave one and wave two respectively. This analysis uses cases that responded to both waves only. As such the data allows for longitudinal multilevel analysis, unique in this thesis to this chapter.

Both waves include the “Feelings Scale”, or Center for Epidemiologic Studies Depression Scale (CES-D) index (Radloff, 1977). Generally used to measure depression, the index includes subscales referred to as “depressed affect” and “positive affect” (Radloff, 1977, pg 397). No suitable measures of life satisfaction are included in the Add Health survey for waves one and two (Mullan Harris and Udry, n.d. a; n.d. b). There are also questions regarding positive affect included in the personality questions (Mullan Harris and Udry, n.d. a; n.d. b).

An advantage of the Add Health dataset is its sample design. The sample design of Add Health matches the model design of this study as schools are the primary sampling unit. A sample of 80 high schools (schools with an 11th grade, also those with over 30 students) stratified by region, urbanicity, school type, ethnic mix and size, were selected (Mullan Harris, 2011). ‘Feeder’ schools, those which schooled children before their progress to a sampled high school, were also sampled (Mullan Harris, 2011), resulting in 132 schools in the final sample (fewer ‘feeder’ schools than high schools were required due to some of the sampled high schools covering grades 7 to 12). Information was also collected in a parent interview, usually from the resident mother (Mullan Harris, 2011). Other useful information includes: demographics, risk behaviours (both knowledge of and engagement in), health, relationship with parents, religion, neighbourhood perceptions, protective factors, and contextual information (Mullan Harris and Udry, n.d. a; n.d. b). Data from school administrators is also available but is not used here due to data access issues.

The dataset used for this analysis was created by linking information (in home questionnaire and contextual variables) from waves 1 and 2 retaining only those 4834 who were included in both waves. The analysis in this thesis focuses on those reporting themselves as currently attending school (i.e. not expelled or otherwise) and those under 18 years old (due to the possibility of skipping grades some of those in the dataset are 18 years and older. While it is possible that 18 year olds may be in school

in some states, there is no way of knowing whether these respondents are still attending compulsory education). None of the children included in the dataset were coded as having changed schools between waves one and waves two. The school questionnaire does ask students how long they have been at the school but the variable is not useful due to the high level of missing cases (1296, 26.81% or 29.99% when weighting applied) as such this information is not used. Thanks to the sampling approach, there is a school identifier for all children.

Weighting variables are available in the publicly available dataset but unfortunately not for multilevel analysis. Multilevel analysis requires conditional weighting (i.e. weights that take into account the different stages of grouping) which is only available for Add Health in a restricted use dataset. This analysis also uses REML (discussed further in the methods section) estimation which precludes the use of weighting. A weighting variable that takes into account attrition and sampling factors is included and this is used for the weighted frequencies reported in Appendix 7.

Chapter 9: Health Behaviour in School-aged Children

Chapter 9 uses Health Behaviour in School-aged Children data from the USA (Mullan Harris and Udry, n.d. c). Five waves of the survey have been conducted and made publically available through the Interuniversity Consortium for Political and Social Research (ICPSR). Initially the most recent survey (2009/10) (Iannotti, 2013) will be analysed in the same manner as data in the previous chapters. This analysis will then be replicated on the previous datasets which also include the life satisfaction variable (2001/2, 2005/6 (USDoH, 2008; Iannotti, 2012), the 1995/6 and 1997/98 waves are not used because they do not include a subjective well-being variable, although the 1997/98 wave does include a Quality of Life measure, (WHO, 2008)) in order to see how and if the relationship between children's subjective well-being and the school that they attend has changed over the time period. An overview of the 3 HBSC datasets used is given in Table 3.1. Understanding how the relationship between children's subjective well-being and the school that they attend has developed over this time, especially in light of the changes in education in the USA over this time, may help to understand this finding. This will be followed by a direct comparison of the 2009/10 HBSC data to the Children's Society Well-Being Survey.

The HBSC survey is a large-scale international survey that collects data from young people in schools regarding their health and well-being. The HBSC survey provides a nationally representative sample of children in grades 6 through 10 (or equivalent) (6, 8 and 10 in 1995/6 and 1997/8) in both public and private schools collected via a 3-stage stratified sample, with school districts acting as the primary sampling unit (ICPSR,

n.d.). An overview of the three datasets is given in Table 3.1. As such the sample design aligns with the research design in this thesis. The survey oversamples African American and Hispanic students in order to ensure accuracy of estimates (ICPSR, n.d.). The children in the sample were all in school at the time of the survey as the survey was conducted in the school setting. Unfortunately the survey does not include a variable relating to whether the child had changed school in the recent past, so unfortunately it is not possible to control for this. Unlike the Add Health survey used in the previous chapter, there is no information available from the children's families. Weighting variables are included in the datasets although these vary across waves. The usefulness and suitability of weighting will be investigated in the methods section of Chapter 9.

Chapter 4: Is the Happy-Productive Worker Hypothesis Applicable to Children?

Chapter 4 had a different analytical approach to Chapters 5-9 as it is answering a different research question. It uses a combination of the above datasets: the Millennium Cohort Study, the Children's Society Well-being Survey and Add Health. These datasets were used as they are the only ones in the thesis to include measures of academic performance (attainment). This data was complemented by international macro-level data from the international HBSC survey and OECD PISA (Programme for International Student Assessment). These data are introduced in Chapter 4.

Outcome variables

As it was necessary to use a range of different datasets to investigate the research questions, it was not possible to use the same measure of subjective well-being throughout the thesis. Chapters 5 through 9 introduce the measures of subjective well-being used in detail, introduced individually because of the range of datasets used. Although not identical, all of the outcome variables used are based on Diener's (1984) conceptualisation of subjective well-being discussed in the previous chapter. As such all outcome variables relate to either life satisfaction or (an aspect of) affective well-being.

Table 3.3 includes an overview of the aspects of subjective well-being included in each chapter. These measures of subjective well-being were used as predictors in the analysis presented in Chapter 4. As Table 3.3 shows, the outcome variables used are a combination of single-item measures and multiple-item scales. Multiple-item measures are preferable to single-item measures as single-item measures are more reliant on the wording of the question and the question that preceded it in the survey, as well as it not being possible to their test internal reliability (Diener, 1984). There are

a number of multiple-item subjective well-being scales that have been assessed for reliability and validity, however their availability across surveys varies is inconsistent, indeed some surveys only include single-item measures (where subjective well-being is included at all). As such, it was necessary at times to use a single-item subjective well-being measure as the outcome variable. However, the single-item measure used in this thesis (Cantril's Ladder) is a well-established and thoroughly tested measure (Cantril, 1965; Muldoon et al., 2010).

Table 3.1: HBSC dataset overview

	Grades	n	School N	Questionnaire	Sample design	Levels
1995/6	6, 8, 10 ⁹	9938	320	Self-completion	Three-stage cluster	School district ¹⁰ , school, class
1997/8	6-10	15686	386	Self-completion	Three-stage cluster with stratification ¹¹	School county, school, class
2001/2	6-10	14817	340	Self-completion	Three-stage cluster with stratification ¹²	School district, school, class
2005/6	6-10	9227	227	Self-completion	Three-stage cluster with stratification ¹³	School district, school, class
2009/10	5-10	12642	314	Self-completion	Three-stage cluster with stratification	School district, school, class ¹⁴

Table 3.2: Comparison of data sources

	Dataset	Ages covered	SWB outcome	School information	Year of collection	Cross-sectional/longitudinal
England	Millennium Cohort Study	7 years	Affective well-being	Yes	2008-09	Cross-sectional (currently) ¹⁵
	The Children's Society Well-being survey	10-15 years	Life satisfaction	Yes (little)	2010-11	Cross-sectional
	Understanding Society	10-15 years	Life satisfaction	No	2009-11	Cross-sectional (currently) ¹¹
USA	Add Health	12-17 years	Positive affect	No	1994-96	Longitudinal
	Health Behaviour in School-aged Children	11-17 years	Life satisfaction	Yes	2001-2 2005-6 2009-10	Cross-sectional

⁹ These grades refer to those closest to the targeted ages of the children in the survey, because children can skip or repeat grades age varies.

¹⁰ In all waves where school districts were used as PSUs with some smaller districts grouped together.

¹¹ Stratification at the school-level according to ethnicity and Metropolitan status of area. 16 strata were created, 4 of each type: African American concentration, Hispanic concentration, largest urban areas, not largest urban areas.

¹² No information given, stratum ID variable provided.

¹³ Census divisions and grades used as strata. African American and Hispanic students oversampled.

¹⁴ Although class is used for sampling in all of the datasets, most do not include a class identification variable.

¹⁵ These data have longitudinal designs but the linked datasets which provide the school information are currently only available for one wave.

Table 3.3: Overview of outcome variables

	England			USA	
	Millennium Cohort Study	Children's Society Well-being Study	Understanding Society	Add Health	Health Behaviours in School-aged Children
Measure	Affective well-being	Life satisfaction (Cantril's ladder)	Life satisfaction	Positive affect	Life satisfaction (Cantril's ladder)
Previously used/tested	No	Yes	No ¹⁶	No	Yes
Single or multiple item	Multiple-item	Single item	Multiple-item	Multiple-item	Single item
Questions used	<ol style="list-style-type: none"> 1. How often do you feel happy? 2. How often do you get worried? 3. How often do you feel sad? 4. How often do you laugh? 	<p>Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?</p>	<ol style="list-style-type: none"> 1. How do you feel about your appearance? 2. How do you feel about your family? 3. How do you feel about your friends? 4. How do you feel about your life as a whole? 	<ol style="list-style-type: none"> 1. You have a lot of good qualities 2. You have a lot to be proud of 3. You like yourself just the way you are 4. You feel you are doing everything just about right 5. You feel socially accepted 6. You feel loved and wanted 	<p>Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?</p>

¹⁶ Although similar approaches have been used, particularly work based on the British Household Panel Survey from which the Understanding Society Survey has developed (e.g. Bradshaw and Keung, 2011b; Clair, 2012).

3.3: Methods

Multilevel Modelling

The primary method used throughout this thesis is multilevel modelling, also known as hierarchical linear modelling and nested models, amongst other names. Multilevel modelling allows the partitioning of variance in the model to different levels which allows for the more accurate understanding of the influences on factors of interest (Snijders and Bosker, 2012). In the field of education this has been used to differentiate between the effects of family background and school on educational achievement (for example, Yang et al., 2002; Rasbash et al., 2010; Strand, 2010). Here multilevel modelling will be used to estimate to what extent individual factors and to what extent school factors predict the subjective well-being of children.

Why Multilevel Modelling?

By definition, one of the main research questions ('How important is the school a child attends to their subjective well-being?') requires the investigation of the effect of the different levels of influence on individual students. Standard linear analyses, such as linear regression, ignore the different levels exerting influence on individuals which can lead to a number of different issues. Information in the data can be lost if data is aggregated, that is, all of the data is treated as if it is from the higher level (for example, in this analysis, if all of the information about pupils was treated as information about schools). This also results in a loss of statistical power (Hox, 2010). The alternative of disaggregating data to a lower level and treating them as independent individual level observations undermines the accuracy of the statistical significance and violates the assumption of independence of observations inherent to many single-level tests (Hox, 2010; Snijders and Bosker, 2012). Perhaps more importantly in terms of answering the research questions, ignoring the hierarchical structure of the data also means that it is not possible to accurately assign the statistical effect to the correct level (Hox, 2010; Snijders and Bosker, 2012). That is, it is impossible to ascertain the effect of schools on child subjective well-being and attainment.

An alternative method to running linear regression on the whole dataset is to run regression models, using the formula below, separately for individual schools.

$$SWB_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} + e_{ij}$$

Where X represents independent variables in the model, i represents individual students and j represents individual schools. The inclusion of j suggests that each school has a different intercept and coefficients. β_{0j} is the intercept, β_{1j} the coefficient for variable X_1 , while e_{ij} represents the residual error term (Hox, 2010). However, as

with running an overall regression model, this method ignores the likely similarities in grouped data, for example that children attending the same school are likely to be more similar to each other than they are to children attending different schools, violating the independence assumption required for linear regression. There is also a risk that the homoscedasticity assumption is violated (Hox, 2010). Estimates produced by multilevel analysis are not the same as estimates produced by linear regression run for groups individually as multilevel modelling produces Empirical Bayes or Shrinkage estimates. These are weighted estimates that ‘shrink’ back towards the dataset mean coefficient depending on the reliability of the coefficient (Hox, 2010). A more practical issue with using this approach would be the number of models that would need to be run, 2360 in the case of the MCS analysis.

In this thesis the lack of independence among students within a school is not only important in terms of statistical considerations it is a key part of the research. This research hypothesises a greater similarity between the subjective well-being of children in the same school compared to all children due to the influence of the school that they attend on their subjective well-being. This will be investigated using two-level, three-level repeated measures, and cross-classification models which are illustrated below in Figures 3.1 and 3.2. In the repeated measures design, as conducted in Chapter 8, variance at level one is interpreted as variance within individuals over time (Hox, 2010). In Chapter 7, a cross-classification design (see Figure 3.2) will also be used alongside a two-level design as the data includes household identification information as well as responses from parents. This will be used to compare the influence of schools and families on child subjective well-being.

Figure 3.1: Two-level and Three-level repeated measures multilevel model designs

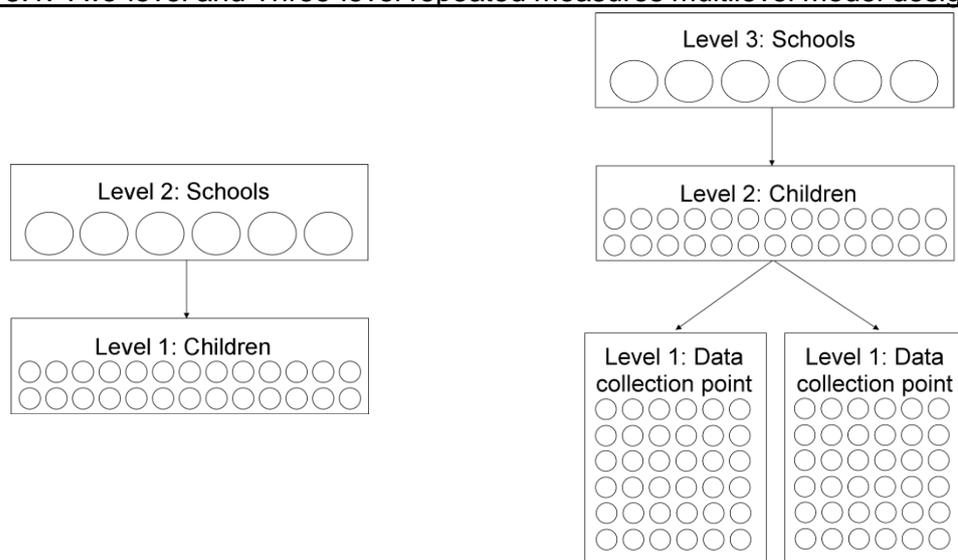
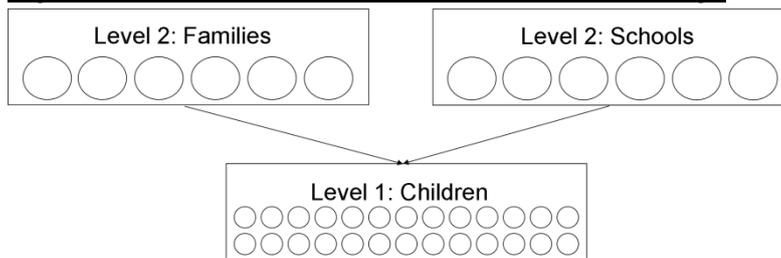


Figure 3.2: Cross-classification multilevel model design



By including levels of information in the model by using multilevel modelling, as well as being able to assign variance to these different levels, it is possible to consider variables at these different levels. Although as noted in the data section above there is only limited availability of school level information that can be considered at the higher, school-level, it is also possible to consider individual level characteristics, such as gender, at the school level. In this sense, multilevel models are able to consider how individual characteristics are associated with the subjective well-being measure outcome variable at the individual level, but also how the relationship between such a predictor and the outcome variable may vary across schools. For example, some schools may treat children with a certain characteristic, such as disability, better or worse than others. This will be indicated by a significant random effect in the model, indicating a school-level slope for that variable which differs significantly from the average slope. By including considerations such as these in the models in this thesis it is possible to gain insight into the ways in which schools are influencing children's subjective well-being in more detail.

Estimation

Multilevel models are estimated using maximum likelihood (ML) estimators (Hox, 2010). Maximum likelihood estimation is an iterative process which identifies the most likely parameter estimates given the observations in the sample (Eliason, 1993; Hox, 2010). The estimates are “generally robust”, and remain robust against “mild” violations of assumptions (Hox, 2010, pg 40).

Maximum likelihood estimation is an iterative procedure and therefore convergence is required for model estimation. Failure of the model to converge after a large number of iterations suggests a misspecification in the model, possibly due to the presence of too many random coefficients in the model that are close to or equal to zero (Hox, 2010). Should the number of iterations in a multilevel model be limited to one, the results will be that of Generalized Least Squares estimates. This is advantageous as it can be used with large or bootstrapped datasets for speed, however it is generally less efficient and the standard errors are poorer than with ML (Hox, 2010).

There are two options in terms of estimation in multilevel modelling. Full maximum likelihood (ML) and restricted maximum likelihood (REML). Full maximum likelihood includes the regression coefficients and the variance components in the likelihood function. This tends to underestimate the variance components in the model (Hox, 2010). Restricted maximum likelihood calculates the likelihood function without the fixed effects, this results in less biased estimates which, when groups are balanced, are equivalent to ANOVA estimates (Hox, 2010). For this reason REML methods produce generally better estimates, especially when the number of groups is small, this research will therefore use REML estimates (Hox, 2010). A disadvantage of REML estimates is that likelihood ratio tests (discussed below) can only be used to compare changes in the random part of the model (Hox, 2010). Similarly, Stata 12 does not support weighting when REML is used (Stata Corp, 2011).

Approach to creating models

Initially, a null or intercept only model is created. This provides a “benchmark” (Hox, 2010, pg 56) deviance value and allows for the calculation of the intra-class correlation/ variance partition coefficient (discussed below). Variables are then added to the model using a ‘bottom-up’ approach. That is, the variables are added one at a time to the null model. This is more desirable than using a top-down approach, which includes all variables in the model at the first stage, as the process is slow (Hox, 2010). At each stage a significance test will be used to assess whether a variable should remain in the model and at what stage. For the fixed part of the model Wald tests will be used with significant variables retained. This is not suitable for the random part of the model as it assumes a normal distribution rather than a sampling distribution (Hox, 2010). Instead, for the random part of the model, the deviances are compared using a likelihood ratio test (Snijders and Bosker, 2012). The likelihood ratio test compares two nested models, subtracting the new, more complicated model, from the original less complicated model, and comparing the result to a Chi^2 distribution with degrees of freedom equal to the difference in parameters in the two models (Hox, 2010). If the result is significant then the variable is retained in the model at the higher level. In large and complicated models it becomes sensible to include in the random part of the model variables that have “strong theoretical or empirical justification” (Hox, 2010, pg 33). Similarly, very small (in this thesis treated as $< .0001$) random coefficients can cause problems for the model, causing it to become very slow to iterate and creating issues with standard error calculation. This is also justification for removing the random effect from the model. Where a variable is significant in the random part of the model it must also be retained in the fixed part of the model regardless of its significance in the fixed part of the model.

The null model is described using the following formula for a two-level model:

$$Y_{ij} = \beta_{0j} + u_{0j} + e_{ij}$$

Where Y represents the outcome of interest, i represents individual students and j individual schools. β_0 is the intercept of the model, which does not vary, u_{0j} the school-level residuals and e_{ij} the individual level residuals. For a random coefficient model (i.e. a model with both fixed and random effects included) the formula is as follows:

$$Y_{ij} = \beta_{0j} + \beta_1 Z_{ij} + \beta_{2j} Z_{ij} + e_{ij}$$

$$\beta_{0j} = \beta_0 + u_{0j}$$

$$\beta_{2j} = \beta_2 + u_{2j}$$

Where β_{0j} is the intercept of the model, varying with each school. $\beta_1 Z_{ij}$ is a vector of variables only included in the fixed part of the model. $\beta_{2j} Z_{ij}$ is a vector of variables included in both the fixed and random part of the model, i.e. variables that have been allowed to vary across schools. e_{ij} represents the individual level residuals.

Accounting for variance at different levels

Given the nature of the research questions it is important to be able to identify how much of the variance in the model is explained at each level as this will allow the investigation of the effect of schools on children's subjective well-being. One of the methods of doing this is the variance partition coefficient. This is outlined below:

For two-level models:

$$\begin{aligned} &= \frac{\text{Variance between macro units}}{\text{Total variance}} = \frac{\text{School level variance}}{\text{Total variance}} = \frac{\text{School level variance}}{\text{School level variance} + \text{individual level variance}} \\ &= \frac{\sigma_u^2}{\sigma_u^2 + \sigma_e^2} \end{aligned}$$

For three-level repeated measures models (school-level variance):

$$\begin{aligned} &= \frac{\text{School level variance}}{\text{Total variance}} = \frac{\text{School level variance}}{\text{School level variance} + \text{individual level variance} + \text{time point variance}} \\ &= \frac{\sigma_v^2}{\sigma_v^2 + \sigma_u^2 + \sigma_e^2} \end{aligned}$$

For cross-classification models:

$$\begin{aligned} &= \frac{\text{School level variance}}{\text{Total variance}} = \frac{\text{School level variance}}{\text{Family level variance} + \text{school level variance} + \text{individual level variance}} \\ &= \frac{\sigma_{u(2)}^2}{\sigma_{u(3)}^2 + \sigma_{u(2)}^2 + \sigma_e^2} \end{aligned}$$

In a null model, the VPC is the same as the intraclass correlation, ρ , which, more generally, is a measure of how similar two individuals within the same group are (Hox, 2010). Intraclass correlation in 3-level models can be calculated in two different ways for the mid-level variance.

Type 1:

$$\rho_{\text{class}} = \frac{\text{Class level variance}}{\text{Total variance}} = \frac{\text{Class level variance}}{\text{School level variance} + \text{class level variance} + \text{time point variance}}$$

$$= \frac{\hat{\sigma}_{u0}^2}{\hat{\sigma}_v^2 + \hat{\sigma}_{u0}^2 + \hat{\sigma}_e^2}$$

Type 2:

$$\rho_{\text{class}} = \frac{\text{School level variance} + \text{Class level variance}}{\text{Total variance}}$$

$$\frac{\text{School level variance} + \text{Class level variance}}{\text{School level variance} + \text{class level variance} + \text{time point variance}} = \frac{\hat{\sigma}_v^2 + \hat{\sigma}_{u0}^2}{\hat{\sigma}_v^2 + \hat{\sigma}_{u0}^2 + \hat{\sigma}_e^2}$$

Type 2 takes into account that a child grouped in a certain class must, by definition, be grouped within a certain school. However, in this thesis the main measure used is the VPC.

For all models the assumption of normality of residuals are at all levels are checked using a 'qnorm' plot (Hox, 2010; Leckie, 2013).

Sample size

Sample size considerations are different for multilevel models compared to single level models such as linear regressions because the effective sample size for a multilevel model is the number of groups at the highest level, for example the number of schools in a two-level model as described above. The importance of group size (i.e. the number of children in each school) is an additional consideration and depends on the focus of analysis. For example, if the research question focuses on between group differences, as this research does, group size is of less importance than the number of groups (Rasbash, 2008). Similarly, if the only or mainly the fixed part of the model is of interest then smaller group sizes are acceptable (Hox, 2010), however in this thesis random effects are important.

Bootstrapping

Where there is evidence of a non-normal distribution of residuals in the multilevel models or in the distribution of the outcome variable bootstrapping will be used to correct this. Bootstrapping is a non-parametric resampling approach that provides potentially more accurate estimates.

Variable coding

It is important to have explanatory variables where 0 is an observable, meaningful value when using multilevel modelling, as without this the results for the random part of the model can be affected (Hox, 2010). For example, if there is variance in the random slopes of a model, that is the effect of an explanatory variable on the outcome (subjective well-being) varies across higher level groups (schools), then the value of the outcome at which the random variation is measured effects the result. For this reason, throughout the thesis continuous variables are grand mean centered (all values have the mean for the group subtracted). This means that the resulting coefficients reflect the average survey respondent. When all variables (including categorical variables) are centered then the intercept and slopes in the model are interpreted as the results for the average respondent (Hox, 2010). Centering is also important for the inclusion of interaction effects in models as the interpretation of main effects of variables included in interactions is the value for variable 1 when variable 2 equals zero (Hox, 2010). If variable 2 cannot equal zero then the value for the main effect of variable 1 is meaningless. If categorical variables (with a value for zero) are not centered (e.g. 0 boys 1 girls) then all slopes in the model refer to those coded for that variable as zero (in this example boys). Centering variables is more desirable than standardizing them as standardizing (which involves centering variables and then transforming to give a standard deviation of one) affects the interpretation of results more broadly than centering, which only affects the interpretation of the intercept (Hox, 2010). Another alternative is group mean centering which involves subtracting the mean for the group a case belongs to from the individual score, rather than the overall mean. This method effects the meaning and interpretation of the whole model and is therefore not used (Hox, 2010).

Other methods

While multilevel modelling is the primary method used throughout the thesis a few other methods are used at different times, these are outlined here.

Preliminary analysis methods

For the preliminary analysis of datasets bivariate methods were selected based on the type of predictor variable. This typically involved correlation methods, t-tests, and chi square tests. The multivariate analyses were linear and logistic regression. These methods were used to get an overview of the relationships between the predictor variables and subjective well-being.

Factor analysis

In some chapters it is necessary to construct an outcome variable from multiple variables. While in some cases outcome variables are constructed in an additive way, it was at times necessary in this thesis to use factor analysis. The reasons for this are illustrated in the relevant chapters, as are the specific factor analysis methods used. Factor analysis is useful for the construction of an outcome variable because it creates a reduced number of derived variables from a larger group of variables by investigating joint variation. It attempts to identify underlying or latent variables, here subjective well-being, from the variables provided and is frequently used in the investigation and construction of psychological scales.

Non-parametric regression

While linear (parametric) regression is used occasionally for the preliminary investigation of potential predictor variables, non-parametric regression is used at times in the thesis to investigate the potential of a non-linear relationship between subjective well-being and achievement. The approach taken is a local regression using the locfit function in R (Add Health, HBSC/PISA) and the lowess (locally weighted scatterplot smoothing) function in Stata (MCS).

Local regression is similar to linear regression but instead of producing results based on a single regression equation using all data, local regression conducts several regressions progressively through the data. Local regression produces a smooth curve, visually demonstrating the relationship between the outcome and predictor in a scatterplot. The result is given this way because, unlike in parametric methods, a single parameter such as a coefficient is not produced (Keele, 2008). The visual nature of the results means that local regressions are very difficult if not impossible to interpret with multiple predictor variables.

In local regression the data is split into 'bins' or subsets of the data with a regression line predicted for the focal point (centre) of each bin. This is conducted repeatedly until a line is produced across the entire area of the graph populated with data. As such data points are used multiple times as the bins and focal points move incrementally across the data. The amount of data included in each local regression or bin depends on the bandwidth set by the user: a high bandwidth can produce a result that is overly smooth resulting in lost information, a small bandwidth may result in a regression line that is not smooth enough. Bandwidth is chosen by visually comparing the results of models run using different bandwidths and selecting that which produces the most accurate looking model (Keele, 2008).

Variable selection

Each of the datasets used provides a very large number of variables (one wave of the HBSC contains 250 variables, while one dataset in one wave of Add Health includes nearly 2800 variables, for example). As such it was necessary to reduce the size of datasets and potential predictor variables for analysis. This was done by investigating the dataset, alongside the survey questionnaire(s), and selecting all variables that were relevant. These variables were then investigated in more detail to check for inconsistencies or problems with high levels of missing cases for example. Where multiple variables referred to similar issues, for example multiple questions on religion, the most parsimonious approach was taken wherever possible. Because of the large number of variables and the complex models, this often meant using or creating categorical or binary variables for such issues. Once variables were selected, they were all recoded to give zero a meaningful value, and to bring some consistency to the analysis in terms of reference categories. An additional consideration for the HBSC and Add Health datasets was ensuring consistency across the waves of data, 2 waves of Add Health and 3 HBSC surveys.

The selection of variables was based on existing theoretical and empirical work, as discussed in Chapter 2. A brief summary of some of the guiding principles is given here.

Demographics: Gender was considered an important predictor because of the relatively consistent finding in existing research which has found boys to report higher levels of subjective well-being than girls (Powdthavee and Vignoles, 2008; Bradshaw and Keung, 2011b). Variables such as whether the child lived with their biological parents were included because of the association between this and stability in the child's family and home life, as well as the persistent discourse around the importance of children living with their biological parents and the nuclear family. Similar variables such as whether the child lived in the sample household full- or part-time, the marital status of the reporting parent, and the stability of the reporting parent's relationship were also included for these reasons.

Financial: Where possible variables relating to both the child's and reporting parent's perceptions of their financial situation were included. Research has suggested a link between children's experiences of poverty as experienced by their parents and their well-being (e.g. Ridge, 2002), however research has also found it is children's own perceptions of poverty and deprivation that explain this relationship (Main and Bradshaw, 2012), as such the research may find no relationship between these

variables and affective well-being. More objective measures of financial situation, such as income level and qualification for Free School meals are also considered.

School related: Where possible variables relating to the school itself such as school type as well as objective information about the child's relation with school, for example whether they have been identified as having Special Educational Needs, are included in order to investigate whether any relationship with school may be explained by these characteristics. Parent involvement in school, pertaining to the exercising of choice in relation to school selection, attendance at school events and engagement with children about school will also be considered. Such variables will help to understand the interactions between the child, their family, and their school and therefore give some indication of the status of the child's mesosystem (see Figure 2.1).

Parental characteristics: In those datasets that allow it the characteristics of the reporting parent(s) will be included in the analysis. Considerations will include their health, employment status, and others, including their own level of subjective well-being where possible (Clair, 2012). Whether parents are healthy and happy will give some indication of the environment in which the child is developing outside of the school.

Health and risk behaviours: The reporting child's health and engagement with risky or unhealthy behaviours will be included where possible because of the emphasis on such behaviours in many child well-being (becoming) discourses, see for example Every Child Matters. Similarly, variable from the Strengths and Difficulties questionnaire will also be used where available. The Strengths and Difficulties Questionnaire (SDQ) is a questionnaire designed to assess the psychological and behavioural adjustment of children, completed in the MCS by the main respondent to the survey (usually the child's mother) (Goodman, 2001; Hansen et al., 2010b). There are five subscales to the SDQ – hyperactivity¹⁷, peer relationships¹⁸, emotional difficulties¹⁹, prosocial behaviour²⁰ and conduct problems²¹. The emotional difficulties and peer relationship problems subscales reflect the internalising problems aspect of the SDQ while the conduct problems and hyperactivity variables reflect the externalising aspect. The results of the hyperactivity, peer relationship, emotional and

¹⁷ Restless/overactive, constantly fidgeting, easily distracted, can stop and think out before acting, sees tasks through to the end.

¹⁸ Rather solitary, has at least one good friend, generally liked by other children, picked on or bullied by others, gets on better with adults than with other children

¹⁹ Often unhappy, often complains of headaches, many worries, nervous or clingy, many fears

²⁰ Considerate of other people's feelings, shares readily with other children, helpful if someone is hurt/upset/ill, kind to younger children, often volunteers to help others

²¹ Often fights, often has temper/tantrums, generally obedient, argumentative with adults, can be spiteful to others

conduct subscales are summed to create the total difficulties scale. Research has found the SDQ to be a reliable and valid measure of children's behaviour and psychopathology (Goodman, 2001).

Child social life: Research suggests that children's social life and time with friends is very important to their subjective well-being (Rees et al., 2010). Similarly, children's time at school, particularly breaktimes is likely to be important for their friendships (Blatchford and Baines, 2006).

School perceptions and experiences: These variables are key to answering some of the main research questions. Their inclusion is important as it will give an indication of the relevance of children's perceptions of school to their subjective well-being while also ensuring the validity of the random effects.

Treatment of missing data

As is the case with many if not all datasets, the data used here have cases with missing information. This section briefly explains how missing data were handled in the analyses presented in this thesis.

With the development of more powerful computers it has become possible to reduce gaps in data by estimating them. Multiple imputation estimates the value of missing data using Monte Carlo simulations (Schafer, 1999) and is the most popular statistical method for the treatment of missing data (Stata Corp, 2009). Alternative methods include using weighted or maximum likelihood estimators, as well as deletion of missing cases. Multiple imputation uses information available from other variables in the dataset and is a computationally intensive process, it requires simulating multiple 'complete' datasets, performing the desired analysis (e.g. multilevel analysis) on each of the simulated datasets, before pooling the results together to provide the overall result (Stata Corp, 2009). Multiple imputation is even more complicated when using multilevel data, as is the case for the data in this thesis. Multilevel data requires the imputation of data not only on the basis of responses to other variables, but also consideration of how variables vary across data levels (Carter et al., 2011). The application of multiple imputation to multilevel data therefore requires specialised software packages.

While it is desirable to impute missing information as it maintains sample size and power in analysis, it was not practical to conduct multiple imputation or any other method to estimate missing data in this thesis. This thesis used seven separate datasets, each of which was used for complex and computationally intensive analysis. Many of the models, particularly the cross-classification and three-level repeated

measures models, are already very challenging to run, even when using Stata MP (multiprocessor, the most powerful version of Stata) on the powerful computer provided by the University of York²². As such adding the additional, complicated step of multiple imputation was simply impractical. Instead, variables with high numbers of missing cases were not included in analyses, this is discussed in the individual chapters, and cases with missing values were excluded from analysis (listwise deletion). This may affect some of the results presented here, through larger standard errors and confidence intervals.

3.4: General notes on statistical reporting

The significance of statistical tests is generally denoted using asterisks, * refers to $p < .05$, ** $p < .01$, and *** $p < .001$. In some tables statistical significance is reported differently, this is explained where necessary. Where the Bonferroni Correction has been applied to results, meaning that $p < .05$ is no longer a meaningful value, the approach to demonstrating this is given in the chapter. Figures are rounded to a maximum of 3 decimal places for reporting, however more accurate values were used when calculating variance partition coefficients and so reported VPCs may not match those calculated using reported random coefficient variances.

3.5: Limitations

Specific limitations to each of the analyses will be discussed in their respective chapters, however there are some overall limitations. For example, the nature of the surveys used means that only children attending mainstream schools are included in the research. It was not possible to use the same measure of subjective well-being throughout the thesis. An additional aspect of this difference is that some of the subjective well-being measures used are based on recalling subjective well-being over a period of time (for example during the previous week), whereas others do not. As such recall bias in responses may be a factor.

The use of only two countries for the comparative case study aspect of the work (introduced in detail in Chapter 8) limits the generalizations that can be made from this part of the study, although it is also beneficial because of the reduced abstraction of the findings (Landman, 2000). Similarly, countries are not necessary the most useful unit of analysis. England is specified in the research opposed to UK due to differences in education policies caused by the devolution in responsibility for education to constituent countries. The USA is, however, considered as a whole despite differences in education across states. This is because of difficulties is getting large, state-specific

²² <http://www.york.ac.uk/social-science/facilities/cluster/>

datasets. This limitation is not hugely problematic as federal level education policy is of interest so the comparison stands.

3.6: Ethics

This thesis will rely on the analysis of secondary quantitative data and therefore poses few ethical concerns. However, as mentioned above, due to the necessity of a school identifier variable in the datasets as well as the use of linked administrative data, some of the datasets are deemed more sensitive and therefore have access restrictions. This increased sensitivity means ensuring the anonymity, through care in reporting low case frequencies for example, is of increased importance.

Throughout this research care will be taken to ensure that the University of York's code of Practice and Principles for Good Ethical Governance (UoY, n.d.) as well as the ESRC's (2012) Framework for Research Ethics are be adhered to.

Chapter 4: The Relationship between Subjective Well-Being and Educational Performance

4.1: Introduction

One of the main arguments used to justify this thesis and its interest in improving the subjective well-being of children through schools and education policy is the potential relationship between subjective well-being and educational achievement/attainment which is discussed in some detail in the Literature Review (Chapter 2). This chapter uses the data introduced in Chapter 3 that include achievement or attainment data, as well as some macro-level (country-level) resources in order to investigate the happy-productive worker hypothesis and its application to children internationally.

4.2: Hypotheses

This chapter seeks to answer the research question: 'Is subjective well-being related to educational performance?' Using evidence regarding the applicability of the happy-productive worker hypothesis to adults alongside similar evidence from the fields of education such as that relating to student engagement, the question is further broken down into the following hypotheses:

1. There is a positive relationship between the level of subjective well-being a child reports and their educational achievement/attainment (performance).
2. Correlations between subjective well-being and performance will be similarly to those found between adult subjective well-being and performance (approximately .30).
3. The relationship between subjective well-being and educational performance is curvilinear.
4. There is a greater relationship between subjective well-being and performance for boys than girls.
5. School engagement and/or connectedness will have a positive impact on achievement.
6. Subjective well-being is a better predictor of school performance than school satisfaction (liking school).

The following section gives further information on the data unique to this chapter, as well as the methods that are used to investigate the above hypotheses.

4.3: Methods and Data

This chapter uses individual-level data from the MCS, Children's Society Well-being Survey and Add Health as these are the datasets used in the thesis that include a measure of educational performance. Details regarding the subjective well-being

outcome variables are given in later chapters. Data from these sources is accompanied by macro-level data from the international HBSC survey and OECD PISA (Programme for International Student Assessment). These two sources are combined because neither international data source includes measures of subjective well-being *and* educational performance, as such one is used to complement the other.

The HBSC country level data for 2009/10 includes 11-, 13-, and 15-year olds in 43 countries and regions (Currie et al., 2012), although only data for 15 year-olds is used here as PISA data on achievement is for 15 year-olds (OECD, 2010). Similarly the data is limited to those countries/regions for which data is also available from both OECD PISA and the HBSC. HBSC data is collected using a stratified cluster probability sampling scheme, aiming for 1500 children of each age group in each country and provides life satisfaction information at the country level (Currie et al., 2012). Cantril's Ladder is the instrument used to collect life satisfaction information. OECD PISA is a well-known and widely-used (although not uncontroversial) survey of educational achievement, often used in international comparisons because of the consistency in measurement across nations. PISA scores are based on student performance in an assessment based on their ability to apply knowledge to real-life examples, rather than meeting curriculum criteria which varies across nations, and as such differs from many of the other measures of academic performance used in this chapter.

The relationship between subjective well-being and educational performance is investigated using a range of methods:

- Initially, correlation is reported (where the outcome variable allows) to investigate hypotheses 1, 2 and 6: there is a positive relationship between the level of subjective well-being a child reports and their educational achievement/attainment (performance) (h. 1), correlations between subjective well-being and performance will be similarly to those found between adult subjective well-being and performance (approximately .30) (h. 2), Subjective well-being is a better predictor of school performance than school satisfaction (liking school) (h. 6).
- Linear and local regression is then used to further investigate hypotheses 1 and 6 and to investigate hypothesis 3: the relationship between subjective well-being and educational performance is curvilinear (h. 3).
- Multilevel analysis is then used to investigate hypotheses 1, 4, 5 and 6: there is a greater relationship between subjective well-being and performance for boys

than girls (h. 4), school engagement and/or connectedness will have a positive impact on achievement (h. 5).

- Correlations and regression lines are produced separately for boys and girls in order to investigate hypothesis 4, while gender interactions are included in the multilevel analysis. Because of the categorical nature of the educational attainment variable in the Children's Society Well-being Survey data the methods used are adjusted slightly.

4.4: Macro level analysis – HBSC and PISA

Tables 4.1 and 4.2 give the PISA scores and HBSC results relating to educational achievement in each country and the proportion of 15 year olds in each region reporting high life satisfaction, multiple psychosomatic health concerns, and liking school a lot. As well as the relationship between subjective well-being and performance, schools satisfaction/liking school is also considered as a predictor of performance in order to compare their respective importance to performance given the focus on job satisfaction as a predictor of performance in earlier happy-productive hypothesis work.

Table 4.1 shows that boys tend to outperform girls on measures of mathematical and scientific literacy, while girls outperform boys in reading literacy. Average achievement for boys and girls in each nation was created by summing the average achievement scores for reading, mathematics, and science and dividing by three. It shows that in many nations girls outperform boys overall, such is the gender difference in reading literacy scores. Table 4.2 shows that girls tend to report lower life satisfaction than boys, and are much more likely to report multiple health complaints, but are more likely to enjoy school a lot. These results indicate considerable and interesting gender differences in subjective well-being and educational outcomes making the hypothesised gender difference in the relationship between these two areas of interest (hypothesis 4) likely.

Table 4.1: PISA scores, overall and by gender

	Reading - overall	Maths - overall	Science - overall	Reading - girls	Reading - boys	Maths - girls	Maths - boys	Science - girls	Science - boys	Overall - girls	Overall - boys
Austria	470	496	494	490	449	486	506	490	498	488.67	484.33
Belgium (Flemish)	519	537	526	533	505	527	546	523	529	527.67	526.67
Belgium (French)	490	488	482	503	478	476	501	478	486	485.67	488.33
Canada	524	527	529	542	507	521	533	526	531	529.67	523.67
Croatia	476	460	486	503	452	454	465	491	482	482.67	466.33
Czech Republic	478	493	500	504	456	490	495	503	498	499.00	483.00
Denmark	495	503	499	509	480	495	511	494	505	499.33	498.67
England	495	493	515	507	482	483	504	510	520	500.00	502.00
Estonia	501	512	528	524	480	508	516	528	527	520.00	507.67
Finland	536	541	554	563	508	539	542	562	546	554.67	532.00
France	496	497	498	515	475	489	505	497	500	500.33	493.33
Germany	497	513	520	518	478	505	520	518	523	513.67	507.00
Greece	483	466	470	506	459	459	473	475	465	480.00	465.67
Hungary	494	490	503	513	475	484	496	503	503	500.00	491.33
Iceland	500	507	496	522	478	505	508	495	496	507.33	494.00
Ireland	496	487	508	515	476	483	491	509	507	502.33	491.33
Italy	486	483	489	510	464	475	490	490	488	491.67	480.67
Latvia	484	482	494	507	460	481	483	497	490	495.00	477.67
Lithuania	468	477	491	498	439	480	474	500	483	492.67	465.33
Luxembourg	472	489	484	492	453	479	499	480	487	483.67	479.67
Netherlands	508	526	522	521	496	517	534	520	524	519.33	518.00
Norway	503	498	500	527	480	495	500	502	498	508.00	492.67
Poland	500	495	508	525	476	493	497	511	505	509.67	492.67
Portugal	489	487	493	508	470	481	493	495	491	494.67	484.67
Romania	424	427	428	445	403	425	429	433	423	434.33	418.33
Russian Federation	459	468	478	482	437	467	469	480	477	476.33	461.00
Scotland	500	499	514	512	488	492	506	510	519	504.67	504.33

Table 4.1 continued

Slovak Republic	477	497	490	503	452	495	498	491	490	496.33	480.00
Slovenia	483	501	512	511	456	501	502	519	505	510.33	487.67
Spain	481	483	488	496	467	474	493	485	492	485.00	484.00
Sweden	497	494	495	521	475	495	493	497	493	504.33	487.00
Switzerland	501	534	517	520	481	524	544	512	520	518.67	515.00
Turkey	464	445	454	486	443	440	451	460	448	462.00	447.33
USA	500	487	502	513	488	477	497	495	509	495.00	498.00
Wales	476	472	496	490	462	462	482	491	500	481.00	481.33

Source: OECD 2010

Table 4.2: HBSC data for 15 year olds only, proportions

	High life satisfaction - girls	High life satisfaction - boys	Like School a Lot – girls	Like School a Lot – boys	Multiple health complaints - girls	Multiple health complaints - boys
Austria	80	86	28	25	31	17
Belgium (Flemish)	88	91	15	12	35	20
Belgium (French)	77	88	13	13	51	29
Canada	80	87	24	19	45	27
Croatia	78	87	7	5	40	25
Czech Republic	80	87	18	14	50	35
Denmark	84	90	24	17	29	21
England	79	89	17	13	44	23
Estonia	84	86	10	4	41	24
Finland	87	90	13	8	38	19
France	82	87	29	21	48	30
Germany	81	89	20	20	30	14
Greece	80	88	13	7	58	38
Hungary	75	83	46	30	43	30
Iceland	85	89	43	38	44	29
Ireland	78	84	20	13	43	28
Italy	77	85	10	7	68	36
Latvia	83	83	31	22	44	24
Lithuania	76	84	39	28	47	29
Luxembourg	77	87	8	12	49	28
Netherlands	90	96	28	19	31	15
Norway	80	89	31	29	44	21
Poland	69	81	18	15	48	30
Portugal	80	84	22	16	35	17
Romania	68	81	40	24	57	33
Russian Federation	81	86	21	20	46	25
Scotland	82	87	14	14	42	27

Table 4.2 continued

Slovak Republic	80	83	25	9	44	31
Slovenia	82	88	37	38	25	14
Spain	84	88	15	13	43	24
Sweden	77	88	14	14	48	24
Switzerland	84	88	16	13	38	19
Turkey	58	63	36	25	65	54
USA	81	85	23	22	45	28
Wales	74	84	17	18	41	23

Source: Currie et al., 2012

Table 4.3 reports the pairwise Pearson's correlations at the country/region level between performance (educational achievement) and predictor variables of interest relating to the hypotheses: life satisfaction (an aspect of subjective well-being), liking school (a proxy satisfaction measure, in comparison to job satisfaction) and reporting multiple health concerns (sometimes used as a proxy for psychosomatic problems).

As suggested by the evidence from the research into the happy-productive worker hypothesis with adults, significant relationships were found for the correlations between life satisfaction and achievement, but not for liking school and achievement appearing to support the hypothesis that subjective well-being is a better predictor of educational performance than school satisfaction (hypothesis 6). Many of the correlations were similar for boys and girls for the outcome measures, with the exception of the mathematics achievement and overall achievement (potentially skewed by the inclusion of mathematics achievement in the measure). The correlations for mathematics achievement suggest that life satisfaction is more closely related to mathematics achievement for girls than for boys. This is perhaps due to the lower levels of confidence girls tend to report compared to boys in regard to their mathematical capabilities (Goetz et al., 2013). The correlations were higher than those found for adults, perhaps due to the data being macro rather than micro level as in the adult research. Correlations were not performed for all outcome measures for the health concerns predictor, as this variable was included as an addition to explore briefly, rather than as a main interest.

Table 4.3: Pairwise correlations between achievement and life satisfaction, liking school

	High life satisfaction	Liking school a lot	Health concerns (psychosomatic)
Reading achievement (girls)	.53, $p = .001$	-.23, n.s.	
Reading achievement (boys)	.49, $p < .01$	-.20, n.s.	
Mathematics achievement (girls)	.71, $p < .001$	-.13, n.s.	
Mathematics achievement (boys)	.62, $p < .001$	-.15, n.s.	
Science achievement (girls)	.60, $p < .001$	-.22, n.s.	
Science achievement (boys)	.57, $p < .001$	-.18, n.s.	
Overall achievement (girls)	.65, $p < .001$	-.20, n.s.	-.51, $p < .01$
Overall achievement (boys)	.59, $p < .001$	-.18, n.s.	-.55, $p < .001$

Figure 4.1 shows the relationship between liking school a lot and overall educational performance by gender. Simple linear regression is presented alongside local regression in order to see if a curvilinear or other nonlinear relationship exists. It shows that the performance of girls is generally higher than of boys. There is some undulation in the local regression line for girls, more so for boys, however the local regression models and coefficients are not significant suggesting a linear fit is more appropriate.

Figure 4.2: Relationship between reporting multiple health complaints and overall achievement at the country level, simple linear and local regressions

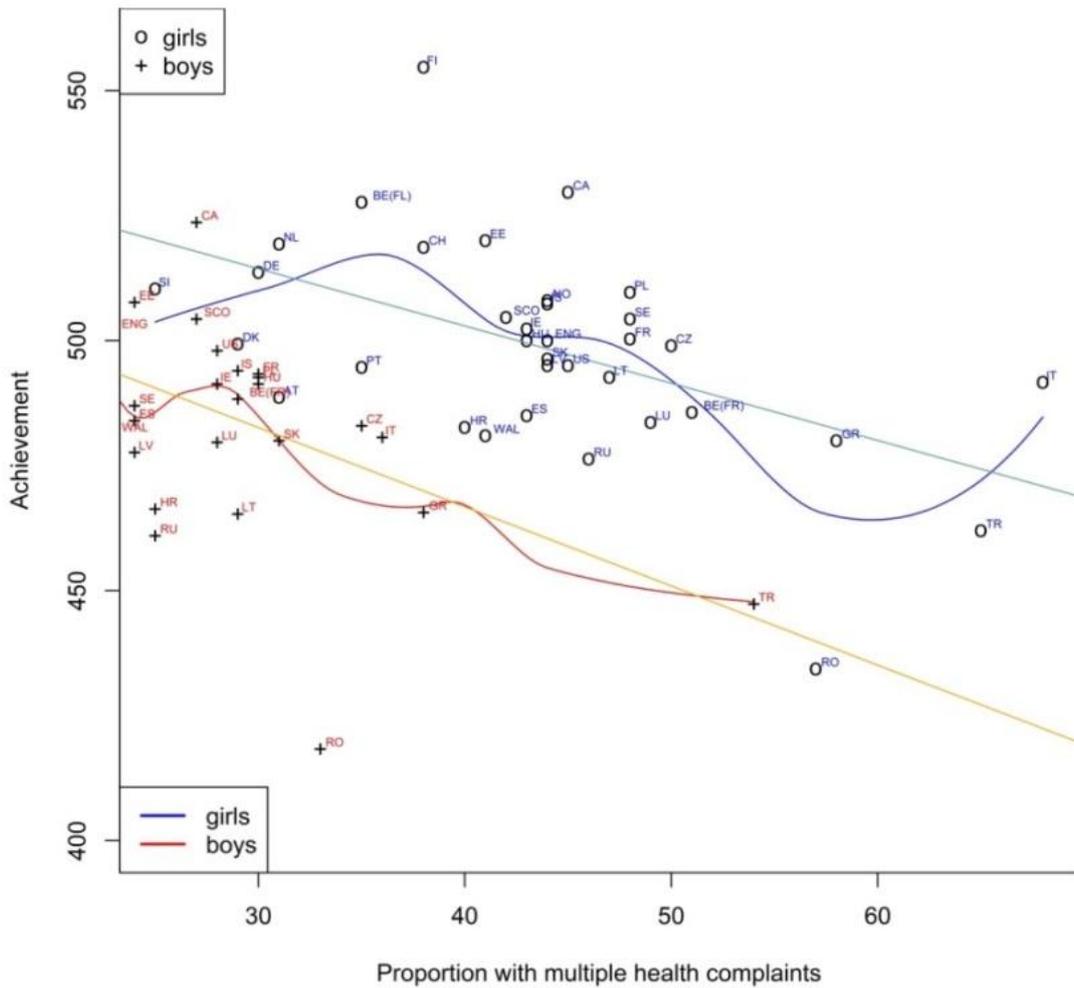


Figure 4.3 shows the relationship between educational performance and life satisfaction for all regions. However it is clear that Turkey and Romania are considerable outliers, likely to be affecting the results. As such the relationship is considered without them, as shown in Figure 4.4.

Figure 4.3: Relationship between life satisfaction and overall achievement at the country level, simple linear and local regressions

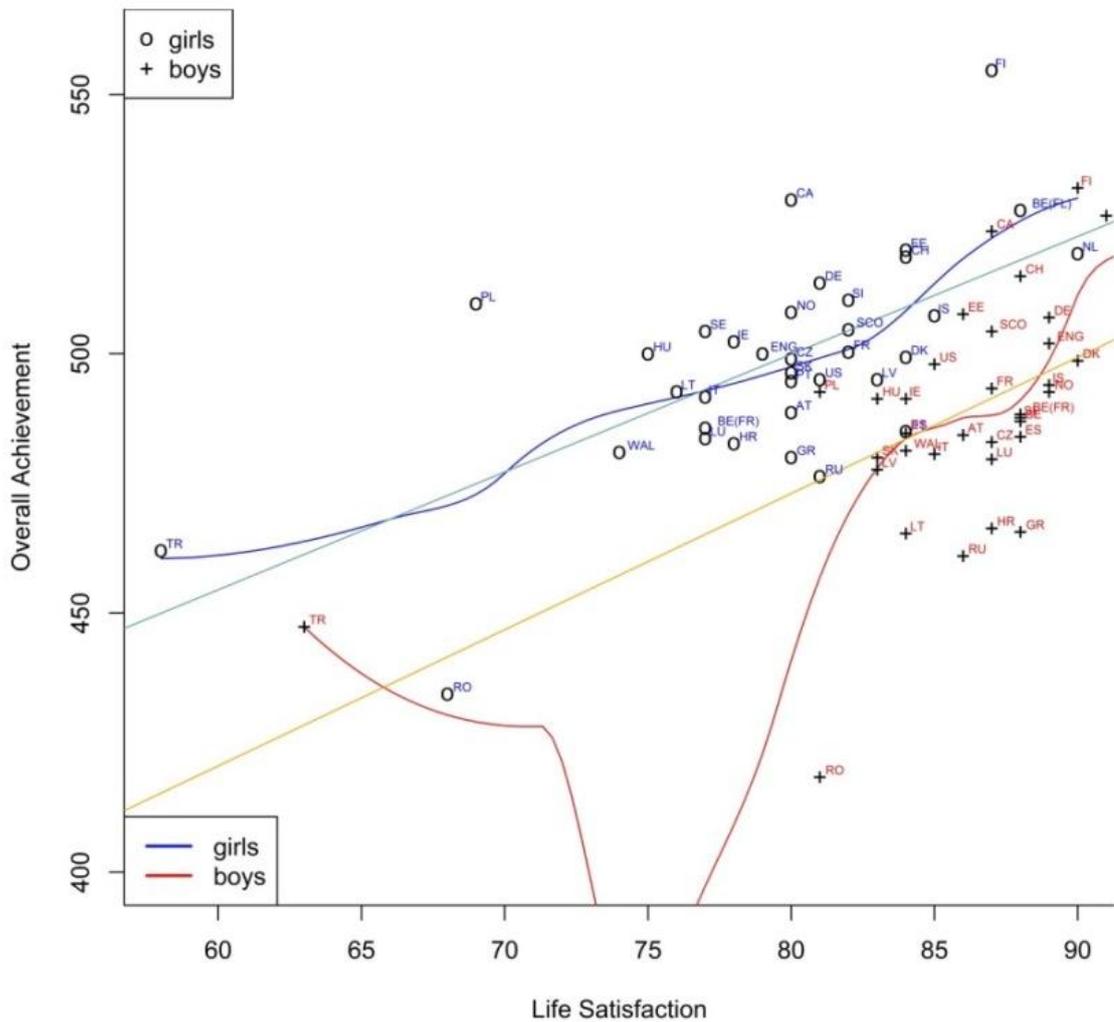
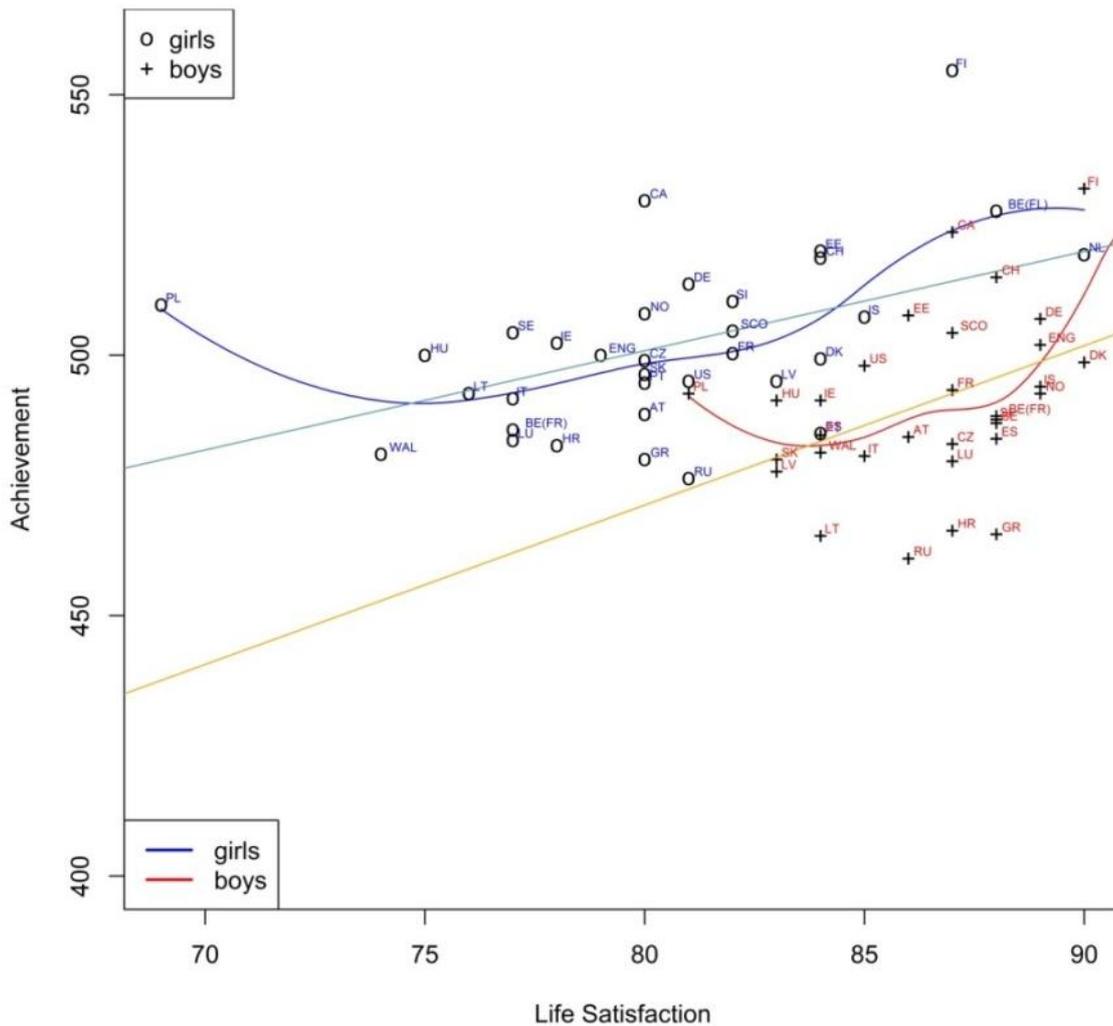


Figure 4.4 shows that, with the exclusion of Turkey and Romania, the points for both boys and girls are quite closely grouped. The data points for girls show greater range in life satisfaction scores than those for boys, with girls in approximately 18 countries reporting lower life satisfaction than the boys in Poland, the country with the lowest average life satisfaction for boys. The data points for boys are all quite closely clustered towards the right of the x-axis indicating that they have higher life satisfaction. The local regression for girls is fairly linear, but seems to be affected by Poland's low life satisfaction and Finland's high achievement. The local regression for boys is very curved, showing an almost u-shape, although the data points do not necessarily make this clear.

These results suggest that there is a positive linear relationship between life satisfaction and educational achievement at the country level. As for the happy-productive worker hypothesis, subjective well-being appears to be a better predictor of performance than school satisfaction which was not significant in the correlations and showed very flat regression lines.

Figure 4.4: Relationship between life satisfaction and overall achievement at the country level, simple linear and local regressions (outliers removed)

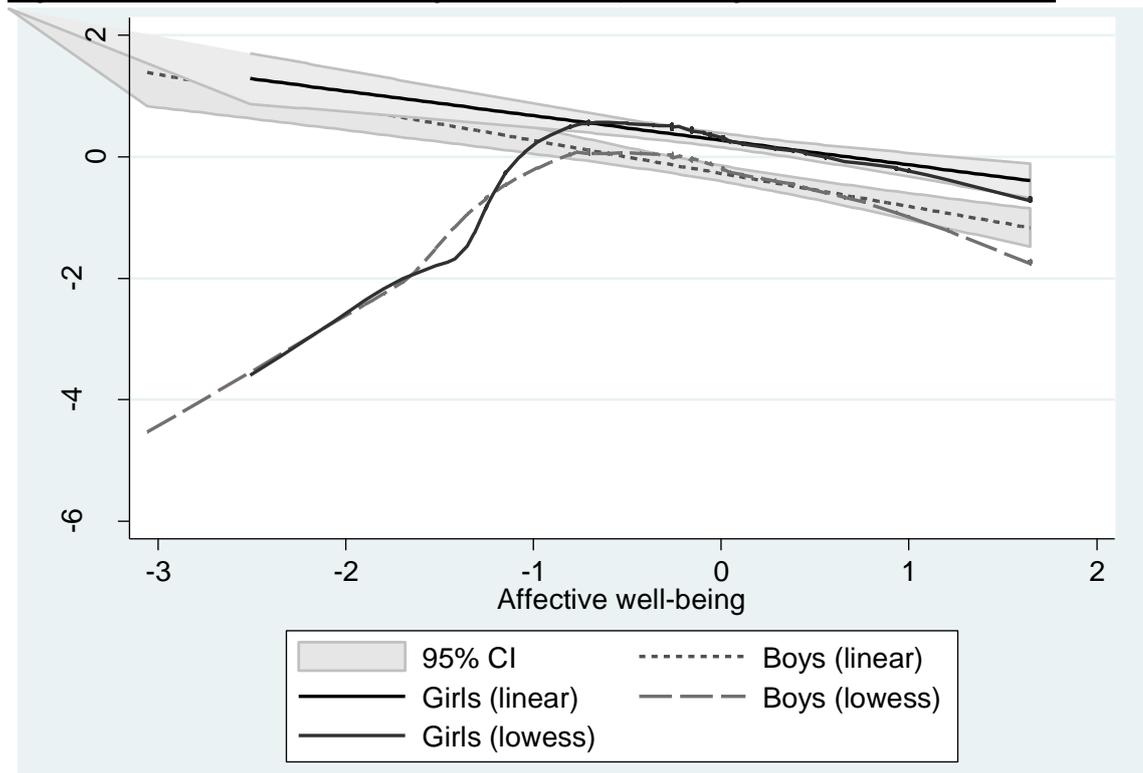


The following section presents micro-level analysis of the relationship between subjective well-being and educational performance.

4.5: Micro level analysis – Millennium Cohort Study (MCS)

The MCS allows investigation of the relationship between the affective well-being and overall educational attainment (based on Key Stage test results) for 7 year-olds in England. The relationship between subjective well-being and achievement in the MCS is initially investigated using pairwise correlation, an overall correlation of -0.104 , $p < .001$ was found between attainment and affective well-being, this changed to -0.114 , $p < .001$ for boys and -0.093 , $p < .001$ for girls. These results contradict the first hypothesis: that the relationship would be positive. This was further investigated using linear and local regression lines, shown in Figure 4.5.

Figure 4.5: Linear and lowess regression lines predicting academic achievement



The linear regression lines, as with the correlation coefficients, are negative. However the local regression lines show a more complex relationship. They suggest that the relationship between affective well-being and achievement is positive until affective well-being approaches the mean value, before becoming negative, a curvilinear relationship, although the positive area of the slope is steeper than the negative.

The relationship between achievement and subjective well-being is compared to the alternative possibility of satisfaction with school (liking school) as an explanatory factor in children’s achievement. The results of linear regression are given below, local regression was not conducted due to the categorical nature of the predictor variable:

Table 4.4: Linear regression predicting overall attainment using school satisfaction²⁴

	All children		Boys		Girls	
	B	S.E.	B	S.E.	B	S.E.
How much do you like school? (Ref. I don't like it)						
A bit	1.323***	.146	1.093***	.190	1.694***	.250
A lot	1.350***	.141	0.849***	.182	1.827***	.229
Model stats	F(2, 196) = 50.32, $p < .001$, $R^2 = .022$		F(2, 195) = 17.68, $p < .001$, $R^2 = .014$		F(2, 195) = 31.76, $p < .001$, $R^2 = .030$	

These results suggest that there is a relationship between school satisfaction and attainment, and unlike the results for affective well-being, the relationship is a positive one. However the amount of variance in educational attainment, as indicated by the R^2 value, is quite small. This will be investigated further below.

²⁴ Constant not shown due to Secure Data Service restrictions

A school engagement measure was created using relevant available variables with Cronbach's alpha as a guide. The final variable created by summing the variables: how much do you like school, how much do you like answering questions in class, how often do you try your best, how often does your teacher think you are clever, how often is school interesting ($\alpha = .653$). The resulting variable ranged from 0 to 10 with a higher score representing a greater level of engagement. However, because of the significant findings in regards to the relationship between school satisfaction and academic achievement shown above, it was appropriate to investigate the affective well-being and school satisfaction simultaneously in relation to academic achievement. It was decided to remove the school satisfaction measure from the engagement measure (which unfortunately but necessarily had a negative impact on the Cronbach's alpha, reducing it to .542). The school satisfaction (liking school) variable was then included separately in the analysis, alongside an interaction effect with gender included because the gender differences identified in the macro-level analysis presented above. A variable relating to how often the children reported behaving well in class was included as a measure of behavioural engagement. Alongside the standard affective well-being variable a quadratic affective well-being term was also included in the model due to the results of the local regression.

Table 4.5 gives the results of the multilevel analysis. The quadratic well-being variable is significant suggesting that there is a relationship between affective well-being and academic achievement when other characteristics such as liking school are controlled for. As such, the investigation of children's affective well-being in schools is still of interest to those more interested in objective outcomes such as achievement. The affective well-being variable itself, however, is not significant. The school satisfaction results are also interesting. Unlike in the earlier regression analysis (Table 4.4), consistently it is the liking school a bit response that results in a statistically significant improvement in achievement. Children who like school a lot do not report significantly higher (or lower) achievement than those who do not like school at all. Why this should be the case is worthy of further research. The interaction between liking school and gender is significant, but this was not the case for the interaction between affective well-being and gender, suggesting that how much a child likes school affects attainment differently depending on gender. The results also show that engagement is important for attainment. The results also suggest that schools account for 13.5% of the variance in achievement, although there are no random coefficients in the model.

This analysis is continued with the other datasets available in order to investigate the relationship for children of different ages, using different measures of subjective well-being, as well as in the USA rather than England.

Table 4.5: Multilevel analysis predicting overall attainment²⁵

	B (S.E.)
Strata (ref. advantaged)	
Disadvantaged	-0.856*** (.112)
Ethnic	-1.075*** (.152)
Affective well-being	-0.426 (.225)
Affective well-being ²	-0.391*** (.063)
Like school (ref. not at all)	
A bit	0.625** (.169)
A lot	0.151 (.173)
Gender (female)	-0.661 (.713)
Engagement	0.279*** (.033)
Behavioural engagement (How often do you behave well in class? ref. none of the time)	
Some of the time	0.771* (.362)
All of the time	0.922* (.361)
Interaction effects	
Affective well-being * gender	0.104 (.121)
Behaviour (some) * gender	0.021 (.723)
Behaviour (all) * gender	0.580 (.712)
Affective well-being * engagement	-0.018 (.037)
Like school a bit * gender	0.307 (.282)
Like school a lot * gender	0.812** (.269)
Random effects	
School level (s.d)	1.170 (1.039-1.317) (.071)
Individual level (s.d.)	2.960 (2.894-3.027) (.034)
ICC	.135 (.015)
Model stats	Wald Chi ² (16) = 472.99, $p < .001$, LL = -13896.845, LR test chibar ² (1) = 143.43, $p < .001$. N = 5418 (2206)

Significant coefficients shown in black, non-significant in grey

4.6: Micro level analysis – The Children’s Society Well-being Survey

The Children’s Society Well-being Survey includes children aged 8 to 15 years old in England and includes life satisfaction as the available subjective well-being measure. The measure of academic attainment in the Children’s Society survey is categorical, reflecting whether a child is in the lowest band, second lowest band, middle band, second highest band, or highest band of attainment nationally based on their key stage assessments. The categorical nature of the variable limits the analysis that can be conducted, and prohibits the investigation of a curvilinear relationship in the same way as for the other datasets.

Temporarily treating the outcome variable as a continuous variable results in non-significant correlations between achievement and life satisfaction of -.05 for boys and .03 for girls. These results are contradictory to previous findings, as well as the hypothesised positive relationship. Further investigation will indicate whether this is

²⁵ Constant not shown due to Secure Data Service restrictions

due to a genuinely different relationship in this data or due to the categorical attainment variable.

Table 4.6 presents the results of ordered logit regression predicting attainment. A measure of emotional engagement was constructed from the data by summing the variables: look forward to school, find school interesting, like being at school with a resulting Cronbach's alpha of .888. The results suggest that there is no relationship between emotional engagement and attainment. An interaction effect between emotional engagement and life satisfaction was tested but was not significant. The inclusion of a liking school variable (in order to compare subjective well-being (here life satisfaction) and a measure somewhat equivalent to job satisfaction) was not possible due to the inclusion of a similar variable in the emotional engagement measure and the small number of variables in this measure prohibiting its removal from the scale. As in the correlation results the relationship between life satisfaction and educational attainment was not significant. However, the interaction between gender and life satisfaction was found to be significant. Similarly to the MCS results, this indicates that a relationship between subjective well-being and academic attainment exists, but that it is not as straight-forward as might be expected. These results suggest a relationship between life satisfaction and educational performance moderated by gender, with girls being more likely to be in the highest level of achievement and high life satisfaction being more important for achievement for girls than for boys.

Table 4.6: Ordered logit regression predicting overall academic attainment, clustered standard errors, odds ratios

	Model 1	Model 2	Model 3	Model 4
Life satisfaction	0.993 (.015)	1.012 (.011)	1.018 (.013)	0.949 (.032)
Age		1.167 (.135)	1.164 (.131)	1.168 (.133)
Gender (Female)		1.632 (.402)	1.626 (.398)	1.625 (.396)
Emotional engagement			0.989 (.028)	0.990 (.028)
Gender*life satisfaction				1.047 (.023)
Log pseudolikelihood	-5089.858	-4917.054	-4725.225	-4721.441
Wald χ^2	0.21, $p > .05$ d.f. = 1	7.69, $p > .05$ d.f. = 3	8.46, $p > .05$ d.f. = 4	13.89, $p < .05$ d.f. = 5

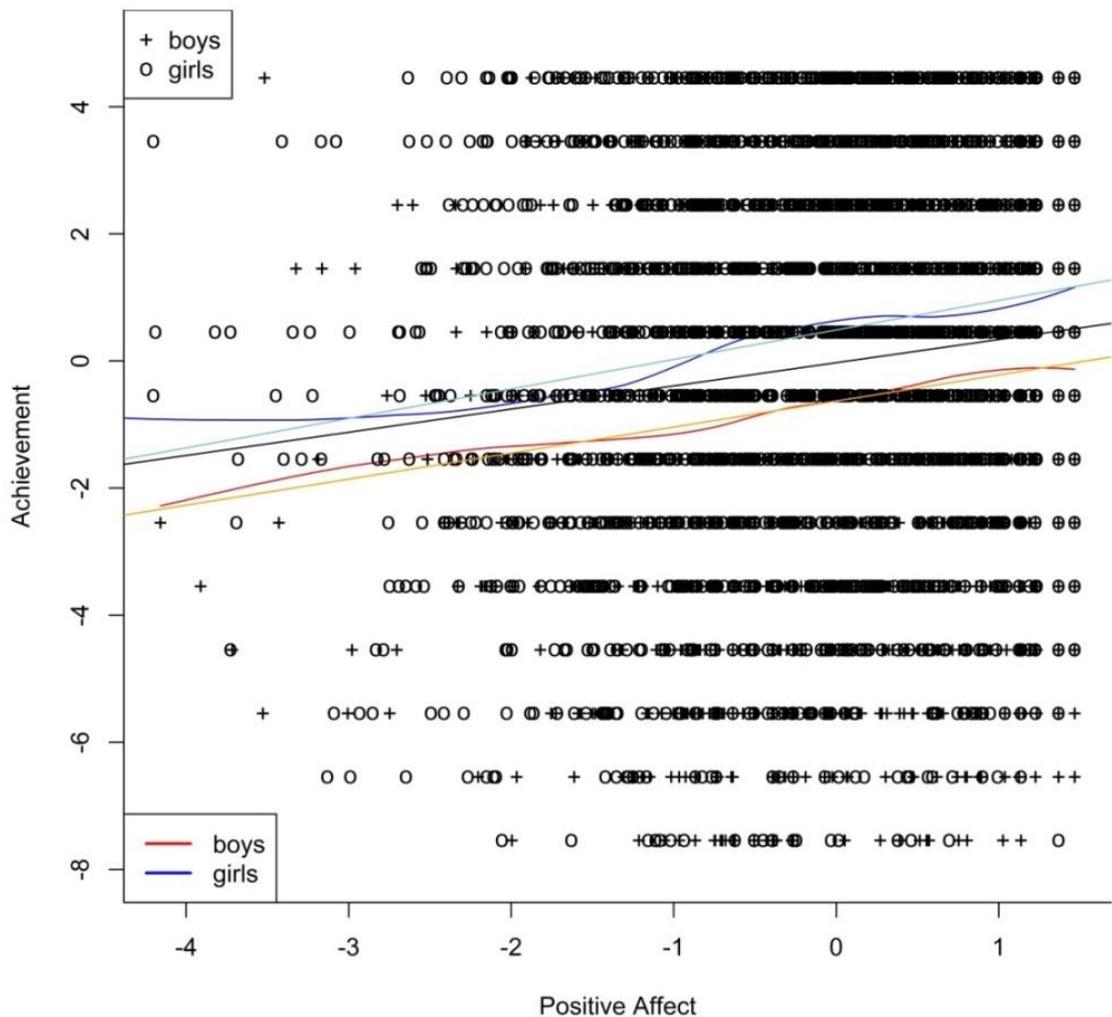
Significant coefficients shown in black, non-significant in grey

The following section presents the only available analysis of the relationship between subjective well-being and educational performance in the USA using data from Add Health.

4.7 Micro level analysis – Add Health

The Add Health survey includes young people aged 12 to 17. The outcome variable for this analysis is the mean of the most recent grade the child has reported in English, mathematics, science and history. As such it is the only analysis to rely on self-reported educational attainment. More information regarding the positive affect variable used here as the subjective well-being measure is given in Chapter 9. Correlations between positive affect and attainment of .12 for all children, .13 for boys, and .16 for girls were found (all $p < .001$). Correlations for achievement and being happy at current school were .29 for all children, .26 for boys and .31 for girls (again all $p < .001$) suggesting school satisfaction may be better at predicting attainment than affective well-being, contrary to what was predicted in hypothesis 6. This relationship was also investigated using linear and local regression, results are shown below in Figure 4.6.

Figure 4.6: Relationship between positive affect and overall attainment, simple linear and local regressions



The results again suggest a positive relationship between positive affect and academic attainment. The results of the local regression were quite flat, indicating that the relationship was not curved or better explained by a non-linear method. The results

were further investigated using multilevel analysis. For this, a measure of school connectedness, from McNeely et al. (2002) (feel close to people at school, feel part of school, happy at school, teachers treat students fairly, safe in my school), was included (Cronbach's alpha .782). This means that liking school cannot be considered as a predictor separately. A measure of behavioural engagement (whether child had ever skipped school, trouble getting along with teachers, trouble paying attention, trouble getting homework done, trouble with other students) was also included (Cronbach's alpha .669).

Table 4.7 shows the results of multilevel models predicting overall attainment. Similar to the results for the Children's Society data, it suggests a relationship between achievement and positive affect moderated by gender. Positive affect was significant in all but the final models, where the interaction terms were added. However, unlike in the Children's Society analysis a positive and significant effect for both behavioural engagement and school connectedness is found. The effect is particularly large for behavioural engagement when the interaction between behavioural engagement and age is included, this interaction implies that higher levels of engagement negate the negative consequences of increased age on attainment. The model indicated that attainment decreased with age, and that girls had higher levels of attainment than boys. The intraclass correlation for the final model suggests a school-level effect (explaining approximately 9 percent of variation in attainment) although none of the variables included in the model were found to vary significantly across schools.

Table 4.7: Multilevel model predicting overall academic achievement

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-0.085 (.092)	-0.100 (.092)	0.777 (.524)	2.727 (.517)	3.885 (.702)
Positive affect		0.290 (.036)	0.331 (.036)	0.134 (.037)	-0.089 (.116)
Age			-0.165 (.033)	-0.166 (.032)	-0.243 (.046)
Gender (Female)			1.032 (.090)	0.847 (.086)	0.834 (.086)
School connectedness				0.074 (.010)	0.073 (.010)
Behavioural engagement				0.217 (.013)	0.513 (.128)
Age* behavioural engagement					-0.020 (.009)
Gender*positive affect					0.142 (.070)
School level (s.d.)	0.897 (.078)	0.898 (.077)	0.871 (.075)	0.856 (.073)	0.853 (.073)
Individual level (s.d.)	2.313 (.039)	2.287 (.039)	2.229 (.038)	2.076 (.037)	2.075 (.038)
Residual (s.d.)	1.665 (.024)	1.663 (.024)	1.658 (.024)	1.640 (.023)	1.639 (.023)
ICC: School	.090 (.014)	.092 (.014)	.090 (.014)	.095 (.015)	.094 (.015)
ICC: Individual School	.689 (.011)	.686 (.011)	.676 (.011)	.652 (.012)	.652 (.012)

Significant coefficients ($p < .05$) shown in black, non-significant in grey

4.8: Discussion

This chapter has sought to investigate the nature of the relationship between subjective well-being and educational performance, comparing these results to hypotheses based on results for adult research studying the happy-productive worker hypothesis. There are a number of limitations to the comparison between the relationship between employment and subjective well-being for adults and education and subjective well-being and children. The main limitation is the different agency children and adults have in regard to their situation. Adults, within constraints, choose their field of employment and employers. They can negotiate their work environment by talking with managers or looking for new employment if they feel that their current job is having negative consequences on their wider well-being. Children do not have the same freedom. While school choice has become an important aspect of education policy, this choice is exercised by parents and is limited. Children do not have the same negotiating powers as adults, and it is unlikely that a child could initiate changes to their environment in the same way that adults in employment could. This means that children are dependent on their parents' school selection, and their parents to let them have some input in the school choice process. However it should be noted that adults are not free to make any

choice they desire. They are limited by their qualifications (which in turn are likely limited by a number of social factors), where they live and their ability to move, among other factors.

Despite these limitations this chapter has demonstrated an interesting relationship between child subjective well-being and academic performance. Table 4.8 summarises the findings of the different analyses in relation to the hypotheses. The results consistently confirm the first hypothesis that there is a relationship between subjective well-being and educational performance. This relationship is found internationally, in England and in the USA, and across a range of ages using different measures of subjective well-being and educational performance. In regards to the second hypothesis relating to the size of the correlation coefficients, results were mixed with much larger coefficients than expected for the macro analysis and smaller coefficients than found in adult research for the micro level analyses. Evidence for a curvilinear relationship was found in the MCS analysis but not in the international or Add Health analyses, which found a linear relationship. A gender difference in the relationship between subjective well-being and educational performance was found in the Children’s Society and Add Health analyses, perhaps because both datasets covered older children compared to the MCS dataset, and such a gender difference may develop with age. Finally, there was evidence to support the importance of student engagement in both the MCS and Add Health analysis, suggesting that it is important for student performance, although this result was not found in the analysis of the Children’s Society Well-being Survey.

Table 4.8: Summary of findings

	HBSC + PISA	MCS	Children’s Society	Add Health
Level	Macro	Micro	Micro	Micro
Performance measure	Overall achievement	Overall attainment	Overall attainment (categorical)	Self-reported overall attainment
SWB measure	Life satisfaction	Affective well-being	Life satisfaction	Positive affect
Country	International	England	England	USA
Age of children	15	7	10-15	12-17
Relationship found	Yes (+)	Yes	Yes (+) (moderated)	Yes (+)
Correlation coefficients	.59-.65	-0.114- -0.093	-.05-.03	.12-.16
Curvilinear relationship	N/A	Yes	N/A	No
Gender difference	No	No	Yes	Yes
Engagement relevant	N/A	Yes, important predictor	No	Yes, important predictor

By demonstrating the relevance of subjective well-being to educational performance these results go some way towards supporting the applicability of the happy-productive worker hypothesis to children in schools and therefore supporting the consideration of subjective well-being in relation to education policy. These findings therefore support the argument being made for broader consideration of the effects of education policy on children's lives by demonstrating that, as with adults in employment, how children engage with education is important, rather than considering them passive participants. The existence of the influence of the workplace on adults, including the elements influenced by policy such as employment security, is broadly accepted. These results suggest that we show the same consideration for children by recognising that policies can and do influence school environments and that this matters.

4.9: Key findings

- There is a generally positive relationship between educational performance and subjective well-being, even when using different measures of performance and aspects of subjective well-being.
- The correlations between subjective well-being and educational performance is different to that found between employment performance and subjective well-being in adults.
- For 7 year-olds, the relationship between affective well-being and educational attainment is curvilinear, positive for lower attainment/affective well-being and negative for higher attainment/affective well-being.
- There is a gender difference in the relationship between subjective well-being and educational performance in some of the analyses.
- Student engagement is an important predictor of educational performance.
- Both school satisfaction and subjective well-being are important for predicting educational performance.

Chapter 5: Schools and Child Affective Well-being in England at age 7

5.1: Context

The literature review (Chapter 2) highlighted a range of evidence suggesting a relationship between child subjective well-being and school. It is desirable to understand this relationship as much as possible because of the importance of subjective well-being as well as the relationship between subjective well-being and academic performance illustrated in Chapter 4. Policies outlined previously that have been linked to children's well-being include those relating to ability grouping, the provision of breaktimes and standardised assessment, for example (Boaler, 1997; Harlen and Malcolm, 1997; Blatchford and Sumpner, 1998; Reay and William, 1999; Boaler et al., 2000; Connor, 2001; Ireson et al., 2001; Connor, 2003; Boaler, 2005; Blatchford and Baines, 2006; Pellegrini, 2008). This chapter is the first analytical chapter to investigate the extent and nature of the relationship between the school a child attends and subjective well-being.

5.2: Research questions

This chapter seeks to answer the research questions (see Chapter 2), 'How important is the school a child attends to their subjective well-being?' and 'How do schools influence children's subjective well-being?', in relation to 7 year-old children in England. A school-level effect on the subjective well-being of children based on Lipsky's (2010) street-level bureaucracy theory and Bronfenbrenner's (1979) ecological approach to child development, as well as the evidence from education research, is hypothesised. The research questions are broken down into four research questions:

1. Is there a relationship between the school a child attends and the level of subjective well-being that they report?
2. Does the relationship, if one exists, remain after other factors are considered? If so how much variance is explained at the school level?
3. How are schools influencing children's subjective well-being?
4. What role, if any, does children's engagement with and experiences of school play?

5.3: Data

This chapter uses data from the Millennium Cohort Study (MCS) (Linked Education Administrative Dataset) (University of London, 2011) which covers 7 year-old children in England. It provides a large, representative sample of children in England, includes self-report information on subjective well-being, and allows children to be grouped according to the school that they attend. More detail was given in Chapter 3, including

the process of creating the dataset used in this analysis. The following sections introduce the outcome and predictor variables used in this chapter.

Outcome variable

The self-report questionnaire of the MCS includes a number of questions that relate to children's subjective well-being. The subjective well-being outcome variable for this analysis is constructed from these variables, shown below in Table 5.1. Other similar variables, for example relating to children reporting wanting to be alone or being quiet were not included, as their inclusion would reflect a value judgement on the part of the author as to what would be an appropriate amount of time for a child to be quiet, rather than the subjective well-being of the child.

All of the variables were recoded in order that the lowest value reflected the poorest outcome and vice versa. Because of the limited number of potential responses in the questionnaire and the small number of questions, creating a scale from the questions was unlikely to be adequate. Indeed, the Cronbach's alpha for the four questions was only .374. Relying on a single variable as a measure of subjective well-being is problematic as such an approach cannot be tested for consistency, is highly likely to be affected by the wording of the question, and potentially unreliable, especially given the categorical nature of the available variables (Diener, 1984). Such a variable in this analysis would be additionally like to be problematic because of the few available response categories. Other possible sources of information on the well-being of the child were the parent and teacher surveys. However, it is considered important to use data collected from the child where possible (Ben-Arieh et al., 2001). The responses from the children are unlikely to be problematic solely because of their young age, as research suggests that "children as young as 5 or 6 can be used as reliable sources of information" (Ben-Arieh, 2006, pg 21; also Ben-Arieh and Frønes, 2011). As such it was felt important to use only the responses from children themselves in order to ensure that the voices of the children themselves were included.

Table 5.1 shows that the children's responses to the questions about their well-being were highly skewed, with very few children reporting the worst possible responses to each question (between 1.63 and 4.80%). This suggests that some information regarding the variation in aspects of children's subjective well-being may be being lost due to the limited number of potential responses or the wording of the questions²⁶.

²⁶ The questions have been changed for the 5th wave of the MCS to be similar to those asked in the British Household Panel Survey (BHPS)/Understanding Society survey which have been used successfully in the past (Bradshaw and Keung, 2011b; Clair, 2012). The potential responses available to the children taking the survey have been expanded to 7 for the satisfaction questions and 4 for affective well-being questions (Ipsos Mori, n.d.). This will allow

However, evidence from research using alternative data sources suggests that the questions themselves may not be the cause of the skewed response and low numbers of children reporting very low well-being. Instead it may be that genuinely few children have low subjective well-being (for example, using data from the BHPS only 5.40% of children aged 10-15 years reported low affective well-being in 2008 (Clair, 2011, pg 41)).

Table 5.1: Child subjective well-being variable descriptives²⁷

Question	Possible Responses			
	Never	Some of the time	All of the time	Missing
How often do you feel happy?	98 1.63%	3597 59.79%	2002 33.28	319 5.30%
How often do you get worried?	1736 28.86%	3645 60.59%	289 4.80%	346 5.75%
How often do you feel sad?	1485 24.68%	4035 67.07%	172 2.86%	324 5.39%
How often do you laugh?	178 2.96%	3208 53.32%	2309 38.38%	321 5.34%

As a scale using the questions in Table 5.1 or the use of a single question as an outcome measure would be unsuitable, polychoric factor analysis with oblique (oblimin) rotation (pcf extraction) was used to create an outcome variable. Factor analysis was used as it retains information from the data while producing an outcome measure, as well as identifying relationships between the variables. Using factor analysis in this case is also slightly problematic as there are fewer variables and potential responses available than is ideal (Costello and Osborne, 2005), however it is the best option. Here, the factor analysis identified two factors (Table 5.2, Figure 5.1).

Table 5.2: Factor analysis of subjective well-being variables unrotated results

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	1.57	0.50	0.39	0.39
Factor2	1.07	0.33	0.27	0.66
Factor3	0.74	0.13	0.19	0.85
Factor4	0.61	.	0.15	1.00

LR test: $\chi^2(6) = 1071.20$ $p = 0.0000$

After rotation it became clear that one of the factors was based on the responses to the questions regarding being happy and laughing, and the other based on the questions about feeling sad and worrying (Table 5.3). These factors reflect the approach to

a partial investigation into whether the skewed responses are due, at least in part, to the wording of and potential responses to the questions.

²⁷ Consistently between 5 and 6% missing for these variables. There are 5625 children with no missing, 79 with 1 missing, 8 with 2 missing, 1 with 3 missing, 303 with all 4 missing.

affective well-being used and defined by Diener (1984) and others (e.g. Pavot, 2008). Namely, that affective well-being is a measure of peoples' emotional states (Pavot, 2008), constructed of both positive and negative affect (Diener, 1984).

Figure 5.1: Scree plot for factor analysis creating outcome variable

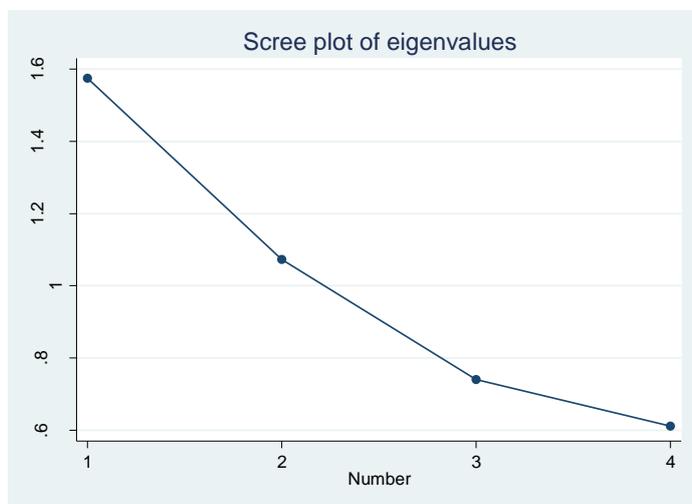


Table 5.3: Factor analysis of subjective well-being variables results (rotated)

Item	Rotated factor loadings	
	Negative affect	Positive affect
How often do you feel happy?	0.30	0.68
How often do you get worried?	0.83	-0.15
How often do you feel sad?	0.77	0.17
How often do you laugh?	-0.14	0.85

The two resulting factors were summed and centred to create a single outcome variable reflecting child overall affective well-being. It was felt that including a variable reflecting overall affective well-being was more appropriate than considering positive and negative affect separately because of the small number of variables. The resulting variable had a minimum of -3.058, maximum of 1.646, standard deviation of 0.730 with a mean of 0 (due to centering). The resulting variable is not normally distributed (histogram investigated but not shown due to Secure Data Service restrictions) as is often the case with subjective well-being measures, this will be taken into account in the analysis by using bootstrapped standard errors. Due to missing data, there was no outcome variable for 391 children, which resulted in a final sample size for analysis of 5625, with 1 to 25 children in each school from a total of 2360 schools.

Due to the potential similarity between the outcome measure, affective well-being, and the difficulties measured by the SDQ, particularly the emotional problems variable, correlations showing the relationships between the SDQ variable and the outcome variable were produced (Table 5.4). This found only very small correlations between the outcome variable and the SDQ measures, suggesting that the variables are not

measuring the same thing, and that there is not an issue with including the SDQ variables in the model.

Table 5.4: Correlations between the affective well-being outcome variable and the SDQ variables

	Emotional difficulties	Conduct problems	Hyper-activity	Peer relationship problems	Prosocial behaviour	Total difficulties
Affective well-being	-0.03*	-0.04*	0.00	-0.03*	0.05***	-0.03*

* $p < .05$, ** $p < .01$, and *** $p < .001$

Predictor variables

The MCS includes a wide range of information about the lives of children. In order to best utilise this, an extensive number of variables were considered for analysis including variables relating to the child's social life, family situation, demographics and school characteristics. The sources of information for the variables are the main respondent to the study (usually the child's mother), the Department for Education (administrative data, as described above), the interviewer (who conducted the assessment for the school readiness variable at wave 2), and the child themselves. All variables are from wave 4 of the survey unless otherwise specified. The descriptives for all of the variables that were considered for analysis are given in Appendix 2. Due to the large number of potential variables only those variables included in the final multilevel model are described here. All scale variables were grand mean centered prior to analysis, giving them a mean of 0. All categorical variables were included in the analysis as dummy variables. Percentages for categorical variables in the tables below may not equal 100 when summed due to rounding.

Table 5.5 gives the descriptive statistics for the demographic variables included in the final model. The relationship stability variable was created by comparing the relationship status of the reporting parent in the current wave of the survey (wave 4) to their relationship status in the previous wave. Those who reported no change between waves (i.e. were single in wave 3 and in wave 4, or who were married in wave 3 and in wave 4, for example) were recorded as having stable relationships while those who changed relationship status (e.g. from married to single) were reported as unstable. A relationship stability variable was included because of evidence suggesting that it is not necessarily parent marital status or the presence of two biological parents that impacts on the outcomes of children, instead it is the stability and consistency within the family that children experience that is important (Craigie et al., 2010; Kiernan and Mensah, 2010). The majority of children were found to live in households with stable parental relationships, however the label here may in no way reflects the subjective stability of

those relationships and may mask changes in relationship between surveys (e.g. a parent may have separated from their partner and then re-partnered, or may have moved from single to married within the same relationship). Demographic variables that were considered but not included as not statistically significant include gender, ethnicity and whether the biological parents were present in the home. The sampling strata variable was included in the fixed part of the model in lieu of weighting, as explained in section 5.4 and Chapter 3.

Table 5.5: Independent Variables: Demographic variables

Question	Possible Responses			Missing
Sampling strata	Disadvantaged 2150 (38.22%)	Advantaged 2601 (46.24%)	Ethnic 874 (15.54%)	0
Reporting parent's relationship stability (wave 3 to 4)	Stable 5138 (91.34%)		Not stable 448 (7.96%)	39 (0.69%)

The variables in Table 5.6 refer to the school and the child's objective relationship with schooling. The achievement variable refers to the child's overall achievement in their Key Stage 1 assessments. A 'yes' for the Special Educational Needs (SEN) variable includes children who have either school action and/or a SEN statement, this includes approximately one fifth of the children in the study. Special educational needs include learning difficulties such as dyslexia, physical disabilities, behavioural and social problems, as well as concentration problems. School type, whether the child received free school meals or was considered gifted and talented were considered in the analysis but were not statistically significant and were therefore not included in the final models.

Table 5.6: Independent Variables: School related variables

Question	Responses		Missing
Achievement	Min. -12.86, Max. 6.64, S.D. 3.35		2 (0.04%)
Special Educational Needs (SEN)	Yes 1178 (20.94%)	No 4447 (79.06%)	0
School Readiness (wave 2)	Min. -42.68, Max. 43.32, S.D. 16.18		877 (15.59%)

S.D. = standard deviation

The variables in Table 5.7 relate to the way the parent(s) of children have engaged with the child's school and the school admissions process. Whether the respondent had to demonstrate faith or religion for the child's school application is considered as this shows the extent parents have gone to get their children into the school of their choice. Considered but not retained variables include whether parents attended parents' evenings and whether parents had taken any other steps (for example moving house) to get their child into their preferred school.

Table 5.7: Independent Variables: Parental involvement with school variables

Question	Responses		Missing
Did parent demonstrate faith or religion for school application?	Yes 1544 (27.45%)	No 4070 (72.36%)	11 (0.20%)

The life satisfaction of the reporting parent (Table 5.8) was included due to evidence in previous research of a relationship between the subjective well-being of parents and that of their children (Casas et al., 2007; Casas et al., 2008; Clair, 2012). The variable is based on responses to the statement: “Here is a scale from 1-10 where '1' means that you are completely dissatisfied and '10' means that you are completely satisfied” (CLS, 2009, pg 249). It should be noted that this is a different aspect of subjective well-being than that used as the outcome variable reflecting children’s subjective well-being. As described above, the child subjective well-being outcome in this chapter is affective well-being. Unfortunately there was no affective well-being measure for adults in the dataset. It is also important to note that life satisfaction was only available for the reporting parent, there is no measure for the non-reporting parent.

Table 5.8: Independent Variables: Parent life satisfaction

Question	Possible Responses	Missing
Reporting parent life satisfaction	Min. -6.54, Max. 3.45, S.D. 1.89	253 (4.50%)

Table 5.9 gives the descriptives for the SDQ (Strengths and Difficulties Questionnaire) variables that were included in the final models. These were introduced in Chapter 3. The SDQ conduct problems and prosocial behaviour variables were not significant. The total difficulties variable was excluded from analysis for the reasons given below.

Table 5.9: Independent Variables: Strengths and Difficulties Questionnaire

Subscale		Missing
Hyperactivity	Min. -3.29, Max. 6.71, S.D. 2.45	133 (2.36%)
Peer relationship problems	Min. -1.23, Max. 7.77, S.D. 1.52	121 (2.15%)
Emotional difficulties	Min. -1.52, Max. 8.48, S.D. 1.75	126 (2.24%)

A correlation matrix was produced to investigate the relationship between the different SDQ subscales in order to check that their inclusion would not cause any problems in the analyses. Table 5.10 shows that there are high correlations between the total difficulties variable and many of the other SDQ variables, suggesting that its inclusion would be problematic. This is not surprising considering that the variable is constructed by summing the other SDQ variables. There are no other variables with consistently high, and therefore potentially troubling, correlations. As such, all SDQ variables, with the exception of the total difficulties variable, were considered in the analyses. Those SDQ variables, other than the total difficulties measure, that were

excluded from the final models were therefore excluded on the basis of significance rather than multicollinearity.

Table 5.10: Pairwise correlations between SDQ variables

	Emotional difficulties	Conduct problems	Hyper-activity	Peer rel. problems	Prosocial behaviour	Total difficulties
Emotional difficulties	1.00					
Conduct problems	0.36***	1.00				
Hyper-activity	0.28***	0.54***	1.00			
Peer relationship problems	0.41***	0.34***	0.31***	1.00		
Prosocial behaviour	-0.15***	-0.41***	-0.36***	-0.28***	1.00	
Total difficulties	0.68***	0.75***	0.80***	0.67***	-0.41***	1.00

* $p < .05$, ** $p < .01$, and *** $p < .001$

Table 5.11 includes the questions ‘How many friends do you have?’ and ‘How often do you feel left out of things by other children at school?’ from the children’s self-report questionnaire. These are included because of the importance children have been found to assign to their friendships in studies of children’s well-being (for example Rees et al., 2010). Indeed, only two variables measuring social life were available in the dataset and both were included in the final models.

Table 5.11: Independent Variables: Child social life

Question	Possible Responses			Missing
How many friends do you have?	Not many 566 (10.06%)	Some 3509 (62.38%)	Lots 1519 (27.00%)	31 (0.55%)
How often do you feel left out of things by other children at school?	All of the time 419 (7.45%)	Sometimes 2844 (50.56%)	Never 2315 (41.16%)	47 (0.84%)

The final group of questions relates to children’s experiences and perceptions of school, and are also similar to the measures of school engagement and connectedness discussed in Chapter 2. Many of these questions received a higher number of negative responses than the general well-being questions used to create the outcome variable (see below), with over 15% of children reporting not liking school at all, for example. Of the 11 available variables relating to school perceptions 10 were included in the final models, only ‘how often do you try your best’ was excluded on the basis of lack of statistical significance. The variable “How often do you feel unhappy at school?” is included in this part of the MCS self-report questionnaire but was excluded from the final analysis due to the similarity between it and the question “How often do you feel happy?” included in the outcome variable. Tests of symmetry confirmed that these questions were significantly similar: Symmetry (asymptotic) $\text{Chi}^2(3) = 245.80$, $p <$

.0001, Marginal homogeneity (Stuart-Maxwell) $\chi^2(2) = 244.55, p < .0001$. It was not felt that the positively worded 'how much do you like school' variable was problematic as it asks about liking school, rather than how happy the child *feels* about their school, which would have been too similar.

Table 5.12: Independent Variables: School perceptions and experiences variables

Question	Possible Responses			Missing
How much do you like school?	Don't like it 872 (15.50%)	Like it a bit 1708 (30.36%)	Like it a lot 2978 (52.94%)	67 (1.19%)
How often does your teacher think you are clever?	Never 225 (4.00%)	Sometimes 2720 (48.36%)	All of the time 2552 (45.37%)	128 (2.28%)
How often is school interesting?	Never 627 (11.15%)	Sometimes 2520 (44.80%)	All of the time 2388 (42.45%)	90 (1.60%)
How often do you get fed up at school?	All of the time 778 (13.83%)	Sometimes 2385 (42.40%)	Never 2423 (43.08%)	39 (0.69%)
How much do you like answering questions in class?	Don't like it 701 (12.46%)	Like it a bit 2173 (38.63%)	Like it a lot 2675 (47.56%)	76 (1.35%)
How often do you feel safe in the playground?	Never 290 (5.16%)	Sometimes 1879 (33.40%)	All of the time 3364 (59.80%)	92 (1.64%)
How often do you behave well in class?	Never 133 (2.01%)	Sometimes 1523 (27.08%)	All of the time 3896 (69.26%)	93 (1.65%)
How often do you get tired at school?	All of the time 1274 (22.65%)	Sometimes 2729 (48.52%)	Never 1547 (27.50%)	75 (1.33%)
How often do other children bully you?	All of the time 501 (8.91%)	Sometimes 2210 (39.29%)	Never 2855 (50.76%)	59 (1.05%)
How often are you horrible to other children at school?	All of the time 141 (2.51%)	Sometimes 748 (13.30%)	Never 4675 (83.11%)	61 (1.08%)

In light of the evidence discussed in the literature review, it would be desirable to include information on whether the child is placed into sets or streams at school. This information is available in the wave 4 teacher survey of the MCS, however there is a very high proportion of missing data (Table 5.13). As such, setting and streaming were not included in the analysis. Setting for mathematics (numeracy) rather than literacy is shown here as this is where the majority of the existing evidence is derived from.

Table 5.13: Setting and streaming variables

Question	Responses				Missing
Set for maths	Not set 2711 (37.23%)	Bottom set 347 (4.77%)	Middle set 516 (7.09%)	Top set 742 (10.19%)	2966 (40.73%)
Streamed	Not streamed 3674 (50.45%)	Bottom stream 172 (2.36%)	Middle stream 239 (3.28%)	Top stream 342 (4.70%)	2855 (39.21%)

5.4: Methods

Preliminary analysis

Before conducting the main analysis the data were examined using a range of methods. Relationships between all of the relevant predictor variables and the outcome variable were investigated using appropriate methods according to variable type (for scale predictor variables Pearson's correlation was used, for binary predictor variables t-tests were used, and for categorical variables ANOVA was used as the outcome variable was continuous in nature). This gave an indication of which variables were likely to contribute to the final model. Following this regression models were run predicting the outcome first using all of the potential predictor variables, then with the variables in their respective groups (e.g. child social life variables), and finally with only variable groups that produced a statistically significant model. This process was then repeated using multinomial logit regression with the outcome variable transformed into a categorical variable with three equal groups. Three groups (low, mid and high) were chosen over two groups (low and high) as it is clear in the literature that the absence of sadness or similar is not equivalent to happiness and therefore a two category measures would not appropriately reflect children's affective well-being (Diener, 1984). The outcome variable was transformed in this way, creating a relative measure of affective well-being, as no absolute measure was possible due to the way the original variable had been constructed (i.e. there were no clear cut off points for children reporting high, middling or low well-being). These regression analyses again indicated the likely relationship between predictor and outcome variables, while the multinomial logit regression illustrated the potential usefulness of treating the outcome variable as a categorical rather than scale variable. In order to take into account the sampling used to collect the data, the data was svyset in Stata before these analyses.

Multilevel analysis

As discussed in greater detail in Chapter 3, multilevel modelling is the best method for investigating the research questions in this chapter as it allows consideration of 'levels' of information. This allows the investigation of the contribution of the school a child attends to the level of subjective well-being that they report, rather than assigning all variance to the level of the child, as would be the case in standard regression (Paterson and Goldstein, 1991; Rabe-Hesketh and Skrondal, 2012).

Initially, a basic 2-level (null) model was used to investigate whether a relationship between child subjective well-being and the school that they attend exists, although for this dataset strata variables are included in the fixed part of the model in lieu of

weighting. As discussed in Chapter 3 it was necessary to do this due to the mismatch between the sample and model design. In order to answer the further research questions random-coefficient models are used. For the second model variables relating to children's lives and characteristics were added. In the final model a number of variables relating to children's perceptions of and engagement with school were added to the model in order to answer the fourth research question. Variables were added to the models one at a time, first to the fixed model and then both to the fixed and random part of the model, to see if they significantly improved the model. Variables were added to the model in group order and in the order given above. When all significant variables had been added to the model, the model was then re-run, removing variables one at a time from the random part of the model to check that they still improved the model. Variables were included in the random part of the final models if they were found to have statistically significantly improved the model according to a log likelihood test.

All multilevel analyses were conducted using Stata's xtmixed function using restricted maximum likelihood.

5.5: Limitations

There are a number of limitations to this analysis. As well as the issues with the outcome measure relating to its construction which were discussed above, it is also a new and untested measure and one that reflects only the affective aspect of subjective well-being. There were no questions in the dataset that could be used to measure life satisfaction. However this limitation is not exclusive to this analysis as any measure of subjective well-being is potentially problematic (Diener, 1984). Another limitation is that the analysis is restricted to children aged 7 year-olds who responded to the survey in 2008, and therefore is not generalizable to all children or all time periods. However, this is an age-group that has not been considered in much of the existing work on child well-being due to a lack of available data (for example: Bradshaw et al., 2007a; Bradshaw et al., 2007b; UNICEF, 2007; Bradshaw and Richardson, 2009, OECD, 2009, as discussed in Chapter 2) and so while being limited to such a specific age group is not ideal, it is positive to be able to include children in the analysis of an age that are typically not able to be included. Additional datasets will be used in this thesis to investigate the relationship between the school a child attends and their subjective well-being at different ages.

There are also few school related variables available for the analysis; for example, it is not possible to compare state and fee-paying schools. This limits the inferences that can be made from the results. Also, as this is the first occasion in the MCS in which

the child self-completion questionnaire has been included, the analysis it is necessarily cross-sectional limiting the ability of the research to make causal inferences. Future releases of the MCS may allow for longitudinal analysis as well as analysis of children at different ages. Similarly, the sometimes limited sample size within schools is a limitation of the data due to the sample design differing from the model design. While the sample size is felt to be acceptable for this analysis it is possible that the school level in the model may pick up some of the variation in neighbourhoods, although this will partially be accounted for by the inclusion of the strata variables within the models. Finally, it would be desirable to consider class-level effects as well as school-level effects due to the likely importance of teachers-pupil relationships and teachers as street-level bureaucrats, however it is not possible with this data as no class identifier is given.

5.6: Analysis

Preliminary analysis results

The detailed findings from the preliminary analysis are given in Appendix 2. Table 5.14 summarizes the results for the different variable groupings in the regression analyses, with 'o' symbols representing variable groups that were not statistically significant predictors of affective well-being and '+' symbols representing those that were. Here, as throughout, statistically significant is considered to be where $p < .05$.

Table 5.14: Significance of predictor variable groupings, results in linear and logit regression analysis

Predictor variable grouping	Linear analysis	Multinomial logit analysis
Demographics	o	o
Financial	+	+
School related	+	+
Parental involvement with school	+	o
Parent life satisfaction	o	o
Child health	o	o
SDQ	+	+
Social life of child	+	+
School perceptions and experiences	+	+

The findings were relatively consistent across the linear and logit regressions, the one difference being that parental involvement in school is only significant in the linear analysis. Most variable groupings were significant; financial, school related, SDQ, social life and school perceptions variables consistently so. The models including demographic variables, parent life satisfaction, and child health were consistently not significant.

Table 5.15 gives a more detailed overview of the results of the preliminary analyses, showing which individual variables were and were not significant in the different models. Only two variables were significant in all of the analyses, achievement and whether the child was bullied. However, a number of variables were not significant in any of the analyses: whether the child had lived in another country, whether the child lived with their biological mother, whether they lived with their biological father, whether the child lived in the study household full- or part-time, the marital status of the reporting parent (binary), parent relationship stability, school year, absence from school, whether the parent took steps to get their child into the school of their choice, parent life satisfaction and child health. Several variables were also only significant in the initial, bivariate analyses. These were special educational needs, gifted and talented, SDQ conduct problems, whether the child finds school interesting, whether they try their best at school, and whether they behave in school. These results suggest that these variables are unlikely to play an important role in the fixed part of the multilevel models. They will all still be considered however, as these preliminary analyses give no indications of how important variables may be at the school level of the analyses.

Although many variables were frequently not significant, there were also several variables that were frequently, if not consistently, significant. Parent's perception of their financial situation (not in bivariate analysis), school type, the number of friends a child has, whether the child feels left out, whether they answer questions in school, whether they feel safe in the playground, whether they feel tired at school, and whether they are horrible to other children were all statistically significant in the bivariate and linear analyses. Whether the child got fed up at school, felt that their teacher thought that they were clever, and whether the child liked school were significant in the bivariate and all logit analyses. These results suggest that school perceptions and experiences are likely to be important in the final analyses, as well as implying that demographic and home characteristics are not likely to play an important role.

Table 5.15: Significant and non-significant variables in preliminary analysis predicting affective well-being²⁸

	Question/variable	Bivariate	LR all vars ²⁹	LR groups	LR sig groups	MLR all vars	MLR groups	MLR sig groups
Demographics	Gender	ns	ns	ns	e	s	s	e
	Has child ever lived in another country?	ns	ns	ns	e	ns	ns	e
	Does child's biological mother live in household?	ns	ns	ns	e	ns	ns	e
	Does child's biological father live in household?	ns	ns	ns	e	ns	ns	e
	Child resident in household full- or part-time	ns	ns	ns	e	ns	ns	e
	Ethnicity of child	ns	s	ns	e	ns	s	e
	Reporting parent's marital status (categorical)	ns	s	ns	e	e	e	e
	Reporting parent's marital status (binary)	ns	s	ns	e	ns	ns	e
	Reporting parent's relationship stability	ns	ns	ns	e	ns	ns	e
³⁰	Parent's perception of financial situation	ns	s	s	s	ns	ns	s
	Whether household in income poverty (below 60% of national median)	ns	ns	s	ns	ns	ns	ns
School related variables	Achievement	s	s	s	s	s	s	s
	Special Educational Needs	s	ns	ns	ns	ns	ns	ns
	School Readiness	s	s	ns	ns	ns	ns	ns
	Child school year	ns	ns	ns	ns	ns	ns	ns
	Amount of time the child has been absent from school	ns	ns	ns	ns	ns	ns	ns
	Child eligible for free school meals	s	ns	ns	ns	s	s	ns
	Child in gifted and talented cohort	s	ns	ns	ns	ns	ns	ns
	School type (foundation, community, etc.)	s	s	s	s	ns	ns	ns

²⁸ e = excluded, s = statistically significant in model, ns = not statistically significant in model. Where categorical variables have been included they are marked as significant if one or more of the dummy variables were significant.

²⁹ LR all vars = linear regression including all potential variables, LR groups = individual linear regressions for each group, LR sig groups = linear regression run including variable groupings found to be significant in group analysis. MLR regressions as for linear regression, instead using multinomial logistic regression.

³⁰ Financial variables

Table 5.15 continued

31	Parents have attended parents' evening	ns	ns	s	ns	ns	ns	e
	Whether parents took any steps to get child into school of their choice	ns	ns	ns	ns	ns	ns	e
	Did parent demonstrate faith or religion for school application?	s	ns	s	ns	ns	ns	e
	Reporting parent life satisfaction	ns	ns	ns	e	ns	ns	e
	Child health	ns	ns	ns	e	ns	ns	e
SDQ	Prosocial behaviour	s	ns	s	ns	ns	ns	ns
	Peer relationship problems	s	ns	ns	s	ns	ns	ns
	Hyperactivity	ns	s	s	ns	ns	s	ns
	Conduct problems	s	ns	ns	ns	ns	ns	ns
	Emotional difficulties	s	ns	s	ns	ns	ns	ns
	Total difficulties	s	e	e	e	e	e	e
32	How many friends do you have?	s	s	s	s	s	s	ns
	How often do you feel left out of things by other children at school?	s	s	s	s	ns	s	s
School perceptions and experiences	How much do you like school?	s	s	ns	s	s	s	s
	How often does your teacher think you are clever?	s	ns	s	ns	s	s	s
	How often is school interesting?	s	ns	ns	ns	ns	ns	ns
	How often do you get fed up at school?	s	ns	s	s	s	s	s
	How much do you like answering questions in class?	s	s	s	s	ns	ns	ns
	How often do you try to do your best at school?	s	ns	ns	ns	ns	ns	ns
	How often do you feel safe in the playground?	s	s	s	s	ns	ns	s
	How often do you behave well in class?	s	ns	ns	ns	ns	ns	ns
	How often do you get tired at school?	s	s	s	s	ns	s	ns
	How often do other children bully you?	s	s	s	s	s	s	s
	How often are you horrible to other children at school?	s	s	s	s	ns	s	ns

³¹ Parental involvement with school

³² Child social life

These analyses do not take into account how variables may vary across groups (children in schools). As such they will be used for guidance when creating the multilevel models, rather than dictating what will be used. The greater consistency in the linear analyses and the better model fit for the linear regression models compared to the logit equivalents suggests that using the outcome variable in its original linear form would be best.

Table 5.16 gives the results for the individual variables in the multilevel models, showing whether or not the variable significantly improved the model when added to the fixed and/or random parts of the model based on a log-likelihood test. Categorical marital status and binary marital status were compared by being added to the model separately and keeping the variable which best improved the model (if significant). To be included in the random part of the model, a variable must also feature in the fixed part of the model, as such a variable might, when included in the fixed part of the model only, be reported as not significant, but still feature in the fixed part of the final model because of its inclusion in the random part of the model. Once all variables had been added to the model it was then checked by removing all included random variables one at a time. Any variables which were found to no longer be significantly improving the model were removed from the random part of the model.

The results are broadly similar to those in the preliminary analysis. That gender is not statistically significant is perhaps one of the most surprising findings as it is contrary to what has been found in many other studies (for example Powdthavee and Vignoles, 2008; Bradshaw and Keung, 2011b). This may be due to the comparatively young age of the children in the study, as analysis using the affective well-being measures available in the Youth Questionnaire of the British Household Panel Survey (BHPS) suggests that this may be because gender differences in affective well-being develop and increase with age, as evidenced by the funnel shape in Figure 5.2.

Table 5.16: Independent variables, significance in multilevel model³³

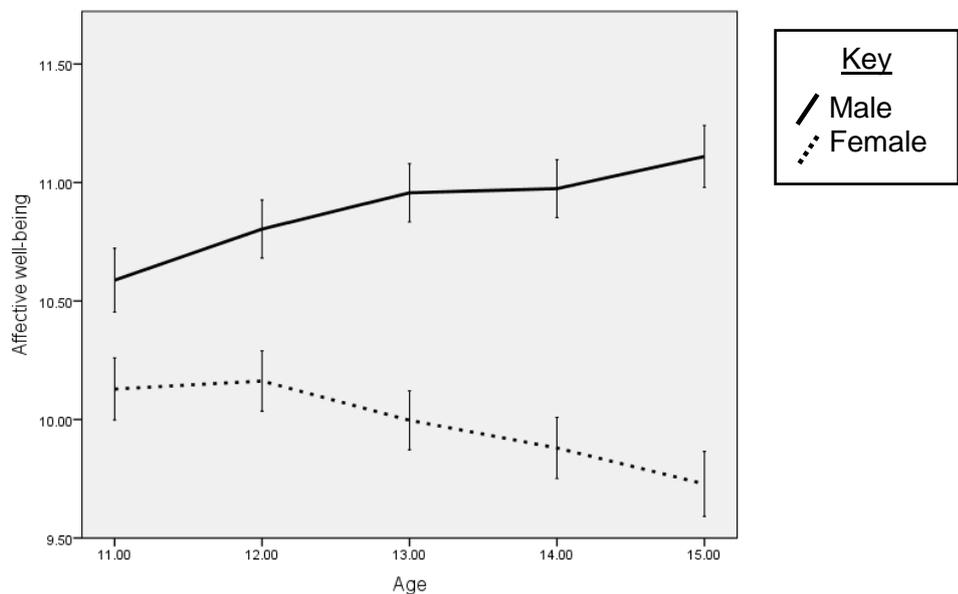
	Question	Fixed	Random
Demographics	Gender	ns	ns
	Has child ever lived in another country?	ns	ns
	Does child's biological mother live in household?	ns	ns
	Does child's biological father live in household?	ns	ns
	Child resident in household full- or part-time	ns	ns
	Ethnicity of child	ns	ns
	Reporting parent's marital status (categorical)	ns	ns
	Reporting parent's marital status (binary)	ns	ns
	Reporting parent's relationship stability	s	ns
	Parent's perception of financial situation	ns	ns
	Whether household in income poverty (below 60% of national median)	ns	ns
School	Achievement	s	ns
	Special Educational Needs	ns	s
	School Readiness	s	ns
	Child school year	ns	ns
	Amount of time the child has been absent from school	ns	ns
	Child eligible for free school meals	ns	ns
	Child in gifted and talented cohort	ns	ns
	School type (foundation, community, etc.)	ns	ns
Parent	Parents have attended parents' evening	ns	ns
	Whether parents took any steps to get child into school of their choice	ns	ns
	Did parent demonstrate faith or religion for school application?	s	ns
	Reporting parent life satisfaction	s	ns
	Child health	ns	ns
SDQ	Prosocial behaviour	ns	ns
	Peer relationship problems	s	ns
	Hyperactivity	s	ns
	Conduct problems	ns	ns
	Emotional difficulties	s	s
	Total difficulties	e	e
Social	How many friends do you have?	s	ns
	How often do you feel left out of things by other children at school?	s	s
School perceptions and experiences	How much do you like school?	s	ns
	How often does your teacher think you are clever?	s	ns
	How often is school interesting?	s	ns
	How often do you get fed up at school?	s	ns
	How much do you like answering questions in class?	s	ns
	How often do you try to do your best at school?	ns	ns
	How often do you feel safe in the playground?	s	ns
	How often do you behave well in class?	s	ns
	How often do you get tired at school?	s	s
	How often do other children bully you?	s	ns
	How often are you horrible to other children at school?	s	ns

As suggested by the preliminary analysis very few of the demographic variables were significant but all but one of the school perceptions variables were significant. It is also

³³ e = excluded on the basis of previous analysis, s = statistically significant in model, ns = not statistically significant in model

notable that none of the poverty measures were significant. This may be due to the fact that all were based on either adult income or adult perceptions and evidence increasingly suggests that children's perceptions and experiences of poverty may be separate from that of their parents (Main and Bradshaw, 2012). Whether the child is eligible for free school meals, often used as an indicator of poverty, was also not significant. However it may be the case that the inclusion of the strata variables in the fixed part of the model, which include a measure of (neighbourhood) deprivation may be affecting these results. Child health was found not to be significant, this was considered likely given the findings by NicGabhainn and Sixsmith (2006) which suggested that the attention given to health in studies of child well-being was not reflective of children's perceptions of what was influential for their well-being.

Figure 5.2: Affective well-being by age 1994-2008



Source: Clair, 2011; Data from: BHPS 1994-2008 (ESDS, n.d.)

Results

This section presents the results of the multilevel analyses, starting with the null model. A more detailed overview of the model and results is given in this chapter in order to introduce the reader to multilevel analysis and its output.

Model 1: Is there a relationship between the school a child attends and the level of subjective well-being that they report?

Initially a basic model including only the strata variables being used in lieu of weighting was run. The results are shown in Table 5.17. The model is significant ($p < .05$), as indicated by its Likelihood Ratio test (LR test) result, confirming its multilevel structure and that there is a school-level effect. The LR test compares the fit of the presented multilevel model with a standard linear model. A significant result, as found here,

indicates that a multilevel model better fits the data than a linear regression model. This justifies the use of multilevel analysis, as it is the most appropriate statistical strategy for this data as it is able to account for the similarity within groups (schools) evident in the data. The use of a multilevel of then allows the allocating of variance to the different levels of the model. The variance partition coefficient (VPC) suggests that school explains 2.03% of the variance in a child’s affective well-being at this stage. The VPC, as introduced in Chapter 3, is a measure of the amount of variance explained at each of the different levels of the model, in the case of this analysis school and individual levels. Here, the proportion of variance at the school-level is calculated by dividing the school-level variance ($0.104^2 = 0.011$, as the variance in the model is reported in standard deviations) by the total variance in the model ($0.104^2 + 0.722^2 = 0.532$)³⁴. As discussed in Chapter 3, the statistical significance of the random effects is not denoted by asterisks due to the association of asterisks with Wald tests, and the inappropriateness of using Wald tests for random effects. As such asterisks are not used with random effects but only statistically significant random effects are reported. The strata variables in the fixed part of the model are found to be significant, most likely reflecting the absence of other explanatory variables. The constant is not shown due to Secure Data Service restrictions.

Table 5.17: Null two-level multilevel model results

	B	S.E.
Fixed		
Constant	-	-
Sampling strata (ref. Advantaged)		
Disadvantaged	0.069***	.018
Ethnic	0.099**	.029
Random		
Pupil level (S.D.) ³⁵	0.722	.010
School level (S.D.)	0.104	.004
Wald $\chi^2(2) = 26.25, p < .001, LL = -6211.32$ LR test: $\chi^2 = 4.95, p < .05, N = 5625 (2259)$ Variance Partition Coefficient (VPC): 2.03%		

* $p < .05$, ** $p < .01$, and *** $p < .001$

The model residuals were checked for normality, the results are not shown here due to Secure Data Service restrictions. The results showed that the school-level model residuals are relatively normally distributed, although with some fairly heavy tails. This is, however, not problematic.

³⁴ $0.011 / 0.532$ does not equal 2.03% exactly as more precise numbers were used in the calculation of the VPC given here, these numbers are used for illustrative purposes.

³⁵ S.D. = random coefficients reported as standard deviations

Model 2: Does the relationship remain after other factors are considered? If so how much variance is explained at the school level? How are schools influencing children's affective well-being?

The second model includes a number of variables available in the dataset that relate to characteristics of the child and school. All shown random effects are significant, however this significance is not marked with asterisks (see above and Chapter 3). Models equivalent to models 2 and 3 which include the school readiness variable, which was excluded here because of the high number of missing cases, are given in Appendix 3.

With the addition of these variables the model remains multilevel and the fit improves, as demonstrated by the continued significance of the LR test and the increased value for this test. The inclusion of the significant random effects into the model reduces the school effect itself to zero (School Level (S.D.) = 0.000) but increases the proportion of variance in children's affective well-being that is explained by the school they attend to 22.26%. This value is again produced by the VPC, which is calculated as explained above, but this time including the SEN, emotional difficulties and feel left out random effects in the school-level variance (i.e. $0.000^2 + 0.273^2 + 0.053^2 + 0.000^2 + 0.222^2$). The significance of these variables in the random part of the model indicates that how schools treat children with SEN, emotional difficulties, and children feeling left out varies resulting in changes in the level of affective well-being reported by children. However, having SEN is not significant in the fixed part of the model suggesting that SEN status itself is not associated with a change in subjective well-being.

In the fixed part of the model, of the variables relating to children's (objective) school lives and parental involvement in school, only achievement and parents demonstrating faith or religion are found to be significant, both showing a negative relationship with a child's affective well-being. Suggesting that children whose parents demonstrate religion to get them into the school of their choice have lower levels of affective well-being. The variables relating to the social lives of children, feeling left out and number of friends, are the only others that are significant indicating that children's social lives are very important for their affective well-being. Those variables in the fixed part of the model that do not have asterisks are no longer statistically significant. The model includes surprisingly few family related variables, although many were considered including parental marital status and the presence of parents in the home, only parent relationship stability and life satisfaction were significant.

Table 5.18: Two-level multilevel model results including all predictors except school perceptions

	B	S.E.
Fixed		
Constant	-	-
Sampling strata (ref. Advantaged)		
Disadvantaged	0.053**	.018
Ethnic	0.063*	.029
Parent relationship stability (Not stable)	-0.054	.042
Key Stage 1 achievement	-0.022***	.005
Special Educational Needs (yes)	0.011	.032
Parent demonstrated religion for school (yes)	-0.055**	.020
Life satisfaction of reporting parent	0.002	.006
SDQ: Peer relationship problems	-0.011	.008
SDQ: Hyperactivity/inattention	-0.002	.004
SDQ: Emotional Difficulties	-0.016*	.007
Number of friends (ref. Not many)		
Some	0.071	.034
Lots	0.238***	.032
Feel left out (ref. All of the time)		
Sometimes	-0.048	.043
Never	0.280***	.045
Random		
School level (S.D.) (95% confidence interval)	0.000 (.000-.000)	.000
SEN (S.D.) (95% confidence interval)	0.273 (.249-.298)	.012
Emotional Difficulties (S.D.) (95% confidence interval)	0.053 (.046-.061)	.003
Feel left out (ref. All of the time)		
Sometimes (S.D.) (95% confidence interval)	0.000 (.000-.000)	.000
Never (S.D.) (95% confidence interval)	0.222 (.206-.239)	.008
Pupil level (S.D.) (95% confidence interval)	0.665 (.634-.696)	.016
Wald $\chi^2(14) = 1237.36, p < .001, LL = -5537.273,$ LR test: $\chi^2(5)=43.50, p < .001, N = 5220 (2162), VPC: 22.26\%$		

* $p < .05$, ** $p < .01$, and *** $p < .001$

Model 3: What role do children's perceptions of and engagement with school play? How much variance in affective well-being is explained at the school level? How are schools influencing children's affective well-being?

At this stage perceptions and experiences of school variables were added to the model, only around half of which were significant in the fixed part of the model once all variables were included. The first set of variables that were significant relate to the

child's sense of comfort in school, how much they like answering questions in class and how often they feel safe in their playground. These variables are closely related to the concepts of school connectedness and engagement discussed in Chapter 2. Feeling safe in the playground appears to be particularly important, being both highly significant and having a large coefficient. Feeling tired in school was significant, both in the fixed part of the model and the random part, suggesting that way schools deal with tired children may affect their well-being. Unsurprisingly, children who reported never being bullied also reported higher levels of affective well-being. More surprisingly, children who report being horrible to other children some of the time report lower affective well-being than those who are horrible all of the time, with no difference between those who are never horrible and those that are always horrible. School related variables that would seem likely to contribute to the well-being of children, such as liking school and finding it interesting, are not significant.

As in the previous model the results of these analyses suggest a negative relationship between affective well-being and academic achievement, contrary to previous findings in this thesis and elsewhere. This was investigated further in Chapter 4, the results of which demonstrated that the relationship was not a negative linear one, but instead a curvilinear one. As in the previous model, the only variables (other than the school related variables) in the fixed part of the model that were significant are achievement and those variables relating to a child's social life. Unlike in the previous model, parents demonstrating their faith or religion is no longer significant. With the addition of these variables the VPC has again increased in this model, calculated as above but with the addition of the variance for feeling tired at school, to suggest that the school a child attends explains 24.94% of the variance in child affective well-being.

Table 5.19: Two-level multilevel model including all predictor variables (without readiness)

	B	S.E.
Fixed		
Constant	-	-
Sampling strata (ref. Advantaged)		
Disadvantaged	0.025	.028
Ethnic	0.038	.030
Parent relationship stability (Not stable)	-0.045	.050
Key Stage 1 achievement	-0.025***	.036
Special Educational Needs (yes)	0.006	.036
Parent demonstrated religion for school (yes)	-0.021	.026
Life satisfaction of reporting parent	0.006	.007
SDQ: Peer relationship problems	-0.005	.009
SDQ: Hyperactivity/inattention	0.006	.005
SDQ: Emotional Difficulties	-0.014	.008
Number of friends (ref. Not many)		
Some	0.059	.047
Lots	0.142**	.042
Feel left out (ref. All of the time)		
Sometimes	-0.013	.051
Never	0.180***	.050
How much do you like school? (ref. Don't like it)		
A bit	-0.051	.042
A lot	0.040	.048
How often does your teacher think you are clever? (ref. Never)		
Sometimes	0.011	.064
All of the time	0.136*	.061
How often is school interesting? (ref. Never)		
Sometimes	-0.058	.049
All of the time	0.032	.050
How often do you get fed up at school? (ref. All of the time)		
Sometimes	-0.077	.041
Never	0.023	.043
How much do you like answering questions in class? (ref. Don't like it)		
A bit	-0.002	.043
A lot	0.129**	.041
How often do you feel safe in the playground? (ref. Never)		
Sometimes	0.074	.056
All of the time	0.224***	.059
How often do you behave well in class? (ref. Never)		
Sometimes	0.195	.095
All of the time	0.082	.096
How often do you get tired at school? (ref. All of the time)		
Sometimes	-0.055*	.025
Never	0.070*	.028

Table 5.19 continued

How often do other children bully you? (ref. All of the time)		
Sometimes	0.034	.052
Never	0.132**	.050
How often are you horrible to other children at school? (ref. All of the time)		
Sometimes	-0.290**	.088
Never	-0.164	.084
Random		
School level (S.D.) (95% confidence interval)	0.000 (.000-.000)	.000
SEN (S.D.) (95% confidence interval)	0.240 (.215-.269)	.014
Emotional Difficulties (S.D.) (95% confidence interval)	0.048 (.041-.056)	.004
Feel left out		
Sometimes (S.D.) (95% confidence interval)	0.000 (.000-.000)	.000
Never (S.D.) (95% confidence interval)	0.190 (.172-.210)	.010
Tired at school (ref. All of the time)		
Sometimes (S.D.) (95% confidence interval)	0.000 (.000-.000)	.000
Never (S.D.) (95% confidence interval)	0.185 (.169-.203)	.009
Pupil level (S.D.) (95% confidence interval)	0.626 (.577-.679)	.026
Wald $\chi^2(34) = 2419.03$, $p < .001$, LL = -5035.916, LR test: $\chi^2(7) = 38.48$, $p < .001$, N=4959 (2099) VPC: 24.94%		

* $p < .05$, ** $p < .01$, and *** $p < .001$

5.7: Discussion

These results confirm that there is a relationship between the school a seven year-old child in England attends and the level of affective well-being that they report. It also confirms the importance of children's experiences of and engagement with school to their affective well-being. For example, one of the highest coefficients was for children feeling safe in their playground all of the time. Less than two-thirds of children in the study reported feeling safe in their playground all of the time, which is unacceptable. Future research needs to investigate why children do not feel safe, and how to improve this.

The importance of children reporting being tired at school might be linked to the breaktimes research discussed in the previous chapter, for example children who are given more breaktimes are less likely to feel fatigued (Pellegrini, 2005; 2008). It may also be linked to the perception that some children, particularly those who live in

poverty, are likely to come to school tired (ATL, 2011). Schools may be dealing with these children in different ways, meaning that the impact varies across schools as was evidenced by the model. Similarly, the importance of friendship identified in the model, considered in the context of children's shrinking independence and time with friends outside of school, makes it likely that breaktimes are important for their affective well-being.

The model found a statistically significant school-level effect on affective well-being for children with special educational needs (SEN). This finding is despite the exclusion of home-schooled children³⁶ from the analysis and the fact that vast majority of children in the study were attending mainstream schools. SEN have been associated with increased risk of mental health issues and bullying (Dawson and Singh-Dhesi, 2010; Anti-Bullying Alliance, 2011), the school effect found in the analysis likely reflects the varying ways this, and other associated issues are dealt with, in different schools. That there should be such variance between schools is interesting, suggesting that the varying needs of children with SEN should be taken into account by schools. The significant finding for children with emotional difficulties is likely to be similar in cause.

The negative relationship between achievement and affective well-being in the original multilevel models is contrary to findings in previous research (Kirkcaldy et al., 2004). This may be due to the comparatively young age of the children in this study, there may be more of a trade-off between well-being and achievement at this age for example. However further investigation found that the relationship is not linear, the relationship varied for children with low affective well-being and achievement compared to those with high levels of achievement and well-being, although the causality of this relationship cannot be established here. The significance of the questions relating to children believing that their teachers think they are clever and liking answering questions in class may reflect the importance of children feeling respected and confident in schools as well as connectedness or engagement. Previous evidence suggests that feeling respected by adults is highly valued by children (Gorard, 2012).

A somewhat surprising finding was that there was no difference in affective well-being being between children who were horrible to others all of the time and those that were never horrible to other children, while those that were horrible some of the time had lower affective well-being. This can be considered in terms of the evidence regarding the well-being of those that engage in bullying behaviour. There is a lack of consensus in this area, with some research suggesting that those who bully are more likely to be

³⁶ There is evidence that parents are choosing home-schooling for their children with SEN where they think their children are not getting the assistance that they need at school (Hopwood et al., 2007).

psychologically damaged or troubled, while other research suggests psychological strength and high self-esteem among those that bully (Patterson, 2005). The findings here therefore may reflect the higher self-esteem and psychological strength of children who occasionally bully others (Weir, 2001; Juvonen et al, 2003). The negative relationship between those children who experience bullying frequently and affective well-being is typical of the relationships identified in existing research (Juvonen et al., 2003; Fekkes et al., 2004).

These findings also demonstrate an important distinction between types of school effects on children's subjective well-being; those relating directly to the school itself, e.g. school size, and those relating to the pupils within the school, in the case of this analysis their SEN status and the emotional difficulties that they face, for example. Although in this model only the latter were found to be statistically significant, both types of school effects are considered (where possible) throughout this thesis as they each reflect a distinct and important aspect of the school experience for children. However the importance of this second type of school effect is especially important given the tendency of previous research to focus predominantly on those characteristics relating to the school itself.

5.8: Conclusion

This research has found that the school a child attends is related to the level of affective well-being that they report at age 7 in England and that school-level factors explain a considerable amount of subjective well-being. This relationship remains even when other factors and characteristics are considered, finding that the ways that schools handle different needs that children may have significantly affects child affective well-being. It also found that children's experiences of and engagement with school are very important for their affective well-being. It is these factors, rather than demographic or background characteristics that are most associated with child affective well-being at this young age. As such, this first analytical chapter investigating the relationship between school and subjective well-being supports the hypothesised relationship and demonstrates that it is imperative for research and policy to consider children's experiences, including safety and social world, even at young ages.

5.9: Key findings

- There is a relationship between the school a child attends and the level of affective well-being that they report at age 7 in England.

- This relationship persists after other characteristics of the child and school are considered.
- The school a child attends explains approximately one quarter of the variance in affective well-being in 7 year-olds.
- The results of the random part of the model emphasise the important supportive role that schools play in the lives of young children.

Chapter 6: Schools and Child Life Satisfaction in England at Ages 8-15

6.1: Context

In light of the findings from the previous chapter analysing Millennium Cohort Study data it is appropriate to explore alternative sources of data, especially those which provide insight into aspects of subjective well-being and childhood not covered by the Millennium Cohort Study. This will allow further investigation of the relationship between the school a child attends and the level of subjective well-being that they report. This chapter therefore investigates the relationship in terms of the life satisfaction of children in England aged 8 to 15 using data collected by the Children's Society.

6.2: Research Questions

The previous chapter found a school-level effect on children's affective well-being aged 7, this chapter will investigate life satisfaction among children of a broader age range. The more specific research questions are given again below:

1. Is there a relationship between the school a child attends and the level of subjective well-being that they report?
2. Does the relationship, if one exists, remain after other factors are considered? If so how much variance is explained at the school level?
3. How are schools influencing children's subjective well-being?
4. What role, if any, does children's engagement with and experiences of school play?

It is plausible to hypothesise a larger relationship between the school attended and the level of life satisfaction a child reports at ages 8 to 15 opposed the school attended and level of affective well-being reported at age 7. This is because of the increased significance of schooling and assessment in children's lives as they get older.

6.3: Data

Again it is necessary to use a large-scale quantitative dataset. This section uses data collected by The Children's Society as part of their investigation of the well-being of children, some of the results of which were introduced in Chapter 2. The dataset is slightly smaller in size than the MCS, but has larger school group sizes due to the sampling approach used, making the sample size at level two (the school level) considerably smaller than in the previous analysis. There are fewer predictor variables available in this dataset compared to others and no weighting information is provided. Children in the dataset answered one of three different questionnaires, the content of which varied. More detail is given in Chapter 3. As with the MCS, this dataset is cross-

sectional. The following sections introduce the outcome and predictor variables used in this analysis.

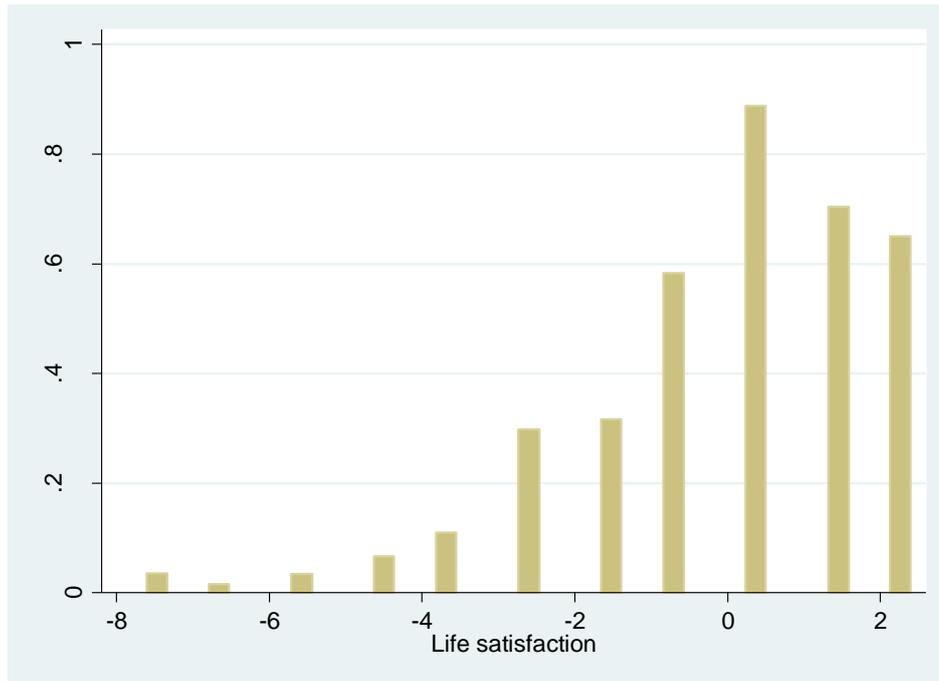
Outcome variable

Unlike the MCS, the Children's Society survey includes existing measures of life satisfaction that have been widely used and tested. Included in the dataset are Huebner's Student Life Satisfaction Scale (SLSS) (Huebner, 1991) and Cantril's Ladder (Cantril, 1965). Typically it would be desirable to use the SLSS because it is a multi-item measure, whereas Cantril's Ladder is a single-item measure (see Chapter 3). However, Cantril's Ladder was chosen because it is also the outcome variable in the HBSC, the US version of which will be used later in this thesis (Chapter 9). As such, use of Cantril's Ladder improves the comparability of the study. While the use of a single-item measure is typically not desirable, Cantril's Ladder has been used and tested thoroughly, with research by Muldoon et al (2010) confirming its reliability among child samples. The wording is as follows:

Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?

The outcome variable was grand-mean centred, giving a mean of 0, minimum of -7.60, maximum of 2.40, and standard deviation of 2.01. As shown in Figure 6.1, the variable has a negative skew as is often the case with subjective well-being measures, therefore bootstrapped standard errors will be used for multilevel models. Because of the greater freedom analysing this data compared to the Millennium Cohort Study in the previous chapter which was subject to Secure Data Service restrictions, as well as the reduced number of predictor variables for this analysis, it was decided to use a greater number of repetitions when bootstrapping the models. As such, 1000 repetitions were used, as opposed to the default of 50.

Figure 6.1: Histogram of life satisfaction (centered)



Predictor variables

The Children’s Society used three different questionnaires when conducting their research, with the questions included varying for each questionnaire. This analysis is limited to only those variables available for all respondents in order to maximise the available sample size, therefore the number of variables available for analysis is limited. Tables 6.1-6.4 give the descriptive statistics for the available variables. Unlike in other chapters, all of the potential predictor variables are described here, rather than being included in a separate appendix, because of the comparatively small number of variables available. All continuous variables have been grand mean centred resulting in a mean of zero.

As in the previous analysis a range of demographic variables are included (Table 6.1). The number of homes lived in, and whether the child is living with the same adults as in the previous year variables give an indication of the level of stability in the child’s life, likely to be important for their well-being. The number of adults in paid employment variable is also likely to somewhat reflect stability, as well as give an indication of the financial situation of the household. The results show that the majority of children are living in what appear be stable households. Variables relating to the religion of the child and the relatives that they live with were excluded from the analysis due to the high levels of missing cases.

Table 6.1: Independent Variables: Child demographics & parent/household information

Variable	Possible responses							Missing
Gender	Female 2719 (51.81%)				Male 2404 (45.81%)			125 (2.38%)
Age	Mean =11.51, S.D. = 2.19, Min 8, Max 15 ³⁷							23 (0.44%)
	8 742 14.14%	9 376 7.16%	10 805 15.34%	11 353 6.73%	12 1037 19.76%	13 713 13.59%	14 801 15.26%	
Country of birth	UK 4548 (86.66%)				Other 404 (7.70%)			296 (5.64%)
Disabled	Yes 159 (3.03%)				No 4665 (88.89%)			424 (8.08%)
Ethnicity	White 4044 (77.06%)	Mixed 208 (3.96%)	Indian 106 (2.02%)	P/B ³⁸ 254 (4.84%)	Black 259 (4.94%)	Other 165 (3.14%)	202 (4.04%)	
Number of homes	One 4245 (80.89%)				Two 869 (16.59%)			134 (2.55%)
Same adults ³⁹	Yes 4563 (86.95%)		No 448 (8.54%)		Not sure ⁴⁰ 92 (1.75%)			145 (2.76%)
No. adults with paid job	None 273 (5.20%)		One 1312 (25.00%)		Two 2737 (52.15%)		> two 575 (10.96%)	351 (6.68%)

Table 6.2 shows the school related variables. The achievement variable refers to the child's most recent key stage assessment results, either achievement in Key Stage 2 SATs or GCSEs depending on the age of the child. There were 24 cases in the dataset where the child had been coded with both a KS2 grade and a GCSE grade. Closer examination of the data showed that those children were all aged 12 and 13 years old and therefore not old enough to have a GCSE grade. As such, the grade given for the KS2 result was used for these respondents. As in Chapter 5 the free school meals variable was included as a measure of financial situation directly related to schooling, while the school type variable (see Appendix 1 for more detail regarding school types) was considered in order to investigate the possibility that different school structures might have an impact on children's subjective well-being. A binary school type variable was created to investigate differences between more selective and fee paying schools compared to state comprehensive schools.

³⁷ Centered stats: Min. -3.512, Max. 3.488.

³⁸ Pakistani/Bangladeshi

³⁹ Living with the same adults this time last year

⁴⁰ Treated as missing in the analysis.

Table 6.2: Independent Variables: School-related characteristics

Variable	Possible responses								Miss.
Achievement	Lowest 653 (12.44%)	2 nd Lowest 1159 (22.08%)	Middle 1135 (21.63%)	2 nd Highest 641 (12.21%)	Highest 1407 (26.81%)				253 4.82%
Free School Meals ⁴¹	Yes 476 (9.07%)		No 3313 (63.13%)			Not asked 1129 (21.51%)			330 6.29%
School type ⁴²	P/C 1796 34.22 %	Junior 425 8.10%	Mid. 24 0.46%	C16 728 13.87 %	C18 1452 27.67 %	O 245 4.67%	G 102 1.94%	I 476 9.07%	0
School type (binary)	Comprehensive/state 4670 (88.99%)				Grammar and independent 578 (11.01%)				0

Table 6.3 gives the available measures relating to happiness with certain aspects of the child's life, responses for which were given on a scale from 0 (very unhappy) through 10 (very happy), 5 being not happy or unhappy. The happiness variables outlined below were excluded from consideration for the final models because investigation suggested that they were measuring a single, underlying variable possibly reflecting life satisfaction. The variables had a Cronbach's alpha of .870, and inter-item correlations consistently above .6. As such, it was felt that including all variables was essentially predicting life satisfaction with life satisfaction. The variables were therefore not included in the analysis.

Table 6.3: Independent Variables: happiness measures

Variable		Missing
Happiness with family relationships	Min. -8.20, Max. 1.80, S.D. 2.25	118 (2.25%)
Happiness with home	Min. -8.43, Max. 1.57, S.D. 2.22	123 (2.34%)
Happiness with the things that you have	Min. -8.47, Max. 1.53, S.D. 2.08	64 (1.22%)
Happiness with relationships with friends	Min. -8.42, Max. 1.58, S.D. 2.09	59 (1.12%)
Happiness with health	Min. -7.92, Max. 2.08, S.D. 2.40	103 (1.96%)
Happiness with appearance	Min. -7.29, Max, 2.71, S.D. 2.74	123 (2.34%)
Happiness with amount of choice in life	Min. -7.91, Max. 2.09, S.D. 2.25	95 (1.81%)
Happiness with what might happen later in life	Min. -7.70, Max. 2.30, S.D. 2.38	170 (3.24%)

Table 6.4 gives the only variable available for all children in the sample relating to their perception of school. As with the above excluded variables it was asked in such a way as to imply satisfaction or happiness, but as shown in Appendix 4 the relationship between the variable and outcome measure was not troublingly high, indicating that its

⁴¹ Excluded from final analysis due to high missing

⁴² P/C = primary or combined, C16 = comprehensive to 16, C18 = comprehensive to 18, O = other secondary, G = grammar, I = independent.

inclusion would not cause problems for the model. Respondents were asked to rate their happiness with their school on a scale of 0-10.

Table 6.4: Independent Variables: School perceptions and experiences variables

Variable		Missing
Happiness with the school you go to	Min. -7.47, Max. 2.53, S.D. 2.58	35 (0.67%)

6.4: Methods

Preliminary analysis

As in the previous chapter the relationships between the available predictor variables and the life satisfaction outcome will be investigated using bivariate analysis and regression models. Here only linear rather than linear and logit regression will be used for the sake of consistency with the previous chapter. Full details and results of the analyses conducted are given in Appendix 4.

Multilevel analysis

The multilevel modelling approach used here is as described in Chapters 3 and consistent with that in Chapter 5. Variables are added to the model one at a time with only significant variables retained. The random part of the model is checked after all potential variables have been considered by removing variables from the random part of the model in order to ascertain whether the inclusion of the variables still improves the model fit.

6.5: Limitations

There are a number of limitations to this analysis. Perhaps most important are the comparative lack of predictor variables, caused in part by the need to limit the analysis to only those variables available in all three questionnaires. As with the Millennium Cohort Study analysis, there is also a lack of information about the schools available, limiting the interpretations that can be made about the causes and effects of school-level influences. It was also not possible in this analysis to identify all of the children who may have changed school recently in most of the sample. The lack of any weighting information also means that the generalizability of the results is limited. However, one advantage this analysis has compared to that presented in the previous chapter is that it is able to make use of a well-known and established measure of life satisfaction: Cantril's ladder.

6.6: Analysis

Preliminary analysis results

The full results of the preliminary analysis are given in Appendix 4. Table 6.5 below gives details of the statistical significance of predictor variables in the analyses as well as the multilevel models. Two linear regression models are described, one including a categorical school type variable and the other including a binary school type variable. Both models were run in order to select the most appropriate school type measure for inclusion in the multilevel analysis.

It shows that the results across the different analyses were again fairly consistent. Interestingly, gender was again not found to be significant in the bivariate analysis, as demonstrated by Figure 6.2 below, but when other characteristics were held constant in the more complex regression and multilevel analyses it was significant. The effect of gender was not, however, found to vary significantly across schools in the multilevel models. Age was significant, showing the decline in life satisfaction as a child gets older evident in previous research (Clair, 2011), again demonstrated in Figure 6.2. Whether the child was born in the UK had no statistically significant effect on the level of life satisfaction reported at any stage of the analysis. Disability was found to be significantly related to life satisfaction in the bivariate analysis but not in any of the regression models or in the fixed part of the multilevel model. Instead the results suggest that the varying ways in which schools treat children with disabilities is important for their life satisfaction. Ethnicity was significant only in the linear regression models, with Indian children reporting statistically significantly lower life satisfaction than white children. The variables relating to stability and security at home; how many homes the child lived in, whether the child was living with the same adults as last year and the number of adults in the home in paid employment, were all consistently significant at the child level. Whether the child was living with the same adults was also significant at the school level of the multilevel model. Achievement was only significant in the bivariate analysis but was included in the final model because of the wider interest in the relationship between subjective well-being and educational achievement in this thesis, and for reference to the analysis given in Chapter 4. The linear regression which included school type as a categorical variable found only one type of school with a significant coefficient. Children at comprehensive schools that took children up to the age of 18 and those at grammar schools were found to report significantly lower life satisfaction than children in primary schools in the linear regression analysis. However, because of the large number of groups for this variable in its categorical form it was decided to use the binary variable in the multilevel model

for the sake of parsimony, although it may be the case that this approach does not so accurately reflect the effects of school type on children. The variable relating to children's happiness with the school that they are currently attending was significant throughout.

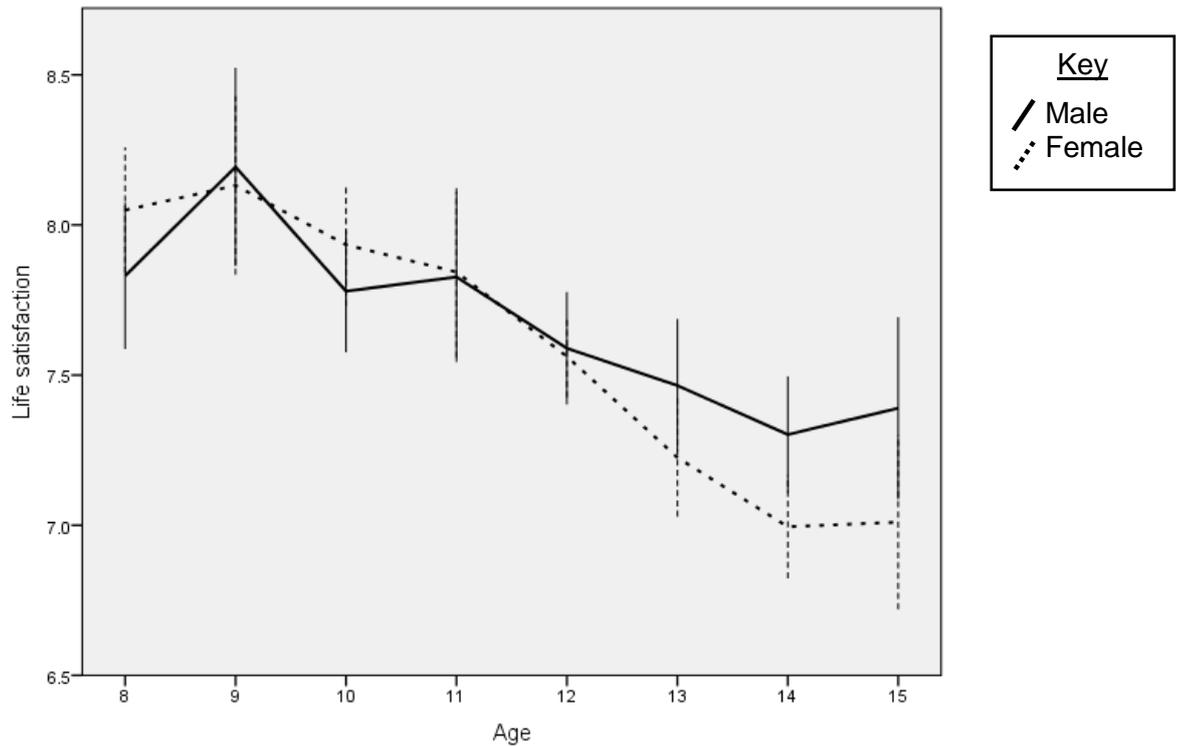
Table 6.5: Significant and not significant predictor variables in the preliminary and multilevel analysis predicting life satisfaction

	Bivariate	Linear regression (cat. school)	Linear regression (bin. school)	MLM fixed	MLM random
Gender	ns	s	s	s	ns
Age	s	ns	s	s	ns
Country of birth	ns	ns	ns	ns	ns
Disability	s	ns	ns	ns	s
Ethnicity	ns	s	s	ns	ns
Number of homes	s	s	s	s	ns
Living with same adults	s	s	s	s	s
No. adults with paid job	s	s	s	s	ns
Achievement	s	ns	ns	ns	ns
School type (categorical) ⁴³	s	s	-	-	-
School type (binary) ⁴⁴	ns	-	ns	ns	ns
Happy with school	s	s	s	s	s

⁴³Categories: Primary, Junior, Middle, Independent, Comprehensive (to 16), Comprehensive (to 18), Other secondary, Grammar.

⁴⁴Categories: Independent/grammar, State.

Figure 6.2: Life satisfaction by age and gender



Results

Model 1: Is there a relationship between the school a child attends and the level of subjective well-being that they report?

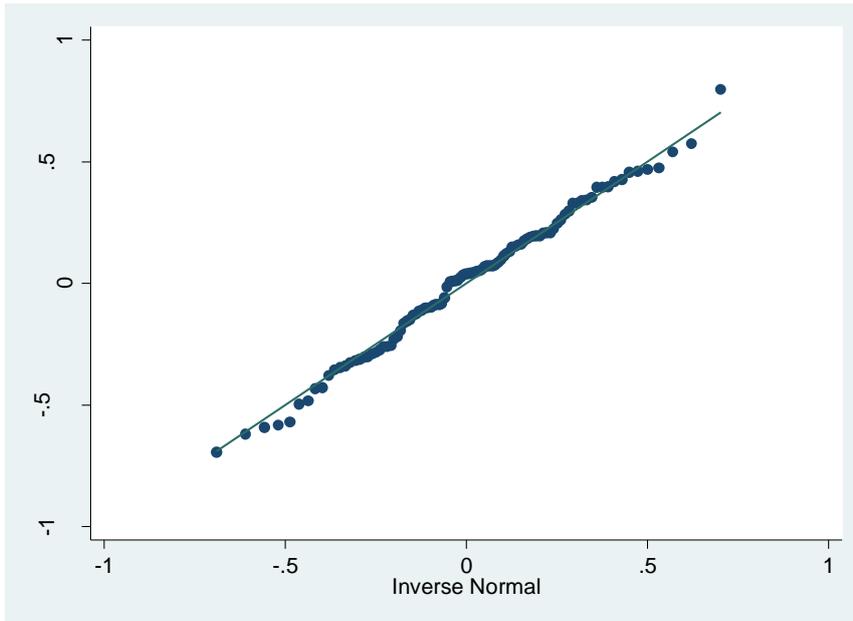
As in the MCS analysis the first model is a basic model with no predictor variables included (although the MCS model included strata variables for weighting purposes). The results confirm the multilevel structure of the data, and find a small school effect on life satisfaction (3.82% of variance in life satisfaction is found to be explained at the school-level at this stage).

Table 6.6: Null two-level multilevel model results

	B	S.E.
Fixed		
Constant	0.084**	.031
Random		
Pupil level (S.D) (95% confidence interval)	1.971 (1.921-2.023)	.026
School level (S.D) (95% confidence interval)	0.393 (0.340-0.454)	.029
LL = -10984.638 LR test: $\chi^2 = 91.70, p < .001, VPC: 3.82\%, N = 5212 (106)$		

The normality of the school-level residuals in the model were checked using a q-norm plot. This is shown in Figure 6.3 below. The results suggest that the residuals are normally distributed and are not a cause for concern for the analysis.

Figure 6.3: School-level residuals, null model q-norm plot



Model 2: Does the relationship remain after other factors are considered? If so how much variance is explained at the school level? How are schools influencing children's affective well-being?

This model includes predictor variables relating to the characteristics of the child, their school and home life. With the addition of these variables the model remains multilevel, with a large increase in the amount of variance explained at the school-level to over 30%.

As expected from the preliminary analysis life satisfaction is found to be lower for girls than for boys, and to decrease with age. Having less stability at home, i.e. living in multiple homes, living with different adults to those they were living with last year, and having a home without adults in employment, is found to negatively impact on children's life satisfaction. Having multiple adults in the home in paid employment is found to have slightly larger coefficients than a single earning adult, lending weight to the argument that having both parents working is not detrimental to the child, at least in terms of life satisfaction. Achievement is not significant, this relationship was investigated in greater detail in Chapter 4.

In terms of the random effects in the model, the results show that the different ways in which schools treat children who have a disability or who have experienced some instability in their lives (through a change in the adults living in the home) has a significant impact on children's self-reported life satisfaction at this stage, suggesting a potentially supportive and inclusive role for schools.

Table 6.7: Two-level multilevel model including all predictors excluding school perception variables

	B	S.E.
Fixed		
Constant	0.238	.202
Gender (female)	-0.127*	.060
Age	-0.154***	.017
Disabled (yes)	-0.252	.208
Number of homes (two)	-0.338***	.091
Living with the same adults this time last year (no)	-0.681***	.123
Number of adults in home in paid employment (ref. None)		
One	0.333*	.162
Two	0.367*	.153
More than two	0.400*	.180
Achievement (ref. lowest band)		
Second lowest band	0.021	.121
Middle band	0.124	.121
Second highest band	0.051	.126
Highest band	0.083	.111
Random		
School level (S.D.) (95% confidence interval)	0.139 (.102-.189)	.022
Disabled (yes) (S.D.) (95% confidence interval)	1.102 (.809-1.500)	.173
Living with the same adults (no) (S.D.) (95% confidence interval)	0.551 (.387-.785)	.099
Pupil level (S.D.) (95% confidence interval)	1.819 (1.766-1.873)	.027
Wald $\chi^2(12) = 158.87, p < .001, LL = -8237.408,$ LR test: $\chi^2(3) = 20.07, p < .001, VPC: 31.71\%, N = 4059 (93)$		

Model 3: What role do children's perceptions of and engagement with school play? How much variance in affective well-being is explained at the school level? How are schools influencing children's affective well-being?

In the final model the variable relating to children's happiness with their school is added. The model is still multilevel, with a final school-level VPC of 31.43%.

The fixed effects remain almost identical to those in Model 2, the only change being that having one adult in paid employment is no longer statistically significantly different to having no adults in paid employment in the home, perhaps indicating that this variable is predominantly measuring an aspect of poverty or financial situation as the effect for life satisfaction of having multiple adults in work is positive. Happiness with school is significant in the fixed part of the model. The random effects are as in Model 2 but with the addition of the happiness at school variable which was also found to vary at the school-level with a small but significant coefficient.

Table 6.8 Two-level multilevel model including all predictor variables

	B	S.E.
Fixed		
Constant	0.289	.186
Gender (female)	-0.189**	.056
Age	-0.058**	.017
Disabled (yes)	-0.101	.192
Number of homes (two)	-0.281***	.079
Living with the same adults this time last year (no)	-0.579***	.115
Number of adults in home in paid employment (ref. None)		
One	0.287	.157
Two	0.310*	.152
More than two	0.364*	.173
Achievement (ref. lowest band)		
Second lowest band	-0.036	.120
Middle band	-0.013	.114
Second highest band	-0.028	.118
Highest band	-0.026	.109
Happiness with school	0.280***	.016
Random		
School level (S.D.) (95% confidence interval)	0.175 (.132-.231)	.025
Disabled (yes) (S.D.) (95% confidence interval)	0.968 (.699-1.340)	.161
Living with the same adults (no) (S.D.) (95% confidence interval)	0.565 (.405-.788)	.096
Happiness with school (S.D.) (95% confidence interval)	0.081 (.063-.103)	.010
Pupil level (S.D.) (95% confidence interval)	1.680 (1.630-1.731)	.026
Wald $\chi^2(13) = 439.55, p < .001, LL = -7922.511,$ LR test: $\chi^2(4) = 35.71, p < .001, VPC: 31.43\%, N = 4048 (93)$		

6.7: Discussion

The results of this chapter indicate that there is a relationship between the school children aged 8 to 15 years old in England attends and the level of life satisfaction that they report, finding that schools explain almost one third of the variation in child life satisfaction.

The results of the fixed effects show that stability and security at home are important in a way that was not the case in the MCS analysis. While this may be due to the different wording of the questions or the fact that the survey was completed entirely by children rather than involving a parent, why this should be the case is interesting. It may be because of the older age of the children suggesting that older children are more aware of and more likely to be affected by instability in their lives. It may alternatively reflect the different aspect of subjective well-being being investigated, suggesting that children may adapt emotionally to changes in family structure, for example, but be less satisfied with their lives because of the changes.

Gender is also significant in the fixed part of this analysis, unlike in the MCS, lending some weight to the notion that it is the young age of the children in the MCS that led to the lack of a significant finding for gender in that analysis. That life satisfaction declined with age was expected but is nonetheless troubling, why this is the case is worthy of investigation, but research by the Children's Society (2012) has suggested that it is school that has a significant role to play in this decline which is also supported by evidence reported in Chapter 2 of reduced engagement in school as children get older. Similarly to the results for the analysis of the MCS, the school effects imply that the support offered to children with difficulties such as disability or instability at home makes a significant difference to the subjective well-being of children, and that the effectiveness of schools in doing this varies. This highlights the broader role of school in children's lives, as a place of more than just academic learning. It shows that the community aspect and support function of schools should not be underestimated and must be considered in education policy and studies of child well-being.

6.8: Conclusion

This analysis supports the findings in the previous chapter regarding the importance of the school a child attends on their subjective well-being, particularly in terms of the supportive role schools can play. It also supports previous research suggesting the importance of stability in children's lives. This will be investigated further in the next chapter using Understanding Society.

6.9: Key findings

- The school a child attends explains nearly one third of their life satisfaction (age 8-15 in England).
- Being disabled, living with the same adults as last year and happiness with school were all found to vary significantly at the school level.
- The results of the random effects again emphasise the supportive role potentially played by schools and the impact this has on children's life satisfaction.
- The fixed effects found, as elsewhere, that girls have lower life satisfaction than boys and that life satisfaction decreases with age.
- The significant fixed effects for number of homes and living with the same adults as last year support the argument that stability is important for children's well-being.

Chapter 7: School and Child Life Satisfaction in England at Ages 10-15

7.1: Context

This chapter seeks to build on the findings of the previous two chapters which investigated the relationship between a child's subjective well-being and the school that they attend in England using the Millennium Cohort Study and Children's Society Well-being Survey. This chapter uses a Special License version of the Understanding Society survey, which includes anonymised school codes alongside the standard dataset. This will be the final analysis conducted using data from England and will investigate the life satisfaction of children aged 10 to 15.

7.2: Research Questions

The previous chapters have both found a school-level effect on children's subjective well-being, both affective well-being and life satisfaction. It is therefore very likely that the results using Understanding Society will also find a school-level effect. However, a new element of this analysis is that the sample design of Understanding Society allows children to be grouped by household as well as by school, with the potential for multiple children to be in each household (unlike in the Millennium Cohort Study) allowing the research to consider family/household level effects alongside school-level effects. As such, this chapter will also compare the effect of school on child subjective well-being to the effect of household. The research questions are therefore:

1. Is there a relationship between the school a child attends and the level of subjective well-being that they report?
2. Does the relationship, if one exists, remain after other factors are considered? If so how much variance is explained at the school level?
3. How are schools influencing children's subjective well-being?
4. What role, if any, does children's engagement with and experiences of school play?
5. How does the school level effect compare to the household/family level effect on subjective well-being?

It is therefore hypothesised that there will be a school level effect on children's subjective well-being (life satisfaction) as this was the case in the prior analysis. It is likely that this will be similar in size to that found in the Children's Society analysis as the outcome variable is similar, as is the age of the sample. The relative size of this effect compared to that for household/family will be of particular interest. It is hypothesised that the effect size for the two elements will be comparable, that is similar in size, given that both schools and households play a large and important role in children's lives.

7.3: Data

The survey used for this analysis is Understanding Society. Chapter 3 introduced this survey in greater detail, including elaborating how the final dataset was constructed by matching data from children and adults. This section discusses the predictor variables included in the analyses and the development of the outcome variable.

Outcome variable

The outcome variable used in this chapter is a measure of life satisfaction based on four questions: 'how do you feel about your appearance?', 'how do you feel about your family?', 'how do you feel about your friends?', 'how do you feel about your life as a whole?'. The similar questions 'how do you feel about your school?' and 'how do you feel about your school work?' were excluded at this stage so as not to bias the models and in order that they may be later included as predictor variables. The questions were answered on a scale of 1-7 and were recoded so that low scores consistently reflected low well-being and were summed to create the outcome. This had a Cronbach's alpha of .695 and an average inter-item covariance of .497 (all children, .694 and .472 respectively when limited to children in schools with multiple cases). Factor analysis confirmed that the variables used were measuring a single construct (see Appendix 5). Although not a well-known and tested measure such as Cantril's ladder which was used in the last chapter, this outcome variable is similar to ones that have been used in earlier work based on the British Household Panel Survey, from which Understanding Society has evolved (e.g. Bradshaw and Keung, 2011b; Clair, 2012).

The outcome variable was grand-mean centred giving it a mean of 0, standard deviation of .846, minimum of -4.753 and maximum of .997. There were 12 cases with no outcome variable. Figures 7.1 and 7.2 below shows the distribution of the outcome variable for the samples used for the two-level and cross-classification models respectively (the sample being slightly different for the cross classification model, as explained below). The distributions are somewhat normally distributed although with a negative skew, as is typical for subjective well-being measures. As such the final models will be bootstrapped.

Figure 7.1: Histogram of life satisfaction (multiple cases per school)

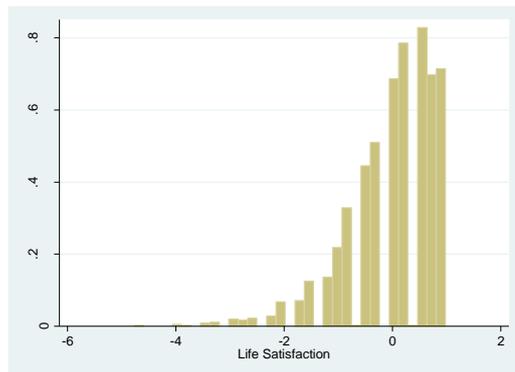
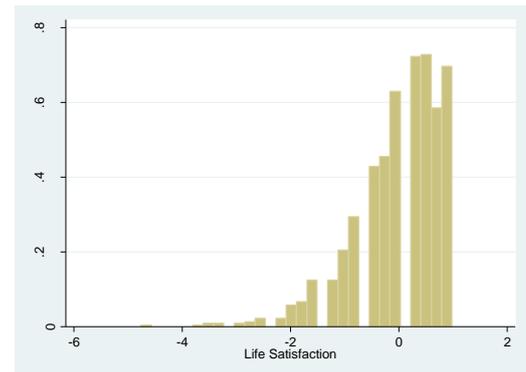


Figure 7.2: Histogram of life satisfaction (multiple cases per school and hh)



Predictor variables

The frequencies reported here are only for those children that will be included in the final analysis (two-level, the number of children included in the analysis was reduced for reasons given in Chapter 3). Continuous variables have been grand-mean centered and therefore have a mean of zero. Where possible, variables with a small number of cases (typically < 50) were recoded to include fewer categories with a number of cases. As in Chapter 5, only the variables retained in the final model are described here due to the large number of potential variables. All potential variables are described in Appendix 6.

Table 7.1 shows the demographic variables. The sample is relatively evenly split between the genders but includes comparatively fewer younger children. The majority are living with siblings and belong to a religion. Most respondents are white but other ethnicities are well represented, making up nearly 40% of the sample. Other potential demographic variables that were considered but were not significant included number of siblings and whether the child reported belonging to a religion.

Table 7.1: Demographic variables

	Possible responses						Missing
Gender	Male 1012 (49.85%)			Female 1018 (50.15%)			0
Age	10 101 4.98%	11 325 16.01%	12 404 19.90%	13 409 20.15%	14 378 18.62%	15 413 20.34%	0
Ethnicity	White 1246 (61.38%)	Mixed 117 (5.76%)	Asian 278 (13.69%)	Black 148 (7.29%)	Other 20 (0.99%)		221 10.89%

Table 7.2 shows the family relationship variables which give information about the child's relationships with their parents, the amount of time they spend with them, and how supported they feel by them. These give an idea of their family relations and household environment. The majority of children report feeling supported by their family for most things or more. Only a very small number reported not feeling

supported at all and so groups were combined. A small but significant number of children reported poor relationships with their mothers, with regular quarrelling and infrequent conversations about things that matter. Variables relating to relationships with father were also considered but had a high number of missing cases and therefore not included. Similarly number of evenings per week the child eats dinner with family was considered but was not significant.

Table 7.2: Family relationship variables

	Possible responses					Missing
Feel supported by family	Most/all things 1595 (78.57%)		Some things/not at all 430 (21.18%)			5 (0.25%)
Quarrel with mother	Most days 235 (11.58%)	> once per week 359 (17.68%)	< once per week 448 (22.07%)	Hardly ever 940 (46.31%)	Don't have mother 14 (0.69%)	34 (1.67%)
Talk to mother, things that matter	Most days 750 (36.95%)	> once per week 472 (23.25%)	< once per week 345 (17.00%)	Hardly ever 440 (21.67%)	Don't have mother 12 (0.59%)	11 (0.54%)

Table 7.3 reports the details of the SDQ (Strengths and Difficulties Questionnaire) variables. These were used in Chapter 5 and give an overview of the psychological and behavioural adjustment demonstrated by the children in the sample. The hyperactivity scale was not significant in the final multilevel analyses and so is not shown here, as in Chapter 5 the total difficulties scale was excluded due to multicollinearity concerns.

Table 7.3: SDQ variables

		Missing
SDQ: Emotional symptoms	S.D. 2.150, Min. -2.947, Max. 7.253	17 (0.84%)
SDQ: Conduct problems	S.D. 1.819, Min. -2.291, Max. 7.709	16 (0.79%)
SDQ: Peer relationship problems	S.D. 1.587, Min. -1.707, Max. 8.293	16 (0.79%)
SDQ: Prosocial behaviour	S.D. 1.887, Min. -7.549, Max. 2.451	12 (0.59%)

The retained health and risk behaviour variable is shown in Table 7.4. As in previous chapters many of the available risk behaviour and health variables were not significant in the multilevel analyses. Considered but non-significant variables included variables relating to smoking, health and amount of exercise taken each week.

Table 7.4: Health and risk behaviours variables

	Possible responses		Missing
Ever had an alcoholic drink	Yes 689 (33.94%)	No 1313 (64.68%)	28 (1.38%)

Table 7.5 shows the variables available in the dataset relating to children's experiences of schooling, including continuous measures relating to how they feel about their school work and school as a whole. The vast majority of children in the sample reported that doing well in their GCSEs was important to them, despite the relatively young age of

the sample. Most children felt that their parents were interested in their school work and success. Most of the sample were never bullied, physically or otherwise, a small number were bullied frequently. There were a high number of missing cases for variables relating to educational aspirations in the dataset (what would like to do at 16 (10.15%) and whether would like to go to university (15.76%)) and so these variables were not included. Variables relating to truanting and behaviour in school were also available and were considered, but were not significant in the final analyses.

Table 7.5: School related variables

	Possible responses				Missing
How feel about schoolwork	S.D. 1.290, Min. -1.644, Max. 4.356				6 (0.30%)
How feel about your school	S.D. 1.477, Min. -1.393, Max. 4.607				8 (0.39%)
Importance of doing well in GCSEs	Very important 1526 (75.17%)	Important 404 (19.90%)	Not important ⁴⁵ 43 (2.12%)		57 (2.81%)
Parents interested in how does at school	Always or nearly always 1662 (81.87%)		Less often ⁴⁶ 336 (16.55%)		32 (1.58%)
How often bullied in other ways at school	Never 1430 (70.44%)	Not much 425 (20.94%)	Quite a lot 92 (4.53%)	A lot 59 (2.91%)	24 (1.18%)
Physically bully others at school	Never 1886 (92.91%)		Yes ⁴⁷ 126 (6.21%)		18 (0.89%)

Table 7.6 gives the variables based on responses from the respondent's mother included in the adult survey. Such information is included to give added depth to the analysis and to allow additional consideration of the household situation and environment. Nearly two-thirds of mothers were working, and a quarter worked in the home. A quarter of the mothers responding to the survey were not born in the UK, while most mothers belonged to a religion and were in good health. Mothers, like the children, were asked how frequently they quarrel with and talk to their children. Analysis, shown in Appendix 6, shows that these responses coordinate with those given by children and so child responses only are used in the analysis. Sadly there were a high number of missing cases for the life satisfaction, GHQ (General Health Questionnaire) and SWEMWBS (Short Warwick-Edinburgh Mental Well-Being Scale) variables included in the adult questionnaire. It was therefore not possible to include a measure of mother's subjective well-being as a predictor of child life satisfaction.

⁴⁵ Responses of 'not very important' and 'not at all important' grouped.

⁴⁶ Responses of 'sometimes', 'hardly ever' and 'never' grouped.

⁴⁷ Responses of 'not much' (a few times every week), 'quite a lot', and 'a lot' grouped.

As noted previously, the reason for focusing on the mother of the respondent rather than the father (or both) is practical rather than theoretical, reflecting that unfortunately responses for fathers were missing in over 45% of cases.

Table 7.6: Mother variables

	Possible responses				Missing
Current economic activity	Employed 1217 (59.95%)	Unemployed 94 (4.63%)	Work in home 506 (24.93%)	Other 113 (5.57%)	100 (4.93%)
Belong to a religion	Yes 1225 (60.34%)		No 705 (34.73%)		100 (4.93%)
How often children are involved in setting rules	Never 318 (15.67%)	Seldom 358 (17.64%)	Sometimes 934 (46.01%)	Very often 296 (14.58%)	124 (6.11%)

Because the sample size for the cross-classification multilevel model was necessarily reduced due to the sample being restricted to only those households with multiple responding children (see Chapter 3) separate descriptives are given in Table 7.7 for the variables in the reduced sample included in the cross-classification models. Only those variables that were statistically significant in the final two-level model were considered for the cross-classification model due to the increased time taken to run the more complex model. All of the multilevel models used in this thesis are complex and computationally intense, however the cross-classification model particularly so. Even with the use of Stata MP (multiprocessor, the most powerful version of Stata) run on the Data Analysis Cluster provided by the University of York⁴⁸ this analysis, as well as some of the others presented (for example that in Chapter 8), remained computationally demanding. A household size variable was added for consideration given the inclusion of the household level influence in the model.

⁴⁸ <http://www.york.ac.uk/social-science/facilities/cluster/>

Table 7.7: Descriptives for the variables included in the cross-classification models

	Possible responses						Missing
Gender	Male 567 (48.42%)			Female 604 (51.58%)			0
Age	10 62 5.29%	11 206 17.59%	12 228 19.47%	13 242 20.67%	14 199 16.99%	15 234 19.98%	0
Ethnicity	White 709 (60.55%)	Mixed ethnicity 64 (5.47%)	Asian 173 (14.77%)	Black 92 (7.86%)	Other 11 (0.94%)		122 10.42%
Feel supported by family	Some/no family support 237 (20.24%)			Most of the time 933 (79.68%)			1 (0.09%)
Quarrel with mother	Most days 128 (10.93%)	> once a week 208 (17.76%)	< once a week 263 (22.46%)	Hardly ever 544 (46.46%)			28 (2.39%)
Talk to mother, things that matter	Hardly ever 254 (21.69%)	< once a week 206 (17.59%)	> once a week 268 (22.89%)	Most days 430 (36.72%)			13 (1.11%)
SDQ: Emotional symptoms	S.D. 2.179, Min. -2.747, Max. 7.253						14 (1.20%)
SDQ: Conduct problems	S.D. 1.874, Min. -2.291, Max. 7.709						12 (1.02%)
SDQ: Peer relationship problems	S.D. 1.557, Min. -1.707, Max. 7.293						12 (1.02%)
SDQ: Prosocial behaviour	S.D. 1.924, Min. -7.549, Max. 2.451						10 (0.85%)
Ever had an alcoholic drink	Yes 363 (31.00%)			No 796 (67.98%)			12 (1.02%)
Current economic activity	Employed 670 (57.22%)	Unemployed 46 (3.93%)	Work in home 338 (28.86%)	Other 64 (5.47%)			53 (4.53%)
Belong to a religion (mother)	Yes 737 (62.94%)			No 381 (32.54%)			53 (4.53%)
How often children are involved in setting rules	Never 189 (16.14%)	Seldom 218 (18.62%)	Sometimes 529 (45.18%)	Very often 172 (14.69%)			63 (5.38%)
How feel about schoolwork	S.D. 1.290, Min. -1.644, Max. 4.356						4 (0.34%)
How feel about your school	S.D. 1.477, Min. -1.393, Max. 4.607						4 (0.34%)
Importance of doing well in GCSEs	Not important 22 (1.88%)		Important 209 (17.85%)		Very important 914 (78.05%)		26 (2.22%)
Parents interested in how does at school	Less often 209 (17.85%)			Always or nearly always 945 (80.70%)			17 (1.45%)
How often bullied in other ways at school	Quite a lot/a lot 82 (7.00%)		Not much 242 (20.67%)		Never 834 (71.22%)		13 (1.11%)
Household size	S.D. 1.374, Min. -1.949, Max. 7.051						53 (4.53%)

7.4: Methods

Preliminary analysis

As in previous chapters the preliminary analysis was conducted by first running a series of bivariate analyses investigating the relationship between the outcome and predictor variables individually. Following this, linear regression including all variables and groups of variables (e.g. demographic variables) were run.

Multilevel analysis

The construction and analysis of the two-level multilevel models is approached in the same way as that taken in the previous two chapters and introduced in Chapter 3. A basic 2-level (null) model is presented first in order to investigate whether a relationship between child subjective well-being and the school that they attend exists. In order to answer the second and third research questions random-coefficient models are created by adding variables to the model one at a time, first to the fixed part of the model and then both to the fixed and random part of the model, to see if they significantly improve the model. When all significant variables have been added to the models, the model was then re-run, removing variables one at a time from the random part of the model in order to check that their inclusion still improves model fit.

Unlike in the previous chapters, cross-classification models considering household level as well as school level were conducted. In Stata, non-hierarchical multilevel models, i.e. cross-classification models, are fitted as constrained hierarchical models. In this analysis schools are treated as units at the second level and households (families) are treated as a series of random indicators at the third level (Leckie, 2013). Because of the increased complexity of this model it will be approached in a slightly different way to that of the two-level model. As in the two-level model analysis first a null cross-classification model will be created. This will be used to investigate the multilevel structure of the data. Following this, three cross-classification multilevel models including the variables retained in the final two-level model, plus a variable relating to household size, in the fixed part of the model will be run. First a model including demographic variables, then with the remaining variables excluding those related to school, and finally a model including school-related variables will be run. Because of the constrained nature of the model it is not possible to include random effects in the model at both the school and household/family level. As such no random coefficient cross classification model will be run as this would affect the interpretation of the relative impact of each of these areas on children's subjective well-being.

The presented analysis is not weighted. As was the case for the MCS analysis, the sampling and research design do not match. Understanding Society is sampled at the household level rather than the school level, it is therefore not possible to apply the provided weights accurately. In the MCS analysis this was partially remedied by including the sample strata in the fixed part of the model. However this was not done in this analysis because of the very large number of strata in the sample design.

7.5: Limitations

As in all analyses there are some limitations with the approach taken in this chapter. It was not possible to identify children who have changed school recently, therefore some children may not have been at the school long enough for it to have any meaningful effect on their subjective well-being, although the move itself may have affected them. Similarly it was necessary to reduce the overall sample size in order to improve the group sizes at the second level of analysis. The inability to weight the data has implications for the generalizability of the findings, as does the reduction in sample size necessitated by small group sizes at the school and household levels. As in Chapter 5, the measure of subjective well-being used in this analysis is relatively new and untested, but as noted there any measure of subjective well-being is potentially problematic (Diener, 1984). More unique to the construction of this outcome variable is the inclusion of overall and domain satisfaction variables within the same measure. Such an approach is not uncontroversial as it may be argued that by including an overall measure alongside domain measures there is duplication of information. However this approach was taken here due to the relatively small number of domain satisfaction variables available and the reluctance to rely on a single-item outcome measure. It is also worthy to note that similar measures have been used successfully in the past (e.g. Bradshaw and Keung, 2011b; Klocke et al., 2013). More school variables, i.e. those relating to the characteristics and policies of the school itself, would have been desirable as these would have allowed more in-depth investigation of the ways in which schools impacted on child well-being, but were not available at this stage.

7.6: Analysis

Preliminary analysis

The following table (Table 7.8) gives the results of the preliminary analyses showing whether there is a statistically significant relationship between the potential predictor variables and the life satisfaction outcome variable. As would be expected, gender and age were significant in all of the results, as was feeling supported by family, SDQ: conduct problems, how feel about schoolwork, how feel about school, importance of

doing well in GCSEs, and parent interest in school. It is likely that these will also be important in the multilevel models. Whether the child lived with siblings, mother's employment status, whether mother was living with biological parents at 16 and how often children were involved in rule setting were not significant in any of the analyses, suggesting that they are not important predictors. There is some consistency between these findings and the preliminary analysis from the previous chapters.

Table 7.8: Significant and non-significant variables in preliminary analysis predicting child life satisfaction⁴⁹

	Question/variable	Bivariate	LR all vars ⁵⁰	LR groups
Demographics	Gender	s	s	s
	Age	s	s	s
	Siblings in home	ns	ns	ns
	Religious (binary)	s	ns	s
	Ethnicity	s	ns	s
Family relationships	Feel supported by family	s	s	s
	Evening meal with family (last 7 days)	s	ns	ns
	Quarrel with mother	s	ns	ns
	Quarrel with father	s	ns	s
	Talk to mother, things that matter	s	s	ns
	Talk to father, things that matter	s	ns	ns
SDQ variables	SDQ: Emotional symptoms	s	ns	s
	SDQ: Conduct problems	s	s	s
	SDQ: Hyperactivity/ inattention	s	s	ns
	SDQ: Peer relationship problems	s	-	s
	SDQ: Prosocial behaviour	s	ns	s
	SDQ: Total difficulties	s	s	-
School related	How feel about schoolwork	s	s	s
	How feel about your school	s	s	s
	Importance of doing well in GCSEs	s	s	s
	Parents interested in how does at school	s	s	s
	Parents attend parent's evenings	s	ns	s
	Ever truanted	s	ns	ns
	How often others misbehave in class	s	ns	ns
	How often misbehave in school	s	ns	ns
	How often physically bullied at school	s	ns	ns
	How often bullied in other ways at school	s	ns	s
	Physically bully others at school	s	ns	ns
	Bully in other ways at school	s	ns	ns
Health + risk behaviours	Days per week exercise	s	ns	s
	Ever smoke cigarettes	s	ns	s
	Ever had an alcoholic drink	s	ns	s
	Drink alcohol regularly	s	ns	ns
	Hours spent watching TV (school day)	ns	ns	s

⁸ s = statistically significant in model, ns = not statistically significant in model, Where categorical variables have been included they are marked as significant if one or more of the dummy variables were significant.

⁵⁰ LR all vars = linear regression including all potential variables, LR groups = individual linear regressions for each variable group, e.g. demographics or social.

Table 7.8 continued

Social	Number of close friends	s	ns	s
	Have own mobile phone	s	ns	ns
	Use social network	s	ns	s
Responses from mothers	Marital status	s	ns	s
	Current economic activity	ns	ns	ns
	UK born	s	s	ns
	Highest qualification	ns	s	s
	Living with biological parents at 16	ns	ns	ns
	English is first language	s	ns	ns
	Belong to a religion	ns	s	ns
	General health	s	ns	s
	Longstanding illness or disability	s	ns	ns
	Paid employment last week	ns	ns	ns
	How often quarrel with children	s	ns	ns
	How often talk about important matters with children	s	ns	ns
	How often praise child	s	ns	ns
	How often children are involved in setting rules	ns	ns	ns
	How often slap or spank child	ns	s	ns
	How often hug or cuddle child	s	ns	ns
How often shout at child	s	ns	s	
Perception of current financial situation	s	ns	ns	

Results

The following sections give the results of the multilevel models used to answer the research questions

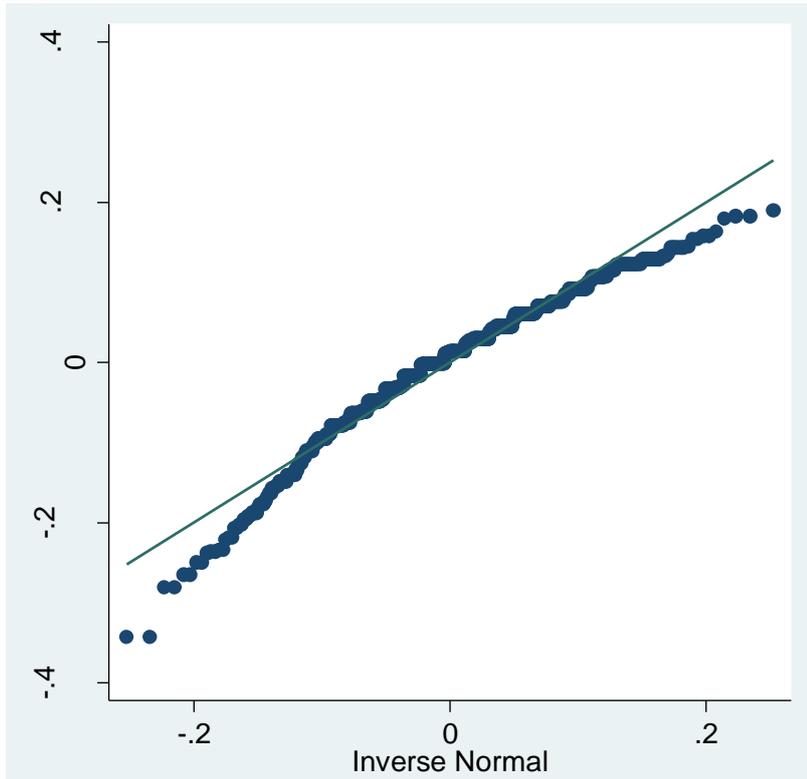
Two-level model 1: Is there a relationship between the school a child attends and the level of subjective well-being that they report?

Table 7.9 gives the results of the null two-level model, bootstrapped with 300 repetitions. It shows that the model is significantly multilevel, meaning that school is playing an important role in predicting children's life satisfaction. The school level Variance Partition Coefficient, i.e. the amount of variance in the model explained at school level, is 6.62%. This is compared to 2.03% in the MCS and 3.82% in the Children's Society Survey. This increase is perhaps due to the focus on life satisfaction (as opposed to affective well-being in the MCS) and overall older age of the children in this data compared to both the MCS and Children's Society Survey. Figure 7.3 gives the qnorm plot of the school-level residuals, which indicates a somewhat normally distribution. There is evidence of some heavy tails, but not a problematic deviation from the normal distribution.

Table 7.9: Null two-level multilevel model results

	B	S.E.
Fixed		
Constant	-0.000	.015
Random		
Pupil level (S.D) (95% confidence interval)	0.797 (.749-.849)	.026
School level (S.D) (95% confidence interval)	0.212 (.194-.233)	.010
LL = -2480.820, LR test: $\chi^2 = 8.55$, $p < .01$, VPC: 6.62%, N = 2024 (752)		

Figure 7.3: Qnorm plot of school level residuals for null multilevel model



Two-level model 2: Does the relationship remain after other factors are considered? If so how much variance is explained at the school level? How are schools influencing children’s affective well-being?

Table 7.10 presents the mid-stage model which includes a range of variables relating to the child but does not include those variables relating to schooling and school experiences. This and the final model were bootstrapped with 100 repetitions due to the complexity of the model and amount of time therefore taken to run the model. There were issues in the two-level model with getting the mid and final models to iterate when applying the bootstrap. This was investigated using the ‘noisily’ function in Stata, identifying the variables in the random part of the model that were preventing the convergence of the model, which were then removed. On completion of the mid model

three variables were removed from the fixed effects: meals with family, whether belong to a religion and mother marital status. These variables were no longer significant and were removed in order to prevent the model from becoming too cluttered due to the large number of potential variables.

In the mid-model gender is significant, showing that girls have lower life satisfaction than boys, but age is not significantly associated with changes in life satisfaction as might be expected. The other variables in the fixed part of the model significantly associated with life satisfaction are: feeling supported by parents, talking with mother, SDQ: emotional difficulties and SDQ: peer relationship problems. Feeling supported by parents is associated with a large increase in life satisfaction, while greater issues as identified by the SDQ variables are associated with lower life satisfaction. In the random part of the model the SDQ variables relating to peer relationship problems and conduct problems are significant, suggesting that the way that different school approach children with these difficulties significantly affects their levels of life satisfaction. Similarly the way schools treat children according to the working status of their mothers is important, although why this is the case is not immediately clear.

With the addition of these variables to the model the amount of variance in life satisfaction explained at the school level has increased significantly to over 46%, suggesting that nearly half of the variance in children's life satisfaction is explained at the school level, a larger amount than in the MCS analysis (22.26%) and the Children's Society Survey analysis (31.43%) at this stage.

Table 7.10: Two-level multilevel model including all predictors excluding school perception variables

	B	S.E.
Fixed		
Constant	-0.608**	.201
Gender (female)	-0.140*	.068
Age	-0.031	.025
Ethnicity (ref. white)		
Mixed ethnicity	0.044	.138
Asian	0.041	.106
Black	0.200	.160
Other	-0.007	.240
Feel supported by parents (most of/all the time)	0.391***	.103
How often quarrel with mother (ref. most days)		
More than once a week	0.012	.158
Less than once a week	0.144	.148
Hardly ever	0.181	.151
How often talk to mother about things that matter (ref. hardly ever)		
Less than once a week	0.166	.101
More than once a week	0.105	.100
Most days	0.302**	.097
SDQ: emotional difficulties	-0.096***	.027
SDQ: conduct problems	-0.026	.018
SDQ: peer relationship problems	-0.112***	.019
SDQ: pro social behaviour	0.039	.025
Ever drank alcohol (no)	0.107	.081
Current economic activity (mother) (ref. employed)		
Unemployed	0.001	.102
Work in home	0.112	.062
Other	0.044	.085
Whether belong to a religion (mother) (no)	0.076	.077
How often involve child in rule setting (mother) (ref. never)		
Seldom	-0.091	.149
Sometimes	-0.064	.129
Very often	-0.157	.132
Random		
School level (S.D) (95% confidence interval)	0.038 (.031-.048)	.004
SDQ: conduct problems (95% confidence interval)	0.102 (.076-.137)	.015
SDQ: peer relationship problems (95% confidence interval)	0.146 (.109-.195)	.021
Current economic activity (mother) (ref. employed)		
Unemployed (95% confidence interval)	0.229 (.130-.402)	.066
Work in home (95% confidence interval)	0.299 (.214-.417)	.051
Other (95% confidence interval)	.299 (.182-.489)	.075
Pupil level (S.D) (95% confidence interval)	0.556 (.344-.890)	.136
LL = -1641.675, LR test: $\chi^2(6) = 85.66, p < .001$, VPC: 46.02%, N = 1642 (724)		

Model 3: What role do children's perceptions of and engagement with school play? How much variance in affective well-being is explained at the school level? How are schools influencing children's affective well-being?

The final two-level model, which includes the variables relating to school, is presented in Table 7.11. Many of the variables that were significant in the previous model remain significant: feeling supported by parents, SDQ: emotional problems and SDQ: peer relationship problems. Gender and talking to mother about things that matter are no longer significant. That gender is no longer significant is surprising, especially given that it was significant in the previous chapter which also predicted life satisfaction. Of the potential school experiences variables, how feel about school work, how feel about school and how often bullied at school (non-physical) are significant. Lower values on the variables relating to school and school work respond to feeling happier in relation to these things, therefore the results suggest that being happy with school and school work is positively related to children's life satisfaction. Unsurprisingly, children who are bullied less frequently report higher life satisfaction.

The variables retained in the random part of this model are: SDQ: peer relationship problems, how feel about school, and how often bullied at school (non-physical). This result suggests that how schools treat children with different levels of enthusiasm for school and who are bullied is important for subjective well-being, likely to be related to how children with peer relationship problems are treated (the relationship between these two variables was checked in order to ensure multicollinearity was not an issue. The results suggested a relationship between the variables as would be expected, but not one that was problematically strong, see Appendix 5). With the addition of these further variables the amount of variance in child life satisfaction explained at the school level in the model has reduced slightly to 38.01%. This is still larger than the results in the previous chapters (MCS 24.94% and Children's Society 31.43%). Again this may be due to the focus on life satisfaction and children of a slightly older age group.

Table 7.11: Two-level multilevel model including all predictor variables

	B	S.E.
Fixed		
Constant	-0.437	.472
Gender (female)	-0.128	.079
Age	-0.027	.022
Ethnicity (ref. white)		
Mixed ethnicity	0.053	0.142
Asian	-0.019	0.121
Black	0.103	0.207
Other	-0.070	0.312
Feel supported by parents (most of/all the time)	0.322**	0.101
How often quarrel with mother (ref. most days)		
More than once a week	-0.029	0.163
Less than once a week	0.092	0.145
Hardly ever	0.142	0.142
How often talk to mother about things that matter (ref. hardly ever)		
Less than once a week	0.104	0.141
More than once a week	0.060	0.143
Most days	0.213	0.122
SDQ: emotional difficulties	-0.068**	0.020
SDQ: conduct problems	0.004	0.023
SDQ: peer relationship problems	-0.071**	0.022
SDQ: pro social behaviour	0.031	0.026
Ever drank alcohol (no)	0.051	0.085
Current economic activity (mother) (ref. employed)		
Unemployed	0.016	0.168
Work in home	0.142	0.111
Other	0.082	0.189
Whether belong to a religion (mother) (no)	0.086	0.091
How often involve child in rule setting (mother) (ref. never)		
Seldom	-0.068	0.169
Sometimes	-0.043	0.110
Very often	-0.087	0.128
How feel about school work	-0.111**	0.039
How feel about school	-0.105***	0.024
Importance of GCSEs (ref. not important)		
Important	-0.215	0.412
Very important	-0.298	0.399
Parents interested in how does at school (yes)	0.106	0.133
How often bullied in other ways at school (ref. quite a lot/a lot)		
Not much	-0.002	0.105
Never	0.229*	0.099

Table 7.11 continued

Random		
School level (S.D) (95% confidence interval)	0.097 (.070-.133)	.016
SDQ: peer relationship problems (95% confidence interval)	0.132 (.100-.173)	.018
How feel about school (95% confidence interval)	0.131 (.101-.168)	.017
How often bullied in other ways at school (ref. quite a lot/a lot)		
Not much (95% confidence interval)	0.337 (.270-.420)	.038
Never (95% confidence interval)	0	0
Pupil level (S.D) (95% confidence interval)	0.507 (.292-.877)	.142
LL = -1472.744, LR test: $\chi^2(5) = 88.75, p < .001$, VPC: 38.01%, N = 1577 (718)		

Cross-classification analysis

The following section presents the results of the cross-classification multilevel models. The addition of cross-classification analysis to this chapter enhances the research by simultaneously allowing the investigation of school and household effects on child subjective well-being. This gives additional information compared to the two-level models and better takes into account the different environments that children are in that may impact on their subjective well-being. Understanding Society is the only dataset in the thesis that allows such an analysis.

Cross-classification model 1: How does the school level effect compare to the household/family level effect on subjective well-being?

Table 7.12 gives the results of the initial null model, bootstrapped (100 repetitions). It shows that the model is again significantly multilevel, but that the amount of variance explained at the school level compared to the household/family level is comparatively small. The Variance Partition Coefficients show that at this stage only 0.81% of the variance is explained at the school level compared to 28.52% at the family level at this stage. This would appear to support the historical emphasis on family effects on child subjective well-being as discussed in Chapter 2. Nonetheless the analysis continues with the addition of the predictor variables used in the final two-level model.

Table 7.12: Null cross-classification multilevel model results

	B	S.E.
Fixed		
Constant	-0.005	.021
Random		
School level (S.D)	0.073 (.053-.101)	.012
Family level (S.D.)	0.436 (.384-.500)	.028
Pupil level (S.D)	0.687 (.621-.759)	.035
LL = -1398.779, LR test: $\chi^2(2) = 48.23, p < .001$, VPC(school): 0.81%, VPC(family): 28.52%, VPC(individual) = 70.68%, N = 1168		

Cross-classification models 2-4: How does the school level effect compare to the household/family level effect on subjective well-being?

Table 7.13 gives the results of the three cross-classification models including variables in the fixed part of the model. Variables were added in groups to the different models in order to be able to investigate which variables resulted in changes to the different VPC statistics. Model 2 includes only demographic variables. Age and gender are both significant, indicating that girls have lower life satisfaction than boys and that life satisfaction decreases as child age increases. Ethnicity and household size are not significant. With the addition of these variables the amount of variance in the model explained at the school level has increased to 8.29%, compared to small reduction to 26.14% at the family level.

In Model 3, with the addition of family relationship, SDQ and mother related variables, gender is no longer significant but age remains significant. Black children are now found to have significantly higher life satisfaction than white children and the ‘feeling supported by parents’ variable is associated with a significant and large increase in life satisfaction. Also significant are the talking and quarrelling with mother variables, the SDQ emotional difficulties and peer relationship problems variables, as well as mother belonging to a religion. Children whose mothers do not report belonging to a religion report significantly higher life satisfaction in this model. With the addition of these variables the amount of variance in the model explained at the school level has again increased. It is now 13.15%, while the introduction of variables relating to family relationships and household has resulted in a reduction in the amount of variance explained at the household level (now 9.06%) suggesting that it is relationship quality that better explains some of the variance in subjective well-being that was previously explained by household.

In the fourth and final model the variables relating to school are added. Gender is again significant, while there are again no significant results for ethnicity. Quarrelling with mother is no longer significant but talking with mother remains significant, as does feeling supported by parents. The SDQ variables and mother's religion variable remain significant but for the first time mothers working in the home is associated with higher life satisfaction. Of the variables added at this stage only the 'how feel about school work' and 'how feel about school' variables are significant, both again finding that being happy with school and school work is important for children's life satisfaction. As in the two-level model, the amount of variance explained at the school level decreased slightly with the addition of these variables, but not to the extent that the household level variance reduced in model 3. The school-level remains larger than the variance explained at the family/household level at 12.58% and 9.03% respectively. The results of these more complex models confirm the hypothesised similarity in the influence of schools and households on children's life satisfaction and show that schools should be considered important influences on child subjective well-being alongside family influences.

Table 7.13: Random intercept cross-classification models

	Model 2		Model 3		Model 4	
	B	S.E.	B	S.E.	B	S.E.
Fixed						
Constant	0.040	0.038	-0.673***	0.143	-0.563	0.332
Gender (female)	-0.137**	0.052	-0.122	0.053	-0.139*	0.056
Age	-0.081***	0.021	-0.054*	0.020	-0.049*	0.020
Ethnicity (ref. white)						
Mixed ethnicity	-0.082	0.106	0.004	0.104	0.023	0.088
Asian	0.093	0.070	0.054	0.063	0.004	0.059
Black	0.188	0.124	0.171*	0.070	0.083	0.087
Other	-0.275	0.174	-0.202	0.161	-0.226	0.160
Household size	0.027	0.017	0.016	0.016	0.005	0.019
Feel supported by parents (most of/all the time)			0.484***	0.079	0.365***	0.097
How often quarrel with mother (ref. most days)						
More than once a week			0.035	0.117	-0.007	0.114
Less than once a week			0.209*	0.106	0.151	0.107
Hardly ever			0.190	0.104	0.170	0.102
How often talk to mother about things that matter (ref. hardly ever)						
Less than once a week			0.150*	0.073	0.128	0.085
More than once a week			0.059	0.078	0.045	0.096
Most days			0.266***	0.071	0.209*	0.091
SDQ: emotional difficulties			-0.088***	0.017	-0.058***	0.016
SDQ: conduct problems			-0.032	0.019	-0.001	0.018
SDQ: peer relationship problems			-0.099***	0.021	-0.068**	0.024
SDQ: pro social behaviour			0.027	0.016	0.015	0.016
Ever drank alcohol (no)			0.060	0.066	0.028	0.065
Current economic activity (mother) (ref. employed)						
Unemployed			0.051	0.079	0.103	0.095
Work in home			0.099	0.059	0.117*	0.047
Other			0.031	0.092	0.035	0.090

Table 7.13 continued

Whether belong to a religion (mother) (no)			0.084*	0.042	0.090*	0.042
How often involve child in rule setting (mother) (ref. never)						
Seldom			-0.098	0.064	-0.051	0.062
Sometimes			-0.066	0.054	-0.047	0.053
Very often			-0.087	0.063	-0.011	0.061
How feel about school work					-0.110***	0.024
How feel about school					-0.102***	0.022
Importance of GCSEs (ref. not important)						
Important					-0.102	0.304
Very important					-0.185	0.307
Parents interested in how does at school (yes)					0.128	0.080
How often bullied in other ways at school (ref. quite a lot/a lot)						
Not much					-0.057	0.125
Never					0.164	0.128
Random						
School level (S.D) (95% confidence interval)	0.229 (.156-.335)	.044	0.236 (.183-.305)	.031	0.216 (.169-.275)	.027
Family/household level (S.D.) (95% confidence interval)	0.406 (.354-.466)	.028	0.196 (.167-.230)	.016	0.183 (.155-.216)	.016
Pupil level (S.D) (95% confidence interval)	0.644 (.585-.708)	.031	0.575 (.508-.650)	.036	0.538 (.465-.624)	.040
VPCs						
VPC: School level	8.29%		13.15%		12.58%	
VPC: Family/household level	26.14%		9.06%		9.03%	
	LL = -1174.007, LR test: $\chi^2(2) = 49.55, p < .001,$ N = 1000		LL = -982.955, LR test: $\chi^2(2) = 18.94, p < .001,$ N = 958		LL = -896.865, LR test: $\chi^2(2) = 16.17, p < .001,$ N = 921	

7.7: Discussion

The results from these analyses emphasise the importance of good familial relationships for children's subjective well-being (see also Clair, 2012), with large coefficients in the fixed part of the model found for these variables, particularly the feeling supported by parents variable. School perceptions are again found to be important predictors at the child level, but as in the previous chapter the way that different schools treat children with different levels of enthusiasm about school is important for their subjective well-being. Peer relationships and being bullied were also found to be important in the random effects of the two-level models, as well as at the individual level. These findings emphasise the importance of children's social lives and experiences to their life satisfaction.

The cross-classification models have added extra depth to the analysis and further validated the findings in this chapter and throughout the thesis by demonstrating that school remains an important influence on children's life satisfaction even when models also control for household and family influence. The finding that, when a range of characteristics including demographics and family relationships are taken into account, schools not only account for a similar amount of variance explained to that explained by household, but a slightly larger amount of variance, emphasises the responsibility of policy makers to take school influences on children beyond academic achievement very seriously.

There is some consistency in these results with those from previous chapters, they again emphasise the important role that school can play beyond academic teaching, in helping young people to overcome difficulties and in creating a community atmosphere for children where they feel supported regardless of the issues that they may face. The random effects identified varied to those for the MCS analysis quite considerably, but given the different outcome variable used (the MCS analysis focused on affective well-being) and different age groups studied (the MCS analysis referred to 7 year-olds), this neither surprising nor problematic.

7.8: Conclusion

This concludes the analysis of the relationship between school and subjective well-being in England. Results have consistently shown that the school a child in England attends plays an important role in the level of subjective well-being that they report.

7.9: Key findings

- The results suggest that schools play an important role in the life satisfaction of children in England who are aged 10-15. The two-level model found that around 38% of variance in life satisfaction was explained at the school level.

- Random school-level effects were found for peer relationship problems, how the child felt about school and whether they were bullied (non-physically). These results suggest that how schools mediate the relationships between pupils, particularly where there are difficulties, has important consequences for their life satisfaction.
- The important role of school remained even when household level effects were controlled for in a cross-classification model, finding that over 12% of variance was explained at the school level compared to 9% at the household level. This finding indicates that the school effects found in the analyses are not merely due to other factors not being considered.

The following chapter introduces the comparative aspect of this work before analysis investigates the relationship between schools and child subjective well-being in the USA.

Chapter 8: Schools and Child Positive Affect in the USA at Ages 12-17

In order to build on the findings of the previous chapters investigating the relationship between school and subjective well-being in England, further analysis will be conducted using datasets from the USA. This chapter will first discuss the comparative approach taken before providing a brief introduction to education policy in the USA. It will then present the first of the analyses conducted on data from the USA using data from the Add Health survey. The focus of the education policy overview is policies and changes relevant to the timeframe of the data used in the following chapters, with most emphasis on the preceding three decades. Very recent policy changes, such as Race to the Top, are not covered here as the data used for analysis will not reflect these changes. Similarly it is focused on compulsory age education, policies relating to further and tertiary are not considered here.

8.1: Comparative approach

While the primary method of statistical analysis for this thesis is multilevel modelling, as discussed in detail in Chapter 3, this is framed within a comparative approach. A theory testing comparative case study (George and Bennett, 2005) is used to investigate the research questions in England and the USA, as outlined below.

The comparative case study

The comparative case study, also known as “focused comparison” or “comparable cases strategy” (Landman, 2000, pg 27), used in this thesis is based in part on George and Bennett (2005), and as such follows the five tasks that they outline. They are as follows:

“Task One: Specification of the Problem and Research Objective” (George and Bennett, 2005, pg 74).

The problem that this research focuses on, as outlined in detail in the Literature Review, is that currently there is little research on the effect of schooling on the overall subjective well-being of children, despite evidence and the significant role of schools in children’s lives suggesting that a relationship is likely. What research there is tends to be small-scale and qualitative in nature. As such, the objective of this research is to improve understanding of the importance of school to children’s subjective well-being using large quantitative datasets.

“Task Two: Developing a Research Strategy: Specification of Variables” (George and Bennett, 2005, pg 79).

This requires the identification of outcome and predictor variables. The outcome variable will be a measure of a dimension of subjective well-being, dependent on what is available in each dataset. In the previous chapters measures of affective well-being and life satisfaction have been used. The predictor variables will likewise vary in the US analysis depending on what is available in each dataset; however attempts will be made to make the analyses as similar and consistent as possible. The analysis will try to include predictors that have been identified as important in other analysis of child subjective well-being, such as age (where applicable) and gender. More detail regarding variable selection is given in Chapter 3, but generally variables relating to the evidence discussed in the literature review, for example school engagement and school characteristics, will be included where possible. The nature of the research objective is such that there are two appropriate levels of analysis, the child and their school, and it will be appropriate to consider predictor variables at both of these levels (Hantrais, 2009).

“Task Three: Case Selection” (George and Bennett, 2005, pg 83)

George and Bennett (2005) specify that the cases chosen for a case study should not be chosen solely because of data availability. While this is important, the reliance on secondary data sources in this thesis means that data availability must be a consideration in case selection.

England is included in the case study as a “most-likely” (George and Bennett, 2005, pg 75) case as it is most likely that a relationship between school and subjective well-being will be found in England because the evidence on which much of the hypothesis under investigation is based is mostly from England. Schools are likely to be important to child well-being in England because of their large role in children’s lives however the changes associated with the Education Reform Act 1988 and policy since, for example the proliferation of ability grouping and standardised assessment, mean that schools are likely to be playing an even greater role in the subjective well-being of children in England. The USA makes a useful comparison as its education policy has taken a markedly similar approach to that of England in recent years, most notably the changes introduced in No Child Left Behind (NCLB) and pursued since, in many ways mimic the changes introduced in England through the Education Reform Act. Because of the more recent changes in the US it is possible to attempt to investigate whether the adoption of NCLB and the embracing of standardised assessment and

accountability in education has increased the importance of schools to child subjective well-being, therefore giving the potential for a within case analysis. However, the education system in the USA before these changes, although not having some of the more specific characteristics of the English system, was still marked by a liberalization and market characteristics, meaning that the change may not be as great as expected (Hill, 2006).

More generally, the USA and England (or in many cases the UK) are often compared together. They are both characterised as Liberal welfare states in Esping-Andersen's (1990) typology and, more specifically, education policy in these countries is guided by "similar neo-liberal and neoconservative political rationales" (Hursh, 2005, pg 3). In both nations the focus on competition and market based reforms place the student in the role of consumer in an education system focused on creating a future workforce, where any resulting inequality is blamed on individual "inadequacy" (Hursh, 2005, pg 4). More broadly the approach to education in these two nations can be considered in relation to the hypotheses surrounding 'competition states' and welfare state retrenchment. The competition state thesis suggests that increasingly the role of welfare states is shifting from ensuring standards of living for people and protecting them from the most severe consequences of the market to creating a nation able to compete with others in the globalised economy (Cerny, 1997; Horsfall, 2010). Education is one area of the welfare state in liberal welfare regimes/competition states in which public spending has not been targeted for reduction (Horsfall, 2010; OECD, 2011), in part likely due to the role of education in creating a competitive and highly skilled workforce. It is this approach to the role of education that encourages the proliferation of standardised testing and the pursuit of academic attainment. However it may be considered that, although spending on education overall is not decreasing in the USA and England, spending in support of the more welfare focused aspects of education has reduced as improving academic attainment becomes the sole focus of education. This is evidenced by the competitive ways that policy makers have come to respond to the OECD PISA (Programme for International Student Assessment) results (gov.uk, 2012), although there is some evidence that the US is more resistant to such pressures (Bieber and Martens, 2011).

The comparison between England and the USA will be made by considering the results of the previous three chapters with analysis of the Add Health and HBSC datasets, as introduced in Chapter 3. Because of the inability to gain access to exactly equivalent datasets across countries the comparison will not be direct. In

order to counter this somewhat a separate analysis of The Children's Society Well-being Survey and the 2009/10 HBSC dataset will be run. These datasets were collected at a similar time, with a similar sampling approach and include the same subjective well-being outcome measure. The age of the sample and potential variables will be limited to be identical across datasets in order that a more exact comparison can be made. This is presented in Chapter 9.

In summary, two similar cases have been selected so that the comparative method taken in this thesis is a "most similar systems design" (Landman, 2000, pg 27) approach.

"Task Four: Describing the Variance in Variables" (George and Bennett, 2005, pg 84).

The way variables are treated and the amount of variance they demonstrate is limited by the way in which the data was collected originally. All outcome and predictor variables will be described throughout as they have been previously, as will any variable transformations. Variables are treated broadly similarly across datasets, although absolute replication is not possible. The analysis comparing results of the Children's Society Well-being Study and the 2009/10 HBSC survey is the only analysis to involve the comparison of two datasets using identical predictor and outcome variables.

"Task Five: Formulation of Data Requirements and General Questions" (George and Bennett, 2005, pg 86).

This task requires specifying what information it is necessary to collect for each case. As a bare minimum it is necessary to have, in each data set, information about the child's subjective well-being (as reported by the child), some demographic information, and a variable that identifies the school the child attends. This will allow the use of multilevel modelling to establish whether there is a school-level effect on subjective well-being using the same approach taken for the England datasets. Desirable information includes that relating to the evidence discussed in the literature review, family information, school perception and school characteristics.

Limitations of the comparative approach

There are some limitations with the comparative approach taken in this thesis. The original intended approach of the thesis was to use the Health Behaviours in School-aged Children international dataset to investigate the research questions and compare results over a larger range of countries. This use of a single dataset would have meant

that concerns about the similarity of predictor and outcome variables for the different countries and datasets would not have been an issue. However, because of restrictions put in place by the data owners it was not possible to obtain access to this data meaning that this more specific comparative approach has been taken. Because it was not possible to use a single dataset for the comparison it was also not possible to use the same measure of subjective well-being or the same predictors throughout. As such the extent and nature of the comparison is affected. Similarly, it was not possible to access the HBSC England datasets, which would have again allowed for a more direct comparison. However, despite these issues the two cases chosen and the datasets available facilitate the comparison being made and allow a more in-depth investigation of the main research questions than would be possible with a single dataset or country of study.

The following section briefly introduces the education system and education policies in the USA.

8.2: Education in the USA: a brief overview

One of the key characteristics of the US education system and most notable ways in which it differs from that in England is that responsibility for education is far more devolved in the USA than in England. Described as “highly decentralized” (US DoE, 2005, pg 5), the Tenth Amendment of the constitution means that the federal government does not govern education, it is instead the responsibility of states. As such, there is no national curriculum, and the compulsory schooling age varies across states (ending at age 16 in 30 states, 17 in 9 states, an 18 in 11 states as well as the District of Columbia, although there is an expectation that children will continue in education until at least 19 (Finn, 1989) having generally started at age 5-6). Academic standards and requirements are set by states (US DoE, 2005) which work alongside school districts (in most states) who are governed by elected school boards. Typically, states are responsible for “the allocation of funds, the certification of teachers, textbooks and library services, and the provision of records and statistics” and school districts “collect taxes, construct buildings and have traditionally purchased equipment, determined instruction policy and employed teachers and other staff” (INCA, 2012, n.p.). School districts are also responsible for allocating children to schools, and generally assign students to their nearest school. However, as in England, in recent years there have been moves to increase parental choice as part of market-based reforms resulting in an increase in children travelling further to go to school. In 1993, 11% of students attended a school that was chosen by family, this rose to 15% in 2005

(US DoE, 2005, pg 18). Similarly some cities have ‘magnet schools’ which admit children from outside of the typical boundaries and are often specialist schools.

The curriculum in the US, although variable, is often similar to that in England and typically includes “language arts (English/literacy), mathematics, social studies (which can include history, geography, literature, multiculturalism, ethics and values, religion, contemporary issues), science, health, music, art, and physical education” (INCA, 2012, n.p.) with states deciding how many years of study of compulsory subjects are needed to graduate high school. The school year is generally slightly shorter in the USA than in England, lasting 180 days typically starting in late August or early September and finishing June (US DoE, 2005). The school day is 5 to 7 hours long (INCA, 2012). The progression through education is similar to that experienced by children in England, with different types of schools at different stages (Table 8.1, Figure 8.1), although unlike in England, students may be able to skip a grade or forced to retake a grade (school year) depending on their academic progress. This decision is usually made by teachers and parents (US DoE, 2005). As in England, private schools are available alongside state schools, with a roughly similar proportion of students attending private schools in England and the USA (around 7% and 10% respectively (ISC, n.d., n.p.; NCES, n.d.a, n.p.)). As in England, private schools are exempt from standardized testing requirements. Similarly a range of other school types are available, such as charter schools which are similar to free schools in England. Unlike England, state funded religiously oriented (parochial) schools are illegal in the USA (this rule has been lessened in recent years in some states), although the influence of religion on education in some states is noticeable, particularly in relation to evolution and sex education.

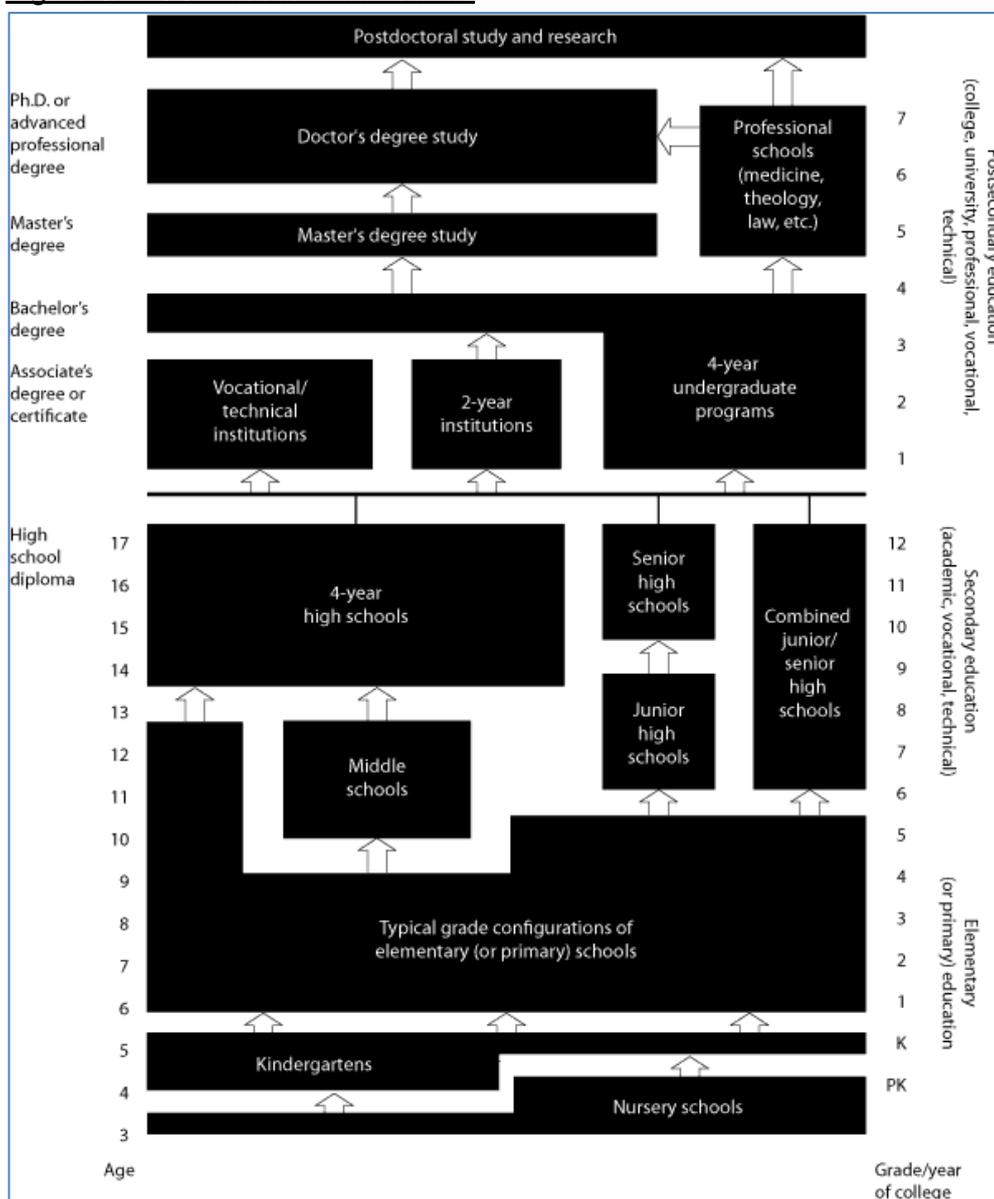
Table 8.1: Grade to school year comparison

Age in years	Level	USA Grade	UK School Year
3-4	Pre-school	-	-
5-10	Elementary	K-5 th	1-6
11-13	Middle School	6 th -8 th	7-9
14-18	High School	9 th -12 th	10-13

Despite the comparatively distant nature of federal government in relation to education policy in the USA, the recent past has nonetheless been characterised by concerted reform efforts with increasingly broad reach. As in the UK and England these efforts have focused on academic performance and have been criticised for lack of consideration of children’s broader needs, with concern about the effects of school on children’s well-being (Huebner and McCullough, 2000). The main piece of federal education legislation is the Elementary and Secondary Education Act (ESEA), originally introduced in 1965 but reauthorized every 5 years under a different title (INCA, 2012).

Originally, the act provided funding for schooling and forbade the establishment of a national curriculum. The most prominent federal education strategy, the No Child Left Behind Act (NCLB) of 2001, was a version of the ESEA. This piece of legislation introduced changes to the American education system that were markedly similar to those in the 1988 Education Reform Act in the UK: accountability, choice, and increased assessment (Hill, 2006). It is these changes in the UK that have caused or lead to many of the concerns discussed in Chapter 2 such as increasingly exclusionary behaviours by schools, deterioration in relationships between students and student stress. Because the federal government of the USA cannot legislate education policy, NCLB instead requires states to commit to a range of requirements, including participating in the National Assessment of Educational Progress and developing an accountability system, in order to receive federal funding (Cumming, 2012).

Figure 8.1: USA education structure



Source: NCES (n.d., n.p.)

As with the Education Reform Act in England and the UK, the emphasis of NCLB is on attainment in English, Mathematics and Science. Its introduction has been associated, as was the case with the Education Reform Act, with the proliferation of externally set, standardised, paper-and-pencil assessments which are carried out even more frequently (every year) than in England (Cumming, 2012). Results of these assessments are published by the state, as well as by school districts for individual schools, for the purposes of comparison as an aid to competition between schools as well as for accountability purposes. As in English league tables, the focus is on the proportion of students achieving certain previously determined thresholds. Schools that fail to meet these targets can face externally organised changes: an enforced improvement plan, a change in head teacher, or even enforced conversion to a different school type (charter or private). Students attending these 'failing' schools are given the option of changing to a more 'successful' school, however "failing schools tend to be clustered by district (urban and poor)" (Hursh, 2005, pg 7) and therefore, as is often the case in England, have little choice in reality. For these reasons these tests are considered to have the same 'high stakes' as those in England (Cumming, 2012) and it is likely that the relationship between schools in and child subjective well-being in the USA would be similar to that in England.

This overview has given a very brief introduction to education in the USA, highlighting some of the similarities and differences between the systems of the USA and England. The rest of this chapter presents the first analysis conducted relating to the investigation of the relationship between child subjective well-being and school attended in the USA.

8.3: Add Health analysis: introduction

The above section has illustrated a number of interesting differences and similarities between education in England and the USA. As such a comparison between the two nations in regards to the research questions of interest in this thesis will be conducted. This is the first analysis of the relationship between children's subjective well-being and school in the USA, it uses data from the Add Health survey which was introduced in Chapter 3.

8.4: Research Questions

As in previous chapters, this chapter will attempt to answer the following questions:

1. Is there a relationship between the school a child attends and the level of subjective well-being that they report?

2. Does the relationship, if one exists, remain after other factors are considered?
If so how much variance is explained at the school level?
3. How are schools influencing children's subjective well-being?
4. What role, if any, does children's engagement with and experiences of school play?

Given the similarities between England and the USA it seems likely that a school level effect on the subjective well-being of children is likely. However the data provided by the Add Health survey is comparatively old, being collected in the 1990s, therefore before No Child Left Behind was introduced. As such it seems likely that the school level effect in this analysis, should one be found, would be smaller than in previous chapters.

8.5: Data

For this and the following chapter it was necessary to identify and access datasets similar to those used in previous chapters which provided information about children and young people in the USA. The Fragile Families study offers up-to-date data on the schooling experiences and well-being of young people in the USA but unfortunately at this stage no school identifier variable is available. Instead, this chapter uses data from the National Longitudinal Study of Adolescent Health, known as Add Health and described in more detail in Chapter 3.

There are no age variables provided in the datasets at wave 1 so age is instead calculated using the month and year of birth variables (day of birth treated as 15 for all cases) and the day, month and year of interview variables. The accuracy of this variable was checked by subtracting it from the provided age variable at wave two. It is plausible that a person could have had up to two birthdays or no birthdays at all in the time between waves one and two (in home interviews conducted in 1995 and 1996 respectively). It is, however, not plausible that someone could have had a negative number of birthdays as suggested by the table below (Table 8.2 which includes all of the children in the original sample). There do appear to be some issues with the dates recorded by interviewers for some interviews in wave one. For example, wave one in-home interviews were conducted between April and December of 1995, however two interviews are reported to have taken place in January, and one of those interviews in January of 1994. For these participants their age will be coded as missing at wave one, there were 17 cases coded as missing in this way, two of these had implausible interview dates. There were also two cases with no birth date given at wave 1. Comparing birth dates from wave one to those provided at wave 2, 35 had different birthdays. As such birthdays from wave two were used to calculate ages at both wave

one and two. This new method resulted in only plausible results, as demonstrated in the 'corrected' column of Table 8.2.

Table 8.2: Discrepancies in age

Difference in years between waves one and two	Provided age at wave 2	Corrected ages
	Frequency	Frequency
-2	10 (0.21%)	0
-1	9 (0.19%)	0
0	542 (11.22%)	514 (10.63%)
1	4156 (86.01%)	4225 (87.40%)
2	114 (2.36%)	95 (1.97%)

Table 8.3 below shows the ages of those in the dataset once the correction was applied, according to the wave and whether or not the respondent reported being in school. Respondents were considered to be in school at wave two if they responded as 'yes – full time'. Those who responded 'no' or 'yes – some of the time' were treated as out of school due to the high number of 'yes – some of the time' cases reporting having previously graduated or been expelled.

Table 8.3: Whether attending school according to age, both waves

Age	Wave 1		Wave 2	
	Yes	No	Yes	No
12	169	0	0	0
13	737	5	230	0
14	897	4	739	12
15	953	10	887	18
16	981	14	946	41
17	747	19	887	91
18	224	18	599	120
19	35	8	140	73
20	6	0	18	24
21	0	0	0	5
	4749	78	4446	384

Note there are 2 cases with missing responses to whether currently in school in wave 1.

Many of those reporting not being in school are of an age that would not be included in the final analyses as it is restricted to those under the age of 18; however there are also many that are of a younger age. These will also be excluded from the final analyses. Reasons for not attending school included having been suspended from school, having dropped out, being sick or injured, having graduated, being pregnant, being on leave, and 'other'.

Removing those cases that were not in school (420) and those that were over the age of 17 at either wave (746) reduced the size of the dataset to 3668 cases. These cases were clustered within 131 schools with between 10 and 87 cases in each school (averaging 28 per school). This sample is therefore more similar to that of the

Children's Society Well-being Study than that of the Millennium Cohort Study or Understanding Society as its school based sampling means that there are fewer schools with more children in them.

The descriptives reported below are for these 3668 children. Unweighted frequencies are reported here, Appendix 7 gives the weighted frequencies for reference. Scale variables, as in previous chapters, have been grand mean centered. Where there are fewer than three cases in any cell it is treated as 0 for disclosure purposes, as required by the data holders. Information is taken from the in-home questionnaire element of the survey due to the lower response rate for school questionnaire. As in the analysis of the Millennium Cohort Study and Understanding Society this analysis utilises data collected from the children themselves and their parents. The outcome variable, as always, is however only based on the responses of the children themselves.

The following section introduces the predictor variables included in the multilevel analysis. Unlike in the previous chapters, the outcome variable is not introduced here. This is because there are multiple potential outcome variables in this chapter, something which requires investigation and discussion. As such the outcome variable is introduced later, in section 8.8.

Predictor variables

The following tables report the descriptive statistics for variables available in waves 1 and 2 which were included in the final multilevel analysis. As was the case for Chapters 5 and 7, the number of potential predictors is very large and so Appendix 7 shows the descriptives for all potential predictor variables.

Table 8.4 shows the demographic characteristics of the respondent children and their parents at wave 1. These are very similar to those used in previous chapters, with the exception of the reported education level of the parent which is included because of the association between parental education and child outcomes, as well as it being a potential indicator of how education is considered in the household. The high school response includes equivalent qualifications, and the post-high school option does not include college graduates. Parent marital status and mother or child disability were considered but not significant in the final multilevel analysis.

Table 8.4: Independent variables, wave 1 demographic variables

Question	Possible Responses					Missing
Gender	Male 1713 (46.70%)		Female 1955 (53.30%)			0
Ethnicity	White 2346 63.96%	African American 824 22.46%	Native American 125 3.41%	Asian 140 3.82%	Other 224 6.11%	9 (0.25%)
Reporting parent education level	< high school 445 12.13%	High school 1000 27.26%	Post high school 975 26.58%	College graduate 532 14.50%	Beyond college 359 9.79%	357 (9.73%)

Table 8.5 gives the health and risk behaviours variables available in the dataset. Most children reported being in good health and getting enough sleep. Around half of respondents had tried smoking.

Table 8.5: Independent variables, wave 1 health and risk behaviours variables

Question	Possible Responses					Missing
Child health	Excellent 1057 (28.82%)	Very good 1515 (41.30%)	Good 860 (23.45%)	Fair 216 (5.89%)	Poor 18 (0.49%)	2 (0.05%)
Child health (binary)	Good-Excellent 3432 (93.57%)		Fair/poor 234 (6.38%)			2 (0.05%)
Does child report getting enough sleep	Yes 2801 (76.36%)		No 863 (23.53%)			4 (0.11%)
Ever smoked a cigarette	Yes 1841 (50.19%)		No 1803 (49.15%)			24 (0.65%)

Table 8.6 gives the variable relating to the child’s social life available in the dataset. Previous analysis has shown that this is very important to children’s subjective well-being. Nearly one-tenth of children report not spending any time with friends in the past week, this may reflect a lack of friends or rules about socializing, or more practical concerns such as distance from friends.

Table 8.6: Independent variables, wave 1 child social life

Question	Possible Responses				Missing
How many times did you hang out with friends in the past week	Not at all 352 (9.60%)	1 or 2 times 879 (23.96%)	3 or 4 times 1010 (27.54%)	5 or more times 1425 (38.85%)	2 (0.05%)

Table 8.7 gives the variables regarding the reporting child’s perceptions of the relationships they have, primarily with their family. Previous analysis has suggested that such factors are likely to be very important (e.g. Chapter 7 results and Clair, 2012). There are a lot of these variables and as such some may need to be simplified for the final analysis. The frequency of eating dinner with parents was included because this is often considered an important measure of children’s family relationships, for example

in the Health Behaviour of School-aged Children studies. As in Chapter 7 there are a high number of missing cases for the variables relating to relationships with fathers which may be due to the child not having a father, or due to other reasons, as such these cannot be included in the analysis.

Table 8.7: Independent variables, wave 1 child perceptions of relationships

Question	Possible Responses					Missing
Mum warm and loving	Strongly agree 1918 (52.29%)	Agree 1322 (36.04%)	Neither 175 (4.77%)	Disagree 84 (2.29%)	Strongly disagree 37 (1.01%)	132 (3.60%)
Mum encourages independence	Strongly agree 1514 (41.28%)	Agree 1468 (40.02%)	Neither 391 (10.66%)	Disagree 127 (3.46%)	Strongly disagree 34 (0.93%)	134 (3.65%)
Satisfied with communication with mother	Strongly agree 1465 (39.94%)	Agree 1401 (38.20%)	Neither 347 (9.46%)	Disagree 246 (6.71%)	Strongly disagree 76 (2.07%)	133 (3.63%)
Satisfied with relationship with mother	Strongly agree 1873 (51.06%)	Agree 1303 (35.52%)	Neither 189 (5.15%)	Disagree 124 (3.38%)	Strongly disagree 47 (1.28%)	132 (3.60%)
Adults care about you	Not at all 28 (0.76%)	Very little 75 (2.04%)	Somewhat 329 (8.97%)	Quite a bit 1099 (29.96%)	Very much 2122 (57.85%)	15 (0.41%)
Friends care about you	Not at all 19 (0.52%)	Very little 68 (1.85%)	Somewhat 439 (11.97%)	Quite a bit 1533 (41.79%)	Very much 1599 (43.59%)	10 (0.27%)
Family understand you	Not at all 94 (2.56%)	Very little 307 (8.37%)	Somewhat 1092 (29.77%)	Quite a bit 1347 (36.72%)	Very much 817 (22.27%)	11 (0.30%)
Want to leave home	Not at all 1800 (49.07%)	Very little 830 (22.63%)	Somewhat 595 (16.22%)	Quite a bit 261 (7.12%)	Very much 164 (4.47%)	18 (0.49%)
Family has fun together	Not at all 79 (2.15%)	Very little 277 (7.55%)	Somewhat 891 (24.29%)	Quite a bit 1352 (36.86%)	Very much 1052 (28.68%)	17 (.046%)
Family pays attention to you	Not at all 36 (0.98%)	Very little 198 (5.40%)	Somewhat 770 (20.99%)	Quite a bit 1448 (39.48%)	Very much 1206 (32.88%)	10 (0.27%)

Table 8.8 gives the variables relating to the child's own perception of their intelligence. The below average response to the intelligence question includes moderately and slightly below average, above average includes slightly and moderately above average.

This variable is interesting because it gives insight into child confidence and self esteem relevant to their school work.

Table 8.8: Independent variables, wave 1 child intelligence

Question	Possible Responses				Missing
Perception of own intelligence	Below average 213 (5.81%)	Average 1377 (37.54%)	Above average 1827 (49.81%)	Extremely above average 242 (6.60%)	9 (0.25%)

Table 8.9 shows the variables available in the dataset relating to perceptions and experiences of school. Some of these variables have been used previously to create a tested measure of school connectedness. These variables are feel close to people at school, feel part of school, happy at school, teachers treat students fairly, feel safe in my school (McNeely, 2002). This measure had a Cronbach’s alpha of .777.

The disparity variable was constructed by subtracting how likely a respondent thought it would be that they would go to college from how much they wanted to go to college. The further the number is from 0 the greater the disparity between the desire to go and perceived likelihood of going to college. Those who have scored 4 want to go to college but consider it highly unlikely that they will go, while those who scored -4 do not want to go to college but consider it likely that they will go. This variable is considered as an indication of frustrated ambitions or external pressure relating to education and is likely to give additional information not given by considering wanting to go to college alone for example.

Table 8.9: Independent variables, wave 1 child school perceptions

Question	Possible Responses										Missing
	Strongly agree		Agree		Neither		Disagree		Strongly disagree		
Students at school are prejudiced	448 (12.21%)		952 (25.95%)		886 (24.15%)		960 (26.17%)		410 (11.18%)		12 (0.33%)
Have trouble paying attention in school	927 (25.27%)		1735 (47.30%)		564 (15.38%)		320 (8.72%)		118 (3.22%)		4 (0.11%)
Have trouble getting homework done	1142 (31.13%)		1549 (42.23%)		558 (15.21%)		290 (7.91%)		125 (3.41%)		4 (0.11%)
Have trouble getting along with other students	1391 (37.92%)		1674 (45.64%)		316 (8.62%)		174 (4.74%)		109 (2.97%)		4 (0.11%)
How much do you want to go to college	94 (2.56%)		73 (1.99%)		316 (8.62%)		460 (12.54%)		2715 (74.02%)		10 (0.27%)
How likely do you think it is that you will go to college	133 (3.63%)		130 (3.54%)		477 (13.00%)		843 (22.98%)		2073 (56.52%)		12 (0.33%)
Disparity between wanting to go and likelihood of going to college	-4	-3	-2	-1	0	1	2	3	4	12 (0.33%)	
	3 0.08 %	5 0.14 %	36 0.98 %	211 5.75 %	2367 64.53 %	794 21.65 %	194 5.29 %	24 0.65 %	22 0.60 %		
Min. -4.28, Max. 3.72, S.D. 0.79 (Min. -4, Max. 4, Mean 0.28)											

Wave 2 descriptives are shown below (only those that have changed since wave 1 and which were retained in the final model are shown). Some variables that were available at wave one were not available at wave two. Variables that were no longer available were: ever repeated a grade, ever skipped a grade, have nothing for breakfast, learned about proper diet, learned about the importance of exercise, learned about smoking, learned about obesity, learned about drinking, learned about drug abuse, learned about pregnancy, learned about AIDs, learned about strangers, reporting parent happy, reporting parent receiving benefits, whether the reporting parent was happy, whether the reporting parent was receiving benefits, the frequency with which the reporting parent attended religious service, the importance of religion to the reporting parent, whether the reporting parent had enough money to pay for bills, the health of the reporting parent, the health of the reporting parent (binary), whether the reporting

parent had difficulty obtaining medical care for the family, whether the reporting parent had difficulty obtaining medical care for the family (binary) and the picture vocabulary test score. As such these variables could not be considered in the analysis.

Table 8.10: Independent variables, wave 2 health and risk behaviours variables

Question	Possible Responses					Missing
Child health	Excellent 1104 (30.10%)	Very good 1488 (40.57%)	Good 873 (23.80%)	Fair 199 (5.43%)	Poor 4 (0.11%)	0
Child health (binary)	Good-Excellent 3465 (94.47%)		Fair/poor 203 (5.53%)			0
Does child report getting enough sleep	Yes 2648 (72.19%)		No 1019 (27.78%)			1 (0.03%)
Ever smoked a cigarette	Yes 1535 (41.85%)		No 2110 (57.52%)			23 (0.63%)

Table 8.11: Independent variables, wave 2 child social life

Question	Possible Responses				Missing
How many times did you hang out with friends in the past week	Not at all 220 (6.00%)	1 or 2 times 850 (23.17%)	3 or 4 times 1061 (28.93%)	5 or more times 1537 (41.90%)	0

Table 8.12: Independent variables, wave 2 child perceptions of relationships

Question	Possible Responses					Missing
Mum warm and loving	Strongly agree 1780 (48.53%)	Agree 1406 (38.33%)	Neither 227 (6.19%)	Disagree 87 (2.37%)	Strongly disagree 29 (0.79%)	139 (3.79%)
Mum encourages independence	Strongly agree 1518 (41.38%)	Agree 1486 (40.51%)	Neither 373 (10.17%)	Disagree 120 (3.27%)	Strongly disagree 29 (0.79%)	142 (3.87%)
Mum helps to understand right and wrong	Strongly agree 1230 (33.53%)	Agree 1652 (45.04%)	Neither 415 (11.31%)	Disagree 195 (5.32%)	Strongly disagree 39 (1.06%)	137 (3.74%)
Satisfied with communication with mother	Strongly agree 1312 (35.77%)	Agree 1490 (40.62%)	Neither 413 (11.26%)	Disagree 246 (6.71%)	Strongly disagree 71 (1.94%)	136 (3.71%)
Satisfied with relationship with mother	Strongly agree 1681 (45.83%)	Agree 1438 (39.20%)	Neither 229 (6.24%)	Disagree 133 (3.63%)	Strongly disagree 48 (1.31%)	139 (3.79%)
Adults care about you	Not at all 22 (0.60%)	Very little 107 (2.92%)	Somewhat 302 (8.23%)	Quite a bit 955 (26.04%)	Very much 2261 (61.64%)	21 (0.57%)
Parents care about you	Not at all 20 (0.55%)	Very little 66 (1.80%)	Somewhat 95 (2.59%)	Quite a bit 398 (10.85%)	Very much 3076 (83.86%)	13 (0.35%)
Friends care about you	Not at all 23 (0.63%)	Very little 63 (1.72%)	Somewhat 417 (11.37%)	Quite a bit 1286 (35.06%)	Very much 1859 (50.68%)	20 (0.54%)
Family understand you	Not at all 139 (3.79%)	Very little 315 (8.59%)	Somewhat 1148 (31.30%)	Quite a bit 1210 (32.99%)	Very much 841 (22.93%)	15 (0.41%)
Want to leave home	Not at all 1651 (45.01%)	Very little 729 (19.87%)	Somewhat 712 (19.41%)	Quite a bit 314 (8.56%)	Very much 236 (6.43%)	26 (0.71%)
Family has fun together	Not at all 114 (3.11%)	Very little 326 (8.89%)	Somewhat 989 (26.96%)	Quite a bit 1226 (33.42%)	Very much 998 (27.21%)	15 (0.41%)
Family pays attention to you	Not at all 45 (1.23%)	Very little 178 (4.85%)	Somewhat 768 (20.94%)	Quite a bit 1452 (39.59%)	Very much 1207 (32.91%)	18 (0.49%)

Table 8.13: Independent variables, wave 2 child intelligence

Question	Possible Responses				Missing
Perception of own intelligence	Below average 182 (4.96%)	Average 1317 (35.91%)	Above average 1902 (51.85%)	Extremely above average 260 (7.09%)	7 (0.19%)

Table 8.14: Independent variables, wave 2 child school perceptions

Question	Possible Responses										Missing
Students at school are prejudiced	Strongly agree 406 (11.07%)		Agree 1008 (27.48%)		Neither 1083 (29.53%)		Disagree 807 (22.00%)		Strongly disagree 354 (9.65%)		10 (0.27%)
Have trouble paying attention in school	Never 926 (25.25%)		A few times 1725 (47.03%)		Once a week 571 (15.57%)		Almost every day 342 (9.32%)		Every day 103 (2.81%)		1 (0.03%)
Have trouble getting homework done	Never 1090 (29.72%)		A few times 1561 (42.56%)		Once a week 622 (16.96%)		Almost every day 283 (7.72%)		Every day 111 (3.03%)		1 (0.03%)
Have trouble getting along with other students	Never 1456 (39.69%)		A few times 1703 (46.43%)		Once a week 271 (7.39%)		Almost every day 139 (3.79%)		Every day 98 (2.67%)		1 (0.03%)
How much do you want to go to college	1 (Low) 123 (3.35%)		2 110 (3.00%)		3 336 (9.16%)		4 478 (13.03%)		5 (High) 2602 (70.94%)		19 (0.52%)
How likely do you think it is that you will go to college	1 (Low) 164 (4.47%)		2 157 (4.28%)		3 491 (13.39%)		4 735 (20.04%)		5 (High) 2100 (57.25%)		21 (0.58%)
Disparity between wanting to go and likelihood of going to college	-4	-3	-2	-1	0	1	2	3	4	21 (0.58%)	
	3 0.08%	3 0.08%	42 1.15%	227 6.19%	2455 66.93%	679 18.51%	205 5.59%	20 0.55%	13 0.35%		
Min. -4.24, Max. 3.76, S.D. 0.77 (Min. -4, Max. 4, Mean 0.24)											

Some of the available variables that were potentially relevant to the analysis are not reported here due to high levels of missing. Whether the respondent was born in the USA had over 20% missing so was not included. A variable for the total income of the household as reported by the reporting parent was available but had nearly 20% missing so was not used. Instead the variable asking whether there was enough money to cover bills was used as an indication of the family financial situation.

8.6: Methods

Preliminary analysis

As in the chapters presented previously the relationships between the potential outcome and predictor variables are investigated prior to conducting the multilevel modelling. Because at this stage there are multiple potential outcome variables as well as a lot of potential predictor variables only linear regression is conducted. The results of these analyses will then be used to guide the final analysis, multilevel modelling, as well as the selection of the outcome variable. Doing this using Add Health is more complicated than in previous chapters as the outcome and predictor variables are measured at two time points. The linear regressions were run separately for the 4 alternative wave 2 outcome variables, initially including the wave 2 predictors, then with the wave 1 and wave 2 predictors. Predictor variables were grouped in the manner used above for descriptive statistics.

Multilevel modelling

As in all chapters thus far, multilevel modelling is the primary analysis method. This is guided by the results of the preliminary analysis. More specific details about the approach to multilevel modelling taken are given in Chapter 3. Unlike in the other chapters this data is longitudinal, meaning the data must be converted to long format for this analysis. The multilevel models will be 3-level repeated measures models. However because of the large amount of potential predictor variables and the amount of processing power potentially required, variables will only be included in the random part of the model at the school level. Again because of the high number of predictor variables, the variables were added to the model in a slightly different way. The variables were added to the model in their group (e.g. demographics) in the fixed effects part of the model. Then to the random part of the model one at a time, in group order, to see if their inclusion in the random part of the model improves the model fit. As previously, the model is checked after all variables have been tested to see if any should be removed. Any variables no longer significant in the fixed part of the model were removed after the addition of further variables, unlike in previous chapters. This is again due to the large number of predictor variables available.

8.7: Limitations

Because this analysis is only able to make use of the public access dataset, as opposed to the restricted use dataset which includes information from school administrators, there is no available information on the schools that the respondents attend. This limits the conclusions that can be drawn. Similarly, the dataset only

allows for the investigation of schools on the amount of positive affect that respondents report, there are no variables that cover negative affect or life satisfaction. There are measures of depression, but depression is not the same as negative affect. Instead depression relates to a person's overall affective well-being, they have both low positive affect and high negative affect (Watson et al., 1988; Joiner et al., 1996). It is also dependent on the frequency and intensity of affective states (Diener et al., 1985). As such this analysis relates to a very specific aspect of children's subjective well-being, one that is not considered on its own in any of the other analyses in this thesis. This is not entirely problematic however, as positive and negative affect can and should be considered separately. It will however limit the comparison of results with other chapters.

As with the previous chapters, some of the measures of affective well-being (here positive affect) are new and untested. However, the measure based on the positive affect subscale (as described below) has been used previously. While it was decided not to use this measure, the similarity in results between this approach and the measure chosen supports the validity of the outcome measure.

As discussed in Chapter 3 it was unfortunately not possible to weight the multilevel analysis for this dataset due to the lack of conditional weights in the public access dataset.

8.8: Analysis

Outcome variable

The Add Health dataset includes a number of variables that can be used to measure positive affect, but unfortunately no variables to measure life satisfaction or negative affect. The relevant variables are provided in the Feelings Scale (CES-D) and the personality questions⁵¹. The following tables (Tables 8.15-8.16) show the frequencies for the Feelings Scale in both waves. Data for all people available in the dataset is used at this stage as it was desirable to study how the reported levels of positive affect varied between those who are and are not attending school.

The Cronbach's alpha for the positive affect subscale at both waves 1 and 2 are satisfactory (shown at the foot of the tables). As well as using the Cronbach's alpha itself, the correlation coefficients between the questions that make up the scale are shown below in Tables 8.17 and 8.18.

⁵¹ The term personality questions refers to the name of the section of the questionnaire from which the variables were taken. The questions themselves do not reflect personality, they are referred to in this way in order to distinguish them from the Feelings Scale questions.

Table 8.15: Feelings Scale (CES-D) Wave1

How often was each of the following true during the last week?	Most/all of the time	A lot of the time	Sometimes	Never/rarely	Missing
You were bothered by things that usually don't bother you	82 (1.70%)	253 (5.23%)	1519 (31.42%)	2967 (61.38%)	13 (0.27%)
You didn't feel like eating, your appetite was poor	98 (2.03%)	301 (6.23%)	1315 (27.20%)	3111 (64.36%)	9 (0.19%)
You felt that you could not shake off the blues, even with help from your family and your friends	99 (2.05%)	256 (5.30%)	958 (19.82%)	3507 (72.55%)	14 (0.29%)
You felt that you were just as good as other people	1743 (36.06%)	1514 (31.32%)	1022 (21.14%)	542 (11.21%)	13 (0.27%)
You had trouble keeping your mind on what you were doing	209 (4.32%)	609 (12.60%)	2066 (42.74%)	1938 (40.09%)	12 (0.25)
You felt depressed	138 (2.85%)	316 (6.54%)	1358 (28.09%)	3009 (62.25%)	13 (0.27%)
You felt that you were too tired to do things	122 (2.52%)	466 (9.64%)	2183 (45.16%)	2053 (42.47%)	10 (0.21%)
You felt hopeful about the future	1461 (30.22%)	1603 (33.16%)	1205 (24.93%)	549 (11.36%)	16 (0.33%)
You thought your life had been a failure	60 (1.24%)	114 (2.36%)	560 (11.58%)	4086 (84.53%)	14 (0.29%)
You felt fearful	47 (0.97%)	112 (2.32%)	1142 (23.62%)	3523 (72.88%)	10 (0.21%)
You were happy	1806 (37.36%)	2002 (41.41%)	883 (18.27%)	134 (2.77%)	9 (0.19%)
You talked less than usual	130 (2.69%)	341 (7.05%)	1632 (33.76%)	2720 (56.27%)	11 (0.23%)
You felt lonely	97 (2.01%)	281 (5.81%)	1299 (26.87%)	3144 (65.04%)	13 (0.27%)
People were unfriendly to you	64 (1.32%)	191 (3.95%)	1368 (28.30%)	3202 (66.24%)	9 (0.19%)
You enjoyed life	2354 (48.70%)	1517 (31.38%)	758 (15.68%)	194 (4.01%)	11 (0.23%)
You felt sad	92 (1.90%)	236 (4.88%)	1918 (39.68%)	2580 (53.37%)	8 (0.17%)
You felt that people disliked you	79 (1.63%)	214 (4.43%)	1376 (28.47%)	3153 (65.23%)	12 (0.25%)
It was hard to get started doing things	54 (1.12%)	336 (6.95%)	2064 (42.70%)	2368 (48.99%)	12 (0.25%)
You felt life was not worth living	34 (0.70%)	118 (2.44%)	403 (8.34%)	4268 (88.29%)	11 (0.23%)
PA scale Cronbach's alpha = 0.7184					

Bold black = positive affect scale, bold red = depressive affect scale, shown for comparison.

Table 8.16: Feelings Scale (CES-D) Wave 2

How often was each of the following true during the last week?	Most/all of the time	A lot of the time	Sometimes	Never/rarely	Missing
You were bothered by things that usually don't bother you	91 (1.88%)	316 (6.54%)	1685 (34.86%)	2735 (56.58%)	7 (0.14%)
You didn't feel like eating, your appetite was poor	98 (2.03%)	343 (7.10%)	1334 (27.60%)	3055 (63.20%)	4 (0.08%)
You felt that you could not shake off the blues, even with help from your family and your friends	103 (2.13%)	285 (5.90%)	1026 (21.22%)	3406 (70.46%)	14 (0.29%)
You felt that you were just as good as other people	1803 (37.30%)	1621 (33.53%)	886 (18.33%)	515 (10.65%)	9 (0.19%)
You had trouble keeping your mind on what you were doing	175 (3.62%)	632 (13.07%)	2156 (44.60%)	1864 (38.56%)	7 (0.14%)
You felt depressed	134 (2.77%)	298 (6.16%)	1404 (29.04%)	2991 (61.87%)	7 (0.14%)
You felt that you were too tired to do things	110 (2.28%)	511 (10.57%)	2224 (46.01%)	1985 (41.06%)	4 (0.08%)
You felt hopeful about the future	1523 (31.51%)	1675 (34.65%)	1141 (23.60%)	481 (9.95%)	14 (0.29%)
You thought your life had been a failure	38 (0.79%)	125 (2.59%)	575 (11.89%)	4083 (84.46%)	13 (0.27%)
You felt fearful	32 (0.66%)	131 (2.71%)	1060 (21.93%)	3606 (74.60%)	5 (0.10%)
You were happy	1817 (37.59%)	1994 (41.25%)	896 (18.54%)	122 (2.52%)	5 (0.10%)
You talked less than usual	107 (2.21%)	356 (7.36%)	1814 (37.53%)	2549 (52.73%)	8 (0.17%)
You felt lonely	90 (1.86%)	279 (5.77%)	1274 (26.35%)	3183 (65.85%)	8 (0.17%)
People were unfriendly to you	45 (0.93%)	173 (3.58%)	1426 (29.50%)	3184 (65.87%)	6 (0.12%)
You enjoyed life	2307 (47.72%)	1600 (33.10%)	754 (15.60%)	168 (3.48%)	5 (0.10%)
You felt sad	81 (1.68%)	237 (4.90%)	1941 (40.15%)	2568 (53.12%)	7 (0.14%)
You felt that people disliked you	55 (1.14%)	150 (3.10%)	1327 (27.45%)	3295 (68.16%)	7 (0.14%)
It was hard to get started doing things	69 (1.43%)	361 (7.47%)	2084 (43.11%)	2314 (47.87%)	6 (0.12%)
You felt life was not worth living	38 (0.79%)	75 (1.55%)	379 (7.84%)	4330 (89.57%)	12 (0.25%)
PA scale Cronbach's alpha = 0.7298					

Bold black = positive affect scale, bold red = depressive affect scale, shown for comparison.

Table 8.17: Pairwise correlations between Feelings Scale variables, wave 1⁵²⁵³

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1.00																		
2	.31***	1.00																	
3	.43***	.33***	1.00																
4	.16***	.16***	.20***	1.00															
5	.32***	.26***	.34***	.15***	1.00														
6	.43***	.33***	.59***	.23***	.37***	1.00													
7	.27***	.23***	.27***	.13***	.32***	.35***	1.00												
8	.13***	.13***	.14***	.38***	.15***	.18***	.12***	1.00											
9	.28***	.25***	.38***	.22***	.28***	.44***	.24***	.18***	1.00										
10	.26***	.21***	.29***	.16***	.24***	.34***	.21***	.10***	.31***	1.00									
11	.23***	.23***	.31***	.35***	.20***	.35***	.18***	.38***	.28***	.15***	1.00								
12	.23***	.20***	.23***	.13***	.17***	.24***	.15***	.09***	.19***	.17***	.16***	1.00							
13	.36***	.27***	.45***	.18***	.29***	.51***	.25***	.14***	.37***	.31***	.29***	.29***	1.00						
14	.23***	.15***	.22***	.12***	.20***	.24***	.19***	.08***	.26***	.22***	.14***	.15***	.27***	1.00					
15	.23***	.22***	.29***	.36***	.22***	.34***	.19***	.38***	.33***	.18***	.54***	.16***	.31***	.18***	1.00				
16	.39***	.29***	.49***	.21***	.31***	.59***	.29***	.17***	.37***	.35***	.29***	.23***	.52***	.28***	.29***	1.00			
17	.26***	.19***	.30***	.22***	.26***	.35***	.23***	.13***	.31***	.31***	.22***	.19***	.34***	.54***	.25***	.37***	1.00		
18	.25***	.20***	.26***	.11***	.33***	.29***	.35***	.12***	.23***	.22***	.17***	.15***	.27***	.24***	.16***	.28***	.22***	1.00	
19	.25***	.22***	.38***	.23***	.23***	.41***	.21***	.17***	.51***	.28***	.26***	.18***	.34***	.25***	.32***	.37***	.32***	.23***	1.00

The average correlation between the positive affect subscale variables is .40. The average correlation between the depressive affect subscale variables is .53

⁵² 1. You were bothered by things that usually don't bother you; 2. You didn't feel like eating, your appetite was poor; 3. You felt that you could not shake off the blues, even with help from your family and your friends; 4. You felt that you were just as good as other people; 5. You had trouble keeping your mind on what you were doing; 6. You felt depressed; 7. You felt that you were too tired to do things; 8. You felt hopeful about the future; 9. You thought your life had been a failure; 10. You felt fearful; 11. You were happy; 12. You talked less than usual; 13. You felt lonely; 14. People were unfriendly to you; 15. You enjoyed life; 16. You felt sad; 17. You felt that people disliked you; 18. It was hard to get started doing things; 19. You felt life was not worth living

⁵³ Correlations for the variables included in the positive affect subscale are shown in bold, for comparison the variables for the depressive affect subscale are shown in blue. Coefficients in bold are those that contribute to the positive affect subscale.

Table 8.18: Pairwise correlations between Feelings Scale variables, wave 2⁵⁴⁵⁵

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1.00																		
2	.33***	1.00																	
3	.47***	.36***	1.00																
4	.18***	.15***	.23***	1.00															
5	.35***	.27***	.36***	.11***	1.00														
6	.45***	.35***	.62***	.25***	.38***	1.00													
7	.31***	.28***	.34***	.13***	.33***	.38***	1.00												
8	.14***	.14***	.20***	.41***	.16***	.23***	.13***	1.00											
9	.29***	.26***	.40***	.25***	.25***	.43***	.27***	.19***	1.00										
10	.27***	.21***	.31***	.17***	.23***	.34***	.23***	.10***	.32***	1.00									
11	.26***	.20***	.36***	.35***	.21***	.37***	.25***	.39***	.31***	.18***	1.00								
12	.26***	.22***	.30***	.15***	.21***	.26***	.23***	.13***	.23***	.19***	.20***	1.00							
13	.34***	.27***	.47***	.21***	.30***	.51***	.32***	.16***	.38***	.31***	.32***	.31***	1.00						
14	.21***	.13***	.22***	.11***	.22***	.25***	.21***	.10***	.23***	.21***	.15***	.15***	.28***	1.00					
15	.25***	.22***	.33***	.36***	.21***	.38***	.26***	.40***	.34***	.19***	.55***	.19***	.34***	.16***	1.00				
16	.40***	.32***	.54***	.24***	.32***	.63***	.35***	.21***	.41***	.36***	.35***	.29***	.53***	.25***	.35***	1.00			
17	.27***	.19***	.31***	.20***	.25***	.35***	.25***	.15***	.33***	.27***	.25***	.22***	.36***	.52***	.24***	.35***	1.00		
18	.24***	.20***	.26***	.10***	.36***	.27***	.37***	.10***	.23***	.23***	.20***	.19***	.27***	.23***	.20***	.28***	.23***	1.00	
19	.23***	.23***	.35***	.21***	.17***	.40***	.22***	.17***	.49***	.21***	.26***	.20***	.32***	.19***	.29***	.36***	.30***	.20***	1.00

The average correlation between the positive affect subscale variables is .41. The average correlation between the depressive affect subscale variables is .55

⁵⁴ 1. You were bothered by things that usually don't bother you; 2. You didn't feel like eating, your appetite was poor; 3. You felt that you could not shake off the blues, even with help from your family and your friends; 4. You felt that you were just as good as other people; 5. You had trouble keeping your mind on what you were doing; 6. You felt depressed; 7. You felt that you were too tired to do things; 8. You felt hopeful about the future; 9. You thought your life had been a failure; 10. You felt fearful; 11. You were happy; 12. You talked less than usual; 13. You felt lonely; 14. People were unfriendly to you; 15. You enjoyed life; 16. You felt sad; 17. You felt that people disliked you; 18. It was hard to get started doing things; 19. You felt life was not worth living

⁵⁵ Correlations for the variables included in the positive affect subscale are shown in bold, for comparison the variables for the depressive affect subscale are shown in blue. Coefficients in bold are those that contribute to the positive affect subscale.

The scales created by summing the variables are summarized below:

Table 8.19: Feelings Scale Positive Affect scales

	No.	Mean	St. Dev.	Min.	Max.
Feelings Scale PA Wave 1	4814	8.138	2.709	0	12
Feelings Scale PA Wave 2	4819	8.249	2.689	0	12

The positive affect subscale is based on findings reported by Radloff (1977) that principal components factor analysis of the Feelings Scale consistently finds four factors that can be interpreted as: “depressive affect”⁵⁶, “positive affect”⁵⁷, “somatic and retarded activity”⁵⁸, and “interpersonal”⁵⁹ (Radloff, 1977, pg 397)⁶⁰. Other research has used the positive affect scale available within the Add Health dataset on this basis (for example, De Neve and Oswald, 2012). These results were checked using principle components factor analysis (orthogonal varimax rotation) on this dataset which found that, although four factors were indeed found, they do not correspond with the interpretation presented described above (Radloff, 1977).

Tables 8.20-8.23 present the results of principal components factor analysis on the Feelings Scale questions included in Add Health. Results for wave one are presented first. Table 8.20 shows that, as in Radloff (1977), four factors with eigenvalues greater than one are found, and these factors explain a similar amount of variance to that reported (51.08% compared to 48% in Radloff (1977)).

⁵⁶ ‘You felt that you could not shake off the blues, even with help from your family and your friends’; ‘You felt depressed’; ‘You felt lonely’; ‘I had crying spells’ (not included in this dataset); ‘You felt sad’

⁵⁷ ‘You felt that you were just as good as other people’; ‘You felt hopeful about the future’; ‘You were happy’; ‘You enjoyed life’

⁵⁸ ‘You were bothered by things that usually don’t bother you’; ‘You didn’t feel like eating, your appetite was poor’; ‘I felt that everything I did was an effort’ (not included in dataset, ‘You felt that you were too tired to do things’ included instead); ‘My sleep was restless’ (not included in this dataset); ‘It was hard to get started doing things’

⁵⁹ ‘People were unfriendly to you’; ‘You felt that people disliked you’

⁶⁰ ‘You had trouble keeping your mind on what you were doing’; ‘You thought your life had been a failure’; ‘You felt fearful’; and ‘You talked less than usual’ did not feature in this interpretation, while ‘You felt life was not worth living’ did not feature in the original scale presented in Radloff (1977)

Table 8.20: Factor analysis of Feelings Scale results – unrotated results, wave 1

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	5.908	4.321	0.311	0.311
Factor 2	1.587	0.431	0.084	0.395
Factor 3	1.157	0.104	0.061	0.455
Factor 4	1.053	0.129	0.055	0.511
Factor 5	0.924	0.100	0.049	0.559
Factor 6	0.825	0.037	0.043	0.603
Factor 7	0.787	0.009	0.041	0.644
Factor 8	0.778	0.086	0.041	0.685
Factor 9	0.692	0.014	0.036	0.722
Factor 10	0.677	0.024	0.036	0.757
Factor 11	0.653	0.023	0.034	0.792
Factor 12	0.630	0.029	0.033	0.825
Factor 13	0.601	0.072	0.032	0.856
Factor 14	0.530	0.044	0.028	0.884
Factor 15	0.486	0.019	0.026	0.910
Factor 16	0.467	0.019	0.025	0.934
Factor 17	0.448	0.015	0.024	0.958
Factor 18	0.433	0.070	0.023	0.981
Factor 19	0.364	-	0.019	1.000

However, Table 8.21 shows the factor loadings are different. Here factor one is found to include not only the ‘depressed affect’ variables, but also two of the ‘somatic and retarded activity’ variables, and four of the variables not included in Radloff’s (1977) original factors. Factor two does match the ‘positive affect’ factor, and factor three matches the ‘interpersonal’ factor. Factor four includes the two remaining variables from the ‘somatic and retarded activity’ factor and one additional variable.

Table 8.21: Rotated factor loadings for Feelings Scale variables, wave 1

Item	Rotated factor loadings				Uniqueness
	Factor 1	Factor 2	Factor 3	Factor 4	
You were bothered by things that usually don't bother you	0.548	0.077	0.060	0.339	0.576
You didn't feel like eating, your appetite was poor	0.449	0.144	-0.066	0.331	0.664
You felt that you could not shake off the blues, even with help from your family and your friends	0.726	0.134	0.079	0.184	0.414
You felt that you were just as good as other people	0.088	0.680	0.159	0.029	0.505
You had trouble keeping your mind on what you were doing	0.295	0.128	0.116	0.602	0.521
You felt depressed	0.735	0.191	0.137	0.229	0.352
You felt that you were too tired to do things	0.184	0.093	0.132	0.700	0.451
You felt hopeful about the future	-0.015	0.753	0.027	0.132	0.415
You thought your life had been a failure	0.543	0.241	0.319	0.007	0.545
You felt fearful	0.423	0.027	0.349	0.116	0.685
You were happy	0.277	0.708	0.026	0.079	0.415
You talked less than usual	0.400	0.064	0.070	0.102	0.821
You felt lonely	0.655	0.128	0.222	0.126	0.489
People were unfriendly to you	0.094	0.038	0.823	0.153	0.290
You enjoyed life	0.279	0.704	0.126	0.047	0.409
You felt sad	0.674	0.132	0.233	0.167	0.446
You felt that people disliked you	0.226	0.136	0.779	0.119	0.310
It was hard to get started doing things	0.130	0.074	0.235	0.688	0.449
You felt life was not worth living	0.527	0.237	0.349	-0.056	0.541

Below are the results from wave two.

Again, four factors with eigenvalues greater than one are found, and these factors explain a similar amount of variance to that reported in the original article (52.12%). Table 8.22 shows, however, that interpretation of factors does not match that reported in Radloff (1977).

Table 8.22: Factor analysis of Feeling Scale results – unrotated results, wave 2

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	6.131	4.575	0.323	0.323
Factor 2	1.556	0.401	0.082	0.405
Factor 3	1.155	0.094	0.061	0.465
Factor 4	1.061	0.184	0.056	0.521
Factor 5	0.877	0.045	0.046	0.457
Factor 6	0.832	0.030	0.044	0.611
Factor 7	0.802	0.019	0.042	0.653
Factor 8	0.783	0.082	0.041	0.695
Factor 9	0.702	0.051	0.037	0.732
Factor 10	0.650	0.016	0.034	0.766
Factor 11	0.635	0.041	0.033	0.799
Factor 12	0.593	0.039	0.031	0.830
Factor 13	0.555	0.040	0.029	0.860
Factor 14	0.514	0.033	0.027	0.887
Factor 15	0.482	0.017	0.025	0.912
Factor 16	0.465	0.023	0.025	0.937
Factor 17	0.442	0.014	0.023	0.960
Factor 18	0.427	0.089	0.023	0.982
Factor 19	0.338	-	0.018	1.000

As in wave one, the first factor has the most variables loaded on to it, 9 out of the 19 variables. It includes all of the ‘depressive affect’ and two of the ‘somatic and retarded activity’ variables as well as three of the variables not included in Radloff’s original interpretation. Factor two again matches the ‘positive affect subscale’, while factor four this time includes the two ‘interpersonal’ variables. Factor three is the same as factor four in the analysis of wave one, including the two remaining ‘somatic and retarded activity’ variables and one additional variable.

Table 8.23: Rotated factor loadings for Feelings Scale variables, wave 2

Item	Rotated factor loadings				
	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
You were bothered by things that usually don't bother you	0.492	0.100	0.429	0.046	0.562
You didn't feel like eating, your appetite was poor	0.451	0.093	0.376	-0.098	0.637
You felt that you could not shake off the blues, even with help from your family and your friends	0.693	0.172	0.307	0.059	0.394
You felt that you were just as good as other people	0.164	0.685	-0.034	0.094	0.494
You had trouble keeping your mind on what you were doing	0.210	0.106	0.673	0.147	0.470
You felt depressed	0.712	0.214	0.270	0.122	0.360
You felt that you were too tired to do things	0.249	0.130	0.612	0.155	0.523
You felt hopeful about the future	0.027	0.777	0.081	0.040	0.388
You thought your life had been a failure	0.634	0.214	-0.042	0.267	0.480
You felt fearful	0.447	0.016	0.172	0.261	0.702
You were happy	0.262	0.694	0.155	0.085	0.419
You talked less than usual	0.346	0.108	0.285	0.086	0.780
You felt lonely	0.600	0.153	0.209	0.254	0.510
People were unfriendly to you	0.078	0.046	0.153	0.839	0.265
You enjoyed life	0.286	0.695	0.120	0.097	0.412
You felt sad	0.689	0.187	0.230	0.172	0.408
You felt that people disliked you	0.270	0.130	0.097	0.768	0.311
It was hard to get started doing things	0.086	0.089	0.642	0.285	0.491
You felt life was not worth living	0.627	0.174	-0.158	0.241	0.494

These results suggest a validity issue with some of the subscales available in Add Health as part of the Feelings Scale (or CES-D scale). However, the positive affect subscale does seem to be valid. As such, a factor variable for each wave will be created. These are summarized in Table 8.24.

Table 8.24: Summary of factors based on Feelings Scale Positive Affect subscale

	No.	Mean	St. Dev.	Min.	Max.
Feelings Scale FA PA Wave 1	4805	0.000	1.000	-3.559	2.646
Feelings Scale FA PA Wave 2	4804	0.000	1.000	-3.709	2.290

An alternative measure based on questions asked in the personality section of the questionnaire is constructed here for comparison with the measure based on the Feelings Scale. The personality questions are similar to questions in the British Household Panel Survey that have been used to measure children’s affective well-being in the past⁶¹ (for example: Bradshaw and Keung, 2011b; Clair, 2011). The two positively worded questions (‘I have a number of good qualities’ and ‘I am a likeable person’) are very similar to two from the personality questions (‘You have a lot of good qualities’, ‘You like yourself just the way you are’). An additive scale based on the relevant variables will be created as well as a variable produced using factor analysis.

Tables 8.25 and 8.26 show the descriptive statistics and Cronbach’s alpha for the variables in this alternative measure of positive affect based on the personality questions. As with the Feelings Scale, and the measures of affective well-being used previously (from the Millennium Cohort Study, but also see Clair, 2011) the responses are highly skewed with very few children reporting the lowest levels of well-being. The alphas are higher than for the positive affect scale but this measure includes more variables meaning that the improvement may not be due to increased internal reliability. However, the correlation between the variables in the scale is on average higher for these variables than for those in the positive affect subscale of the Feelings Scale (see Tables 8.27 and 8.28).

Table 8.25: Wave 1 Personality section questions

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Missing
You have a lot of good qualities	6 (0.12%)	53 (1.10%)	374 (7.74%)	2584 (53.45%)	1801 (37.26%)	16 (0.33%)
You have a lot to be proud of	10 (0.21%)	90 (1.86%)	354 (7.32%)	2305 (47.68%)	2060 (42.61%)	15 (0.31%)
You like yourself just the way you are	41 (0.85%)	410 (8.48%)	667 (13.80%)	2038 (42.16%)	1666 (34.46%)	12 (0.25%)
You feel you are doing everything just about right	37 (0.77%)	432 (8.94%)	1039 (21.49%)	2422 (50.10%)	891 (18.43%)	13 (0.27%)
You feel socially accepted	28 (0.58%)	175 (3.62%)	498 (10.30%)	2715 (56.16%)	1402 (29.00%)	16 (0.33%)
You feel loved and wanted	17 (0.35%)	73 (1.51%)	378 (7.82%)	2289 (47.35%)	2064 (42.70%)	13 (0.27%)
Cronbach’s Alpha for scale = 0.8438						

⁶¹ I have a number of good qualities; I certainly feel useless at times; I am a likeable person; All in all, I am inclined to feel I am a failure; At times I feel I am no good at all.

Table 8.26: Wave 2 Personality section questions

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Missing
You have a lot of good qualities	7 (0.14%)	31 (0.64%)	300 (6.21%)	2462 (50.93%)	2021 (41.81%)	13 (0.27%)
You have a lot to be proud of	9 (0.19%)	57 (1.18%)	313 (6.47%)	2200 (45.51%)	2243 (46.40%)	12 (0.25%)
You like yourself just the way you are	50 (1.03%)	341 (7.05%)	596 (12.33%)	2070 (42.82%)	1768 (36.57%)	9 (0.19%)
You feel you are doing everything just about right	39 (0.81%)	328 (6.79%)	912 (18.87%)	2437 (50.41%)	1105 (22.86%)	13 (0.27%)
You feel socially accepted	30 (0.62%)	113 (2.34%)	481 (9.95%)	2566 (53.08%)	1631 (33.74%)	13 (0.27%)
You feel loved and wanted	9 (0.19%)	77 (1.59%)	285 (5.90%)	2274 (47.04%)	2176 (45.01%)	13 (0.27%)
Cronbach's Alpha for scale = 0.8541						

The correlation coefficients for the variables relating to positive affect are given below, with the variables represented as numbers due to space limitations:

Table 8.27: Pairwise correlations for personality question variables, wave 1⁶²

	1	2	3	4	5	6
1	1.00					
2	.61***	1.00				
3	.44***	.53***	1.00			
4	.40***	.47***	.56***	1.00		
5	.43***	.47***	.45***	.46***	1.00	
6	.47***	.57***	.47***	.43***	.53***	1.00
Average correlation = .49						

Table 8.28: Pairwise correlations for personality question variables, wave 2

	1	2	3	4	5	6
1	1.00					
2	.63***	1.00				
3	.45***	.54***	1.00			
4	.41***	.50***	.57***	1.00		
5	.47***	.49***	.48***	.51***	1.00	
6	.48***	.58***	.47***	.46***	.58***	1.00
Average correlation = .51						

The scales created by summing the variables are summarized below. The minimum reported value for wave 2 is 2, but the potential minimum is 0.

Table 8.29: Personality Questions Positive Affect scales

	No.	Mean	St. Dev.	Min.	Max.
Personality Qs PA Wave 1	4811	18.767	3.526	0	24
Personality Qs PA Wave 2	4813	19.193	3.477	2	24

Table 8.30 shows the results of the principal components factor analysis for the personality questions in wave one. It finds one factor (confirmed by the screeplot in

⁶² 1. You have a lot of good qualities; 2. You have a lot to be proud of; 3. You like yourself just the way you are; 4. You feel you are doing everything just about right; 5. You feel socially accepted; 6. You feel loved and wanted

Figure 8.2) which explains 57% of the variance. All of the variables are heavily loaded onto the one factor.

Table 8.30: Factor analysis of relevant personality questions results – unrotated results, wave 1

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	3.429	2.735	0.572	0.572
Factor 2	0.645	0.078	0.116	0.687
Factor 3	0.616	0.136	0.103	0.790
Factor 4	0.481	0.053	0.080	0.870
Factor 5	0.428	0.077	0.071	0.942
Factor 6	0.351	-	0.059	1.000

Figure 8.2: Screeplot for personality questions, wave 1

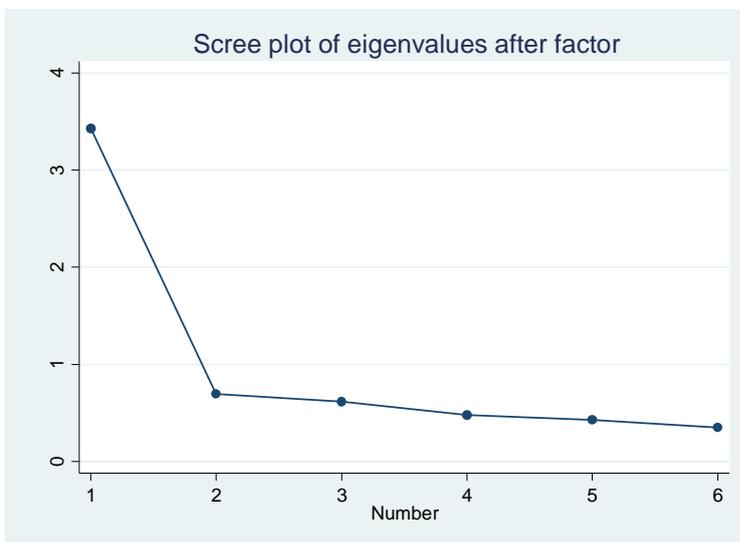


Table 8.31: Factor loadings for relevant personality questions, wave 1

Item	Rotated factor loadings	
	Positive affect	Uniqueness
You have a lot of good qualities	0.738	0.455
You have a lot to be proud of	0.811	0.342
You like yourself just the way you are	0.757	0.428
You feel you are doing everything just about right	0.726	0.473
You feel socially accepted	0.731	0.466
You feel loved and wanted	0.769	0.408

Table 8.32 presents the findings for the wave two analysis. The findings are very similar, although the one retained factor explains slightly more of the variance (59%).

Table 8.32: Factor analysis of personality questions results – unrotated results, wave 2

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	3.536	2.856	0.589	0.589
Factor 2	0.680	0.085	0.113	0.703
Factor 3	0.595	0.146	0.099	0.802
Factor 4	0.449	0.038	0.075	0.877
Factor 5	0.411	0.081	0.068	0.945
Factor 6	0.330	-	0.055	1.000

Figure 8.3: Screeplot for personality questions, wave 2

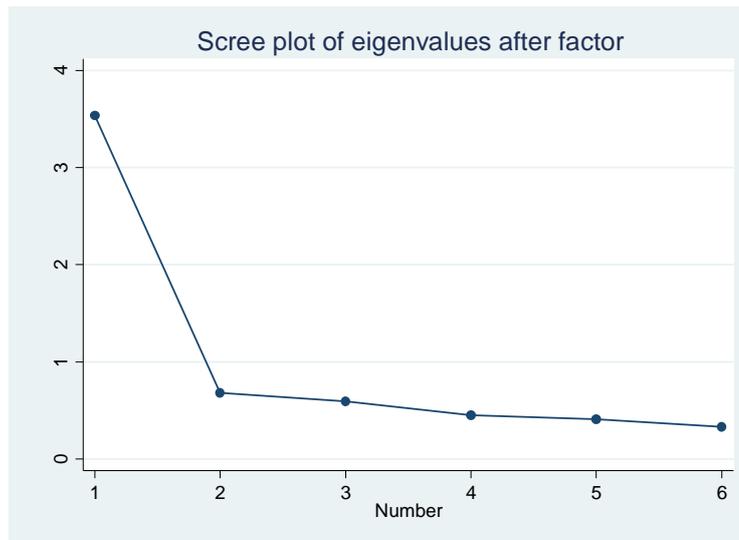


Table 8.33: Factor loadings for relevant personality questions, wave 2

Item	Rotated factor loadings	
	Positive affect	Uniqueness
You have a lot of good qualities	0.744	0.446
You have a lot to be proud of	0.816	0.335
You like yourself just the way you are	0.760	0.423
You feel you are doing everything just about right	0.746	0.444
You feel socially accepted	0.765	0.415
You feel loved and wanted	0.773	0.402

The variables created using factor analysis of the personality questions are summarized below.

Table 8.34: Summaries of factors based on personality questions

	No.	Mean	St. Dev.	Min.	Max.
Personality Qs FA PA Wave 1	4811	0.000	1.000	-5.459	1.467
Personality Qs FA PA Wave 2	4813	0.000	1.000	-5.050	1.368

Table 8.35 presents the descriptive statistics for the four potential outcome variables at each wave. Standardized variables will not be used in the analysis because of issues with interpretation in multilevel models but are presented here to allow for easy

comparison between outcome variables. It shows that there is greater range in responses from the variables based on the personality questions.

Table 8.35: Standardized positive affect variables, wave 1

	No.	Mean	St. Dev.	Min.	Max.
Feelings Scale PA Wave 1	4814	0.000	1.000	-3.004	1.425
Feelings Scale FA PA Wave 1	4805	0.000	1.000	-3.559	2.646
Personality Qs PA Wave 1	4811	0.000	1.000	-5.323	1.484
Personality Qs FA PA Wave 1	4811	0.000	1.000	-5.459	1.467
Feelings Scale PA Wave 2	4819	0.000	1.000	-3.068	1.395
Feelings Scale FA PA Wave 2	4804	0.000	1.000	-3.709	2.290
Personality Qs PA Wave 2	4813	0.000	1.000	-4.945	1.382
Personality Qs FA PA Wave 2	4813	0.000	1.000	-5.050	1.368

Pairwise correlations between the outcome variables were also explored. These are shown in Table 8.36, reasonable correlations between the measures are found throughout suggesting validity.

Table 8.36: Pairwise correlations between constructed positive affect variables

	FS 1	FS FA 1	PQ 1	PQ FA 1	FS 2	FS FA 2	PQ 2	PQ FA 2
FS 1	1.00							
FS FA 1	.96***	1.00						
PQ 1	.46***	.38***	1.00					
PQ FA 1	.46***	.39***	1.00***	1.00				
FS 2	.50***	.45***	.36***	.36***	1.00			
FS FA 2	.45***	.44***	.30***	.31***	.96***	1.00		
PQ 2	.36***	.31***	.57***	.57***	.46***	.38***	1.00	
PQ FA 2	.36***	.31***	.57***	.57***	.46***	.39***	1.00***	1.00

Figures 8.4 and 8.5 show the histograms for the created variables. All are negatively skewed, as is often the case with children’s affective well-being (Clair, 2011), and subjective well-being generally. The variable based on the positive affect subscale of the Feelings Scale created using factor analysis is the most normally distributed in both waves, unusually so compared the previous measures of subjective well-being used. The qnorm plots in Figures 8.6 and 8.7 show that the residuals of the variables are relatively normally distributed, although the variables based on the Feelings Scale have slightly heavier tails than would be expected (in school only, wave 2). The residuals for the variance within individuals over time were less normally distributed than those for the school level. Particularly for the personality question variables, the tails are heavier than would be expected. No decision about which outcome variable to select was made at this stage. Instead, the preliminary analysis was conducted using all four of the variables and the decision made with these results in mind.

Figure 8.4: Histograms of PA variables, wave 1

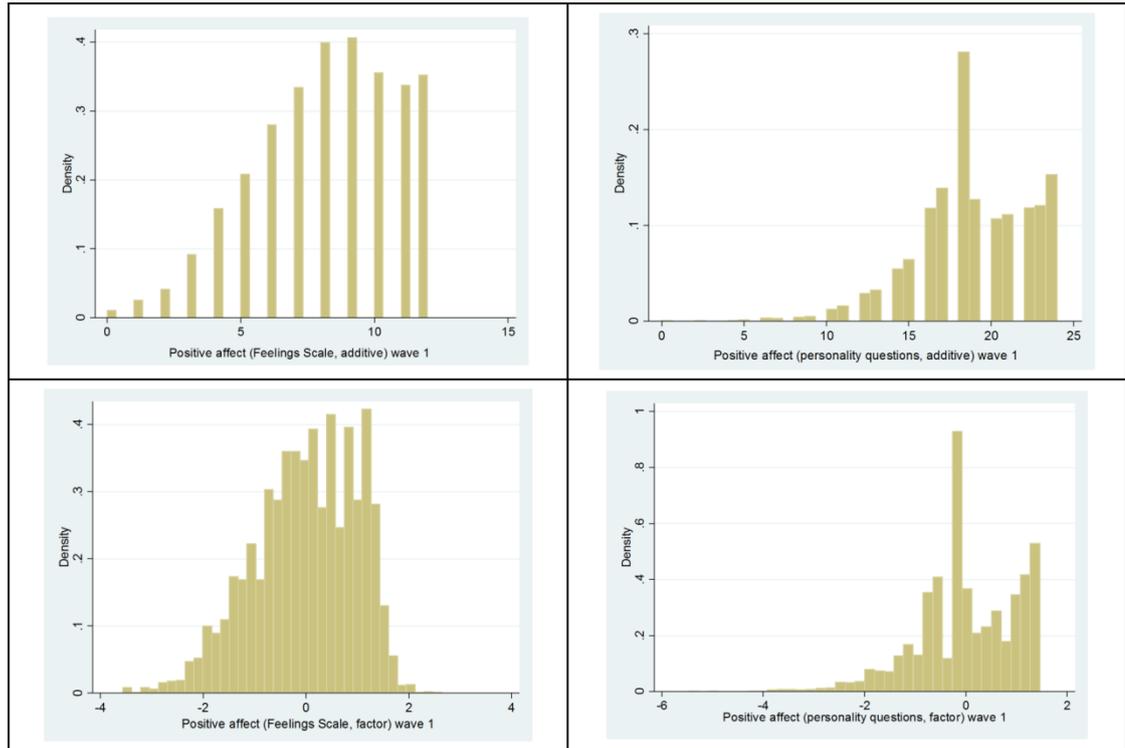


Figure 8.5: Histograms of PA variables, wave 2

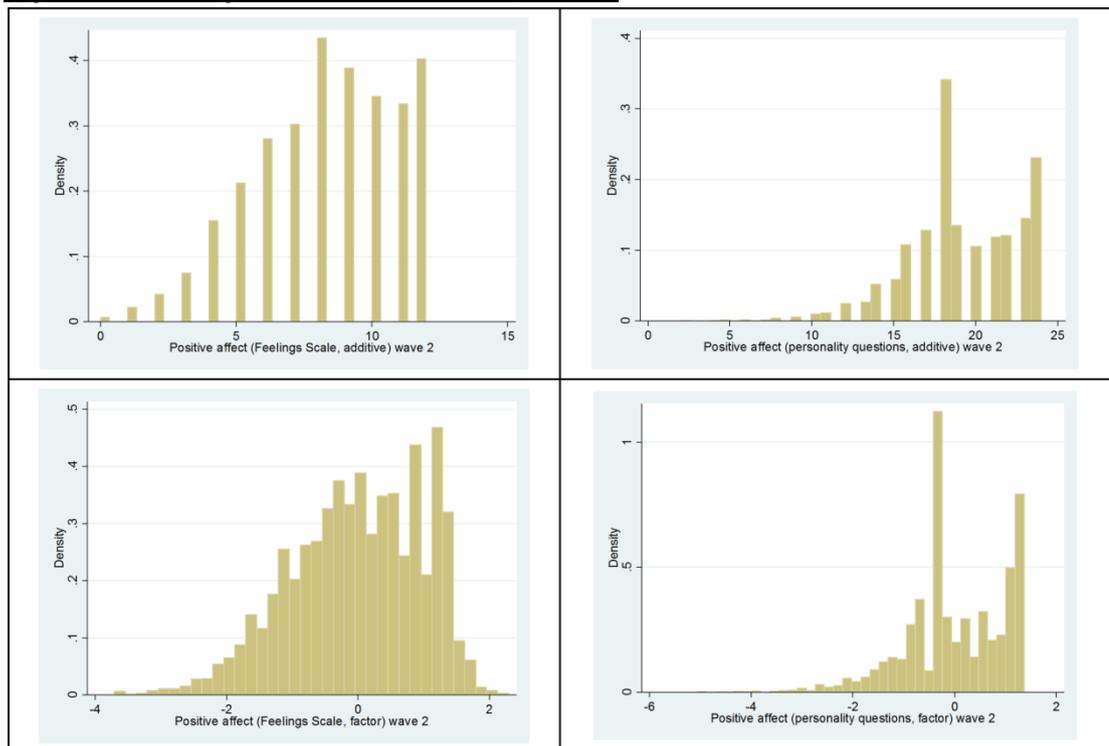


Figure 8.6: Qnorm plots of school level residuals for outcome variables

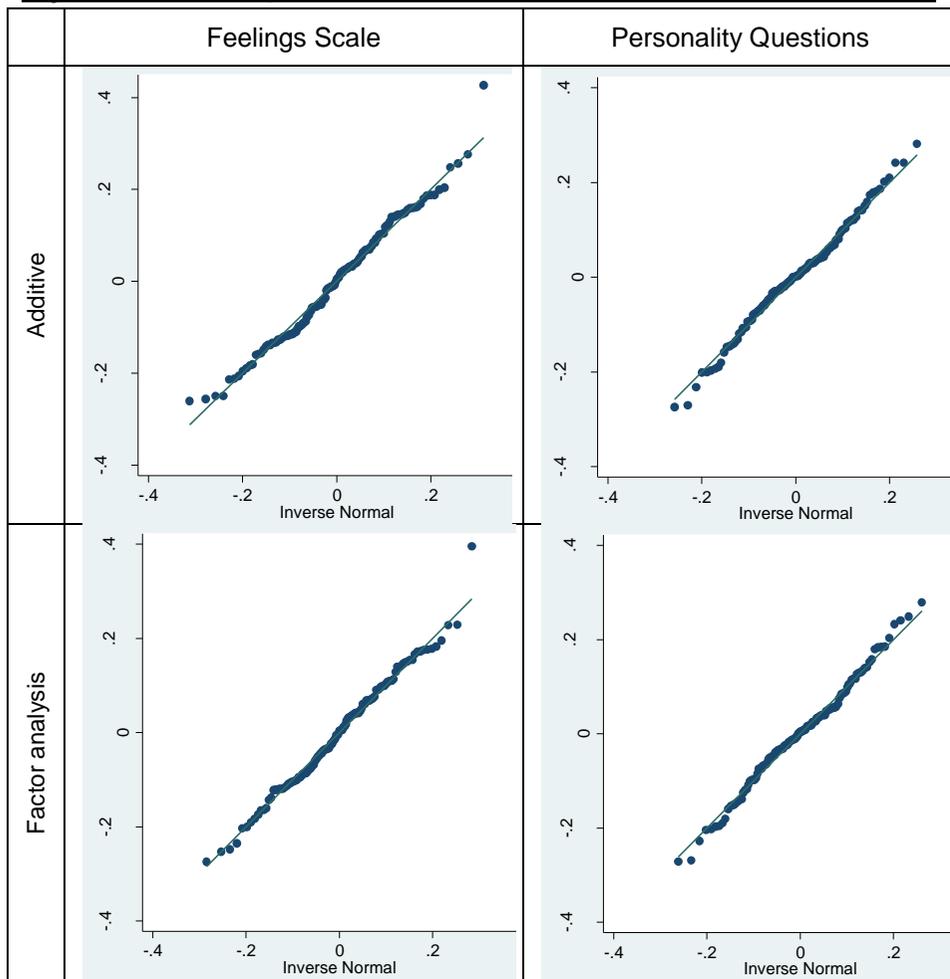
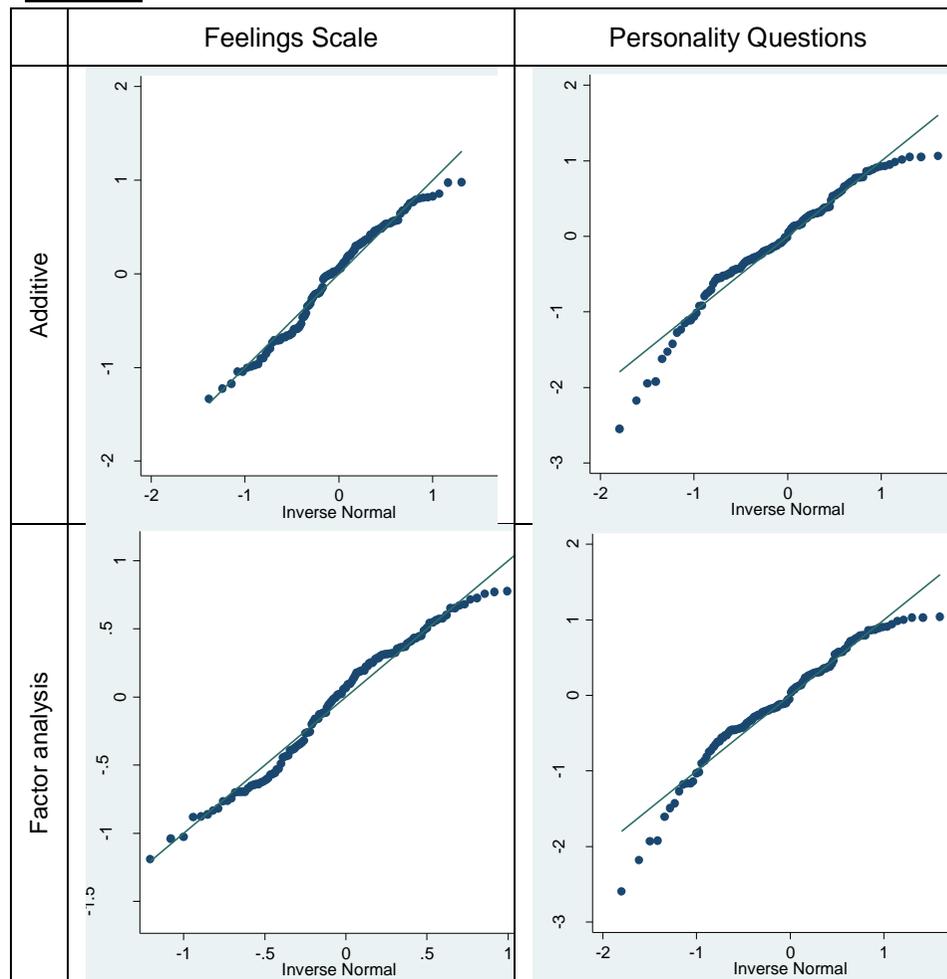


Figure 8.7: Qnorm plots of within individual residuals for outcome variables



However, it was first investigated whether there was a statistically significant difference in the level of positive affect reported by children attending and not attending school. This was the only dataset in the thesis for which this analysis was possible. The results are shown below in Table 8.37. These results show a near consistent finding that children not currently attending school report lower levels of positive affect showing that these children should be of additional concern, although it is not possible to ascertain here whether lower positive affect is a cause or consequence of not attending school.

Table 8.37: T-tests showing the difference in PA for those attending and not attending school (unweighted)

Outcome variable used	In school mean	Out of school mean	T-test result (two-tailed)
Feelings Scale PA Wave 1	.006	-.336	t(4812) = -3.014, $p < .05$
Feelings Scale FA PA Wave 1	.003	-.199	t(4803) = -1.786, $p > .05$
Personality Qs PA Wave 1	.007	-.405	t(4809) = -3.661, $p < .001$
Personality Qs FA PA Wave 1	.007	-.431	t(4809) = -3.895, $p < .001$
Feelings Scale PA Wave 2	.028	-.320	t(4817) = -6.554, $p < .001$
Feelings Scale FA PA Wave 2	.022	-.257	t(4802) = -5.248, $p < .001$
Personality Qs PA Wave 2	.027	-.317	t(4811) = -6.493, $p < .001$
Personality Qs FA PA Wave 2	.028	-.321	t(4811) = 6.583, $p < .001$

From this stage on, analyses will exclude those aged 18 and over, and those who are not currently attending school.

Preliminary analysis results

The Bonferroni correction was applied to the results of the preliminary analysis (resulting in a cut-off p value of 0.0125) as 4 outcomes for a single dataset were being predicted simultaneously. Tables 8.38 and 8.39 show the results for individual variables in the different models, detailed results are given in Appendix 8. Table 8.40 shows an overview for groups of variables. English grade, overall health, getting enough sleep, smoking, being happy in neighbourhood, perceiving mum as being warm and loving, good communication with mum, good overall relationship with mum, perception of own intelligence, trouble doing homework, feeling part of school, feeling safe in school and feeling in control of future were all significant in all models of the wave 2 analysis. Race, marital status of reporting parent, overall health (both waves), health of reporting parent, mum warm and loving (not at wave 1), overall relationship with mum (only for 2 models at wave 1), perception of intelligence (only 2 models at wave 1), score on the Picture Vocabulary Test, trouble doing homework (wave 2 only), feel part of school (only 2 models at wave 1), and feel safe in school (wave 2 only) are consistently significant in the models using variables from both waves one and two.

Table 8.38: Preliminary analysis predicting positive affect, linear regression wave 2

	Variable	FS	FS FA	PQ	PQ FA
Demo- graphics	Age	ns	ns	s	s
	Gender	ns	ns	s	s
	Mother disabled	ns	ns	ns	ns
	Child disabled	ns	s	ns	ns
Neighbour hood	Urbanicity	ns	ns	ns	ns
	Income dispersion	ns	ns	ns	ns
	Poverty rate	ns	ns	ns	ns
	Unemployment rate	s	ns	ns	ns
School related	Grade	ns	ns	s	s
	Excused absences	ns	ns	ns	ns
	Skipped school	ns	ns	ns	ns
	Suspended	s	s	ns	ns
	Expelled	ns	ns	ns	ns
	English grade	s	s	s	s
	Maths grade	ns	ns	ns	ns
	Science grade	s	ns	s	s
Health and risk - categorical	Overall health	s	s	s	s
	Needed but not get medical care	s	ns	s	s
	Health limits attending school	s	s	ns	ns
	Get enough sleep	s	ns	s	s
	Smoke	ns	ns	s	s
	Drink alcohol	ns	ns	ns	ns
Health and risk - binary	Overall health	s	s	s	s
	Needed but not get medical care	s	s	s	s
	Health limits attending school	s	ns	ns	ns
	Get enough sleep	s	s	s	s
	Smoke	s	s	s	s
	Drink alcohol	ns	ns	s	ns
mon ey	Child works for money	ns	ns	ns	ns
	Allowance (continuous)	s	ns	ns	ns
	Allowance (binary)	s	ns	ns	ns
Neighbourhood perceptions	Know people in neighbourhood	ns	ns	ns	ns
	Talk to people in neighbourhood	ns	ns	s	s
	Neighbours look out for each other	ns	ns	ns	ns
	Use neighbourhood rec. facilities	ns	ns	ns	s
	Neighbourhood is safe	s	ns	ns	ns
	Happy in neighbourhood	s	s	s	s
	Hang out with friends	s	ns	ns	ns

Table 8.38 continued

Relationship perceptions	How often have dinner with parents	s	s	ns	ns
	Mum close	ns	ns	ns	ns
	Mum care	ns	ns	ns	ns
	Talk to mum personal problem	s	ns	s	s
	Talk with mum about school work	ns	ns	ns	ns
	Talk with mum about other school	s	s	ns	ns
	Mum warm	s	s	s	s
	Mum encourages independence	ns	ns	s	s
	Mum teaches right from wrong	ns	ns	s	s
	Communication with mum	s	s	s	s
	Mum relationship overall	s	s	s	s
	Adults care	ns	ns	s	s
	Mum disappointed if not grad. college	ns	ns	ns	ns
	Parents care	ns	ns	ns	ns
	Friends care	ns	ns	ns	ns
	Family understand	s	ns	s	s
	Want to leave home	ns	ns	ns	ns
	Family have fun together	ns	ns	s	s
	Family pay attention	ns	ns	s	s
Child perception of own intelligence	s	s	s	s	
School perceptions	Trouble getting along with teachers	ns	ns	ns	ns
	Trouble paying attention	ns	ns	s	s
	Trouble doing homework	s	s	s	s
	Trouble getting along with other students	s	ns	ns	ns
	Feel close to people at school	ns	ns	ns	ns
	Feel part of school	s	s	s	s
	School is prejudiced	ns	ns	ns	ns
	Happy at school	ns	ns	s	s
	Teachers fair	ns	ns	ns	ns
	Feel safe in school	s	s	s	s
	Teachers care	s	s	ns	ns
	College disparity	ns	ns	ns	ns
	College disparity squared	s	s	ns	ns
	Future in own control	s	s	s	s

Table 8.39: Preliminary analysis predicting positive affect results, linear regression waves 1 and 2 (variables wave 2 unless specified)

	Variable	FS	FS FA	PQ	PQ FA
Demographics	Age	ns	ns	s	s
	Gender	ns	ns	s	s
	Mother disabled	ns	ns	ns	ns
	Child disabled	s	s	ns	ns
	Race w1	s	s	s	s
	Parent marital status w1	s	s	s	s
	Parent education level w1	s	s	ns	ns
Demographics - categorical	Age	ns	ns	s	s
	Gender	ns	ns	s	s
	Mother disabled	ns	ns	ns	ns
	Child disabled	ns	s	ns	ns
	Race w1	s	s	s	s
	Parent marital status w1	s	s	ns	ns
	Parent education level w1	s	s	ns	ns
School related	Grade	ns	ns	s	s
	Excused absences	ns	ns	ns	ns
	Skipped school	ns	ns	ns	ns
	Suspended	ns	ns	ns	ns
	Expelled	ns	ns	ns	ns
	English grade	s	s	ns	s
	Maths grade	ns	ns	ns	ns
	Science grade	ns	ns	ns	ns
	English grade w1	ns	ns	ns	ns
	Maths grade w1	ns	ns	ns	ns
	Science grade w1	s	s	ns	ns
Health and risk - categorical	Overall health	s	s	s	s
	Needed but not get medical care	ns	ns	s	s
	Health limits attending school	s	s	ns	ns
	Get enough sleep	s	ns	s	s
	Smoke	ns	ns	s	s
	Drink alcohol	ns	ns	ns	ns
	Overall health w1	s	s	s	s
	Needed by not get medical care w1	ns	ns	ns	ns
	Learned about proper diet w1	ns	ns	ns	ns
	Learned about exercise w1	ns	ns	ns	ns
	Learned about smoking w1	ns	ns	ns	ns
	Learned about obesity w1	s	s	ns	ns
	Learned about drinking w1	ns	ns	ns	ns
	Learned about drug abuse w1	ns	ns	ns	ns
	Learned about pregnancy w1	ns	ns	ns	ns
	Learned about AIDs w1	ns	ns	ns	ns
Learned about stranger danger w1	ns	ns	ns	ns	

Table 8.39 continued

Health and risk - binary	Overall health	s	s	s	s
	Needed but not get medical care	s	ns	s	s
	Health limits attending school	ns	s	ns	ns
	Get enough sleep	s	s	s	s
	Smoke	s	ns	s	s
	Drink alcohol	ns	ns	ns	ns
	Overall health w1	s	s	s	s
	Needed by not get medical care w1	s	ns	ns	ns
	Learned about proper diet w1	ns	ns	ns	ns
	Learned about exercise w1	ns	ns	ns	ns
	Learned about smoking w1	ns	ns	ns	ns
	Learned about obesity w1	s	s	ns	ns
	Learned about drinking w1	ns	ns	ns	ns
	Learned about drug abuse w1	ns	ns	ns	ns
	Learned about pregnancy w1	ns	ns	ns	ns
	Learned about AIDs w1	ns	ns	ns	ns
	Learned about stranger danger 21	ns	ns	ns	ns
	Reporting parent happy w1	ns	ns	ns	ns
	Reporting parent receive benefits w1	ns	ns	ns	ns
	Reporting parent health w1	s	s	s	s
	Reporting parent access medical care w1	s	s	ns	ns
	Hang out with friends	ns	ns	ns	ns
	Hang out with friends w1	ns	ns	ns	ns
Relationship perceptions	How often have dinner with parents	s	s	ns	ns
	Mum close	ns	ns	ns	ns
	Mum care	ns	ns	ns	ns
	Talk to mum personal problem	ns	ns	s	s
	Talk with mum about school work	ns	ns	ns	ns
	Talk with mum about other school	s	s	ns	ns
	Mum warm	s	s	s	s
	Mum encourages independence	ns	ns	ns	ns
	Mum teaches right from wrong	ns	ns	s	s
	Communication with mum	ns	s	s	s
	Mum relationship overall	s	s	s	s
	Adults care	ns	ns	s	s
	Mum disappointed if not grad. college	ns	ns	ns	ns
	Parents care	s	ns	ns	ns
	Friends care	ns	ns	ns	ns
	Family understand	ns	ns	s	s
	Want to leave home	ns	ns	ns	ns
	Family have fun together	ns	ns	s	s
	Family pay attention	ns	ns	s	s
	Mum close w1	ns	ns	ns	ns
	Mum care w1	ns	ns	ns	ns
	How often have dinner with parents w1	ns	ns	ns	ns
	Mum warm w1	ns	ns	ns	ns
	Mum encourages independence w1	ns	ns	ns	ns
	Mum teaches right from wrong w1	ns	ns	ns	ns
	Communication with mum w1	ns	ns	s	s
	Mum relationship overall w1	ns	ns	s	s
	Adults care w1	ns	ns	ns	ns
	Parents care w1	ns	ns	ns	ns
	Friends care w1	ns	ns	ns	ns
	Family understands you w1	ns	ns	ns	ns
	Want to leave home w1	ns	ns	ns	ns
Family have fun together w1	ns	ns	ns	ns	
Family pay attention w1	ns	ns	ns	ns	

Table 8.39 continued

	Child perception of own intelligence w2	s	s	s	s
	Picture vocabulary test w1	s	s	s	s
	Child perception of own intelligence w1	s	s	ns	ns
School perceptions – disparity variables	Trouble getting along with teachers	ns	ns	ns	ns
	Trouble paying attention	ns	ns	s	s
	Trouble doing homework	s	s	s	s
	Trouble getting along with other students	s	ns	ns	ns
	Feel close to people at school	ns	ns	ns	ns
	Feel part of school	s	s	s	s
	School is prejudiced	ns	ns	ns	ns
	Happy at school	s	ns	s	s
	Teachers fair	ns	ns	ns	ns
	Feel safe in school	s	s	s	s
	Teachers care	s	s	ns	ns
	College disparity	ns	ns	ns	ns
	College disparity squared	s	ns	ns	ns
	Feel close to people at school w1	s	ns	ns	ns
	Feel part of school w1	ns	ns	s	s
	School is prejudiced w1	ns	ns	s	s
	Happy at school w1	ns	ns	s	s
	Teachers fair w1	ns	ns	ns	ns
	Feel safe in school w1	ns	ns	ns	ns
	Teachers care w1	s	s	ns	ns
	Trouble getting along with teachers w1	ns	ns	s	s
	Trouble paying attention w1	ns	ns	ns	ns
	Trouble doing homework w1	ns	ns	ns	ns
	Trouble getting along with students w1	ns	ns	ns	ns
College disparity w1	ns	ns	ns	ns	
College disparity squared w1	s	s	ns	ns	
School perceptions - original	Trouble getting along with teachers	ns	ns	ns	ns
	Trouble paying attention	s	ns	s	s
	Trouble doing homework	s	s	s	s
	Trouble getting along with other students	s	ns	ns	ns
	Feel close to people at school	ns	ns	ns	ns
	Feel part of school	s	s	s	s
	School is prejudiced	ns	ns	ns	ns
	Happy at school	s	s	s	s
	Teachers fair	ns	ns	ns	ns
	Feel safe in school	s	s	s	s
	Want to attend college	ns	ns	ns	ns
	Likelihood of attending college	ns	ns	ns	ns
	Teachers care	s	s	ns	ns
	Feel close to people at school w1	ns	ns	s	s
	Feel part of school w1	ns	ns	s	s
	School is prejudiced w1	ns	ns	s	s
	Happy at school w1	ns	ns	ns	s
	Teachers fair w1	ns	ns	s	s
	Feel safe in school w1	ns	ns	ns	ns
	Teachers care w1	s	s	ns	ns
	Trouble getting along with teachers w1	ns	ns	s	s
	Trouble paying attention w1	ns	ns	ns	ns
	Trouble doing homework w1	ns	ns	ns	ns
	Trouble getting along with students w1	ns	ns	ns	ns
Want to attend college w1	ns	ns	ns	ns	
Likelihood of attending college w1	s	ns	ns	ns	

Table 8.40 below gives an overview of the different models (using the groups of predictor variables) showing which models were significant overall after the Bonferroni

correction had been applied. Where two models based on the same variables but in a different form (e.g. continuous or binary) are compared the model with the better model fit is shown in bold. It should be noted however that some of the differences are very small. It is perhaps most surprising that children's social life is rarely found to be significant in the models, particularly given the significance social experiences in previous chapters. This may be because the question available, which focuses on time spent with friends after school in the last week, does not adequately reflect what is important to children or their true social experiences.

Table 8.40: Overview of group regression analyses predicting positive affect⁶³

Model	FS	FS FA	PQ	PQ FA
Demographics (w2)	s	ns	s	s
Neighbourhood context (w2)	s	s	ns	ns
School related (w2)	s	s	s	s
Health and risk behaviours (continuous) (w2)	s	s	s	s
Health and risk behaviours (binary) (w2)	s	s	s	s
Child money (w2)	s	ns	ns	ns
Neighbourhood perceptions (w2)	s	s	s	s
Child social life (wave 2)	ns	ns	ns	ns
Relationship perceptions (w2)	s	s	s	s
Intelligence (w2)	s	s	s	s
School perceptions (disparity variable) (w2)	s	s	s	s
School perceptions (original variable) (w2)	s	s	s	s
Future in own control (w2)	s	s	s	s
Demographics (binary) (1 + 2)	s	s	s	s
Demographics (categorical) (1 + 2)	s	s	s	s
School related (1 + 2)	s	s	s	s
Health and risk behaviours (continuous) (1 + 2)	s	s	s	s
Health and risk behaviours (binary) (1 + 2)	s	s	s	s
Parent and household characteristics (binary) (1)	s	s	ns	ns
Parent and household characteristics (continuous) (1)	s	s	s	s
Child social life (1 + 2)	ns	s	ns	ns
Relationship perceptions (1 + 2)	s	s	s	s
Intelligence (1 + 2)	s	s	s	s
School perceptions (disparity variables) (1 + 2)	s	s	s	s
School perceptions (original variables) (1 + 2)	s	s	s	s
Number of significant variable groups	23/25	22/25	20/25	20/25

Selection of outcome variable

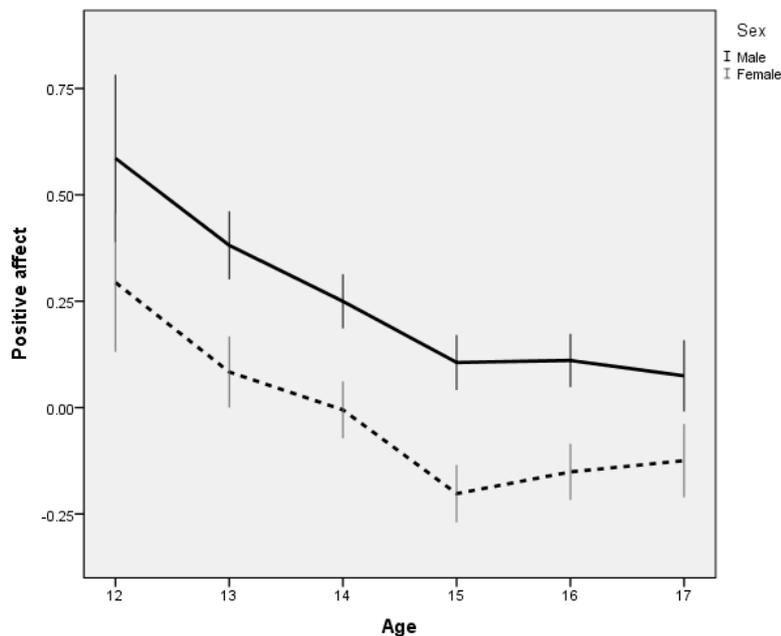
Preliminary analysis results were given above for all four of the potential outcome variables. However only one outcome variable will be used for the multilevel analysis presented below. The variable used will be chosen on the basis of construct validity, reliability, consistency and normality of the distribution of residuals in a null multilevel model (important for meeting the assumptions of multilevel analysis).

The outcome variables based on the Feelings Scale have the most significant results, as shown above in Tables 8.38-8.40. However, it is not enough to select the outcome

⁶³ FS = Feelings Scale, PQ = Personality Questions, FA = factor analysis

variable that has the most significant results, as selecting the variable in this way risks skewing the analysis in order to maximise the chances of finding a significant result. It is important to note that the qnorm plots (Figure 8.6 and 8.7) showed that the residuals for the Personality Questions based variable were the most normally distributed at the school level, although less so for the occasion level. They did also have higher Cronbach's alphas and correlations between variables. The results for the personality question variables when gender and age were included in the model were more as would be expected (see Figure 8.8) based on previous findings and other research (Powdthavee and Vignoles, 2008; Bradshaw and Keung, 2011b; Clair, 2011). As well as the questions themselves being more in-keeping with the approach to subjective well-being used in this thesis. These findings suggest that using one of the variables based on the personality questions as opposed to the Feelings Scale would be desirable. However, there is little to choose between the two personality question variables in terms of results. An outcome variable based on factor analysis was used in Chapter 5, as such the variable based on a factor analysis of the personality questions will be used as the outcome variable for the multilevel analyses. Therefore the outcome variable used in the multilevel analysis is that labelled as PQ FA (Personality Questions Factor Analysis) in the above tables.

Figure 8.8: Positive affect, age and gender



Unlike in the similar graph shown in Chapter 5 (Figure 5.3), this graph does not show a divergence in the affective well-being of boys and girls as they age, instead this appears to show a very similar relationship between age and positive affect for both genders, although girls have considerably lower positive affect than boys. This may be because the relationship is different in the USA compared to England, or because of the exclusion of negative affect from this analysis. It may be that boys and girls in both

nations have similar relationships between positive affect and age but girls show an increase in negative affect with age that is not demonstrated in boys.

Following the selection of the outcome variable, the next section gives the results for the multilevel models.

Results

Prior to the completion of the multilevel analysis the relationship perceptions variables were made binary, i.e. positive and negative (quite a bit and very much; opposed to not at all, very little and somewhat for positively worded questions for example). This was because the number of categories in the model was presenting challenges for the estimation of the model. The multilevel model produced was longitudinal, therefore only predictor variables available at both waves (or those treated as unchanged from wave 1, see below) are used. Bootstrapped standard errors are produced (100 reps, fewer than used previously because of the computational power required by this more complicated model) to account for the slight non-normality of the distribution in the outcome variable. Unlike in Chapter 6, educational achievement was not retained in the final model. In other chapters the educational performance variable was retained in the multilevel models, regardless of statistical significance, for information. However because of the comparatively high number of missing cases in this dataset for achievement variables the variable was not retained.

Model 1: Is there a relationship between the school a child attends and the level of subjective well-being that they report?

Initially, a baseline model is run containing no variables in any part of the model, shown in Table 8.41. This finds a school level result, but one that is much smaller than the between child and within child variances. This result suggests that, unsurprisingly perhaps, within child effects are most important. The model indicates that at this stage 2.57% of the variance in positive affect is explained at the school level, comparable to the finding in the MCS analysis of 2.03%.

Table 8.41: Null model results

	B	S.E.
Constant	0.033***	.009
Within pupil (S.D.) (95% confidence interval)	0.721 (.706-.737)	.008
Pupil level (S.D.) (95% confidence interval)	0.652 (.627-.679)	.013
School level (S.D.) (95% confidence interval)	0.158 (.136-.183)	.012
LL = -9551.503, LR test: $\chi^2(2) = 1418.55$, $p < .001$, VPC (school): 2.57%, N = 3663 (131)		

Model 2: Does the relationship remain after other factors are considered? If so how much variance is explained at the school level? How are schools influencing children's affective well-being?

This model includes the predictor variables discussed above with the exception of the school perception variables. Two of the included variables that were only available at wave 1 in the dataset were duplicated so that wave 1 responses were used for both waves, thus allowing them to be included in this analysis. The variables were race and highest level of parent education. That the responses for race were duplicated is not problematic as race is a (debatably, see Saperstein and Penner, 2010) static characteristic. Marital status and education level are not static, as such these will be referred to as marital status at wave 1 and education level at wave 1. This is not hugely problematic because of the comparatively short time between waves, meaning that any changes are unlikely to have had their full impact, particularly for the parent education level variable.

The results show that, as expected, girls report lower positive affect than boys. In terms of race, African American children report significantly higher positive affect than white children. Children whose reporting parent had a high school or post high school education were found to have higher positive affect. There was no statistically significant difference between those with a college or higher education and those without a high school education.

Having good health and getting enough sleep were positively associated with positive affect, while having smoked was associated with a reduction in positive affect. Positive relationships with friends and family were associated with improved positive affect, consistent with previous findings. The coefficients for children's perceptions of their

own intelligence were statistically significant, indicating that increased positive affect is associated with higher confidence.

In terms of random effects in the model, only gender and wanting to leave home were significant. This finding suggests that different schools were treating children differently based on their gender, impacting on their subjective well-being. This finding is new to this analysis, potentially reflecting the age of the data or the outcome variable used. The significant random effect for wanting to leave home was also new, but this was due at least in part to such a variable not being included in previous datasets. However, the implication of the finding is not new, it likely indicates the supportive role of schools being important for subjective well-being, as found elsewhere. In this model the school-level VPC has increased slightly, to 2.77%.

Table 8.42: Multilevel model including all predictors except school perceptions

	B	S.E.
Fixed		
Constant	-1.577***	.106
Gender (Female)	-0.198***	.016
Race (Ref. white)		
African American	0.218***	.024
Native American	0.001	.049
Asian	-0.098	.052
Other	-0.045	.044
Parent education level (w1) (Ref. Below high school)		
High school or equivalent	0.059*	.029
Post high school (not college graduate)	0.097**	.030
College graduate	-0.002	.031
Beyond college	0.011	.032
Overall health (good)	0.299***	.054
Get enough sleep (yes)	0.201***	.030
Ever smoked (yes)	-0.086***	.023
Hang out with friends in the past week (Ref. not at all)		
1 or 2 times	0.049	.052
3 or 4 times	0.117*	.048
5 or more times	0.151**	.047
Adults care (yes)	0.249***	.049
Friends care (yes)	0.145***	.038
Family understand (yes)	0.240***	.025
Family have fun together (yes)	0.145***	.032
Family pay attention (yes)	0.118**	.037
Want to leave home (yes)	-0.114***	.029
Mum warm and loving (yes)	0.195**	.056
Mum encourages independence (yes)	0.100**	.034
Mum communication (positive)	0.153***	.042
Mum overall relationship (positive)	0.177**	.059
Perception of own intelligence (Ref. below average)		
Average	0.070	.055
Above average	0.242***	.062
Extremely above average	0.438***	.070
Random		
Within pupil (S.D.) (95% confidence interval)	0.545 (.531-.558)	.006
Pupil level (S.D.) (95% confidence interval)	0.623 (.594-.654)	.015
School level (S.D.) (95% confidence interval)	0.000 (.000-.011)	.000
Gender (Female) (95% confidence interval)	0.043 (.015-.122)	.023
Want to leave home (Yes) (95% confidence interval)	0.133 (.108-.163)	.014
LL = -7483.395, LR test: $\chi^2(4) = 623.07$, $p < .001$, VPC (school): 2.77%, N = 3234 (131)		

Model 3: What role, if any, do children's perceptions and experiences of school play?

Table 8.43 presents the final model which includes variables relating to children's perceptions of school and education. Consistent with previous findings, girls were found to report statistically significantly lower levels of positive affect than boys. There was no such effect for age. African American children reported higher positive affect than white children, and Asian children lower. Getting enough sleep and reporting good overall health were both positively associated with positive affect, having ever smoked had a small but significant negative effect.

Children whose reporting parent was educated to a post high school level had the best result. As in previous chapters, spending time with friends was associated with an increase in subjective well-being. Similarly, good relationships with friends and family were positively associated with a positive effect. Wanting to leave home had a significant negative effect, although the coefficient was not particularly large. This perhaps reflects different reasons for young people wanting to leave home, poor relationships with family compared to excitement about independence for example. Again children's perceptions of their intelligence were significant.

The variables new to this model were the school perceptions variables. School connectedness had a small positive coefficient but was highly significant. Both the trouble paying attention and trouble getting homework done variables had increasingly negative, statistically significant, effects for the worsening responses, until the worst response. This perhaps reflects some disengagement among those with the worst responses, that is, they may always have trouble paying attention but not view it as important or concerning. The results for the getting along with other students variable was somewhat surprising as only the 'a few times' response was significant. There was no statistically significant effect on positive affect for those who more frequently struggled to get along with other young people. The result for perceiving other students as prejudiced was also not straightforward. The disparity variable was significant. The result suggesting a negative impact on positive affect for young people who want to go to college but deem it unlikely that they will be able to.

As in the previous model, only gender and wanting to leave home are significant in the random part of the model. The final VPC is 2.52% at the school-level, considerably smaller than in previous chapters.

Table 8.43: Multilevel model including all predictor variables

	B	S.E.
Fixed		
Constant	-1.747***	.113
Gender (Female)	-0.217***	.018
Race (Ref. white)		
African American	0.236***	.024
Native American	0.047	.050
Asian	-0.105*	.048
Other	-0.049	.035
Parent education level (w1) (Ref. Below high school)		
High school or equivalent	0.051	.033
Post high school (not college graduate)	0.100**	.034
College graduate	-0.019	.033
Beyond college	0.001	.036
Overall health (good)	0.256***	.053
Get enough sleep (yes)	0.138***	.031
Ever smoked (yes)	-0.047*	.022
Hang out with friends in the past week (Ref. not at all)		
1 or 2 times	0.044	.051
3 or 4 times	0.099*	.050
5 or more times	0.143**	.052
Adults care (yes)	0.203***	.039
Friends care (yes)	0.107**	.033
Family understand (yes)	0.193***	.028
Family have fun together (yes)	0.106***	.029
Family pay attention (yes)	0.101**	.032
Want to leave home (yes)	-0.074**	.025
Mum warm and loving (yes)	0.167**	.055
Mum encourages independence (yes)	0.085*	.035
Mum communication (positive)	0.122**	.043
Mum overall relationship (positive)	0.181**	.055
Perception of own intelligence (Ref. below average)		
Average	0.074	.061
Above average	0.221**	.066
Extremely above average	0.392***	.073
School connectedness	0.054***	.004
Trouble paying attention in school (Ref. never)		
A few times	-0.079*	.032
About once a week	-0.126**	.043
Almost every day	-0.169**	.053
Every day	0.046	.087
Trouble getting homework done (Ref. never)		
A few times	-0.092**	.027
About once a week	-0.093*	.040
Almost every day	-0.180**	.064
Every day	-0.118	.085

Table 8.43 continued

Trouble getting along with other students (Ref. never)		
A few times	-0.077**	.024
About once a week	-0.081	.043
Almost every day	-0.106	.069
Every day	0.048	.094
Other students are prejudiced (Ref. strongly agree)		
Agree	-0.069	.043
Neither agree nor disagree	-0.097*	.044
Disagree	-0.133**	.043
Strongly disagree	0.001	.055
Disparity between desire to attend college and likelihood of attending	-0.033*	.017
Random		
Within pupil (S.D.) (95% confidence interval)	0.509 (.496-.523)	.007
Pupil level (S.D.) (95% confidence interval)	0.609 (.583-636)	.013
School level (S.D.) (95% confidence interval)	0.000 (.000-.007)	.000
Gender (Female) (95% confidence interval)	0.049 (.013-183)	.033
Want to leave home (Yes) (95% confidence interval)	0.118 (.093-.149)	.014
LL = -7264.474, LR test: $\chi^2(4) = 556.85$, $p < .001$, VPC (school): 2.52%, N = 3230 (131)		

8.9: Discussion

This chapter again found that the school a child or young person attends plays an important role in their subjective well-being (here positive affect). However the relationship is much smaller in this analysis than found previously. This could be due to the focus on positive affect, rather than overall affective well-being or life satisfaction. It could also be due to the age of the data, the data being collected well before the proliferation of standardised testing and accountability measures associated with the introduction of No Child Left Behind in the USA. Analysis of Health Behaviours in School-aged Children (HBSC) data in the next chapter will go some way towards indicating whether this is the case. However, the smaller proportion of variance explained at the school level (as demonstrated by the VPC) may be due to the inclusion of a longitudinal element to the analysis and the importance of children's past subjective well-being to their present subjective well-being, or the greater availability of detailed measures of influences on children's well-being in this dataset.

Although the relationship between the school a child attends and their positive affect levels is small, it does remain after other factors, such as demographics and social life, are considered. As in previous chapters, the results confirm the importance of children's experiences and perceptions of school to their well-being, as suggested by

Bronfenbrenner (1979). Other factors which results suggest are particularly important for child positive affect are family relationships and feeling cared for, similar to previous findings (Clair, 2011; 2012). Variables relating to health and spending time with friends are also significant.

As in Chapter 6, gender was significant in the fixed part of the model, although unlike in previous models gender was also found to be significant in the random part of the model, suggesting that the way that different schools were treating students based on their gender was impacting their levels of positive affect. The coefficient was small, but why this should be the case is interesting. Another difference between this analysis and those conducted on data from England is that race (or ethnicity) is significant in the fixed part of the model. This may be to do with cultural differences between England and the USA or the time of the study. The only other variable significant in the random part of the model was whether the respondent reported wanting to leave home, suggesting that the different ways schools support young people in this situation is important for positive affect. The comparatively small number of variables that are significant in the random part of this model compared to previous models may be due to the age of the data, as discussed above.

8.10: Conclusion

The results of this analysis confirm that the school a child attended in the USA between 1995 and 1996 was related to the level of positive affect that they reported. The amount of variance explained was relatively small, certainly compared to results in previous chapters, but remained after consideration of other aspects of children's lives. As such these results further support the claim that school approaches and education policies are important considerations for those looking to improve child well-being, as hypothesised in Chapter 2. The application of this hypothesis in relation to children in the USA will be investigated further in the next chapter.

8.11: Key findings

- This chapter found a small but important school-level effect on children's affective well-being in the USA for young people aged 12-17.
- This relationship persists after other characteristics of the child and school are considered.
- The significant random effects were somewhat different to those found previously; gender and wanting to leave home.
- The differences in these results may be due to the unusual outcome measure, positive affect, or the age of the data as well as cultural differences across the nations.

- There were a large number of significant fixed effects, including demographic characteristics, health and risk behaviours, school related variables, and a large number of variables relating to familial relationships.

Chapter 9: Schools and Child Life Satisfaction in the USA at Ages 10-17

9.1: Context

This chapter concludes the investigation of the relationship between subjective well-being and school. It presents the second and final analysis of the relationship in the USA using the Health Behavior in School-aged Children (HBSC) surveys conducted in 2001/02, 2005/06 and 2009/10.

9.2: Research Questions

The previous chapter was the first analysis to investigate the relationship between schools and subjective well-being in the USA. It found only a small amount of variance in children's positive affect to be explained at the school level. It was suggested that this might reflect the age of the data and measure of subjective well-being used rather than the relationship between subjective well-being and school being considerably lower in the USA than in England. This chapter presents analysis that can go some way towards investigating this suggestion. Below are the research questions this chapter seeks to answer. It includes the questions investigated through Chapters 5-8 as well as some more unique to this chapter.

1. Is there a relationship between the school a child attends and the level of subjective well-being that they report?
2. Does the relationship, if one exists, remain after other factors are considered? If so how much variance is explained at the school level?
3. How are schools influencing children's subjective well-being?
4. What role, if any, does children's engagement with and experiences of school play?
5. How has this relationship developed over time?
6. How does this relationship compare to that in England?

The interest in the relationship over time is considered in the context of the discussion of US education policy in Chapter 8, hypothesising that the relationship between children's subjective well-being and the school that they attend will be highest for the 2005/06 data, as this is when the changes introduced by No Child Left Behind (NCLB) will likely have the most impact. This is because the 2001/02 dataset was collected before and during the introduction of NCLB, and therefore will not reflect any impact of the policy, and the 2009/10 data was collected after a change in government and after the focus on NCLB had diminished. A more direct comparison between the USA and England is also made in this chapter using the Children's Society Well-being Survey a both this and the HBSC datasets include the same subjective well-being measure and

can be adjusted to cover the same age group. Unfortunately it was not possible to access the English HBSC dataset for this comparison.

9.3: Data

This chapter uses data from the three most recent HBSC surveys conducted in the USA. As with the other datasets used, further details are given in Chapter 3. The following section introduces the outcome and predictor variables. As in many of the previous chapters only those variables included in the final multilevel model are described here because of the large number of relevant variables available. Appendix 9 includes descriptives for all of the potential variables.

Outcome variable

Table 9.1 below presents an overview of the outcome measures in the three surveys of the HBSC USA survey. Like the Children’s Society Well-Being Survey, the HBSC (since 2001/02) includes Cantril’s ladder, a measure of overall life satisfaction that will be used as the outcome variable in this study.

Table 9.1: Outcome Variables: Life Satisfaction

	Survey	Question		Missing
Life satisfaction	01/02	Cantril’s ladder	Min. 0, Max. 10, Mean 7.47, S.D. 2.06 (Min. -7.47, Max. 2.53, Mean 0, S.D. 2.06)	458 (3.09%)
	05/06	Cantril’s ladder	Min. 0, Max. 10, Mean 7.37, S.D. 1.95 (Min. -7.37, Max. 2.63, Mean 0, S.D. 1.95)	163 (1.77%)
	09/10	Cantril’s ladder	Min. 0, Max. 10, Mean 7.49, S.D. 2.00 (Min. -7.49, Max. 2.51, Mean 0, S.D. 2.00)	220 (1.74%)

Figures 9.1-9.3 give the histograms for the outcome variables and q-norm plots of the school-level residuals for the null models. As in previous chapters the distribution of the outcomes is negatively skewed, and bootstrapping is used in the calculation of the multilevel models. The normality of the residuals is consistent across all 3 surveys.

Figure 9.1: Histogram of life satisfaction (centered) and QNORM plot of school-level residuals 2001/02

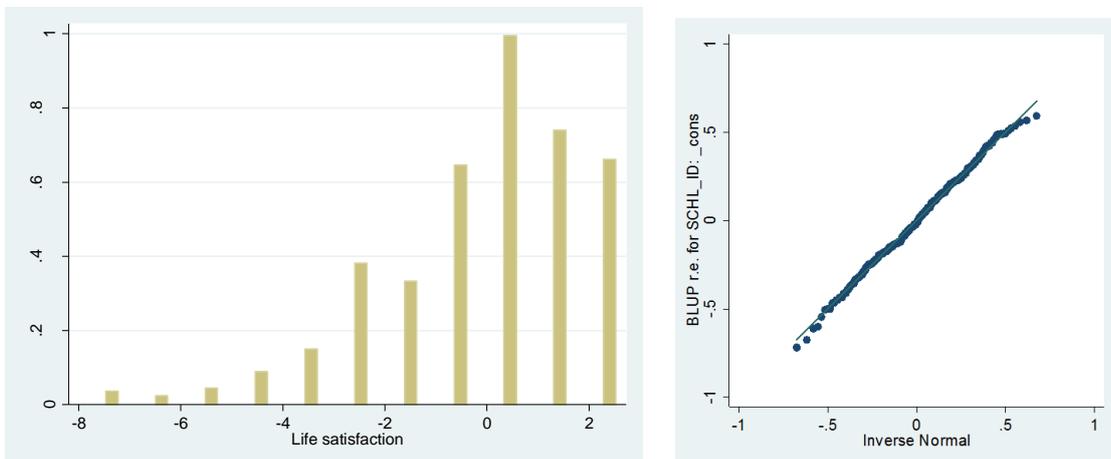


Figure 9.2: Histogram of life satisfaction (centered) and QNORM plot of school-level residuals 2005/06

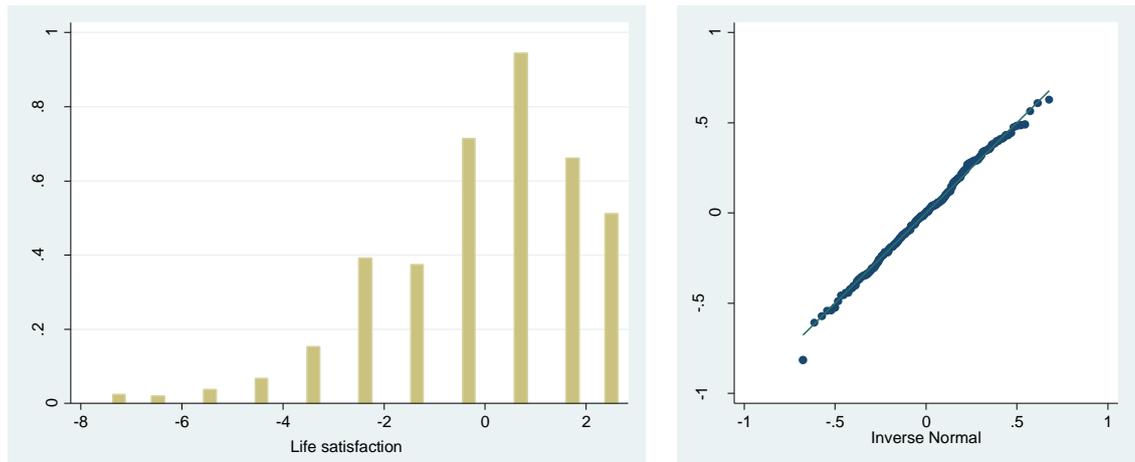
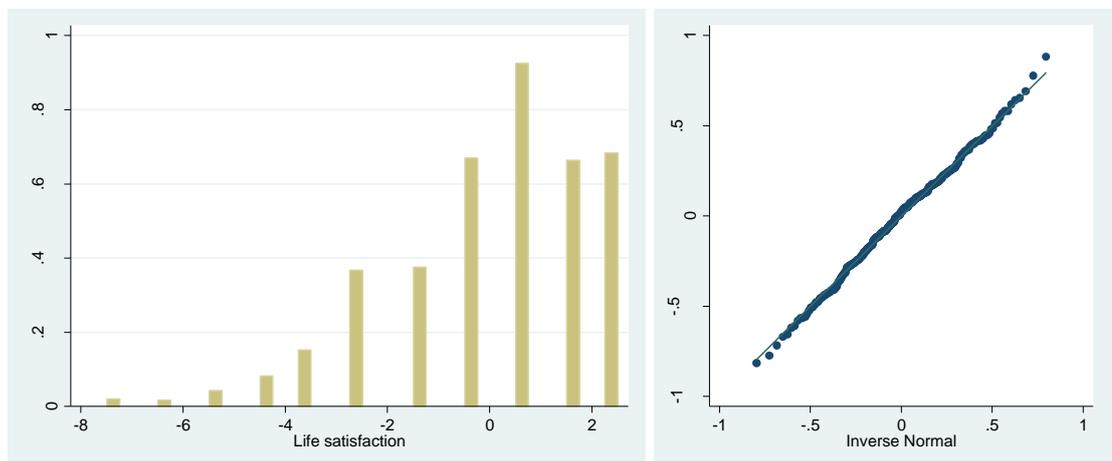


Figure 9.3: Histogram of life satisfaction (centered) and QNORM plot of school-level residuals 2009/10



Predictor variables

The HBSC collects a range of information about children's lives, although is mostly focused on their health and risk behaviours and so the number of variables relevant for this analysis is somewhat limited. The predictor variables considered in the analysis were limited to those available in all three of the surveys used. All variables were recoded and renamed in order to be equivalent across datasets where necessary. Descriptives for those variables retained in the final model of at least one dataset are included here. Table 9.2 gives the demographic variables. School grade and number of siblings were considered but not significant. The results show that the data is relatively evenly split among the genders, and most children lived with their mother, fewer children reported living with their father in their main home.

Table 9.2: Independent Variables: Demographic characteristics

Variable	Wave	Potential responses								Miss
Gender	01/02	Male 7088 (47.84%)				Female 7729 (52.16%)				0
	05/06	4456 (48.29%)				4742 (51.39%)				29 0.31%
	09/10	6502 (51.43%)				6136 (48.54%)				4 0.03%
Age	01/02	10 25 0.17%	11 2177 14.69%	12 3055 20.62%	13 2876 19.41%	14 2747 18.54%	15 2666 17.99%	16 1175 7.93%	17 96 0.65%	0
	05/06	- -	989 ⁶⁴ 10.72%	2005 21.73%	1899 20.58%	1660 17.99%	1543 16.72%	950 10.30%	55 0.60%	126 1.37%
	09/10	1157 9.15%	1828 14.46%	2229 17.63%	2473 19.56%	2143 16.95%	1888 14.93%	772 6.11%	133 1.05%	19 0.15%
Race/ethnicity	01/02	White 7408 50.00%	African Ameri. 2893 19.52%	Hispani c/Latino 2453 16.56%	Asian 651 4.39%	Native Ameri. 971 6.55%	Pacific Island. 262 1.77%	179 1.21%		
	05/06	3974 43.07%	1698 18.40%	2165 23.46%	324 3.51%	494 5.35%	166 1.81%	406 4.40%		
	09/10	5334 42.19%	2126 16.82%	3187 25.21%	598 4.73%	619 4.90%	225 1.78%	553 4.37%		
Live with mother (main home)	01/02	Yes 13299 (89.76%)				No 1518 (10.24%)				0
	05/06	8184 (88.70%)				1043 (11.30%)				0
	09/10	11242 (88.93%)				1400 (11.07%)				0
Live with father (main home)	01/02	Yes 9220 (62.23%)				No 5597 (37.77%)				0
	05/06	5499 (59.60%)				3728 (40.40%)				0
	09/10	7903 (62.51%)				4739 (37.49%)				0

Table 9.3 shows the variables relating the financial situation of the child and their family. There has been a significant increase in the prevalence of computer ownership over time, likely reflecting their prevalence and reduced cost rather than increased financial prosperity among families, which may affect the stability of the FAS (Family Affluence Scale). Variables relating to the employment status of fathers were available but not significant in the final models and so are not shown here.

⁶⁴ Includes 11 or younger

Table 9.3: Independent Variables: Family socio-economics/financial

Variable	Wave	Potential responses					Miss
Family well off	01/02	Very well off 4108 (27.72%)	Quite well off 3597 (24.28%)	Average 4515 (30.47%)	Not very well off 713 (4.81%)	Not at all well off 502 (3.39%)	1382 9.33%
	05/06	1533 (16.61%)	2338 (25.34%)	4187 (45.38%)	708 (7.67%)	208 (2.25%)	253 2.74%
	09/10	2130 (16.85%)	2833 (22.41%)	5582 (44.15%)	1028 (8.13%)	303 (2.40%)	766 6.06%
Number of family holidays in past 12 months	01/02	Not at all 2676 (18.06%)	Once 3643 (24.59%)	Twice 3359 (22.67%)	More than twice 3941 (26.60%)		1198 8.09%
	05/06	1821 (19.74%)	2248 (24.36%)	2104 (22.80%)	2997 (32.48%)		57 0.62%
	09/10	2708 (21.42%)	3208 (25.38%)	2763 (21.86%)	3870 (30.61%)		93 0.74%
Family own a car or van	01/02	No 526 (3.55%)		Yes, one 2601 (17.55%)	Yes, two or more 10538 (71.12%)		1152 7.77%
	05/06	266 (2.88%)		1761 (19.09%)	7162 (77.62%)		38 0.41%
	09/10	488 (3.86%)		2582 (20.42%)	9529 (75.38%)		43 0.34%
Family own a computer	01/02	None 1785 (12.05%)	One 7098 (47.90%)	Two 3588 (24.22%)	More than two 2299 (15.52%)		47 0.32%
	05/06	781 (8.46%)	3658 (39.64%)	2470 (26.77%)	2282 (24.73%)		36 0.39%
	09/10	693 (5.48%)	4339 (34.32%)	3665 (28.99%)	3909 (30.92%)		36 0.28%
Own bedroom	01/02	No 3476 (23.46%)		Yes 10194 (68.80%)			1147 7.74%
	05/06	2306 (24.99%)		6878 (74.54%)			43 0.47%
	09/10	3612 (28.57%)		8959 (70.87%)			71 0.56%
Mother job	01/02	No 2340 (15.79%) ⁶⁵		Yes 9316 (62.87%)			3161 21.33%
	05/06	2008 (21.76%)		6434 (69.73%)			785 8.51%
	09/10	2911 (23.03%)		8672 (68.60%)			1059 8.38%

Table 9.4 presents health and risk behaviours. The time spent watching TV variable was created by averaging responses for weekends and weekdays to provide an overview. A variable relating to time spent using a computer was not included in the

⁶⁵ For the 2001/02 and 2005/06 waves the responses 'do not know' and 'do not have/see' mother were coded as missing.

analysis due to inconsistency in the wording of the question across surveys. It was originally intended to include a variable relating to whether respondents had ever used marijuana. However because of the very high number of missing cases for this variable (10041, 67.77%) in the 2001/02 wave this was not possible. Indeed the 2001/02 dataset has a comparatively high number of missing cases for nearly all of the health and risk behaviours variables, especially those relating to the use of tobacco and alcohol. It is not clear from the literature accompanying the data why this should be the case. There was also a large increase in the number of children reporting injuries in this survey, despite the wording of the question not changing. However, this variable, alongside a that relating to whether the respondent was on or had ever been on a diet, was not included in the final model as it was not significant.

Table 9.4: Independent Variables: Health and risk behaviours

Variable	Wave	Potential responses						Miss
Hours spent watching TV per day	01/02	none 123 0.83%	< 0.5 220 1.48%	0.5-1 2022 13.65%	2-3 4994 33.70%	4 2187 14.76%	>4 4368 29.48%	903 6.09%
	05/06	113 1.22%	230 2.49%	1795 19.45%	3467 37.57%	1182 12.81%	2144 23.24%	296 3.21%
	09/10	260 2.06%	442 3.50%	3045 24.09%	4612 36.48%	1453 11.49%	2339 18.50%	491 3.88%
Overall health	01/02	Poor 330 (2.23%)		Fair 2753 (18.58%)	Good 7492 (50.56%)	Excellent 3695 (24.94%)	547 3.69%	
	05/06	303 (3.28%)		1906 (20.66%)	4921 (53.33%)	1962 (21.26%)	135 1.46%	
	09/10	382 (3.02%)		2321 (18.36%)	6461 (51.11%)	3305 (26.14%)	173 1.37%	
Frequency of exercise	01/02	Never/< 1 p/w 1093 (7.38%)	1 day p/w 1118 (7.55%)	2-3 days p/w 3233 (21.82%)	4-6 days p/w 5165 (34.86%)	Every day 3821 (25.79%)	387 2.61%	
	05/06	654 (7.09%)	641 (6.95%)	1984 (21.50%)	3436 (37.24%)	2387 (25.87%)	125 1.35%	
	09/10	780 (6.17%)	799 (6.32%)	2659 (21.03%)	4785 (37.85%)	3356 (26.55%)	263 2.08%	
Thoughts about body	01/02	Much too thin 376 (2.54%)	A bit too thin 1590 (10.73%)	About right 7933 (53.54%)	A bit too fat 3998 (26.98%)	Much too fat 650 (4.39%)	270 1.82%	
	05/06	148 (1.60%)	899 (9.74%)	5198 (56.33%)	2515 (27.26%)	393 (4.26%)	74 0.80%	
	09/10	244 (1.93%)	1247 (9.86%)	7503 (59.35%)	3084 (24.39%)	387 (3.06%)	177 1.40%	

Table 9.4 continued

Ever smoked tobacco	01/02	No 9459 (63.84%)		Yes 3942 (26.60%)		1416 9.56%	
	05/06	6846 (74.20%)		2043 (22.14%)		338 3.66%	
	09/10	10233 (80.94%)		1932 (15.28%)		477 3.77%	
Currently smoke (frequency)	01/02	Don't smoke 11449 (77.27%)	< once p/w 858 (5.79%)	At least once p/w 415 (2.80%)	Every day 616 (4.16%)	1479 9.98%	
	05/06	7954 (86.20%)	429 (4.65%)	199 (2.16%)	284 (3.08%)	361 3.91%	
	09/10	11071 (87.57%)	502 (3.97%)	266 (2.10%)	270 (2.14%)	533 4.22%	
Currently smoke (binary)	01/02	No 11449 (77.27%)		yes 1889 (12.75%)		1479 9.98%	
	05/06	7954 (86.20%)		912 (9.88%)		361 3.91%	
	09/10	11071 (87.57%)		1038 (8.21%)		533 4.22%	
Ever been drunk	01/02	No 10419 (70.32%)	Once 1322 (8.92%)	2-3 times 772 (5.21%)	4-10 times 328 (2.21%)	> 10 times 482 (3.25%)	1494 10.08 %
	05/06	7040 (76.30%)	773 (8.38%)	445 (4.82%)	190 (2.06%)	231 (2.50%)	548 5.94%
	09/10	10371 (82.04%)	889 (7.03%)	407 (3.22%)	168 (1.33%)	181 (1.43%)	626 4.95%
Ever been drunk (binary)	01/02	No 10419 (70.32%)		Yes 2904 (19.60%)		1494 10.08 %	
	05/06	7040 (76.30%)		1639 (17.76%)		548 5.94%	
	09/10	10371 (82.04%)		1645 (13.01%)		626 4.95%	

Table 9.5 gives the psychosomatic health variables available in each of the HBSC datasets. These variables were predominantly used in the analysis in terms of the final two variables given in this table: number of health complaints and two or more health complaints. This is because these summary variables are more likely to reflect the overall issue of interest better than including a large number of individual health complaints. It also improves the interpretation of results and the parsimony of the model.

Table 9.5: Independent Variables: Psychosomatic health

Variable	Wave	Potential responses					Miss
In the past 6 months how often have you had:		Rarely/n ever	Approx. 1 p/m	Approx. 1 p/w	> 1 p/w	Every day	
Headaches	01/02	5727 (38.65)	3340 22.54%	1978 13.35%	1919 12.95%	1298 8.76%	555 3.75%
	05/06	3817 41.37%	2474 26.81%	1177 12.76%	908 9.84%	706 7.65%	145 1.57%
	09/10	5348 42.30%	2868 22.69%	1590 12.58%	1406 11.12%	980 7.75%	450 3.56%
Stomach aches	01/02	6293 42.47%	4213 28.43%	1680 11.34%	1311 8.85%	690 4.66%	630 4.25%
	05/06	3976 43.09%	2887 31.29%	895 9.70%	884 9.58%	421 4.56%	164 1.78%
	09/10	5838 6.18%	3443 27.23%	1362 10.77%	951 7.52%	541 4.28%	507 4.01%
Back ache	01/02	7932 53.53%	2383 16.08%	1417 9.56%	1090 7.36)	1288 8.69%	707 4.77%
	05/06	4878 52.87%	1695 18.37%	859 9.31%	847 9.18%	762 8.26%	186 2.02%
	09/10	7114 56.27%	2012 15.92%	1106 8.75%	886 7.01%	951 7.52%	573 4.53%
Irritability or bad temper	01/02	4794 32.35%	3355 22.64%	2252 15.20%	1787 12.06%	1890 12.76%	739 4.99%
	05/06	3062 33.19%	2224 24.10%	1351 14.64%	1208 13.09%	1186 12.85%	196 2.12%
	09/10	4918 38.90%	2723 21.54%	1673 13.23%	1391 11.00%	1393 11.02%	544 4.30%
Feeling low	01/02	7291 49.21%	2687 18.13%	1450 9.79%	1262 8.52%	1283 8.66%	844 5.70%
	05/06	4840 52.45%	1779 19.28%	796 8.63%	827 8.96%	754 8.17%	231 2.50%
	09/10	6791 53.72%	2179 17.24%	1164 9.21%	959 7.59%	905 7.16%	644 5.09%
Feeling nervous	01/02	5586 37.70%	3131 21.13%	2233 15.07%	1640 11.07%	1436 9.69%	791 5.34%
	05/06	3294 (35.70%)	2190 (23.73%)	1235 13.38%	1365 14.79%	932 10.10%	211 2.29%
	09/10	4785 37.85%	2694 21.31%	2017 15.95%	1338 10.58%	1173 9.28%	635 5.02%
Difficulty sleeping	01/02	7070 47.72%	2084 14.06%	1581 10.67%	1388 9.37%	1947 13.14%	747 5.04%
	05/06	4228 45.82%	1394 15.11%	1036 11.23%	912 9.88%	1477 16.01%	180 1.95%
	09/10	6051 47.86%	1875 14.83%	1251 9.90%	1163 9.20%	1779 14.07%	523 4.14%

Table 9.5 continued

Feeling dizzy	01/02	9257 62.48%	2049 13.83%	1063 7.17%	892 6.02%	872 5.89%	684 4.62%	
	05/06	5924 64.20%	1349 14.62%	640 6.94%	594 6.44%	533 5.78%	187 2.03%	
	09/10	8063 63.78%	1738 13.75%	839 6.64%	788 6.23%	685 5.42%	529 4.18%	
Sum of health complaints	01/02	Min. 0, Max. 32, Mean 8.86, S.D. 6.93					1645 11.10%	
	05/06	Min. 0, Max. 32, Mean 9.00, S.D. 6.75					437 4.74%	
	09/10	Min. 0, Max. 32, Mean 8.30, S.D. 6.90					1101 8.71%	
Two or more health complaints more than once per week ⁶⁶	01/02	8245 55.65%		4927 33.25%		1645 11.10%		
	05/06	5195 56.30%		3595 38.96%		437 4.74%		
	09/10	7578 59.94%		3963 31.35%		1101 8.71%		

Table 9.6 shows variables relating the respondent's relationships and social life, grouped together here as there was only one available social life variable. It shows that there seem to be fewer children reporting having few friends in the later surveys, perhaps reflecting increased ability to maintain friendships through social networks in the later datasets. The 'Don't have/don't see' option for easy to talk to parents variable coded as very difficult (as in Klocke et al., 2013) in the multilevel analysis for clarity. All variables are relatively stable over time and all available relationship and social variables are shown here as they were included in the final models.

⁶⁶ See Currie et al. 2012.

Table 9.6: Independent Variables: Relationships and social

Variable	Wave	Potential responses				Missing
Number of close friends	01/02	None 165 (1.11%)	One 191 (1.29%)	Two 419 (2.83%)	Three or more 13208 (89.14%)	834 (5.63%)
	05/06	80 (0.87%)	124 (1.34%)	266 (2.88%)	8418 (91.23%)	339 (3.67%)
	09/10	169 (1.34%)	212 (1.68%)	408 (3.23%)	11296 (89.35%)	557 (4.41%)
Easy to talk to mother	01/02	Very difficult 1941 (13.10%)	Difficult 2274 (15.35%)	Easy 4457 (30.08%)	Very easy 5217 (35.21%)	928 (6.26%)
	05/06	1303 (14.12%)	1536 (16.65%)	2933 (31.79%)	3171 (34.37%)	284 (3.08%)
	09/10	1616 (12.78%)	1877 (14.85%)	3479 (27.52%)	4953 (39.18%)	717 (5.67%)
Easy to talk to father	01/02	Very difficult 4518 (30.49%)	Difficult 3014 (20.34%)	Easy 3803 (25.67%)	Very easy 2713 (18.31%)	769 (5.19%)
	05/06	2983 (32.33%)	2001 (21.69%)	2497 (27.06%)	1525 (16.53%)	221 (2.40%)
	09/10	3559 (28.15%)	2295 (18.15%)	3143 (24.86%)	2995 (23.69%)	650 (5.14%)
Number of evenings per week with friends	01/02	Min. -2.59, Max. 4.41, S.D. 2.16				508 (3.43%)
	05/06	Min. -2.34, Max. 4.66, S.D. 2.01				221 (2.40%)
	09/10	Min. -2.17, Max. 4.83, S.D. 2.09				320 (2.53%)

Table 9.7 gives the school perceptions and experiences predictor variables available in the student dataset. Most of these variables were fairly consistent over time, although there was a slight increase in children responding positively about school and children feeling their teachers held positive perceptions regarding their school work. There was also an increase in children feeling pressured by school work in the 2005/06 survey, which is consistent with the suggestion of an impact on children's lives caused by the introduction of No Child Left Behind. 'Students enjoy being together' was the only one of the available variables to not be included in any of the final multilevel models.

Table 9.7: Independent Variables: School perceptions and experiences

	Wave	Potential responses					Missing
Bullied at school in the last couple of months	01/02	Never 9475 (63.95%)	Once or twice 2676 (18.06%)	2/3 times p/m 646 (4.36%)	Once p/w 440 (2.97%)	Multiple p/w 626 (4.22%)	954 (6.44%)
	05/06	6241 (67.64%)	1629 (17.65%)	404 (4.38%)	230 (2.49%)	384 (4.16%)	339 (3.67%)
	09/10	8730 (69.06%)	2018 (15.96%)	514 (4.07%)	334 (2.64%)	512 (4.05%)	534 (4.22%)
Bully others at school in the last couple of months	01/02	Never 8658 (58.43%)	Once or twice 3338 (22.53%)	2/3 times p/m 800 (5.40%)	Once p/w 412 (2.78%)	Multiple p/w 502 (3.39%)	1107 (7.47%)
	05/06	5678 (61.54%)	2233 (24.20%)	453 (4.91%)	232 (2.51%)	260 (2.82%)	371 (4.02%)
	09/10	8618 (68.17%)	2417 (19.12%)	454 (3.59%)	219 (1.73%)	246 (1.95%)	688 (5.44%)
How do you feel about school	01/02	Don't like it all 1496 (10.10%)	Don't like very much 2842 (19.18%)	Like it a little 6580 (44.41%)	Like it a lot 3332 (22.49%)		567 (3.83%)
	05/06	939 (10.18%)	1762 (19.10%)	4142 (44.89%)	2140 (23.19%)		244 (2.64%)
	09/10	922 (7.29%)	1971 (15.59%)	5565 (44.02%)	3825 (30.26%)		359 (2.84%)
Students accept me as I am	01/02	Strong disagree 876 (5.91%)	Disagree 795 (5.37%)	Neither 2195 (14.81%)	Agree 5335 (36.01%)	Strong agree 4634 (31.27%)	982 (6.63%)
	05/06	623 (6.75%)	573 (6.21%)	1552 (16.82%)	3777 (40.93%)	2380 (25.79%)	322 (3.49%)
	09/10	595 (4.71%)	657 (5.20%)	1953 (15.45%)	4772 (37.75%)	3957 (31.30%)	708 (5.60%)
Pressure from school work	01/02	Not at all 2685 (18.12%)	A little 5149 (34.75%)	Some 3627 (24.48%)	A lot 2645 (17.85%)		711 (4.80%)
	05/06	1554 (16.84%)	3082 (33.40%)	2340 (25.36%)	1934 (20.96%)		317 (3.44%)
	09/10	2522 (19.95%)	4720 (37.34%)	2826 (22.35%)	2067 (16.35%)		507 (4.01%)
Teacher perception of school performance	01/02	Very good 3594 (24.26%)	Good 5542 (37.40%)	Average 4159 (28.07%)	Below average 891 (6.01%)		631 (4.26%)
	05/06	2323 (25.18%)	3595 (38.96%)	2468 (26.75%)	580 (6.29%)		261 (2.83%)
	09/10	3761 (29.75%)	4851 (38.37%)	3006 (23.78%)	541 (4.28%)		483 (3.82%)

A supplementary questionnaire was given to school administrators from the 2001/02 survey onwards (a lead health teacher was also surveyed in the 2001/02 wave only).

There are a number of variables from this questionnaire that would have been useful for this analysis. It would have been desirable to include information at the school level of the proportion of students entitled or receiving free or reduced meals, for example. Unfortunately the number of missing cases was very high (25.48-47.94% of cases), meaning that their inclusion would significantly reduce the sample size at both levels. This variable, as well as many of the others was not collected consistently over the 3 surveys, indeed there are few variables that are consistent across all three waves. As such it was not possible to use information from these questionnaires in the analysis.

9.4: Methods

Preliminary analysis

As in the previous chapters the relationship between life satisfaction and the available predictor variables will be investigated before the multilevel models are constructed. This will involve bivariate analysis and linear regression.

Multilevel analysis

The HBSC datasets, because of their sampling approach which also includes school districts, could potentially be investigated using 3-level or 2-level models. In order to identify the most appropriate method 3 null models were run for each dataset, considering the multilevel model as a three-level model with school and district accounted for, and two two-level models including school and district separately (REML estimation). The results were as follows:

Table 9.8: Comparison of two- and three-level models, 2009/10

Model	Likelihood ratio test (compared to single level model)
Three-level	$\chi^2(2) = 173.99, p < .001$
School-level only	$\chi^2(1) = 173.11, p < .001$
District-level only	$\chi^2(1) = 55.70, p < .001$

Table 9.9: Comparison of two- and three-level models, 2005/06

Model	Likelihood ratio test (compared to single level model)
Three-level	$\chi^2(2) = 108.39, p < .001$
School-level only	$\chi^2(1) = 108.15, p < .001$
District-level only	$\chi^2(1) = 48.12, p < .001$

Table 9.10: Comparison of two- and three-level models, 2001/02

Model	Likelihood ratio test (compared to single level model)
Three-level	$\chi^2(2) = 131.54, p < .001$
School-level only	$\chi^2(1) = 131.02, p < .001$
District-level only	$\chi^2(1) = 81.83, p < .001$

The results consistently show that a 2-level approach including the school level only is most appropriate for all of the datasets (likelihood ratio tests: 2009/10: $\chi^2(1) = 0.88, p >$

.05; 2005/06: $\chi^2(1) = 0.25$, $p > .05$; 2001/02 $\chi^2(1) = 0.52$, $p > .05$). It would be desirable to investigate a time-series approach to the multilevel models given the interest in the changing relationship between subjective well-being and school over time. However it is not possible to conduct such an analysis with this data as there is no way of telling which schools have participated in the survey at each data collection point and school identification is not consistent across time.

Weighting

The 2001/01, 2005/06, and 2009/10 datasets include both individual level and school-level weights, as is required for weighting in multilevel analysis. This section presents investigation of the different weighting approaches available in order to guide and justify the method taken for the final analysis. There are four available weighting methods in Stata. The first method weights the data without scaling the weights, this is uncommon in multilevel analysis. The first scaling method, size, scales the individual level weights in order that they sum to equal the sample size of the corresponding school. No scaling is conducted on the school-level weights, this is the most common method (Asparouhov and Muthen, 2006). The second method is similar, school-level weights are unaffected, but child-level weights are scaled to equal the effective sample size of the corresponding school weight. The final method is the GK method, the Graubard and Korn method, in which the school-level weights are set to be equal to the cluster averages of the products of both the child-level and school-level weights, and the child-level weights are given value of 1 (Stata Corp, 2011). The weighted approaches give robust standard errors.

The following tables (Tables 9.11-9.13) present the results of the null, 2-level models, with all available weighting approaches applied, alongside unweighted REML and ML models, in order to investigate the suitability of weighting to this analysis. Unweighted REML analyses were presented in all of the previous chapters.

For all of the datasets there are minimal differences between the two unweighted approaches. The weighting approach that does not scale the individual weights only works for the 2009/10 data, making its use limited. The effect of scaling the weights is not consistent across datasets, increasing the school-level coefficient in 2009/10, reducing it in 2005/06, and having minimal impact in 2001/02, relative to the unweighted approaches. It is considered good practice to scale the weights in multilevel models where weights are included (Carle, 2009) as scaling makes the individual level weights more consistent across schools. Scalars have little impact on the fixed effects coefficients when the clusters are large (Pfeffermann et al., 1998). As can be seen from Figure 9.4 most children in the sample are clustered in schools that

have a sample size of over 30. The scalars do, however, have an effect on the bias in the variance component estimates. That said, the weighted models report very high pseudo-loglikelihoods, suggesting great uncertainty in the convergence of these models. Because of this, as well as the advantage of consistency with previous chapters, no weighting will be applied to the multilevel models here. This will allow consistency across datasets in this chapter and with other chapters as REML estimation can be used, as in other chapters. The below results suggest that REML estimates are not massively different to the weighted estimates. For the key statistic, the variance partition coefficient (VPC, equivalent to the intraclass correlation in a null multilevel model) there is no conclusive evidence to suggest that the lack of weighting is resulting in an overestimation of school effects, if anything it appears more likely to be underestimating school-level impacts. As such the use of unweighted REML models does not appear to increase the risk of Type I error in relation to the main research question. As discussed in Chapter 3, REML cannot be used with weights but may produce more accurate estimates than ML estimation.

Figure 9.4: School sample sizes

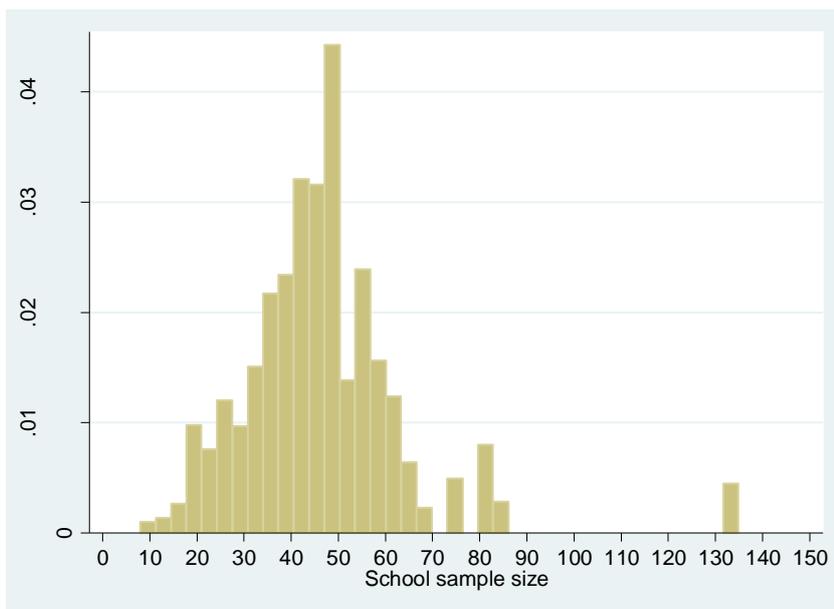


Table 9.11: Comparison of model weighting approaches: 2009/10

	Unweighted		Weighted			
	REML	ML	No scaling	Scaled - size	Scaled - effective	Scaled - GK
Constant	7.494*** (.028)	7.494*** (.028)	7.657*** (.047)	7.659*** (.048)	7.662*** (.049)	7.520*** (.040)
Random effects (S.D.)						
School	0.382 (.026) (.334-437)	0.381 (.026) (.333-.436)	0.504 (.036) (.439-.579)	0.418 (.046) (.341-.513)	0.402 (.047) (.320-.505)	0.406 (.036) (.341-.483)
Child	1.964 (.013) (1.940-1.989)	1.964 (.013) (1.940-1.989)	1.927 (.026) (1.877-1.978)	1.945 (.033) (1.881-2.011)	1.937 (.035) (1.870-2.006)	1.959 (.026) (1.909-2.010)
Model stats						
Loglikelihood ⁶⁷	-26155.026	-26152.379	-51017567	-8747032.90	-7858754.40	-51592280
LR test	173.11, $p < .001$	172.21, $p < .001$	-	-	-	-
ICC ⁶⁸	.036	.036	.064	.058	.041	.041

⁶⁷ Restricted likelihood for the REML test, pseudo likelihood for weighted tests.

⁶⁸ ICC (intraclass correlation coefficient) calculated by Stata for unweighted models, for weighted models estat commands not available because of robust standard errors. ICCs are given for indication only. In the null model the ICC is equivalent to the VPC.

Table 9.12: Comparison of model weighting approaches: 2005/06

	Unweighted		Weighted			
	REML	ML	No scaling	Scaled - size	Scaled - effective	Scaled - GK
Constant	7.373*** (.031)	7.373*** (.031)	-	7.367*** (.044)	7.369*** (.045)	7.392*** (.042)
Random effects (S.D.)						
School	0.349 (.029) (.296-.412)	0.348 (.029) (.294-.410)	-	0.286 (.044) (.212-.385)	0.283 (.044) (.208-.385)	0.361 (.036) (.297-.439)
Child	1.922 (.014) (1.894-1.950)	1.922 (.014) (1.894-1.950)	-	1.948 (.033) (1.885-2.014)	1.950 (.033) (1.887-2.015)	1.872 (.025) (1.823-1.922)
Model stats						
Loglikelihood	-18876.956	-18874.411	-	-507624.07	-497165.88	-13152346
LR test	108.15, $p < .001$	107.30, $p < .001$	-	-	-	-
ICC	.032	.032	-	.021	.021	.036

Table 9.13: Comparison of model weighting approaches: 2001/02

	Unweighted		Weighted			
	REML	ML	No scaling	Scaled - size	Scaled - effective	Scaled - GK
Constant	7.448*** (.026)	7.448*** (.026)	-	7.492*** (.073)	7.492*** (.073)	7.422*** (.031)
Random effects (S.D.)						
School	0.342 (.026) (.296-.397)	0.341 (.026) (.295-.395)	-	0.330 (.038) (.264-.414)	0.330 (.038) (.264-.414)	0.339 (.028) (.288-.398)
Child	2.033 (.012) (2.010-2.057)	2.033 (.012) (2.010-2.057)	-	1.939 (.036) (1.870-2.011)	1.939 (.036) (1.870-2.011)	2.032 (.022) (1.989-2.075)
Model stats						
Loglikelihood	-30695.368	-30692.635	-	-6615804.2	-6615804.2	-35688103
LR test	131.05, $p < .001$	130.20, $p < .001$	-	-	-	-
ICC	.028	.027	-	.028	.028	.027

9.5: Limitations

As with all of the analysis in this thesis and more generally, the work presented in this chapter is subject to a number of limitations. Most notably, there is no information about the schools children are attending, e.g. summary information regarding student body or school characteristics and policies. Unfortunately no information is collected about children's academic achievement either, making it impossible to assess the relationship between achievement and subjective well-being as was done for some other datasets. There is also no information regarding how long the children have been at the survey school, making removing children who have recently changed schools from the sample impossible. More generally, the cross-sectional nature of the datasets means that causal inferences from results are limited while any time trends that are identified cannot be investigated causally because of the inability to use the data in a time-series analysis.

It would be desirable to compare the results from the analysis of this dataset to its English equivalent; this unfortunately is not possible due to the more restrictive nature of access to the English dataset. However, the Children's Society Well-Being Survey (used in Chapter 6) also uses Cantril's ladder as its outcome variable and was conducted at a similar time to the 2009/10 HBSC. As such a comparison, limiting children to comparable ages, will be conducted between these two datasets in this chapter.

However, as well as these limitations, there are a number of positives to this analysis. It is possible to use a well-known and tested outcome variable which was also included in one of the previously used datasets, aiding comparison. The availability of 3 surveys from the same series allows the investigation of the relationship between schools and subjective well-being in the USA over time, even if causal inferences are limited. This is something that has not been possible at all with previously used datasets.

9.6: Analysis

Preliminary analysis results

As in previous chapters a summary of the preliminary analysis results are given here while more detailed results are given in Appendix 9 due to space issues. Table 9.14 gives the results for individual variables in the binomial analysis and the two regression approaches: the first approach ran one regression model including all variables and the second ran separate regressions for each of the groups of variables, e.g. demographics. The results for all three datasets are given together for comparison. Nearly all of the variables were consistently significant in the binomial analysis, the

exception being mother being employed, although it was significant in the more recent datasets. Perhaps surprisingly gender was not significant in the regression models where all variables were included, and findings were mixed for the age variable. There were also mixed findings for school grade. Ethnicity and living with mother however were consistently significant. Other consistently statistically significant variables were: family well off, overall health, easy to talk to mother, easy to talk to father, bullied in school, liking school and students are accepting. Variables that seem unlikely to be important in the later multilevel analysis due to their consistently being not significant in the linear regression are number of siblings, employment status of parents, dieting, number of health complaints, bullying, number of close friends, and students liking being together. It is not possible to distinguish any obvious time trends from these results.

Table 9.14: Preliminary analysis predicting life satisfaction results⁶⁹

Variables	Wave	Binomial analysis ⁷⁰	Regression - all	Regression - groups
Gender (female)	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	ns	s
Age	01/02	s	ns	s
	05/06	s	s	ns
	09/10	s	ns	ns
Grade	01/02	s	ns	ns
	05/06	s	s	s
	09/10	s	ns	s
Ethnicity	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Live with mother	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Live with father	01/02	s	s	s
	05/06	s	ns	s
	09/10	s	s	s
Number of siblings	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	ns	s
Family well off	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Family holidays in the past 12 months	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s

⁶⁹ s = statistically significant, ns = not statistically significant.

Table 9.14 continued

Family vehicle	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	ns	ns
Family computer	01/02	s	ns	ns
	05/06	s	s	s
	09/10	s	ns	ns
Own bedroom	01/02	s	ns	ns
	05/06	s	ns	s
	09/10	s	s	s
Mother employed	01/02	ns	ns	ns
	05/06	s	ns	s
	09/10	s	ns	ns
Father employed	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	ns	ns
Time spent watching TV per day	01/02	s	ns	ns
	05/06	s	s	s
	09/10	s	s	s
Overall health	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Exercise (days per week)	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	s	s
Body perception	01/02	s	s	s
	05/06	s	ns	s
	09/10	s	s	s
On a diet	01/02	s	ns	s
	05/06	s	ns	ns
	09/10	s	ns	s
Tried smoking	01/02	s	ns	s
	05/06	s	s	s
	09/10	s	s	s
Frequency of smoking	01/02	s	ns	s
	05/06	s	s	s
	09/10	s	ns	ns
Currently smoke	01/02	s	-	s
	05/06	s	s	s
	09/10	s	ns	ns
Number of times drunk	01/02	s	s	s
	05/06	s	ns	ns
	09/10	s	s	ns
Ever been drunk (binary)	01/02	s	s	s
	05/06	s	ns	ns
	09/10	s	ns	s
Injured in the past 12 months	01/02	s	ns	ns
	05/06	s	s	s
	09/10	s	ns	s

Table 9.14 continued

Number of health complaints	01/02	s	s	s
	05/06	s	ns	s
	09/10	s	s	s
Reports multiple health complaints	01/02	s	ns	ns
	05/06	s	ns	ns
	09/10	s	ns	s
Number of close friends	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	ns	s
Easy to talk to mother	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Easy to talk to father	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Evenings per week with friends	01/02	s	s	s
	05/06	s	ns	ns
	09/10	s	s	s
Bullied in school	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Bully others	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	ns	s
Like school	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Students like being together	01/02	s	ns	s
	05/06	s	ns	s
	09/10	s	ns	s
Students are accepting	01/02	s	s	s
	05/06	s	s	s
	09/10	s	s	s
Pressure from school work	01/02	s	s	s
	05/06	s	ns	s
	09/10	s	ns	s

Results

Multilevel models were bootstrapped (100 reps). Age and gender are retained in the fixed part of models 2 and 3 as in previous chapters but because of the large number of variables other non-significant fixed effects were removed.

Model 1: Is there a relationship between the school a child attends and the level of subjective well-being that they report? How has this relationship developed over time?

Table 9.15 gives the results of the null multilevel models for the three surveys. These results show that all of the models were multilevel, with a small amount of variance in children's life satisfaction (between 2.76 and 3.65%) being explained by the school that

they attended, similar to the equivalent result in the Add Health analysis. The amount of variance explained appears to increase slightly over time, contradicting the hypothesis that the most variance would be explained in 2005/06 after the introduction of No Child Left Behind.

Table 9.15: Null multilevel models

	2001/02		2005/06		2009/10	
	B	S.E.	B	S.E.	B	S.E.
Fixed effects						
Constant	-0.023	.018	0.003	.020	.008	.017
Random effects						
School-level (S.D.)	0.342 (.315-.372)	.015	0.349 (.315 - .386)	.018	0.382 (.354 - .413)	.015
Individual Level (S.D.)	2.033 (2.004-2.063)	.015	1.922 (1.889-1.955)	.017	1.964 (1.935-1.994)	.015
	LL = -30695.368, chi ² (1) = 131.02, p < .001, VPC: 2.76%, N = 14359 (340)		LL = -18876.956, chi ² (1) = 108.15, p < .001, VPC: 3.19%, N = 9064 (226)		LL = -26155.026, chi ² (1) = 173.11, p < .001, VPC: 3.65%, N = 12422 (314)	

Model 2: Does the relationship remain after other factors are considered? If so how much variance is explained at the school level? How are schools influencing children's affective well-being? How has this relationship developed over time?

Table 9.16 gives the results of the mid models for the datasets, i.e. the analyses that potentially included all of the available variables except those relating to the child's perceptions and experiences of schooling. Unlike the equivalent analyses in previous chapters, this analysis is considering the effect of these different characteristics across time (although with the limitations on making any causal inferences in this regard noted) and as such results are also discussed in this context.

There are a number of variables that are consistently significant in the fixed effects of all analyses, such as gender, living with mother, high FAS (Family Affluence Scale), overall health, body perception, smoking (both currently smoking and having tried smoking), number of health complaints and relationship with parents variables. The range of significant variables demonstrates the complexity of child well-being and the different factors that affect it. In the random part of the model living with mother, FAS and currently smoking were consistently significant, suggesting that across the time periods studied the way schools handled children with these different characteristics was important for their life satisfaction. In the most recent dataset ethnicity was significant in the random part of the model for the first time, suggesting a worrying increase in the effects of schools treating children differently based on their ethnicity, impacting on their life satisfaction. Similarly, exercise and dieting were significant for

the first time in the random part of the 2009/10 model, while having been drunk was no longer significant where it had been in the previous datasets.

The amount of variance in the model explained at the school-level as increased massively to nearly half in the 2001/02 analysis, increasing to nearly 70% in the 2005/06 analysis before dropping slightly to around 67% in 2009/10. These findings, particularly for 2005/06 and 2009/10, are considerably larger than that in previous chapters, although the 2001/02 finding (49%) is not dissimilar to the finding at this stage of the Understanding Society model (46%) in Chapter 7. The results at this stage support the hypothesis that No Child Left Behind increased the predictive effect of school on child subjective well-being in the USA. It should be noted that there is a very large confidence interval for the school-level coefficient of the 2009/10 model suggesting some difficulty in estimating this element of the model. However this issue is resolved in the final model, model 3, and therefore does not affect the main results and inferences of this analysis.

Table 9.16: Two-level multilevel models including all predictor variables except school perceptions

	2001/02		2005/06		2009/10	
	B	S.E.	B	S.E.	B	S.E.
Fixed effects						
Constant	-1.476***	0.160	-1.227***	0.273	-1.658***	0.204
Gender (female)	0.121**	0.035	0.135**	0.040	0.142***	0.039
Age	-0.009	0.012	0.020	0.015	0.011	0.015
Grade	-	-	-	-	-	-
Ethnicity (Ref. white)						
Black	0.271***	0.052	0.034	0.064	0.044	0.056
Hispanic or Latino	-0.016	0.053	-0.083	0.060	-0.144**	0.047
Asian	-0.206*	0.090	-0.315**	0.106	-0.302***	0.084
Native American	-0.018	0.078	-0.113	0.094	-0.212*	0.083
Pacific islander	0.199*	0.132	0.070	0.161	-0.117	0.152
Live with mother (no)	-0.292***	0.075	-0.146*	0.066	-0.261**	0.075
Live with father (no)	-0.094*	0.038	-	-	-0.117**	0.041
Number of siblings	-	-	-	-	-	-
Family well off (Ref. very well off)						
Quite well off	-0.377***	0.035	-0.572***	0.056	-0.525***	0.048
Average	-0.707***	0.041	-0.867***	0.058	-0.852***	0.052
Not well off	-1.315***	0.085	-1.559***	0.083	-1.632***	0.091
Not at all well off	-0.803***	0.121	-1.789***	0.187	-1.193***	0.156
Family affluence scale (Ref. low)						
Mid	0.019	0.082	0.123	0.112	0.174	0.100
High	0.177*	0.086	0.229*	0.105	0.349**	0.102
Mother employed (yes)	-	-	0.117*	0.047	-	-
Father employed (yes)	-	-	-	-	-	-
Time spent watching TV per day (Ref. none)						
Less than half an hour	-	-	0.507	0.266	0.139	0.170
Half an hour to an hour	-	-	0.485	0.255	0.262	0.145
Two to three hours	-	-	0.364	0.247	0.342*	0.141
4 hours	-	-	0.340	0.248	0.234	0.152
More than four hours	-	-	0.399	0.257	0.339*	0.142
Overall health (binary)	0.912***	0.047	0.455***	0.065	0.439***	0.055
Exercise (days per week) (Ref. none/less than one day per week)						
One day per week	0.099	0.097	-0.020	0.112	0.147	0.116
Two to three days per week	0.023	0.079	0.063	0.096	0.294***	0.082
Four to six days per week	0.108	0.074	0.153	0.093	0.365***	0.085
Every day	0.210*	0.086	0.218*	0.099	0.479***	0.085
Body perception (binary)	0.222***	0.034	0.167***	0.042	0.315***	0.048

Table 9.16 continued

On a diet (Ref. no, weight is fine)						
No but want to lose weight	-	-	-	-	0.017	0.049
Yes	-	-	-	-	0.102	0.056
Tried smoking	-0.142**	0.048	-0.153*	0.061	-0.139*	0.062
Currently smoke	-0.191**	0.070	-0.229*	0.096	-0.232**	0.088
Ever been drunk (binary)	-0.082	0.053	-0.073	0.065	-0.199**	0.072
Injured in the past 12 months	-	-	-	-	-	-
Number of health complaints	-0.068***	0.004	-0.056***	0.004	-0.060***	0.003
Multiple health complaints	0.052	0.061	-	-	-	-
Number of close friends (binary)	-	-	-	-	0.254**	0.081
Easy to talk to mother (Ref. very difficult)						
Difficult	0.283***	0.069	0.281**	0.085	0.209**	0.068
Easy	0.531***	0.057	0.534***	0.075	0.507***	0.066
Very easy	0.752***	0.060	0.703***	0.078	0.745***	0.072
Easy to talk to father (Ref. very difficult)						
Difficult	0.121*	0.050	0.079	0.063	0.060	0.058
Easy	0.329***	0.048	0.252***	0.058	0.230***	0.061
Very easy	0.372***	0.065	0.377***	0.058	0.307***	0.071
Evenings per week with friends	0.040***	0.008	0.032**	0.009	0.029**	0.009
Random effects						
School level (S.D.)	0.000 (.000-.000)	0.000	0.077 (.059-.100)	0.010	0.053 (0-.821)	0.284
Gender (female)	-	-	-	-	-	-
Age	-	-	-	-	-	-
Grade	-	-	-	-	-	-
Ethnicity (Ref. white)						
Black	-	-	-	-	0.280 (.224-.350)	0.032
Hispanic or Latino	-	-	-	-	0.368 (.319-.423)	0.026
Asian	-	-	-	-	0.483 (.363-.643)	0.071
Native American	-	-	-	-	0.554 (.471-.653)	0.046
Pacific islander	-	-	-	-	0.887 (.647-1.217)	0.143
Live with mother (no)	0.597 (.511-.697)	0.047	0.493 (.389-.625)	0.060	0.544 (.462-.640)	0.045
Live with father (no)	-	-	-	-	-	-
Number of siblings	-	-	-	-	-	-

Table 9.16 continued

Family well off (Ref. very well off)						
Quite well off	0.000 (.000-.000)	0.000	0.000 (.000-.000)	0.000	0.000 (.000-.000)	0.000
Average	0.240 (.208-.277)	0.017	0.200 (.160-.249)	0.022	0.000 (.000-.000)	0.000
Not well off	0.601 (.521-.694)	0.044	0.659 (.567-.765)	0.050	0.591 (.522-.668)	0.037
Not at all well off	1.206 (1.010-1.439)	0.109	2.074 (1.762-2.441)	0.172	1.492 (1.286-1.732)	0.113
Family affluence scale (Ref. low)						
Mid	-	-	-	-	-	-
High	-	-	-	-	-	-
Mother employed	-	-	-	-	-	-
Father employed	-	-	-	-	-	-
Time spent watching TV per day (Ref. none)						
Less than half an hour	-	-	-	-	-	-
Half an hour to an hour	-	-	-	-	-	-
Two to three hours	-	-	-	-	-	-
4 hours	-	-	-	-	-	-
More than four hours	-	-	-	-	-	-
Overall health (binary)	-	-	-	-	-	-
Exercise (days per week) (Ref. none/less than one day per week)						
One day per week	-	-	-	-	0.468 (.393-.557)	0.042
Two to three days per week	-	-	-	-	0.000 (.000-.000)	0.000
Four to six days per week	-	-	-	-	0.000 (.000-.000)	0.000
Every day	-	-	-	-	0.258 (.217-.307)	0.023
Body perception (binary)	-	-	-	-	-	-
On a diet (Ref. no, weight is fine)						
No but want to lose weight	-	-	-	-	0.000 (.000-.000)	0.000
Yes	-	-	-	-	0.327 (.278-.384)	0.027
Tried smoking	-	-	-	-	0.097 (.077-.122)	0.012
Currently smoke	0.421 (.357-.496)	0.035	0.633 (.496-.808)	0.079	0.513 (.434-.606)	0.044
Ever been drunk (binary)	0.299 (.254-.351)	0.025	0.386 (.313-.476)	0.041	-	-
Injured in the past 12 months	-	-	-	-	-	-
Number of health complaints	0.022 (.019-.026)	0.002	0.021 (.018-.025)	0.002	-	-

Table 9.16 continued

Multiple health complaints	0.242 (.205-.285)	0.020	-	-	-	-
Number of close friends (binary)	-	-	-	-	-	-
Easy to talk to mother (Ref. very difficult)						
Difficult	-	-	-	-	-	-
Easy	-	-	-	-	-	-
Very easy	-	-	-	-	-	-
Easy to talk to father (Ref. very difficult)						
Difficult	-	-	-	-	-	-
Easy	-	-	-	-	-	-
Very easy	-	-	-	-	-	-
Evenings per week with friends	-	-	0.070 (.059-.082)	0.006	-	-
Individual level (S.D.)	1.620 (1.585-1.656)	0.018	1.561 (1.517-1.607)	.023	1.566 (1.515-1.618)	0.026
	LL = -20406.47, chi ² (10)=153.08, p<.001, VPC: 49.32%, N=10536 (339)		LL = -13312.573, chi ² (10)=160.62, p<.001, VPC: 69.60%, N =6970 (226)		LL = -17146.071, chi ² (19)=165.30, p < .001, VPC: 67.46%, N = 8948 (314)	

Model 3: What role do children's perceptions of and engagement with school play? How much variance in affective well-being is explained at the school level? How are schools influencing children's affective well-being? How has this relationship developed over time?

The final models in this analysis include variables relating to children's school experiences and perceptions. With the addition of these variables gender only remains significant in the fixed part of the most recent dataset, 2009/10, suggesting a re-emergence of gender inequality in subjective well-being in recent years. Asian children consistently reported lower subjective well-being than white children, with mixed findings for other ethnicities. How well off the child perceived their family to be, high FAS score, body perception, number of health complaints, ease of talking to parents, being bullied (but not bullying) liking school and perceiving students as accepting were consistently significant in the fixed part of the models. Consistently significant random effects were found for FAS and bullying (both bullying and being bullied). Very large school-level coefficients are found for the bullying and family well off variables causing the very large VPCs reported, suggesting huge variation in the ways and effectiveness of schools tackling bullying and bullying behaviour as well as in the treatment of children from different backgrounds. The VPCs ranged from 68% to nearly 82%, suggesting that schools are responsible for very large proportions of the levels of life satisfaction in young people in the USA. The results again support the hypothesis

regarding the impact of No Child Left Behind with the 2005/06 model having the largest VPC.

Table 9.17: Two-level multilevel models including all predictor variables

	2001/02		2005/06		2009/10	
	B	S.E.	B	S.E.	B	S.E.
Fixed effects						
Constant	-1.926***	0.166	-1.159***	0.217	-1.988***	0.245
Gender (female)	-0.005	0.036	0.034	0.045	0.080*	0.037
Age	-0.007	0.015	0.013	0.017	0.015	0.013
Grade	-	-	-	-	-	-
Ethnicity (Ref. white)						
Black	0.215***	0.058	-0.020	0.066	-0.015	0.065
Hispanic or Latino	-0.060	0.052	-0.152**	0.052	-0.201***	0.049
Asian	-0.207*	0.090	-0.366***	0.100	-0.325***	0.081
Native American	-0.036	0.076	-0.089	0.104	-0.229**	0.084
Pacific islander	0.171	0.130	0.003	0.144	-0.089	0.148
Live with mother	-0.265***	0.067	-0.147	0.075	-0.255***	0.068
Live with father	-0.106**	0.040	-	-	-0.124*	0.048
Number of siblings	-	-	-	-	-	-
Family well off (Ref. very well off)						
Quite well off	-0.322***	0.038	-0.521***	0.051	-0.495***	0.047
Average	-0.612***	0.042	-0.806***	0.053	-0.816***	0.044
Not well off	-1.186***	0.093	-1.472***	0.095	-1.550***	0.078
Not at all well off	-0.691***	0.116	-1.668***	0.198	-1.053***	0.158
Family affluence scale (Ref. low)						
Mid	0.054	0.083	0.158	0.122	0.161	0.107
High	0.216**	0.081	0.266*	0.120	0.331**	0.108
Mother employed (yes)	-	-	0.118**	0.043	-	-
Father employed (yes)	-	-	-	-	-	-
Time spent watching TV per day (Ref. none)						
Less than half an hour	-	-	-	-	0.127	0.185
Half an hour to an hour	-	-	-	-	0.232	0.150
Two to three hours	-	-	-	-	0.305*	0.152
4 hours	-	-	-	-	0.202	0.163
More than four hours	-	-	-	-	0.339*	0.146
Overall health (binary)	0.833	0.049	0.396***	0.047	0.367***	0.049
Exercise (days per week) (Ref. none/less than one day per week)						
One day per week	0.040	0.094	-	-	0.103	0.097
Two to three days per week	-0.036	0.077	-	-	0.250**	0.085
Four to six days per week	0.034	0.073	-	-	0.284***	0.078
Every day	0.149	0.078	-	-	0.371***	0.085

Table 9.17 continued

Body perception (binary)	0.169***	0.033	0.155***	0.040	0.262***	0.033
On a diet (Ref. no, weight is fine)						
No but want to lose weight	-	-	-	-	-	-
Yes	-	-	-	-	-	-
Tried smoking	-0.115*	0.051	-0.211**	0.061	-	-
Currently smoke	-0.146*	0.061	-	-	-0.277***	0.071
Ever been drunk (binary)	-0.066	0.047	-0.035	0.069	-0.189**	0.059
Injured in the past 12 months	-	-	-	-	-	-
Number of health complaints	-0.056***	0.005	-0.042***	0.004	-0.049***	0.003
Multiple health complaints	0.058	0.053	-	-	-	-
Number of close friends (binary)	-	-	-	-	0.173*	0.083
Easy to talk to mother (Ref. very difficult)						
Difficult	0.267***	0.069	0.277***	0.078	0.237**	0.073
Easy	0.453***	0.062	0.491***	0.072	0.504***	0.065
Very easy	0.648***	0.063	0.644***	0.066	0.719***	0.071
Easy to talk to father (Ref. very difficult)						
Difficult	0.103*	0.049	0.089	0.051	0.039	0.056
Easy	0.275***	0.045	0.191***	0.050	0.157**	0.048
Very easy	0.290***	0.054	0.330***	0.062	0.213***	0.057
Evenings per week with friends	0.031**	0.009	0.023	0.012	0.028**	0.009
Bullied in school (Ref. not bullied)						
Once or twice	-0.069	0.043	-0.108*	0.049	-0.060	0.051
Two or three times a month	-0.025	0.074	-0.255**	0.093	-0.177*	0.088
About once a week	-0.272**	0.090	-0.028	0.130	-0.186	0.123
Several times a week	-0.371**	0.117	-0.392*	0.153	-0.384**	0.123
Bully others (Ref. haven't bullied others)						
Once or twice	-0.075	0.041	-0.012	0.048	-0.027	0.040
Sometimes	0.039	0.082	-0.145	0.092	-0.055	0.103
About once per week	-0.184	0.100	0.161	0.114	0.122	0.155
Several times per week	-0.060	0.120	-0.221	0.186	0.014	0.158
Like school (Ref. don't like it at all)						
Don't like it very much	0.160*	0.081	0.316**	0.093	0.273**	0.095
Like it a little	0.351***	0.083	0.477***	0.087	0.431***	0.089
Like it a lot	0.624***	0.079	0.703***	0.096	0.703***	0.092
Students like being together (Ref. strongly disagree)						
Disagree	-	-	-	-	-	-
Neither agree nor disagree	-	-	-	-	-	-
Agree	-	-	-	-	-	-
Strongly agree	-	-	-	-	-	-
Students are accepting (Ref. strongly disagree)						
Disagree	0.382**	0.129	0.064	0.139	0.074	0.142
Neither agree nor disagree	0.453***	0.101	0.162	0.124	0.179	0.125
Agree	0.699***	0.092	0.341**	0.119	0.319**	0.121
Strongly agree	0.836***	0.092	0.528***	0.131	0.522***	0.114

Table 9.17 continued

Pressure from school work (Ref. not at all)						
A little	-0.103*	0.046	-0.037	0.048	-	-
Some	-0.090	0.053	-0.116*	0.059	-	-
A lot	-0.212**	0.064	-0.123	0.064	-	-
Random effects						
School level (S.D.)	0.000 (.000-.000)	0.000	0.099 (.074-.134)	0.015	0.040 (.003-.547)	0.053
Gender (female)	-	-	-	-	-	-
Age	-	-	-	-	-	-
Grade	-	-	-	-	-	-
Ethnicity (Ref. white)						
Black	-	-	-	-	0.258 (.212-.313)	0.026
Hispanic or Latino	-	-	-	-	0.344 (.293-.403)	0.028
Asian	-	-	-	-	0.491 (.369-.653)	0.071
Native American	-	-	-	-	0.505 (.419-.609)	0.048
Pacific islander	-	-	-	-	0.861 (.629-1.179)	0.138
Live with mother (no)	-	-	0.456 (.369-.564)	0.049	0.499 (.423-.590)	0.043
Live with father (no)	-	-	-	-	-	-
Number of siblings	-	-	-	-	-	-
Family well off (Ref. very well off)						
Quite well off	0.000 (.000-.000)	0.000	0.075 (.060-.093)	0.008	0.000 (.000-.000)	0.000
Average	0.224 (.192-.261)	0.017	0.234 (.197-.278)	0.021	0.112 (.096-.132)	0.009
Not well off	0.593 (.512-.686)	0.044	0.670 (.580-.774)	0.049	0.600 (.526-.685)	0.041
Not at all well off	1.053 (.905-1.224)	0.081	1.904 (1.648-2.200)	0.140	1.316 (1.115-1.553)	0.111
Family affluence scale (Ref. low)						
Mid	-	-	-	-	-	-
High	-	-	-	-	-	-
Mother employed	-	-	-	-	-	-
Father employed	-	-	-	-	-	-
Time spent watching TV per day (Ref. none)						
Less than half an hour	-	-	-	-	-	-
Half an hour to an hour	-	-	-	-	-	-
Two to three hours	-	-	-	-	-	-
4 hours	-	-	-	-	-	-
More than four hours	-	-	-	-	-	-
Overall health (binary)	-	-	-	-	-	-

Table 9.17 continued

Exercise (days per week) (Ref. none/less than one day per week)						
One day per week	-	-	-	-	-	-
Two to three days per week	-	-	-	-	-	-
Four to six days per week	-	-	-	-	-	-
Every day	-	-	-	-	-	-
Body perception (binary)	-	-	-	-	-	-
On a diet (Ref. no, weight is fine)						
No but want to lose weight	-	-	-	-	-	-
Yes	-	-	-	-	-	-
Tried smoking	-	-	-	-	-	-
Currently smoke	-	-	-	-	0.540 (.465-.626)	0.041
Ever been drunk (binary)	0.329 (.281-.385)	0.026	0.314 (.251-.391)	0.035	-	-
Injured in the past 12 months	-	-	-	-	-	-
Number of health complaints	0.017 (.015-.020)	0.001	0.022 (.018-.025)	0.002	-	-
Multiple health complaints	0.272 (.229-.323)	0.024	-	-	-	-
Number of close friends (binary)	-	-	-	-	-	-
Easy to talk to mother (Ref. very difficult)						
Difficult	-	-	-	-	-	-
Easy	-	-	-	-	-	-
Very easy	-	-	-	-	-	-
Easy to talk to father (Ref. very difficult)						
Difficult	-	-	-	-	-	-
Easy	-	-	-	-	-	-
Very easy	-	-	-	-	-	-
Evenings per week with friends	-	-	0.063 (.053-.075)	0.006	-	-
Bullied in school (Ref. not bullied)						
Once or twice	0.000 (.000-.000)	0.000	0.274 (.232-.325)	0.024	0.000 (.000-.000)	0.000
Two or three times a month	0.333 (.260-.426)	0.042	0.492 (.388-.623)	0.059	0.674 (.524-868)	0.087
About once a week	0.488 (.390-.611)	0.056	0.828 (.630-1.089)	0.116	0.955 (.802-1.137)	0.085
Several times a week	1.163 (1.013-1.336)	0.082	1.418 (1.186-1.694)	0.129	0.993 (.853-1.157)	0.077

Table 9.17 continued

Bully others (Ref. haven't bullied others)						
Once or twice	0.000 (.000-.000)	0.000	0.000 (.000-.000)	0.000	0.047 (.040-.055)	0.004
Sometimes	0.168 (.138-.206)	0.017	0.287 (.231-.358)	0.032	0.622 (.504-.766)	0.066
About once per week	0.560 (.443-.708)	0.067	0.000 (.000-.000)	0.000	0.630 (.468-.848)	0.095
Several times per week	1.211 (.991-1.479)	0.124	1.602 (1.259-2.040)	0.197	1.202 (.972-1.486)	0.130
Like school (Ref. don't like it at all)						
Don't like it very much	-	-	-	-	-	-
Like it a little	-	-	-	-	-	-
Like it a lot	-	-	-	-	-	-
Students like being together (Ref. strongly disagree)						
Disagree	-	-	-	-	-	-
Neither agree nor disagree	-	-	-	-	-	-
Agree	-	-	-	-	-	-
Strongly agree	-	-	-	-	-	-
Students are accepting (Ref. strongly disagree)						
Disagree	-	-	-	-	-	-
Neither agree nor disagree	-	-	-	-	-	-
Agree	-	-	-	-	-	-
Strongly agree	-	-	-	-	-	-
Pressure from school work (Ref. not at all)						
A little	-	-	-	-	-	-
Some	-	-	-	-	-	-
A lot	-	-	-	-	-	-
Individual level (S.D.)	1.563 (1.530-1.580)	0.017	1.498 (1.456-1.541)	0.022	1.523 (1.483-1.565)	0.021
	LL = -19433.08, chi ² (16) = 200.72, p < .001, VPC: 68.04%, N = 10164 (339)		LL = -13275.79, chi ² (17) = 268.57, p < .001, VPC: 81.85%, N = 7023 (226)		LL = -16772.782, chi ² (20) = 213.28, p < .001, VPC: 78.85%, N = 8825 (314)	

Model 4: How does the relationship between school and life satisfaction in the USA compare to that in England?

The previous analyses have investigated the relationship between school and life satisfaction in the USA. This part of the analysis attempts to make a direct comparison of the nature of this relationship in the USA and England. As mentioned previously, it was not possible to obtain access to the equivalent HBSC datasets for English children, however it remains possible to use this data to conduct a somewhat direct

comparison between the USA and England. The Children's Society Well-Being Survey, used in Chapter 6, also includes Cantril's Ladder, collects data on a similar age group and conducts the survey in schools. The following presents a comparison between The Children's Society dataset and the 2009/10 HBSC dataset.

The work used only those variables available in both datasets, which limited the variables considerably. Variables were recoded as necessary so that coefficients could be interpreted easily and are equivalent across datasets. Both datasets were limited to only children aged over 10 in order to make the ages across the datasets equivalent (children were coded as 10 or younger in the HBSC whereas The Children's Society reported specific ages). The ethnicity variable for the HBSC in this analysis is different to that used above, including fewer categories, in order for it to be equivalent to the ethnicity variable in The Children's Society dataset.

Figure 9.5 presents initial results, showing the distribution of life satisfaction by gender in the two nations. The distributions are similar, with slightly more children reporting high life satisfaction in the English sample. Both countries show a decline in life satisfaction as children get older, with few significant gender differences.

Table 9.18 presents the results of a random intercept multilevel analysis. In both nations Asian children report lower life satisfaction than white children, children report higher life satisfaction if they live in a home with at least one adult who is in employment, and there is a significant interaction effect between age and gender in both nations which suggests that age is a more negative influence on girls' life satisfaction than boys. However, these are the only similarities. Girls report significantly lower life satisfaction than boys in the USA sample, but this is not the case in the English dataset. Similarly, children in grade 8, or who are of mixed or other ethnicity report lower life satisfaction in the USA, the same is not the case in England.

There are also differences in the structure of the data. The US (HBSC) model is significantly multilevel, suggesting important school effects on children's life satisfaction. This is not the case in the English model. However, when the model is run separately for boys and girls, the model is multilevel for girls in England, but not for boys, suggesting interesting gender differences in the relationship between school and life satisfaction for children in England (models for both boys and girls are significantly multilevel in the US dataset, suggesting no such gender differences).

Figure 9.5: Histograms of life satisfaction by gender, and life satisfaction by age and gender

Key
 ■ Male
 ▣ Female

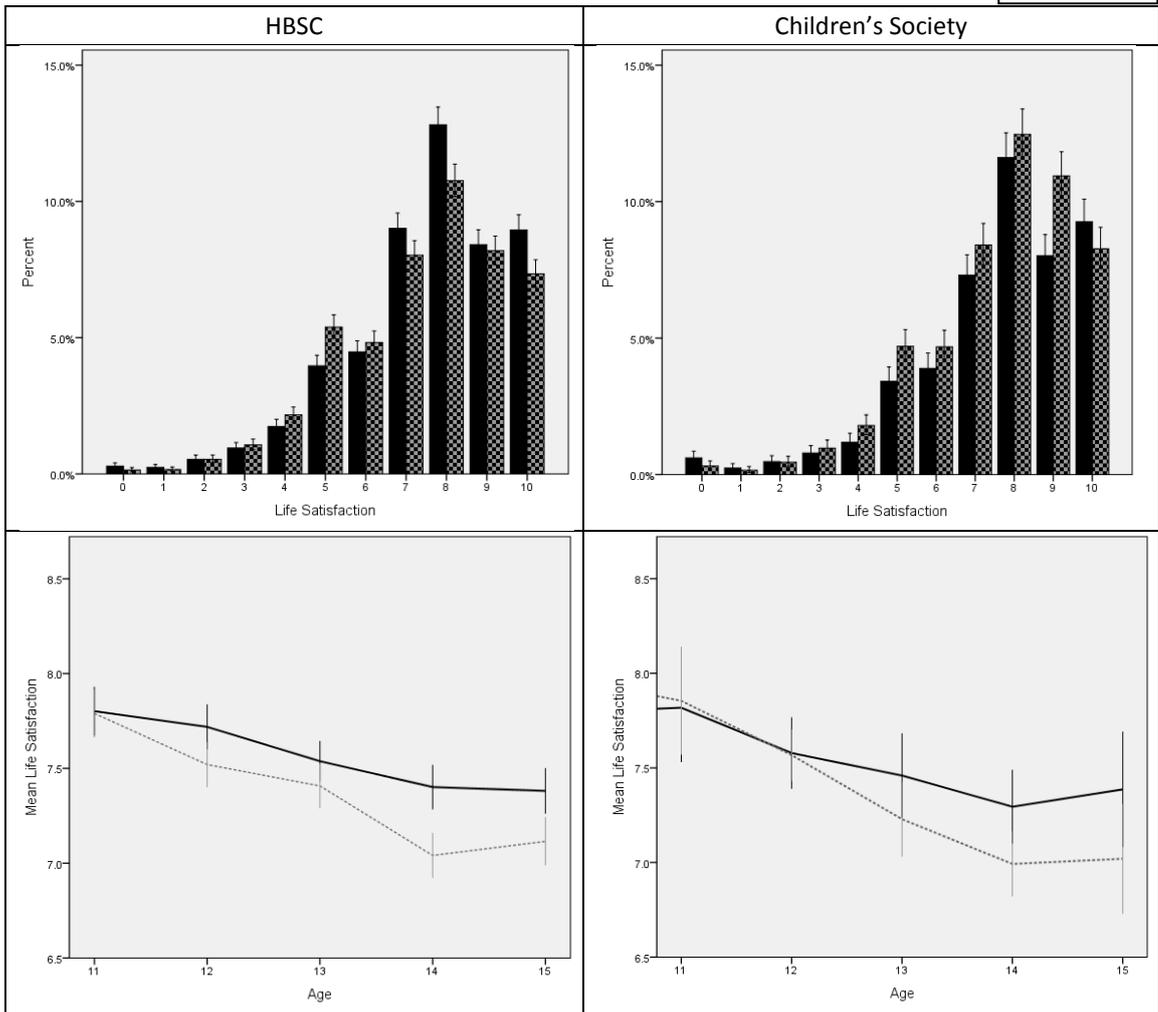


Table 9.18: Multilevel analysis comparing English and US datasets, fixed effects only

	HBSC		CSWBS	
	B.	S.E.	B.	S.E.
Constant	0.136	0.153	-0.075	.203
Gender (girl)	-0.174***	0.040	-0.079	.107
Age	0.056	0.058	-0.032	.079
School year/grade (Ref. year 6/grade 5)				
School year- / grade 6	-0.063	0.108	-	-
School year 8 / grade 7 ⁷¹	-0.286*	0.120	-0.224	.157
School year - / grade 8	-0.416**	0.140	-	-
School year 10 / grade 9	-0.588***	0.168	-0.367	.272
School year - / grade 10	-0.378*	0.192	-	-
Ethnicity (Ref. white)				
Black	0.003	0.061	-0.238	.169
Asian	-0.346**	0.110	-0.379**	.141
Mixed	-0.358***	0.079	0.138	.170
Other ethnicities	-0.270***	0.056	-0.009	.184
Adult in paid employment (yes) ⁷²	0.574***	0.085	0.405*	.171
Gender * Age	-0.062*	0.029	-0.111*	.056
Random effects				
School level (S.D.)	0.292 (.239-.358)	.030	0.133 (.056-.316)	.059
Individual level (S.D.)	1.907 (1.880-1.935)	.014	1.816 (1.770-1.863)	.024
Model statistics				
	LL = -19727.933 Chi ² (1) = 49.59, <i>p</i> < .001		LL = -6072.768 Chi ² (1) = 2.35, <i>p</i> > .05	
ICC	.023 (.015-.034)	.005	.005 (.001-.030)	.005
	n = 9506 (312)		n = 3005 (92)	

The two models were then run again, this time including random effects using the method used throughout the thesis for deciding the inclusion of random effects. Results are shown in Table 9.19. This time Children’s Society model is multilevel, however when run separately for boys and girls there are again differences. The model for girls is significantly multilevel but the model for boys is not. Both models are significant when running the HBSC model for the different genders. The fixed effects results are similar to those in the random intercept models. Only one of the variables was significant in the random part of each model, gender in the HBSC and school year in the CSWBS, further emphasising the differences between the countries in terms of the subjective well-being of their children. These results suggest that gender plays an important role in the relationship between schools and life satisfaction in these nations,

71 School year and grade varied between country and so generic terms are used here. Grades in the HBSC run from 6 through to 10. For the Children’s Society survey school years 6, 8 and 10 were included (when the data is limited to those over 10). Year groups were considered alongside age to see if there the different expectations and characteristics of the school years/grades had an effect on SWB independent of age.

72 Adult in paid employment refers to there being at least one adult in the child’s household that is currently in paid employment.

but one that differs. In the USA it would appear that there is an important relationship between school and life satisfaction for both boys and girls, but that the way schools treat children differently based on their gender has implications for their life satisfaction. The results for England instead suggest that the relationship between school and life satisfaction is more important for boys than girls, having little impact on the life satisfaction of boys but making a meaningful difference to girls. However there is no school-level effect found in the analysis of children in England.

Table 9.19: Multilevel analysis comparing English and US datasets with random effects

	HBSC		CSWBS	
	B.	S.E.	B.	S.E.
Constant	0.139	0.152	-0.064	0.202
Gender (girl)	-0.174***	0.041	-0.081	0.108
Age	0.062	0.058	-0.027	0.079
School year/grade (Ref. year 6/grade 5)				
School year- / grade 6	-0.063	0.107	-	-
School year 8 / grade 7	-0.287*	0.119	-0.236	0.159
School year - / grade 8	-0.423**	0.139	-	-
School year 10 / grade 9	-0.591***	0.168	-0.393	0.274
School year - / grade 10	-0.387*	0.191	-	-
Ethnicity (Ref. white)				
Black	0.001	0.061	-0.206	0.171
Asian	-0.342**	0.110	-0.355*	0.142
Mixed	-0.361***	0.079	0.138	0.170
Other ethnicities	-0.263***	0.056	-0.002	0.184
Adult in paid employment (yes)	0.573***	0.085	0.398*	0.170
Gender * Age	-0.064*	0.030	-0.113*	0.056
Random effects				
School level (S.D.)	0.188 (.087-.407)	0.074	0.000 (.000-.000)	0.000
Gender (female)	0.150 (.093-.244)	0.037	-	-
School year (year 6)				
Year 8	-	-	0.225 (.130-.389)	0.063
Year 10	-	-	0.222 (.086-.570)	0.107
Individual level (S.D.)	1.906 (1.878-1.934)	0.014	1.809 (1.763-1.856)	0.024
Model statistics				
	LL = -19725.648 Chi ² (2) = 54.16, p < .001		LL = -6068.767 Chi ² (3) = 10.35, p < .05	
School-level VPC	1.57%		2.96%	
	n = 9506 (312)		n = 3005 (92)	

It should be noted however that the findings of this analysis are quite limited. Only very few variables were available in both datasets, meaning that many variables known to be important in predicting life satisfaction based on the results of analysis presented in

this chapter as well as Chapter 6 had to be excluded. As such the relationship presented may not be as accurate as would be hoped. Similarly, there were only very few variables significant in the random part of the models, likely due to the few variables available. This in part explains the very low VPCs found. Nonetheless these results indicate a number of interesting differences between the USA and England in the way that children's life satisfaction varies.

9.7: Discussion

The analyses presented in this chapter find a very large school level effect on the life satisfaction of children in the USA. Very large coefficients for bullying behaviours and family financial situation contribute to these very large effects, suggesting that how different schools treat these situations are massively important for child life satisfaction. The finding of a significant random effect for ethnicity and fixed effect for gender in most recent dataset is perhaps symbolic of increased inequality due to the effects of the recession but worthy of further investigation. The results for the pressure caused school work variable are inconsistent and do not support the hypothesis of increased pressure after the introduction of No Child Left Behind, however the increased VPC particularly in the 2005/06 analysis does support the hypothesis of increased relevance of schools to child subjective well-being since NCLB. However this is not definitive due to the cross-sectional nature of the data. The comparatively large VPCs found in the original 3 models compared to the results using data from England may be explained by the greater variation in schools across the USA due to the devolved nature of education in the USA. Neighbourhood effects may also be a factor due to the high level of clustering of deprivation in the USA, although this is likely to also affect the English data.

The results of the comparison between models using data from the USA and England are limited because of the number of variables available in both datasets, however they point to some interesting differences across nations. The most interesting of which is that relating to the varying relationship between gender and school effect identified. Why such a difference in the effect of gender should be found is worthy of future study.

9.8: Conclusion

This chapter concludes the analysis in this thesis. All datasets have found a school-level effect on subjective well-being, while the analysis in Chapter 4 provided additional evidence of a relationship between subjective well-being and educational performance. The following chapter discusses these results in greater detail.

9.9: Key findings

- A considerable school-level effect on life satisfaction was found in all three of the HBSC datasets, indicating that the school a child attends is important for their life satisfaction at ages 10-17 in the USA.
- In all cases this effect remains after a wide range of characteristics are accounted for.
- Although causality cannot be established here, there is a pattern in the results indicating an increase in the school-level effect on life satisfaction after the introduction of No Child Left Behind.
- The fixed and random effects across the three datasets varied, although there were some consistent findings. In the fixed part of the model, family financial situation, health and risk behaviours, communication with parents, being bullied and liking and feeling accepted at school are all consistently significant.
- In the random parts of the models family financial situation and bullying were again important, as was engaging in bullying behaviour.

Chapter 10: Discussion and Conclusion

10.1: Discussion

The previous chapters have presented analysis of the relationship between subjective well-being and educational performance, and between the school a child attends and the level of subjective well-being that they report. The results have consistently found a considerable amount of variance in children's subjective well-being to be explained at the school-level. They have also given insight into children's subjective well-being, educational performance and the nature of the relationship between the two. The following sections synthesise and discuss these findings, as well as issues around the usefulness and importance of subjective well-being. Following on from this, the conclusion discusses the limitations of the study, potential areas for future research, key contributions and policy implications.

The relationship between subjective well-being and educational performance

Chapter 4 presented analysis investigating the relationship between subjective well-being and educational performance (the term educational performance is used because measures of both educational achievement and attainment were used) using a range of micro and macro level data. This was conducted for 3 reasons: to see if results were similar to those found in previous research; to investigate the applicability of the happy-productive worker hypothesis to children in school; and in order to provide additional, compelling evidence to encourage those who do not consider subjective well-being relevant to education policy to reconsider their position.

Alongside instrumental reasons for being interested in this relationship there are clear normative reasons for interest in the effects of education policy on children. Subjective well-being is universally important and it is right that we should seek to ensure that levels of subjective well-being among children (and adults) are as high as possible and that detrimental impacts caused by policies are minimal. Indeed it has been argued that policy should focus on minimising unhappiness (Lelkes, 2013). However the extent to which the impacts of education policy on subjective well-being is a consideration gets to the heart of debates about the role of schools and what education is, and should be, with current political consensus emphasising the role of individual academic attainment and later economic outcomes to the almost complete exclusion of other outcomes and considerations. Therefore by demonstrating a mostly positive relationship between achievement and subjective well-being this research is able to undermine the relevance of this debate and well-becoming arguments which focus on performance as the ultimate goal of education policies. By showing that increased

subjective well-being is positively associated with more objective educational outcomes, arguments that dismiss subjective well-being are rendered irrelevant and responsibility is placed upon those for whom educational performance is the main objective to take subjective well-being seriously as a means of improving this outcome, if not for its own sake. A strict focus solely on the improvement of academic performance at the cost of other outcomes is likely to be counterproductive if it negatively impacts on the subjective well-being of children.

The relevance of the happy-productive worker hypothesis to children established by these findings is additionally beneficial as it encourages the more serious consideration of children's experiences and perceptions of their environment. Essentially these findings support the argument being made for broader consideration of the effects of education policy on children's lives by demonstrating that, as with adults in employment, how children engage with education is important, rather than considering them passive participants. We have mostly accepted the existence of the influence of the workplace on adults, including the elements influenced by policy such as employment security, we should do the same for children by recognising that policies can and do influence school environments and that this matters.

However, the mostly positive relationship between subjective well-being and educational performance did have some nuances and caveats. For example, the relationship was found to be curvilinear in the analysis of the Millennium Cohort Study, perhaps reflecting the comparatively young age of the children in the sample. Similarly, the micro-level analysis of older children in England and the USA (Children's Society Well-being Survey and Add Health) found significant gender differences in the relationship between life satisfaction and educational performance. However such findings are not limited to children, research investigating the happy-productive worker hypothesis in adults has similarly found curvilinear relationships and gender differences (Mishra and Smyth, 2012). As such, the importance of these findings is not undermined.

Schools and child subjective well-being in England and the USA

The finding of a relationship between subjective well-being and educational performance discussed above and given in more detail in Chapter 4 demonstrates the importance of subjective well-being to more objective aspects of child well-being. The later analysis in this thesis aimed to investigate if and how schools were relating to children's subjective well-being in England and the USA. It hypothesised that there would be an important school-level effect on children's subjective well-being, and that in the USA this would have increased following the introduction of No Child Left Behind

in 2001. How schools would affect child subjective well-being was not explicitly hypothesised, although the evidence presented in Chapter 2 did give some indications. The evidence highlighted concerns such as the impact of standardised testing and ability grouping on those who were less confident, who find learning challenging and the appearance that such policies were creating a less supportive and friendly, more confrontational and competitive working environment. Similarly the evidence regarding breaktimes discussed their importance in terms of exercise and children's social lives, as well as tiredness at school.

The findings are discussed here first in terms of school-level effects in England, then school-level effects in the USA. The amount of variance in subjective well-being explained at the school-level is then revisited, before the differences in findings between England and the USA are discussed briefly. A summary of the measures of subjective well-being used as the outcome variables in these analyses is given in Table 10.1, while Tables 10.2 and 10.3 give overviews of the models.

Results for England: The importance of the nurturing role of schools

The key findings of the analyses are summarised in Tables 10.2 and 10.3 for England and the USA respectively. The tables show that the results support the tentative hypotheses given above relating to the evidence discussed in Chapter 2 (the impacts of standardised testing and ability grouping, impacts on less confident children), particularly those results for England. The significant random coefficients found in the England analyses vary slightly, but all models include variables from the SDQ (Strengths and Difficulties Questionnaire, which relates to mental health and behavioural difficulties) or a physical or learning disability. This was not the case for the USA analysis which tended to include broader characteristics such as family financial situation. The results for the MCS analysis were slightly different to those for the other analyses of children in England, perhaps due to the affective well-being rather than life satisfaction outcome variable (see Table 10.1), as well as the young age of the children in the sample. Of the random effects in the MCS analysis nearly all in some way reflected the emotive elements of children's lives and relationships with school: special educational needs (SEN), SDQ: Emotional difficulties, feeling left out and tired at school. This result suggests that the supportive role schools play in regard to the potential difficulties of their students accounts for the school-level influence on children's affective well-being. These results are intuitively understandable given the young age of the children in the sample, as well as the affective nature of the outcome variable, yet policies do not take this role into account, something that should be improved. This finding is further reinforced by the fact that having SEN or emotional

difficulties was not significantly related to child affective well-being itself (i.e. significant in the fixed part of the model); only how schools treated children with SEN or emotional difficulties was related to changes in affective well-being. As such, it is how schools treat children with these individual characteristics, rather than the characteristics themselves, that impact on children's subjective well-being. Such results support the ecological approach to child development discussed by Bronfenbrenner (1979) and highlights the flawed approach of considering children's lives in isolation from their environments.

The results for the Children's Society Well-being Survey and Understanding Society, both of which had life satisfaction measures as their outcome variable and included children of a similar age range, were alike but with some notable differences. As in the MCS results, both models included variables that relate to difficulties children may face such as being disabled, being bullied or family instability in the random part of the model, again emphasising the supportive role of schools in children's lives. Alongside these variables both the Children's Society and Understanding Society models also included variables relating to children's enjoyment of school as significant random effects. A similar variable was considered in the MCS analysis but was not significant. This suggests that the way schools treat children who are more or less enthusiastic about and enjoying school has implications for their life satisfaction. For example it may be important for schools to find ways to connect with children who particularly enjoy school and support those that don't in such a way as to keep them engaged and enthused, improving their level of satisfaction with their lives overall. This result suggests that different schools are finding different ways to deal with the different levels of enthusiasm in the children that they teach. This could be related back to the impact of standardised testing discussed in Chapter 2, particularly the exclusion of non-assessed topics due to the pressure on schools to perform well in those subjects subject to standardised assessment. Successful schools that are having a more positive impact on children's life satisfaction may be resisting the temptation to focus almost exclusively on assessed subjects, allowing children who do not enjoy such topics to continue to partake in arts and sports for example. These results speak more to the environment of the school as well as the supportive role it plays in terms of what is causing the school-level effect. This finding, as well as the amount of variance explained in the models, suggests that perhaps the role of schools in predicting child subjective well-being may increase with age although this cannot be proved by these results alone. This seems likely given the increasing importance of school and school performance as children get older.

Table 10.1: Overview of outcome variables

	England			USA	
	Millennium Cohort Study	Children's Society Well-being Study	Understanding Society	Add Health	Health Behaviours in School-aged Children
Measure	Affective well-being	Life satisfaction (Cantril's ladder)	Life satisfaction	Positive affect	Life satisfaction (Cantril's ladder)
Previously used/tested	No	Yes	No ⁷³	No	Yes
Single or multiple item	Multiple-item	Single item	Multiple-item	Multiple-item	Single item
Questions used	5. How often do you feel happy? 6. How often do you get worried? 7. How often do you feel sad? 8. How often do you laugh?	Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?	5. How do you feel about your appearance? 6. How do you feel about your family? 7. How do you feel about your friends? 8. How do you feel about your life as a whole?	7. You have a lot of good qualities 8. You have a lot to be proud of 9. You like yourself just the way you are 10. You feel you are doing everything just about right 11. You feel socially accepted 12. You feel loved and wanted	Here is a picture of a ladder. The top of the ladder '10' is the best possible life for you and the bottom '0' is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?

⁷³ Although similar approaches have been used, particularly work based on the British Household Panel Survey from which the Understanding Society Survey has developed (e.g. Bradshaw and Keung, 2011b; Clair, 2012).

Results for the USA: The social role of schools

The results of the USA analyses were slightly different to those for England, particularly for the Add Health dataset. There were only two significant random effects in the Add Health analysis, gender and wanting to leave home. Gender was not significant at the school level in any of the other analyses. This result suggests that in the mid nineteen-nineties the different ways that schools in the USA were treating boys and girls (a binary gender variable is provided in the dataset) had important implications for their positive affect. This finding was in contrast to the results of the original HBSC analyses, although a school-level effect for gender was found in the analysis of the HBSC in comparison to the Children's Society Well-being Study. However, as noted in Chapter 9 the results of the comparative models were limited by the number of potential variables. Therefore the significant school-level effect for gender in the Add Health analysis may be due to the gender difference in the USA dissipating with time or due to differences in how schools influence the different aspects of subjective well-being. Why girls and boys should be affected differently by schools in terms of their subjective well-being is of interest. This may related to the idea that girls are more likely to be affected by school experiences or to attribute emotional importance to events such as success or failure, which has been discussed in relation to several nations (Norlander and Stensöta, 2014), which may explain why gender was only found to be significant in the school level in the analysis predicting positive affect.

The importance in the Add Health analysis of a variable relating to whether the respondent reported wanting to leave home perhaps is more similar to the English findings, relating to a difficulty that the child is facing and how they are supported by their school. This may reflect schools playing a sanctuary-like role for some children who are unhappy at home, where they are able to feel supported and comfortable. However, as noted in Chapter 8, young people may be enthusiastic about leaving home for more positive reasons, such as excitement about going to university, getting a job or gaining independence. Therefore the effect of schools on children who want to leave home may also be through supporting children to gain the skills and qualifications to achieve these goals, as opposed to frustrating their aims through limiting their aspirations, for example.

The HBSC random effects results were different to those for Add Health, perhaps unsurprisingly given the differences between the data, but with some consistency across the different HBSC datasets. The variables relating to whether the child was bullied or bullied other children was significant in the random part of all three HBSC models with large coefficients, as was whether the child felt that their family were well

off. Being bullied was also significant in the two-level analysis of Understanding Society (England), which also predicted life satisfaction, but was not available in the Children's Society Well-being study. Neither being bullied or bullying other children were significant at the school level in the MCS analysis, but were significant in the fixed effects. The significance of the bullying related variables in the random part of the HBSC analyses likely reflects how children who are bullied are supported by their school and peers, while the variable relating to those who bully others is more complex to interpret. It may relate to the intent and goals of the bullies, which is disputed in the literature. For example, if the bully is aiming to benefit from their behaviour through improved social status, if the bullying policy at the school the child is attending negates this benefit then there will be variation in the effect of schools on bullying behaviour in relation to life satisfaction (Olthofa, 2011).

The perceived financial situation variable also produced very large coefficients at the school level of the HBSC analyses indicating that this is something that has considerable impact on children's life satisfaction in the USA. Children and young people have been found to demonstrate considerable awareness of the financial situation of their family and the impacts that it has on other family members as well as themselves (Ridge, 2002), which is consistent with the significance of this variable in the fixed effects of all of the HBSC models. However, the significance of family financial situation at the school level suggests that the impact of family hardship goes beyond such an influence. This may be due to the high level of income inequality in the USA which has been found to detrimentally impact on subjective well-being (Wilkinson and Pickett, 2009). Income inequality is higher in the USA than England (as part of the UK), as illustrated by the very high gini coefficient for this nation (CIA World Factbook, n.d.), which may explain why no similar findings were found in analysis of children in England. It may be that the very high income inequality in the USA creates an environment in which children from less financially secure homes are more visible and thus more likely to be treated differently by their schools. This may take the form of assumptions about academic ability, as was discussed in Chapter 2 regarding the use of ability grouping in schools evidence shows that children from working class backgrounds are disproportionately found in lower ability groups, and that placement in such a group may frustrate academic success and cause discontentment among students (Harlen and Malcolm, 1997; Boaler et al., 2000).

It is also possible that the significant findings for being bullied and family financial situation may be related. Evidence suggests that children may be more likely to be bullied if they look different to their peers, for example they are not able to dress in the same way as their peers for financial reasons, or are perceived to have poor parents

(Thornberg, 2010). As such children may be facing the double difficulty of financial disadvantage and bullying caused (at least in part) by their financial disadvantage. This finding is perhaps the key result for the USA analysis, not least because of the large effects sizes as well as consistency across surveys. As it was found that the key role for schools in England is supportive in the face of difficulties such as SEN, the USA analysis, for the HBSC at least, suggests that the key role schools play is in relation to social relationships and perceptions, particularly relating to financial situation. Again, this is an aspect of schooling that is neglected in education policy, and evidence presented here suggests that this neglect may be having significant impact on the subjective well-being of children.

Number of health complaints and reporting having ever been drunk were significant random effects in the first two waves of the HBSC analysis but not the most recent (2009/10) analysis. The statistical significance of health in the USA analyses in both the fixed and random parts of the model compared to the lack of any statistically significant health variables in the analyses of English children may be due to the different healthcare systems in the US compared to England. Health may be more important to child subjective well-being in the USA where the potentially greater financial costs of health care may be associated with negative effects on subjective well-being compared to England where costs of health care are less of a consideration. In terms of a school-level effect it may be that some schools are more supportive of children with complex health needs and the associated complications that they are likely to have, for example frequent school absences. In a policy environment which prioritises academic achievement, and which in England has been associated with the increased suspension and expulsion of 'difficult' students who may impact school league table performance (Coles and Richardson, 2005), children who have health problems and frequent absences from school may be seen as burdensome and problematic by some schools who are concerned about their performance on the accountability measures used to allocate federal funding. As such, different schools may treat children with health problems differently across the country.

The significant effects for drinking in the random part of the first two HBSC models may be related to how schools treat those engaged in deviant behaviour, with personal difficulties, and who may pose a threat to school performance measures. Schools may be more or less supportive in helping children who engage in deviant activities to change their behaviour, with some being inclusive and others pursuing more disciplinarian approaches. Punishments for such behaviours that are perceived as harsh by students are associated with lower school engagement and connectedness, aspects of which are associated with subjective well-being (McNeely et al., 2002;

Willms, 2003; Fredricks et al., 2004; Voelkl, 2012). It seems likely that the currently smoke variable may have replaced drinking behaviours as the indicator of deviance in the 2009/10 analysis where having ever been drunk was no longer statistically significant. That similar variables were not significant in the analysis of children in England may be due to cultural factors, smoking is less prevalent in the USA compared to England (as part of Great Britain) (OECD Factbook, 2013), and is perhaps considered more deviant because of this. Similarly, the legal drinking age in the USA is 21 compared to 18 in England, although children in England are able to legally consume alcohol at a younger age in certain situations such as with a meal or in private premises. Because of this difference, like smoking, it is likely that drinking alcohol as a teenager is seen as a more deviant act in the US than in England. This may go some way to explaining the difference in results across the nations.

As number of health complaints and having been drunk variables were significant in the first two models, living with mother was significant in the final two HBSC analyses. Not living with their mother is an unusual situation for children, only a minority of children (10-11%) reported not living with their mother, and such a situation has obvious social and emotional implications. The random effect for not living with mother may illustrate the supportive role of the school in this potentially very difficult situation and the ability of schools to prevent bullying or unkindness by other children relating to the situation. It is unclear however why this variable is significant in only two of the datasets, no similar variable was found to be significant in the first model which might partially explain this change.

Perhaps the most concerning finding to emerge from the US analysis was the occurrence of a significant school-level effect for ethnicity in the most recent, 2009/10, analysis. This result suggests that, similar to the finding for gender in the Add Health analysis, the way that different schools are treating children based on their ethnicity is having a significant impact on their levels of life satisfaction. Ethnicity was significant in the fixed effects of all three models, although the specific results varied. One finding that does stand out from the fixed effects results is the increase in ethnicities reporting statistically significantly lower life satisfaction than white children as time progresses. In 2001/02 only Asian children had statistically significantly lower life satisfaction than White children while Black children reported statistically significantly higher life satisfaction. In 2005/06 Asian and Hispanic or Latino children had significantly lower life satisfaction while there was now no difference between black and white children. In 2009/10 Asian, Hispanic or Latino and Native American children all reported statistically significantly lower life satisfaction. While the nature of this analysis means that causal claims across time cannot be made, the results do suggest an increase in

differences in life satisfaction according to ethnicity. This may reflect increased inequality and discrimination following the recent recession.

The variance in subjective well-being explained by schools

The VPC (Variance Partition Coefficient) is the indicator of the amount of variance explained at different levels of the multilevel models used throughout this thesis, introduced in more detail in Chapter 3. Findings for school-level VPCs in the USA were very different between Add Health and the HBSC surveys. Considering the differences between the analyses, i.e. the longitudinal nature of Add Health, the large time difference in data collection (Add Health data being collected in 1994/96 compared to 2001/02 at the earliest for the HBSC data), and the differences in terms of the aspect of subjective well-being studied (positive affect compared to life satisfaction), this is perhaps not surprising. The VPC for Add Health is very low, especially compared the VPCs for the HBSC models. It would be expected that the school-level VPC would be smaller for Add Health because of the additional consideration of variance explained at the within-individual/across time level, similar to how the VPC was reduced in the cross-classification Understanding Society model (although this model did not include any random coefficients and therefore is not completely comparable). However it is likely that the very specific measure of subjective well-being, positive affect, may also be a reason for this small finding. It may be that schools play a greater role in predicting negative affect, in part explaining the larger finding for the MCS analysis which covered overall affective well-being. This would be consistent with the hypothesis that accountability policies were creating an environment that was detrimental to children and therefore potentially increasing their levels of negative affect. It may also be that such policies decrease levels of positive affect, but to a lesser extent.

The amount of variance explained at the school level in the HBSC analyses is very high. While this may reflect the higher significance of schooling to child life satisfaction in the USA compared to England it may also be due to issues such as neighbourhood effects being conflated with school level effects, although neighbourhood variables were considered in the models but were not significant. This seems likely given the more locally administered approach to education in the USA compared to England, as discussed in Chapter 8. However the increase in the VPC in the 2005/06 analysis compared to 2001/02, also slightly larger than 2009/10, although not able to prove anything without further analysis supported the hypothesis that the No Child Left Behind act and associated policies increased the impact that schools were having on children's subjective well-being.

The VPC findings for England were more consistent, with school-level variance ranging between 24.94% and 38.01% for the two-level models. The analysis of the MCS found the smallest school-level effect of the two-level models, although at nearly one quarter of variance explained the amount is not small. This is perhaps due to the young age of the children, although potentially also reflecting the use of an affective well-being rather than life satisfaction outcome variable. Around 6.5% more variance in life satisfaction was found to be explained at the school level in the Understanding Society analysis compared to the Children's Society Well-being Survey analysis despite both models having the same number of variables included in both the fixed and random parts of the model as well as both models predicting life satisfaction (although the measure used was different). However, the included variables are slightly different as the available variables were not consistent across datasets. It seems particularly likely that the lack of any bullying related variables may have affected the results of the Children's Society analysis given the importance of this variable in most other models. This, alongside the slight difference in ages of the sample, may explain the difference in results.

The size of the school-level effect in the Understanding Society cross-classification model was different to that in the two-level models using Understanding Society and the Children's Society Well-being Survey. This is to be expected, not just because of the inclusion of an additional level of variance at the household level, but because of the lack of random coefficients in the model (necessitated by the use of a constrained multilevel model approach to be able to conduct the analysis in Stata). However this model still found a considerable amount of variance in child life satisfaction (12.58%) to be explained at the school level, more than was explained at the household level (9.03%). This finding serves to demonstrate that, while school-level influences are the focus of this thesis, they are not the sole external influence on children's subjective well-being. Future research, where possible, would benefit from considering children's multiple environments, as they are all important for their subjective well-being. However the result does demonstrate that schools are an important influence on children's well-being, even when factors such as their household are controlled for, and as such should be considered in research into children's subjective well-being while education policy should seriously consider subjective well-being when making decisions.

Table 10.2: Model overview 1, England analysis

	Millennium Cohort Study – 2-level model	Children’s Society Well-being Survey – 2-level model	Understanding Society – 2-level model	Understanding Society - Cross classification model
Ages included	7	8-15	10-15	10-15
SWB measure	Affective well-being	Life satisfaction	Life satisfaction	Life satisfaction
Significant fixed effects	<ol style="list-style-type: none"> 1. Achievement 2. Number of friends 3. Feeling left out 4. Teacher think clever 5. Answering questions in class 6. Feeling safe in playground 7. Tired at school 8. Bullied 9. Bully others 	<ol style="list-style-type: none"> 1. Gender 2. Age 3. No. of homes lived in 4. Living w/ same adults 5. Adults in household in work 6. Happiness with school 	<ol style="list-style-type: none"> 1. Supported by parents 2. SDQ: Emotional difficulties 3. SDQ: Peer relationship prob. 4. How feel about school 5. How feel about school work 6. Bullied (non-physical) 	<ol style="list-style-type: none"> 1. Gender 2. Age 3. Supported by parents 4. Talk to mother about things 5. SDQ: Emotional difficulties 6. SDQ: Peer relationship prob. 7. Mother employment status 8. Mother belongs to a religion 9. How feel about school 10. How feel about school work
Significant random effects	<ol style="list-style-type: none"> 1. SEN 2. SDQ: Emotional difficulties 3. Feeling left out 4. Tired at school 	<ol style="list-style-type: none"> 1. Disabled 2. Living with same adults 3. Happiness with school 	<ol style="list-style-type: none"> 1. SDQ: Peer relationship prob. 2. How feel about school 3. Bullied (non-physical) 	N/A
School-level VPC	24.94%	31.43%	38.01%	12.58%

Table 10.3: Model overview 2, USA analysis

	Add Health – 2-level model	HBSC 2001/02– 2-level model	HBSC 2005/06– 2-level model	HBSC 2009/10– 2-level model
Ages included	12-17	10-17	10-17	10-17
SWB measure	Positive affect	Life satisfaction	Life satisfaction	Life satisfaction
Significant fixed effects	<ol style="list-style-type: none"> 1. Gender 2. Race 3. Parent education level 4. Overall health 5. Getting enough sleep 6. Ever smoked 7. Hang out with friends 8. Friends care 9. Family understand 10. Family have fun together 11. Family pay attention 12. Want to leave home 13. Mum warm and loving 14. Mum encourages independ. 15. Mum communication 16. Overall relationship w/ mum 17. Perception of intelligence 18. School connectedness 19. Trouble paying att. school 20. Trouble w/ homework 21. Trouble w/ other students 22. Other students prejudiced 23. College disparity 	<ol style="list-style-type: none"> 1. Ethnicity 2. Live with mother 3. Live with father 4. Family well off 5. FAS 6. Body perception 7. Tried smoking 8. Currently smoke 9. No. of health complaints 10. Easy to talk to mother 11. Easy to talk to father 12. Evenings with friends 13. Bullied 14. Like school 15. Students are accepting 16. Pressure from school work 	<ol style="list-style-type: none"> 1. Ethnicity 2. Family well off 3. FAS 4. Mother employed 5. Overall health 6. Body perception 7. Tried smoking 8. No. of health complaints 9. Easy to talk to mother 10. Easy to talk to father 11. Bullied 12. Like school 13. Students are accepting 14. Pressure from school work 	<ol style="list-style-type: none"> 1. Gender 2. Ethnicity 3. Live with mother 4. Live with father 5. Family well off 6. FAS 7. Time spent watching TV 8. Exercise 9. Body perception 10. Currently smoke 11. Ever been drunk 12. Number of health complaints 13. Number of close friends 14. Easy to talk to mother 15. Easy to talk to father 16. Evenings with friends 17. Bullied 18. Like school 19. Students are accepting
Significant random effects	<ol style="list-style-type: none"> 1. Gender 2. Want to leave home 	<ol style="list-style-type: none"> 1. Family well off 2. Ever been drunk 3. No. of health complaints 4. Bullied 5. Bully 	<ol style="list-style-type: none"> 1. Live with mother 2. Family well off 3. Ever been drunk 4. No. of health complaints 5. Evenings with friends 6. Bullied 7. Bully 	<ol style="list-style-type: none"> 1. Ethnicity 2. Live with mother 3. Family well off 4. Currently smoke 5. Bullied 6. Bully
School-level VPC	2.52%	68.04%	81.85%	78.85%

Differences in the child-level predictors of subjective well-being in England and the USA

As well as the differences in the random effects across the England and USA analyses there are also some differences in terms of the fixed effects, some of which have already been discussed. There were far more significant fixed effects for the USA models (14-23) than there were for the England models (6-10). This may reflect the greater complexity of the predictors of subjective well-being in the USA and/or greater availability of relevant variables in the analysis (particularly for the Add Health model). Ethnicity was never significant in England, but consistently significant in the USA. Age was at times significant in England but never in the USA. As mentioned previously health was more important in the USA, but so were health behaviours. No health behaviours considered were significant in the England models, whereas in the USA smoking and drinking status were commonly significant, as were exercising and time watching TV in the most recent HBSC model. The increased deviancy of smoking and drinking in the USA, as discussed above, may account for this difference across nations but why time watching TV and amount of exercise should vary is less clear. Nonetheless these findings indicate potential cultural differences in the individual-level predictors of children's subjective well-being in England and the USA.

Measures of subjective well-being

As shown in Table 10.1 and discussed throughout, this thesis used multiple measures of subjective well-being. It would have been desirable to use one or more measures consistently throughout the thesis to make the results more easily comparable but this was not possible due to the lack of available data. However, the use of multiple datasets and measures of subjective well-being adds to the robustness of the findings, demonstrating that any school-level impact on children's subjective well-being is not an artefact of the particular measure of well-being used. Two of the data sources, the Children's Society Well-being Survey from England and the USA HBSC survey included the same life satisfaction measure, Cantril's Ladder. This was exploited to allow for a direct, although limited (due to the lack of consistent predictor variables across the two datasets), comparison between the two countries which highlighted a number of differences. However it was not possible to use the same measure across the other datasets, and in most cases (the exception being Add Health) it was not possible to use a previously constructed and tested measure such as Cantril's ladder (although it was decided not to use the previously constructed measure based on Radloff's work in the Add Health analysis due to the results of the preliminary analysis). The selection and construction of subjective well-being measures was guided by the

definition of subjective well-being given in Chapter 2, which was based primarily on the work of Diener (1984), who defined subjective well-being as having a cognitive element (life satisfaction) and an emotive element (affective well-being, consisting of positive and negative affect). As such it is felt that, despite their differences, the different outcome measures used are all an aspect of this one overarching concept and therefore in some ways comparable. Outcome variable selection was also based on the desire to avoid use of single-item scales, as discussed in Chapter 3. At times it was necessary however to utilise such measures due to lack of available alternatives. This highlights the need for future surveys to include multiple-item measures of subjective well-being, and given the results of this thesis should consider the constructs discussed by Tomy and Cummins (2011) and Casas et al. (2013) which include domains relating to school satisfaction.

Table 10.1 shows that for both the USA and England it was possible to include both measures of affective well-being and life satisfaction, although more measures of life satisfaction were available. The inclusion of these different aspects was useful however, as it enabled the research to demonstrate the importance of school to the different aspects of subjective well-being. The construction of new measures was guided by previous work, as well as measures of internal reliability (Cronbach's alpha) and tests of validity including comparing results of preliminary analyses to other work both within and beyond the thesis. Although the results appear to indicate that school-level influences better explain variance in life satisfaction compared to affective well-being, because the analyses were not completely comparable (covering different age groups for example) it is not possible to make this inference. Unfortunately none of the available datasets included measures of both affective well-being and life satisfaction (Understanding Society no longer including the affective well-being questions that were available in the British Household Panel Survey for example) meaning that it was not possible to make such a comparison. Future research would benefit from a dataset which included both of these aspects of subjective well-being in order to see which aspect school was most influential. Better still, a dataset in which negative and positive affect could be considered separately alongside life satisfaction would allow a more specific investigation of the impact of school on children's subjective well-being.

Subjective well-being: its importance to children and relevance to schools

This thesis has argued that subjective well-being, as defined by Diener (1984), is of key importance to children, as well as adults, and that subjective well-being should be one of the key considerations of social policies. It has sought to demonstrate that there are impacts of schools and education policy on children's subjective well-being and that

these impacts are measurable and important. This section will critically consider the usefulness and relevance of subjective well-being as a concept to children's lives and schools.

The findings of an important school-level influence on subjective well-being in this thesis, as well as information about the nature of this influence, provides some confirmation of the hypothesised importance of schools to subjective well-being as well as of the validity of subjective well-being as conceptualised and operationalised here. It also demonstrates that it is both possible and useful to assess policy impacts and outcomes through consideration of subjective well-being. This is relevant to the growing literature which argues for the use of subjective well-being to both assess and guide policies (for example Ferrer-i-Carbonell, 2002; Dolan, 2011; HM Treasury, 2011). The work in Chapter 4, which investigated the relationship between subjective well-being and academic performance, demonstrated the value of considering subjective well-being alongside objective measures of people's lives. This has been demonstrated in other areas, for example health where higher levels of subjective well-being have been associated with improved health and longer lifespan (Xu and Roberts, 2010; Diener and Chan, 2011). These findings highlight the interplay between the subjective and objective in people's lives and the potential value of further study of this interaction and its consequences. While subjective well-being is both interesting, and as demonstrated in this thesis, relevant to schools other outcomes and elements of children's lives remain important. Particularly for children outcomes such as their physical and cognitive development and social and emotional skills (as included in the Strengths and Difficulties Questionnaire used in this thesis) remain important considerations. Results in this thesis show, however, that these outcomes are also related to subjective well-being, as well as schools (for example the findings relating to school level effects for emotional difficulties in the Millennium Cohort Study analysis). As such the results of this thesis should be considered in this broader context, with other outcomes also of importance both in relation to children, their subjective well-being, their school and wider educational experiences.

10.2: Conclusions

Objectives of research

This research sought to build on existing evidence indicating that the nature of education policies in England since the 1980s and the USA more recently is likely to be having a negative impact on children's lives. The evidence discussed in Chapter 2 described how policies intended to improve educational attainment were associated with increased stress and anxiety in children, poorer social relationships and reduced

breaktimes. Despite this evidence, as well as the practical consideration of the likely importance of schools to child well-being given the amount of time children must spend in schools, there has been little large scale, quantitative investigation of the impact of schools and education policies on child overall subjective well-being. This thesis therefore aimed to contribute towards narrowing this gap in knowledge by investigating the complementary research questions:

- What is the relationship between subjective well-being and educational performance (educational achievement/attainment)?
- How important is the school a child attends to their subjective well-being?
 - How do schools influence children's subjective well-being?

The thesis has answered these questions providing some useful insights into children's subjective well-being which are described below in the key contributions section, before the limitations section illustrates some of the constraints of the research. Areas for potential future research, as well as policy implications, are also given.

Key contributions

The key contributions made by this thesis are to the understanding of child subjective well-being in relation to schools and education policy. They are summarised in more detail below:

- For all of the datasets used in Chapter 4; the Millennium Cohort Study, the Children's Society Well-being Survey, Add Health, the international HBSC datasets and OECD PISA, a significant relationship between educational performance and subjective well-being was found. For all but one dataset this relationship was positive, suggesting that high subjective well-being and educational performance go hand-in-hand. As such it appears that subjective well-being should be an important concern for those interested in improving educational attainment.
 - The results also highlight that, as employment plays an important role in the lives of adults, schools play an important role in the lives of children. This result shows that these institutions, while not absolutely comparable, play comparable roles in the lives of adults and children and that where we are happy to make considerations for adults we should be happy to do the same for children.
- Schools were consistently found to explain a considerable amount of variance in children's subjective well-being in both England and the USA, confirming the

importance of schools to child well-being hypothesised at the beginning of the thesis and as indicated in work by Klocke et al (2013).

- This was true for both affective well-being and life satisfaction measures, suggesting a far reaching impact of school, beyond simply causing some sadness for example.
- The construction of random coefficient multilevel models for each of the datasets gave some insight into how schools are affecting children's well-being. These random coefficient models allowed student and school characteristics to vary across schools, giving an indication of how schools were influencing children and therefore signalling direction for policy improvements. The results were discussed in more detail above but highlighted the important social and supportive roles schools were playing in children's lives in both the USA and England, supporting calls for a more holistic approach to the creation of education policy and the consideration of the impacts of school on children's lives.
- There are some differences in terms of the role played by schools in children's lives across the USA and England. In the direct comparison presented in Chapter 9 there were gender differences in the school level effect on life satisfaction in England that was not the case in the USA, finding that in England there was a school-level effect on life satisfaction for girls only. This may relate to different gender roles or expectations in England compared to the USA. Similarly the other models highlighted that school level impacts on perceptions of family financial situation was very important in the USA but not England.

Limitations and areas for future research

There are some limitations to these findings which effect the interpretation and use of the results. In all chapters the lack of weighting means that the results lack generalizability. The need to reduce the sample size in some chapters due to lack of information or small school/household group sizes for example has a similar impact. Results are therefore limited to the samples only and cannot be used to generalize about the England and the USA more broadly. This is a significant limitation but one that is not unusual or unique to this work. Similarly, the lack of longitudinal data limits the causal inferences that can be made from the results. This is particularly relevant for the work reported in Chapter 4 relating to the relationship between subjective well-being and educational performance. This chapter identified a relationship between subjective well-being and performance but concrete claims about causality cannot be made due in particular to the lack of longitudinal data. Therefore these findings may instead relate to the higher well-being of children who do well at school, rather than the

better performance of children with high subjective well-being. A causal relationship in either or both directions is theoretically plausible.

Another of the main limitations with this work and the inferences that can be made from it is the lack of high quality data available that includes meaningful information about school characteristics and policies. This has meant that while it has been possible using the data available to identify areas in which schools have an important impact on child subjective well-being, for example in how they treat those with SEN, it has not been possible to say how they have made this impact by investigating their different policies or characteristics. Similarly, aggregated data on schools, such as the proportion of the school sample who received free school meals, was not used as some of the datasets had small school samples, meaning that aggregated data would have been potentially misleading.

As more data becomes available, particularly longitudinal data which links social surveys with administrative data, it will be increasingly possible to conduct research unaffected by these limitations. Particularly useful school characteristics and policies to consider in future research would include bullying policies, overall income and deprivation information about school intake, as well as inequality within the school. Other considerations once more data becomes available may include comparing the influence of private and public schools, and including class-level as well as school-level impacts in models. As well as school information, it would also be useful to have further information in datasets such as measures of personality (for example the Big 5 dimensions) which would also allow the research to control for personality in models as well investigating how personality affects the relationship between school and child well-being, which may be particularly useful for understanding school engagement (Diener and Lucas, 1999).

Another limitation to the work presented in this thesis is that the comparative approach used is focused on two similar cases. England was included in the comparison as a 'most likely' case, as research evidence suggested that English policies were having a large, detrimental impact on children's subjective well-being. The USA was considered to test this hypothesis as it was another nation where such an impact was likely given that it had followed a similar policy path to that in England. Results for the USA showed that schools were playing an important role in the lives of children with results similar to those for England. While this approach has enabled investigation of the research questions it would be useful in future as data becomes available to compare these results to equivalent models in countries that have taken a different approach to England and the USA, some of the Scandinavian nations for example. Would the

amount of variance in subjective well-being explained at the school level in these nations be smaller, as education policies have a less detrimental impact? Or would the amount of variance explained be similar or possibly even greater due to the supportive environments of schools in these nations? Such a comparison would provide interesting and important insight into the effects of different policy approaches and is an idea for potential future research. Other research that may usefully build on to the findings presented here includes investigating the impact of school on the distribution of well-being, that is, do school effects indicate an improvement in subjective well-being for all children, or do they improve the subjective well-being of only those with high or low subjective well-being (Hicks et al., 2013)?

Another interesting area for future investigation is the gender difference identified in the relationship between subjective well-being and educational performance, shown in Chapter 4. Why do girls, despite their on average lower subjective well-being, report a more consistently positive relationship between subjective well-being and educational performance than boys? Can this difference be investigated in order to better understand gender differences in educational performance? Such questions could also be considered in relation to and alongside other characteristics associated with differences in educational performance and subjective well-being, such as ethnicity and social class. The results of this thesis, for example the finding of a gender difference in the role of schools in subjective well-being in England that was not found in the USA (Chapter 9), suggest that considering such questions comparatively is likely to be additionally beneficial.

Policy implications

Although, as noted above, causal inferences cannot be made about the findings here the results do support arguments favouring a change in focus of education policy in England (Best, 2008; Alexander, 2010), as well as the USA. The results emphasise that, as workplaces are important for adult well-being and performance, schools play an incredibly important role in children's lives. The supportive and nurturing role that schools play in terms of children's subjective well-being, which is in turn positively related to their education performance, means that they cannot be considered solely as tools of academic instruction. They are important environments with serious consequences. As such national-level education policy should support schools in this role, alongside promoting academic performance. As demonstrated in this thesis and elsewhere (e.g. Kirkcaldy et al., 2004) these goals are complementary rather than counterproductive or mutually exclusive, with at least a minimum level of subjective

well-being required in order for children to fully engage with and benefit from education (Norlander and Stensöta, 2014).

The analysis presented here also shows that attempting to include subjective well-being in education by teaching children about 'happiness' and similar approaches (e.g. Social and Emotional Aspects of Learning) is not enough when structural, school-level factors are impacting on their well-being as is indicated by the significant school-level influences on children based on their disability or SEN status for example. Teaching children about subjective well-being is not the same as fundamentally improving their environment in the ways supported by existing research and that presented here such as focusing less exclusively on standardised assessment results to the exclusion of children's wider outcomes and needs. Such approaches transfer responsibility for subjective well-being to the child and should not be used to detract from the role of policy makers in improving the well-being of children. Similarly, it would not be appropriate for policy makers to apply the language of 'choice' to this issue while ignoring their responsibility for ensuring schools are as supportive and nurturing as possible. As it was felt that choice would improve educational performance by encouraging successful schools and punishing others it may be argued that parents should choose the school that will be best for their child's subjective well-being. This is again transferring responsibility from policy makers to parents as well as being vulnerable to the well discussed flaws with educational choice (Tomlinson, 2005). But aside from this issue the current government approach of emphasising individual responsibility (as evidenced for example in their work on job satisfaction) places responsibility for unhappiness and low subjective well-being at the feet of the individual or parent, simply suggesting that they should have made better decisions. Although consistent with previous Conservative philosophy in this area (Tomlinson, 2005; Margaret Thatcher Foundation, 1987) this is unacceptable when the government continues to pursue policies with harmful impacts on the subjective well-being of the population, apart from the fact that in the case of children they are not able to make many meaningful choices and lack the power to change their environment. The language of choice should not be used as a means for government to avoid the responsibility to ensure that education policy is not damaging to children, and that every school is equipped to provide the best possible environment for children.

It is therefore felt that the results of this thesis support calls for a change in the direction of education away from the longstanding sole focus on educational performance and the somewhat more recent concerns about children competing against children of the same age in different nations. Instead education policy should consider the whole child, emphasise the broader role of schools in children's lives, and consider how to

make schooling and learning an engaging prospect for children. It is likely that in doing so educational performance may itself improve. Children who are engaged and feel positively about school and themselves are likely to perform better and to persist with schooling. It should be noted that evidence consistently suggests that subjective well-being declines during adolescence, as such any interventions aimed at this age group may appear unsuccessful if this is not taken into account. However this should not discourage from the important aim of improving the subjective well-being of young people and acknowledging the roles that schools and education play in this aim.

Summary

This thesis first discussed the important role that school plays in children's lives, highlighting evidence that suggests that decisions made by policy makers may be increasing the influence of schools on child well-being in a detrimental way. Before investigating this further, the thesis first examined the relationship between subjective well-being and educational performance. This was of interest because the focus on educational performance in current education policy meant that it would be difficult to persuade policy makers of the relevance of research solely focused on a subjective outcome. Guided by similar concepts from research on adults, primarily the happy-productive worker hypothesis, analysis found an almost entirely positive relationship between subjective well-being and educational performance, emphasising the importance of subjective well-being to those who are focused on improving educational standards.

With this in mind, the analysis in the five chapters following the investigation of the relationship between subjective well-being and educational performance which investigated the relationship between school attended and subjective well-being (chapters 5 through 9) demonstrated the considerable importance of schools to children's subjective well-being. The results of the random coefficient models, which showed in some detail how schools were influencing children's subjective well-being as well as by how much, demonstrated the supportive and community-like role of schools, an aspect of schooling and education very much neglected in current policy. These findings are likely to be related, with the analysis in Chapter 4 showing that school engagement, including emotional engagement, is important for educational performance. The results in this thesis therefore provide support for the notion that policy makers should change their approach to education policy making, not just to improve children's subjective well-being, but also their learning.

Appendices

Table A1.1 continued

3	Secondary - upper	Mainstream State	Foundation/Trust	15 to 19	Y	Y - faith if oversubscribed	Y	Y	N	LEA	GB
		Mainstream State	Community		Y		N	Y	N	LEA	LEA
		Mainstream State	Voluntary Controlled		Y	N	Y	Y	N	LEA	LEA
		Mainstream State	Voluntary Aided		Y	Y - faith if oversubscribed	Y	Y	N	LEA, GB, Charity	GB
		Mainstream State	Grammar		Y	Y - 11 plus examination	Y	Y	N	**	**
		Mainstream State	Special		Y				N		
		Mainstream State	Academy		Y	Y - faith	Y	N	N	DfE and Sponsors	GB
		Mainstream State	City Technology College		Y	Y	Y	N	N	DfE and Sponsors	GB
		Mainstream State	Free School			Y - faith (up to 50%)	Y	N	N	DfE	GB
		Mainstream State	Mainstream Boarding		Y	***	***	Y	Y - Boarding	***	***
		Independent	Independent		N	Y	Y	N	Y	Fees	Headteacher and GB
		Independent	Special								

LEA = Local Education Authority

GB = Governing Body

* can only select based on faith if legally registered as having religious character, cannot select based on academic ability

** Grammar schools are community, foundation, voluntary aided or voluntary controlled schools, their funding and hiring procedures depend on this classification

*** maintained boarding schools can be academies, comprehensives or grammar, their policies depend on this classification

Specialist schools also available.

Some information taken from:

http://www.direct.gov.uk/en/Parents/Schoolslearninganddevelopment/ChoosingASchool/DG_4016312

http://www.humanism.org.uk/_uploads/documents/schools-with-a-religious-character.pdf

<http://www.education.gov.uk/popularquestions/schools/typesofschools/a0064247/unnamed-item>

http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CDIQFjAC&url=http%3A%2F%2Fwww.nfer.ac.uk%2Fshadomx%2Fapps%2Ffms%2Ffmsdownload.cfm%3Ffile_uuid%3DA981DA0E-C29E-AD4D-078D-4942AEADC20D%26siteName%3Dnfer&ei=zyB7T5HAJ8HT8gOova3BCA&usq=AFQjCNEcP6Z3x5yT2HBNvaGSvcoWn0MQnw&sig2=laEv16SYb3Lzs3p1ja5a2A

Appendix 2: Descriptives and preliminary analysis of the Millennium Cohort Study (MCS)

Descriptives for all potential predictor variables

This section presents descriptive information for all of the potential predictor variables in this analysis (Chapter 5). They are given in Tables A2.1- A2.7 and A2.9- A2.10). Descriptions are given here for the variables not previously presented, as well as some of the previously introduced variables for clarity. All scale variables are grand mean centered, giving them a mean of 0. All categorical variables were included in the analysis as dummy variables. Percentages for categorical variables in the tables below may not equal 100 when summed due to rounding.

Table A2.1 gives the descriptive statistics for the demographic variables. The gender variable shows that the sample is almost equally split between the genders. The data shows that the vast majority of children live with their biological mother, while considerably fewer children live with their biological father. The marital status variable may not accurately portray the relationships of parents as experienced by the family as it does not, for example, include a cohabitation option. The relationship stability variable was created by comparing the relationship status of the reporting parent in the current wave of the survey (wave 4) to their relationship status in the previous wave. Those who reported no change between waves (i.e. were single in wave 3 and in wave 4, or who were married in wave 3 and in wave 4, for example) were recorded as having stable relationships while those who changed relationship status (e.g. from married to single) were reported as unstable. This was included because of evidence suggesting that it is not necessarily parent marital status or the presence of two biological parents that impacts on the outcomes of children, instead it is the stability and consistency within the family that children experience that is important (Craigie et al., 2010; Kiernan and Mensah, 2010). The majority of children were found to live in households with stable parental relationships, however the label here may in no way reflect the subjective stability of those relationships and may mask changes in relationship between surveys (e.g. a parent may have separated from their partner and then re-partnered, or may have moved from single to married within the same relationship).

Table A2.1: Independent Variables: Demographic variables

Question	Possible Responses						Missing
Sampling strata	Disadvantaged 2150 (38.22%)		Advantaged 2601 (46.24%)		Ethnic 874 (15.54%)		0
Gender	Male 2812 (49.99%)			Female 2813 (50.01%)			0
Has child ever lived in another country?	No 5411 (96.20%)			Yes 214 (3.80%)			0
Does child's biological mother live in household?	No 71 (1.26%)			Yes 5554 (98.74%)			0
Does child's biological father live in household?	No 1340 (23.82%)			Yes 4285 (76.18%)			0
Child resident in household full- or part-time	Part-time 54 (0.96%)			Full-time 5571 (99.04%)			0
Ethnicity of child	White 4476 (79.57%)	Asian 689 (12.25%)	Black 181 (3.22%)	Mixed 189 (3.36%)	Other 56 (1.00%)	Un-classified 34 (0.60%)	0
Reporting parent's marital status (categorical)	First marriage 3485 (61.96%)	Later marriage 346 (6.15%)	Never married 1106 (19.66%)	Divorced 427 (7.59%)	Widowed 32 (0.57%)	Separated 227 (4.04%)	2 (0.04%)
Reporting parent's marital status (binary)	Single 1792 (31.86%)			Married 3831 (68.11%)			2 (0.04%)
Reporting parent's relationship stability (wave 3 to 4)	Stable 5138 (91.34%)			Not stable 448 (7.96%)			39 (0.69%)

Table A2.2 outlines the variables relating to the financial situation of the household in which the child lives. Parent's perception of financial situation indicates the subjective financial situation (from the reporting adult's perspective) and the income poverty variable the objective financial situation of the household in which the child lives.

Table A2.2: Independent Variables: Financial variables

Question	Possible Responses					Missing
Parent's perception of financial situation	Comfortable 1177 (20.92%)	Doing alright 2070 (36.80%)	Getting by 1665 (29.60%)	Quite difficult 530 (9.42%)	Very difficult 177 (3.15%)	6 (0.10%)
Whether household in income poverty (below 60% of national median)	Below median 1545 (27.47%)			Above median 4078 (72.50%)		2 (0.04%)

The variables in Table A2.3 refer to the school and the child's objective relationship with schooling. The achievement variable refers to the child's overall achievement in

their Key Stage 1 assessments. A 'yes' for the Special Educational Needs (SEN) variable includes children who have either school action and/or a SEN statement, this includes approximately one fifth of the children in the study. School readiness information was based on the results of the Bracken School Readiness Assessment, which assesses a child's readiness for formal education standardised for age, conducted at wave 2 of the MCS (age 3) (Hansen et al., 2010a). The composite measure was used in the analysis. There are a high number of missing cases for this variable and so the analysis is run both with and without this variable.

The school year in which the child was enrolled at the time of the survey was included in order to investigate whether these different stages of education had any impact on the affective well-being of children. However, because of the limited age group in the survey there was little variation. The amount of time the child has been absent from school was included as it is likely to reflect a range of possible issues such as whether the child has experienced illness, their engagement with school, or whether they are likely to have fallen behind with work. Whether the child was eligible for free school meals (FSM) was considered as it is often used as an indicator of poverty, like those used in Table A2.2, but specifically affecting the child's relationship with school, not least through experiences of stigmatisation which may occur with FSM. Fewer children were reported to be receiving FSM compared to the percentage of children living in households deemed to be in poverty according to the 60% of median income indicator, but a similar proportion of children were receiving FSM compared to those in households where parents reported financial difficulty (Table A2.2).

Whether children were in their school's gifted and talented cohort was included because the experience of school for those labelled as such is likely to be different from those who are not. Gifted and talented children are those "with one or more abilities developed to a level significantly ahead of their year group" (DCSF, 2008, pg 1). The school type variable refers to the different ways schools are managed, funded and staffed in England (see Appendix 1). It is desirable to include whether the school the child attended charged fees, unfortunately due to the small number of cases involved this was not possible.

Table A2.3: Independent Variables: School related variables

Question	Responses				Missing
Achievement	Min. -12.86, Max. 6.64, S.D. 3.35				2 (0.04%)
Special Educational Needs	Yes 1178 (20.94%)	No 4447 (79.06%)			0
School Readiness (wave 2)	Min. -42.68, Max. 43.32, S.D. 16.18				877 (15.59%)
Child school year	Year 2 5375 (95.56%)	Year 3 242 (4.30%)			8 (0.15%)
Amount of time the child has been absent from school	Min. -0.15, Max. 25.85, S.D. 0.82 (Min 0, Max 26, Mean, 0.15)				2 (0.04%)
Child eligible for free school meals	Yes 892 (15.86%)	No 4733 (84.14%)			0
Child in gifted and talented cohort	Yes 893 (15.88%)	No 4728 (84.05%)			4 (0.07%)
School type (foundation, community, etc.)	Community 3952 (70.26%)	Voluntary aided 1010 (17.96%)	Voluntary controlled 517 (9.19%)	Foundation 142 (2.52%)	4 (0.07%)

The variables in Table A2.4 relate to the way the parent(s) of children have engaged with the child's school and school admissions process. The question regarding whether parents have attended a parents' evening (at any point in time) at the child's school is included to reflect parental engagement with their child's education, and very few parents had not attended a parent's evening where one had taken place. Steps taken by parents to get their child into the school of their choice includes moving house, appeals against school allocation, renting and other. This variable may not accurately reflect a parents' involvement with school and the school application process as those parents who may have taken steps such as moving but who didn't need to are hidden within the 'no' category. A similar question refers to whether the respondent had to demonstrate faith or religion for the child's school application as this also shows the extent parents have gone to get their children into the school of their choice. Considerably more parents had demonstrated their faith or religion (over one quarter) than had taken other steps (less than one in thirteen).

Table A2.4: Independent Variables: Parental involvement with school variables

Question	Responses		Missing
Parents have attended parents' evening	Yes/no parents' evening 5470 (97.24%)	No 154 (2.74%)	1 (0.02%)
Whether parents took any steps to get child into school of their choice	Yes 394 (7.00%)	No 5231 (93.00%)	0
Did parent demonstrate faith or religion for school application?	Yes 1544 (27.45%)	No 4070 (72.36%)	11 (0.20%)

The life satisfaction of the reporting parent (Table A2.5) was included due to evidence in previous research of a relationship between the subjective well-being of parents and that of their children (Casas et al., 2007; Casas et al., 2008; Clair, 2012). The variable

gives the responses to the statement: “Here is a scale from 1-10 where '1' means that you are completely dissatisfied and '10' means that you are completely satisfied” (CLS, 2009, pg 249).

Table A2.5: Independent Variables: Parent life satisfaction

Question	Possible Responses	Missing
Reporting parent life satisfaction	Min. -6.54, Max. 3.45, S.D. 1.89	253 (4.50%)

The variable in Table A2.6 gives the child’s health status according to the reporting parent. The vast majority of respondents reported their children have good or excellent health. This is included in this analysis because health is frequently included in studies of child well-being; however research with children has found that the priority given to health by adult researchers may be misplaced (NicGabhainn and Sixsmith, 2006)

Table A2.6: Independent Variables: Child health

Question	Possible Responses		Missing
Child health	Fair/poor 163 (2.90%)	Good/excellent 5461 (97.08%)	1 (0.02%)

Table A2.7 gives the descriptives for the SDQ variables.

Table A2.7: Independent Variables: Strengths and Difficulties Questionnaire

Subscale		Missing
Hyperactivity	Min. -3.29, Max. 6.71, S.D. 2.45	133 (2.36%)
Peer relationship problems	Min. -1.23, Max. 7.77, S.D. 1.52	121 (2.15%)
Emotional difficulties	Min. -1.52, Max. 8.48, S.D. 1.75	126 (2.24%)
Prosocial behaviour	Min -8.63, Max. 1.37, S.D. 1.60	114 (2.03%)
Conduct problems	Min. -1.33, Max. 8.67, S.D. 1.46	115 (2.04%)
Total difficulties	Min. -7.34, Max. 25.66, S.D. 5.22	155 (2.76%)

A correlation matrix was produced to investigate the relationship between the different SDQ subscales in order to check that their inclusion would not cause any problems in the analyses. Table A2.8 shows that there are high correlations between the total difficulties variable and many of the other SDQ variables, suggesting that it’s inclusion would be problematic. This is not surprising considering that the variable is constructed by summing the other SDQ variables. There are no other variables with consistently high, and therefore potentially troubling, correlations. As such, all SDQ variables, with the exception of the total difficulties variable, were included in the analyses.

Table A2.8: Pairwise correlations between SDQ variables

	Emotional difficulties	Conduct problems	Hyper-activity	Peer rel. problems	Prosocial behaviour	Total difficulties
Emotional difficulties	1.00					
Conduct problems	0.36***	1.00				
Hyper-activity	0.28***	0.54***	1.00			
Peer rel. problems	0.41***	0.34***	0.31***	1.00		
Prosocial behaviour	-0.15***	-0.41***	-0.36***	-0.28***	1.00	
Total difficulties	0.68***	0.75***	0.80***	0.67***	-0.41***	1.00

* $p < .05$, ** $p < .01$, and *** $p < .001$

Table A2.9 includes the questions ‘How many friends do you have?’ and ‘How often do you feel left out of things by other children at school?’ from the children’s self-report questionnaire. These are included because of the importance children have been found to assign to their friends in studies of children’s well-being (for example Rees et al., 2010).

Table A2.9: Independent Variables: Child social life

Question	Possible Responses			Missing
How many friends do you have?	Not many 566 (10.06%)	Some 3509 (62.38%)	Lots 1519 (27.00%)	31 (0.55%)
How often do you feel left out of things by other children at school?	All of the time 419 (7.45%)	Sometimes 2844 (50.56%)	Never 2315 (41.16%)	47 (0.84%)

The final group of questions relates to children’s experiences and perceptions of school, and are also similar to the measures of school engagement and connectedness discussed in Chapter 2. Many of these questions received a higher number of negative responses than the general well-being questions used to create the outcome variable (see below), with over 15% of children reporting not liking school at all, for example.

Table A2.10: Independent Variables: School perceptions and experiences variables

Question	Possible Responses			Missing
How much do you like school?	Don't like it 872 (15.50%)	Like it a bit 1708 (30.36%)	Like it a lot 2978 (52.94%)	67 (1.19%)
How often does your teacher think you are clever?	Never 225 (4.00%)	Sometimes 2720 (48.36%)	All of the time 2552 (45.37%)	128 (2.28%)
How often is school interesting?	Never 627 (11.15%)	Sometimes 2520 (44.80%)	All of the time 2388 (42.45%)	90 (1.60%)
How often do you get fed up at school?	All of the time 778 (13.83%)	Sometimes 2385 (42.40%)	Never 2423 (43.08%)	39 (0.69%)
How much do you like answering questions in class?	Don't like it 701 (12.46%)	Like it a bit 2173 (38.63%)	Like it a lot 2675 (47.56%)	76 (1.35%)
How often do you try to do your best at school?	Never 106 (1.88%)	Sometimes 1038 (18.45%)	All of the time 4406 (78.33%)	75 (1.33%)
How often do you feel safe in the playground?	Never 290 (5.16%)	Sometimes 1879 (33.40%)	All of the time 3364 (59.80%)	92 (1.64%)
How often do you behave well in class?	Never 133 (2.01%)	Sometimes 1523 (27.08%)	All of the time 3896 (69.26%)	93 (1.65%)
How often do you get tired at school?	All of the time 1274 (22.65%)	Sometimes 2729 (48.52%)	Never 1547 (27.50%)	75 (1.33%)
How often do other children bully you?	All of the time 501 (8.91%)	Sometimes 2210 (39.29%)	Never 2855 (50.76%)	59 (1.05%)
How often are you horrible to other children at school?	All of the time 141 (2.51%)	Sometimes 748 (13.30%)	Never 4675 (83.11%)	61 (1.08%)

Preliminary analysis results and discussion

This section presents the detailed preliminary analysis conducted on the MCS before the multilevel analysis which was presented in Chapter 5. Table A2.11 shows the correlation coefficients for all of the scale predictor variables and the outcome variable, affective well-being. There is a significant correlation coefficient for the majority of variables, the exceptions being absence from school, parent life satisfaction, and hyperactivity. All of the significant correlations were negative in direction, with the exception of the prosocial behaviour variable which had a positive relationship. These findings are perhaps not surprising as it seems likely that the behavioural difficulties measured in the SDQ (with the exception of prosocial behaviour) would be negatively related to a child's affective well-being. The achievement and school readiness results are perhaps more surprising, especially considering previous research has found a positive relationship between subjective well-being and achievement. Many of the predictor variables are found to be significantly correlated with each other, however none of the coefficients are high enough to cause any concern for further analysis (with the exception of the SDQ total difficulties variable as identified above).

Table A2.11 part one: Pairwise correlations between affective well-being and scale predictor variables

	1	2	3	4	5
1. Affective well-being	1.00				
2. Achievement	-0.10***	1.00			
3. School readiness	-0.09***	0.51***	1.00		
4. Absence	0.02	-0.08***	-0.07***	1.00	
5. Parent life satisfaction	0.02	0.07***	-0.05*	0.02	1.00
6. Emotional difficulties	-0.04**	-0.20***	-0.14***	0.06***	-0.15***
7. Conduct problems	-0.03*	-0.25***	-0.20***	0.07***	-0.16***
8. Hyperactivity	0.00	-0.35***	-0.22***	0.05***	-0.15***
9. Peer rel. problems	-0.03*	-0.24***	-0.19***	0.07***	-0.13***
10. Prosocial behaviour	0.04**	0.12***	0.10***	-0.01	0.11***
11. Total difficulties	-0.03*	-0.39***	-0.26***	0.09***	-0.21***

Table A2.11 part two: Pairwise correlations between affective well-being and scale predictor variables

	6	7	8	9	10	11
1. Affective well-being						
2. Achievement						
3. School readiness						
4. Absence						
5. Parent life satisfaction						
6. Emotional difficulties	1.00					
7. Conduct problems	0.35***	1.00				
8. Hyperactivity	0.28***	0.54***	1.00			
9. Peer rel. problems	0.41***	0.32***	0.30***	1.00		
10. Prosocial behaviour	-0.14***	-0.41***	-0.35***	-0.26***	1.00	
11. Total difficulties	0.68***	0.74***	0.80***	0.66***	-0.40***	1.00

Table A2.12 shows the results of t-tests for the binary predictor variables. Many of these were not significant. Those that were significant are: did the parent demonstrate faith or religion for their school application, income poverty (below 60% of median national income), whether the child has SEN, whether the child is eligible for FSM, and whether the child is in the gifted and talented cohort. Children whose parents had demonstrated faith or religion for their school application reported lower affective well-being on average than those whose parents had not demonstrated faith. Similarly, those in the gifted and talented cohort reported lower affective well-being on average than those who were not in the cohort. Perhaps contrary to expectations, the t-tests found that children living in income poor households, with SEN or who were eligible for

FSM reported higher affective well-being than those in non-poor households or did not have SEN or qualify for FSM.

Table A2.12: Results of t-tests for binary predictor variables and affective well-being

Gender
Mean(female) = 0.003, mean(male) = -0.003, $t(5623) = 0.27, p > .05$.
Has child ever lived in another country?
Mean(no) = 0.001, mean(yes) = -0.022, $t(5623) = 0.44, p > .05$
Biological mother in household
Mean(no) = -0.049, mean(yes) = 0.001, $t(5623) = -0.57, p > .05$
Biological father in household
Mean(no) = 0.262, mean(yes) = -.008, $t(5623) = 1.50, p > .05$
Child resident in house full-time?
Mean(part-time) = 0.052, mean(full-time) = -0.001, $t(5623) = 0.53, p > .05$
Have parents attended parents' evening?
Mean(no) = 0.112, mean(yes/no parents' evening) = -0.003, $t(5622) = 1.94, p > .05$
Whether parents took any steps to get child into school of their choice
Mean(no) = -0.001, mean(yes) = 0.015, $t(5623) = -0.44, p > .05$
Did parent demonstrate faith or religion for school application?
Mean(no) = 0.015, mean(yes) = -0.041, $t(5612) = 2.58, p < 0.01$
Child health
Mean(fair/poor) = -0.027, mean(good/excellent) = 0.001, $t(5622) = -0.48, p > .05$
Marital status of reporting parent (binary)
Mean(single) = 0.019, mean(married) = -0.009, $t(5621) = 1.34, p > .05$
Reporting parent relationship stability
Mean(not stable) = -0.054, mean(stable) = 0.005, $t(5584) = 1.64, p > .05$
Income poverty (income below 60% of median)
Mean(below 60%) = 0.041, mean(above 60%) = -0.016, $t(5621) = -2.57, p < .05$
SEN
Mean(no) = -0.021, mean(yes) = 0.078, $t(5623) = -4.13, p < .001$
Free school meals
Mean(no) = -0.012, mean(yes) = 0.064, $t(5623) = -2.87, p < .01$
Gifted and talented
Mean(no) = 0.013, mean(yes) = -0.069, $t(5619) = 3.09, p < .01$
School year
Mean(year 2) = -0.000, mean(year 3) = 0.016, $t(5165) = -0.34, p > .05$

Table A2.13 shows the ANOVAs run on the categorical predictor variables. School type, both child social life variables, and all school perceptions/experiences variables were significant. The only variables not significant were the parent's perception of financial situation, ethnicity and parent marital status variables.

Table A2.13: Results of ANOVA for categorical variables and affective well-being

Parent's perception of financial situation
$F(4, 5614) = 1.93, p > .05$
School type
$F(3, 5617) = 4.43, p < .01$
Ethnicity
$F(5, 5619) = 0.67, p > .05$
Marital status
$F(5, 5617) = 2.18, p > .05$
Number of friends
$F(2, 5591) = 53.85, p < 0.001$
How often do you feel left out?
$F(2, 5575) = 177.57, p < 0.001$
How much do you like school?
$F(2, 5555) = 105.53, p < 0.001$
How often does your teacher think you are clever?
$F(2, 5495) = 92.12, p < 0.001$
How often is school interesting?
$F(2, 5532) = 104.20, p < 0.001$
How often do you feel fed up at school?
$F(2, 5583) = 137.24, p < 0.001$
How much do you like answering questions in school?
$F(2, 5546) = 86.78, p < 0.001$
How often do you try your best at school?
$F(2, 5547) = 17.88, p < 0.001$
How often do you feel safe in your playground?
$F(2, 5530) = 107.57, p < 0.001$
Behave
$F(2, 5529) = 57.36, p < 0.001$
How often do you feel tired at school?
$F(2, 5547) = 91.22, p < 0.001$
How often are you bullied at school?
$F(2, 5563) = 73.91, p < 0.001$
How often are you horrible to other children at school?
$F(2, 5561) = 54.36, p < 0.001$

Table A2.14 shows the first of the linear regression analyses. It includes all predictor variables and its findings are broadly similar to those reported above. The categorical variables have been entered as dummy variables and for some of the categorical variables found not to be significant in the ANOVAs reported above, one dummy category is significant. For example, black in the ethnicity variable.

Throughout, constants are not shown due to Secure Data Service restrictions.

Table A2.14: Linear regression predicting affective well-being with all predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Gender (male)	.036	.025
Has child ever lived in another country (yes)	.043	.074
Biological mother in household (yes)	.085	.120
Biological father in household (yes)	-.068	.040
Child resident in household full-time (yes)	.087	.106
Ethnicity (Asian)	-.035	.044
Ethnicity (Black)	-.196*	.097
Ethnicity (mixed)	-.052	.063
Ethnicity (other)	-.119	.135
Ethnicity (unclassified)	.056	.121
Marital status (later marriage)	.032	.050
Marital status (never married)	.288*	.125
Marital status (divorced)	.213	.134
Marital status (widowed)	-	-
Marital status (separated)	.290*	.134
Marital status binary (married)	.260*	.127
Relationship stability (not stable)	-.061	.045
Perception of financial situation (quite difficult)	-.161*	.073
Perception of financial situation (getting by)	-.076	.067
Perception of financial situation (doing alright)	-.098	.066
Perception of financial situation (comfortable)	-.093	.067
Income poverty (below 60% median/in poverty)	-.018	.034
Achievement	-.021***	.004
SEN (yes)	.009	.030
School readiness	-.002*	.001
School year (year 3)	.047	.049
Absence from school	.010	.013
Free school meals (yes)	-.036	.041
Gifted and talented (yes)	-.024	.032
School type (Voluntary aided)	-.105*	.046
School type (Voluntary controlled)	-.098*	.046
School type (Foundation)	.097	.083
Has parent attended parents' evening (yes)	-.030	.078
Were steps taken to get child into school (yes)	.006	.044
Religion demonstrated to get into school (yes)	.060	.045
Parent life satisfaction	.010	.006
Child health (good/excellent)	-.087	.078
SDQ Prosocial behaviour	-.003	.008
SDQ Conduct problems	-.003	.009
SDQ Emotional difficulties	-.008	.007
SDQ Hyperactivity	.010*	.005
SDQ Peer relationship problems	-.006	.008
Number of friends (some)	.064	.044
Number of friends (lots)	.152***	.039
Feel left out (some of the time)	-.020	.057
Feel left out (never)	.185**	.055
Like school (a bit)	-.005	.041
Like school (a lot)	.103*	.045
Teacher thinks clever (some of the time)	-.010	.062
Teacher thinks clever (all of the time)	.123	.067
School interesting (some of the time)	-.080	.043
School interesting (all of the time)	.020	.049
Fed up at school (some of the time)	-.077	.043
Fed up at school (never)	.026	.045

Table A2.14 continued

Answer questions at school (some of the time)	-.016	.040
Answer questions at school (all of the time)	.101*	.043
Try best at school (some of the time)	-.054	.109
Try best at school (all of the time)	-.060	.109
Safe in playground (some of the time)	.139*	.068
Safe in playground (all of the time)	.291***	.066
Behave (some of the time)	.042	.097
Behave (all of the time)	.106	.096
Tired in school (some of the time)	-.061	.031
Tired in school (never)	.071*	.034
Bullied (some of the time)	.091	.053
Bullied (never)	.203***	.050
Bully (some of the time)	-.378***	.087
Bully(never)	-.236**	.083
F(67, 131) = 24.47, $p < .001$. $R^2 = 0.21$, N = 4236		

Tables A2.15-A2.23 show the regression models for the individual groups of variables.

Table A2.15 shows the regression analysis using demographic variables. Unsurprisingly, considering that few of the demographic variables were found to be significant in the analyses above, none of the variables are statistically significant. Similarly, the model itself is not significant, with an R^2 of 0.

Table A2.15: Linear regression, demographic variables

Variables	B	SE B
Constant	-	-
Gender (male)	-0.015	.022
Has child ever lived in another country (yes)	-0.022	.051
Biological mother in household (yes)	-0.066	.109
Biological father in household (yes)	-0.072	.038
Child resident in household full-time (yes)	0.038	.121
Ethnicity (Asian)	0.036	.035
Ethnicity (Black)	-0.056	.073
Ethnicity (mixed)	-0.046	.063
Ethnicity (other)	-0.116	.126
Ethnicity (unclassified)	-0.057	.132
Marital status (later marriage)	-0.047	.048
Marital status (never married)	0.016	.056
Marital status (divorced)	-0.082	.065
Marital status (widowed)	-0.184	.136
Marital status (separated)	-	-
Marital status binary (married)	-0.024	.051
Relationship stability (not stable)	-0.087	.042
F(13, 185) = 0.77, $p > 0.05$, $R^2 = 0.00$, N = 5584		

Table A2.16 shows the regression model for the financial variables. All are significant, perhaps surprisingly as at no stage previously has the parent's perception of financial situation been significant. The model itself is significant, but again with an R^2 value of 0, meaning that no variance in the outcome is explained.

Table A2.16: Linear regression, financial variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Perception of financial situation (quite difficult)	-0.231***	.059
Perception of financial situation (getting by)	-0.143*	.059
Perception of financial situation (doing alright)	-0.141*	.058
Perception of financial situation (comfortable)	-0.148*	.059
Income poverty (below 60% median/in poverty)	0.049*	.025
F(5, 193) = 4.28, <i>p</i> = .001, <i>R</i> ² = 0.00, N = 5617		

Table A2.17 shows the linear regression using school related variables. Here, only achievement and school type (voluntary aided and voluntary controlled) are significant. Achievement and school type have been consistently significant throughout the analysis so far. SEN, school readiness, and gifted and talented, which were significant in the original set of analyses are no longer significant. Again the model itself is significant but with only a small amount of variance in the outcome explained (*R*² = .01).

Table A2.17: Linear regression, school related variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Achievement	-0.017**	.005
SEN (yes)	-0.002	.033
School readiness	-0.001	.001
School year (year 3)	-0.008	.058
Absence from school	0.007	.013
Free school meals (yes)	-0.002	.036
Gifted and talented (yes)	-0.028	.033
School type (Voluntary aided)	-0.078*	.030
School type (Voluntary controlled)	-0.075*	.034
School type (Foundation)	0.047	.095
F(10, 188) = 6.50, <i>p</i> < .001, <i>R</i> ² = 0.01, N = 4738		

Table A2.18 shows the parent involvement in school variables, parents attending a parents' evening and demonstrating religion/faith for school application were significant. Only demonstrating religion/faith has been found to be significant previously, and none of these variables were significant in the original regression model. The model is significant, however, but again explains none of the variance in the outcome.

Table A2.18: Linear regression, parent involvement in school variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Has parent attended parents' evening (yes)	-0.153*	.067
Were steps taken to get child into school (yes)	0.016	.041
Religion demonstrated to get into school (yes)	-0.048*	.023
F(3, 195) = 3.30, <i>p</i> < .05, <i>R</i> ² = 0.00, N = 5613		

Tables A2.19 and A2.20 show the parent life satisfaction and child health variables respectively, as in the previous analyses neither were significant and neither produced a significant model.

Table A2.19: Linear regression, parent life satisfaction

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Parent life satisfaction	0.009	.006
F(1, 197) = 2.82, $p > .05$, $R^2 = 0.00$, N= 5372		

Table A2.20: Linear regression, child health

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Child health (good/excellent)	0.068	.070
F(1, 197) = 0.93, $p > .05$, $R^2 = 0.00$, N= 5624		

Table A2.21 shows the linear regression for the SDQ variables. In the correlation matrix all but the hyperactivity variable were shown to have small but significant correlation coefficients with affective well-being. However here, hyperactivity is found to be significant, with a positive relationship, and conduct problems and peer relationship problems no longer significant. The model itself is significant, but with an R^2 value of zero.

Table A2.21: Linear regression, SDQ variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
SDQ Prosocial behaviour	.019**	.007
SDQ Conduct problems	-.002	.009
SDQ Emotional difficulties	-.014*	.007
SDQ Hyperactivity	.011*	.005
SDQ Peer relationship problems	-.014	.008
F(5, 193) = 3.88, $p < .01$, $R^2 = 0.00$, N= 5469		

The regression analysis for child social life, shown in Table A2.22. The most extreme responses (lots of friends and never feeling left out) were significant for both variables, with larger coefficients than have been found in many of the previous models. The *F* value for the model is large, larger even than the model with all variables. It also has the highest R^2 value of any of the group models.

Table A2.22: Linear regression, child social life

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Number of friends (some)	0.076	.039
Number of friends (lots)	.230***	.038
Feel left out (some of the time)	-0.074	.045
Feel left out (never)	0.304***	.047
F(4, 194) = 94.62, $p < .001$, $R^2 = 0.08$, N= 5547		

Table A2.23 shows the regression model for children's school perceptions and experiences. It has the highest R^2 value of the group models, but a smaller *F* value than that for the social life model. The variables relating to teacher thinking the child is clever, answering questions in school, feeling safe in the playground, feeling tired at school, being bullied and bullying others were significant.

Table A2.23: Linear regression, school perceptions and experiences variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-	-
Like school (a bit)	-0.033	.034
Like school (a lot)	0.075	.040
Teacher thinks clever (some of the time)	0.023	.057
Teacher thinks clever (all of the time)	0.164**	.062
School interesting (some of the time)	-0.071	.040
School interesting (all of the time)	0.041	.044
Fed up at school (some of the time)	-0.112**	.038
Fed up at school (never)	0.316	.039
Answer questions at school (some of the time)	-0.026	.038
Answer questions at school (all of the time)	0.107**	.040
Try best at school (some of the time)	-0.091	.102
Try best at school (all of the time)	-0.113	.099
Safe in playground (some of the time)	0.064	.057
Safe in playground (all of the time)	0.247***	.056
Behave (some of the time)	-0.080	.087
Behave (all of the time)	-0.025	.088
Tired in school (some of the time)	-0.067*	.029
Tired in school (never)	0.101**	.033
Bullied (some of the time)	0.050	.048
Bullied (never)	0.203***	.045
Bully (some of the time)	-0.329***	.075
Bully (never)	-0.202**	.069
F(22, 176)= 42.83, $p < 0.001$. $R^2 = 0.16$, N= 5303		

According to these analyses the demographic, parent life satisfaction and child health groups should be excluded. Resulting in:

Table A2.24: Linear regression, included groups

Variables	B	SE B
Constant	-	-
Perception of financial situation (quite difficult)	-.186**	.071
Perception of financial situation (getting by)	-.081	.065
Perception of financial situation (doing alright)	-.101	.063
Perception of financial situation (comfortable)	-.089	.063
Income poverty (below 60% median/in poverty)	-.017	.033
Achievement	-.022***	.004
SEN (yes)	.011	.030
School readiness	-.001	.001
School year (year 3)	.040	.048
Absence from school	.003	.014
Free school meals (yes)	-.030	.038
Gifted and talented (yes)	-.024	.031
School type (Voluntary aided)	-.122**	.046
School type (Voluntary controlled)	-.108*	.044
School type (Foundation)	.098	.082
Has parent attended parents' evening (yes)	-.036	.077
Were steps taken to get child into school (yes)	.010	.044
Religion demonstrated to get into school (yes)	.073	.045
SDQ Prosocial behaviour	-.002	.007
SDQ Conduct problems	-.003	.009
SDQ Emotional difficulties	-.009	.007
SDQ Hyperactivity	.011*	.005
SDQ Peer relationship problems	-.007	.008
Number of friends (some)	.058	.043
Number of friends (lots)	.140***	.039
Feel left out (some of the time)	-.022	.054
Feel left out (never)	.188***	.053
Like school (a bit)	-.006	.040
Like school (a lot)	.095*	.045
Teacher thinks clever (some of the time)	-.005	.064
Teacher thinks clever (all of the time)	.127	.068
School interesting (some of the time)	-.077	.043
School interesting (all of the time)	.021	.048
Fed up at school (some of the time)	-.084*	.042
Fed up at school (never)	.019	.043
Answer questions at school (some of the time)	-.015	.040
Answer questions at school (all of the time)	.101*	.043
Try best at school (some of the time)	-.079	.108
Try best at school (all of the time)	-.071	.109
Safe in playground (some of the time)	.138*	.068
Safe in playground (all of the time)	.296***	.066
Behave (some of the time)	.022	.097
Behave (all of the time)	.081	.096
Tired in school (some of the time)	-.056	.032
Tired in school (never)	.078*	.034
Bullied (some of the time)	.086	.052
Bullied (never)	.197***	.050
Bully (some of the time)	-.353***	.087
Bully (never)	-.210*	.082
F(50, 148)= 26.81, $p < 0.001$. $R^2 = 0.21$, N= 4334		

The following tables show the same analyses as conducted above using linear regression, but instead using multinomial logit regression with the affective well-being outcome variable split into 2 quantiles. It was not possible to include both marital status and marital status binary in the multinomial logit models. An investigation using two

models, one including the categorical variable and one including the binary variable, were conducted and the results compared. The binary variable produced a better model fit ($F(128, 70) = 9.44, p < .001$ compared to $F(136, 62) = 8.81, p < .001$), as such this variable was used.

Table A2.25 shows the multinomial logit regression with all variables (the logit equivalent to Table A2.14). As with the linear equivalent the model is significant, although the model fit is poorer. Unlike the linear model gender variable is significant, being male found to significantly increase the likelihood of a child reporting high affective well-being. Also unlike the linear model, none of the ethnicity variables are significant, nor are the marital status, perception of financial situation, school readiness, school type and feeling left out variables. Free school meals are significant in this model, reducing the likelihood of a child reporting high affective well-being. More of the school perceptions and experiences variables are significant in the logit model, liking school, teacher thinking child is clever and being fed in school are significant in this model but not in the linear model. Conversely, answering questions in class, feeling tired and feeling safe were not significant.

Table A2.25: Multinomial logit regression predicting affective well-being with all predictor variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Gender (male)	1.092	.102	1.231*	.119
Has child ever lived in another country (yes)	.866	.249	.938	.290
Biological mother in household (yes)	1.349	.726	2.190	1.244
Biological father in household (yes)	.974	.139	.887	.121
Child resident in household full-time (yes)	1.100	.480	1.289	.542
Ethnicity (Asian)	.833	.171	.776	.142
Ethnicity (Black)	1.114	.346	.544	.177
Ethnicity (mixed)	.942	.214	.947	.264
Ethnicity (other)	.945	.514	.659	.364
Ethnicity (unclassified)	.795	.419	.683	.384
Marital status binary (married)	1.098	.131	.934	.113
Relationship stability (not stable)	1.177	.203	.937	.182
Perception of financial situation (quite difficult)	1.278	.345	.690	.217
Perception of financial situation (getting by)	1.145	.284	.953	.271
Perception of financial situation (doing alright)	1.099	.286	.785	.219
Perception of financial situation (comfortable)	1.319	.362	.969	.276
Income poverty (below 60% median/in poverty)	1.125	.147	1.013	.144
Achievement	1.016	.019	.930***	.018
SEN (yes)	.997	.129	1.116	.130
School readiness	1.004	.003	.998	.003
School year (year 3)	.759	.158	1.146	.276
Absence from school	.995	.049	1.005	.060
Free school meals (yes)	.823	.139	.678*	.122

Table A2.25 contined

Gifted and talented (yes)	1.064	.134	.920	.121
School type (Voluntary aided)	1.109	.219	.782	.154
School type (Voluntary controlled)	.975	.204	.743	.138
School type (Foundation)	.728	.186	1.110	.455
Has parent attended parents' evening (yes)	.951	.263	1.114	.314
Were steps taken to get child into school (yes)	.780	.145	.961	.169
Religion demonstrated to get into school (yes)	.999	.199	1.268	.231
Parent life satisfaction	.969	.024	1.011	.028
Child health (good/excellent)	1.128	.305	.804	.238
SDQ Prosocial behaviour	1.004	.033	.996	.032
SDQ Conduct problems	1.018	.038	1.014	.040
SDQ Emotional difficulties	.981	.026	.958	.027
SDQ Hyperactivity	1.001	.022	1.021	.025
SDQ Peer relationship problems	1.045	.035	1.041	.041
Number of friends (some)	.893	.142	1.253	.228
Number of friends (lots)	.760	.110	1.461*	.222
Feel left out (some of the time)	1.123	.211	.707	.146
Feel left out (never)	.958	.181	1.124	.240
Like school (a bit)	.840	.132	.726*	.115
Like school (a lot)	.675*	.102	.921	.145
Teacher thinks clever (some of the time)	.545*	.129	.496*	.134
Teacher thinks clever (all of the time)	.392***	.096	.612	.167
School interesting (some of the time)	1.115	.162	.871	.144
School interesting (all of the time)	.999	.158	1.145	.190
Fed up at school (some of the time)	.855	.123	.678*	.115
Fed up at school (never)	.792	.125	.935	.148
Answer questions at school (some of the time)	1.059	.142	.979	.128
Answer questions at school (all of the time)	.874	.130	1.190	.163
Try best at school (some of the time)	1.282	.434	1.189	.433
Try best at school (all of the time)	1.278	.408	1.199	.422
Safe in playground (some of the time)	.752	.164	1.049	.267
Safe in playground (all of the time)	.671	.140	1.489	.377
Behave (some of the time)	1.314	.417	1.179	.429
Behave (all of the time)	1.274	.400	1.477	.542
Tired in school (some of the time)	1.208	.135	.877	.107
Tired in school (never)	1.100	.135	1.251	.168
Bullied (some of the time)	1.195	.203	1.478*	.259
Bullied (never)	1.264	.218	2.265***	.394
Bully (some of the time)	1.760	.630	.560	.193
Bully (never)	1.489	.514	.844	.248
F(126, 72)= 8.56, p< 0.001. N= 4236				

Table A2.26 shows the multinomial logit regression for demographic variables. As above, gender is significant, however with a conflicting effect, this time increasing the likelihood of a child reporting low affective well-being. The model also suggests that Asian children are more likely to report low well-being. However, as in the linear equivalent, the model is not significant.

Table A2.26: Multinomial logit regression, demographic variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Gender (male)	1.185*	0.90	1.113	.081
Has child ever lived in another country (yes)	0.864	.193	0.892	.230
Biological mother in household (yes)	1.378	.441	1.135	.377
Biological father in household (yes)	1.042	.121	0.939	.110
Child resident in household full-time (yes)	0.946	.408	0.896	.350
Ethnicity (Asian)	0.731*	.111	0.877	.124
Ethnicity (Black)	0.743	.183	0.718	.129
Ethnicity (mixed)	1.141	.230	1.062	.265
Ethnicity (other)	0.663	.258	0.491	.212
Ethnicity (unclassified)	0.839	.369	0.491	.259
Marital status binary (married)	1.103	.109	0.977	.107
Relationship stability (not stable)	1.162	.174	0.925	.139
F(24, 174) = 1.02, <i>p</i> > .05, N = 5584				

Table A2.27 shows the analysis for financial variables. The model is significant, as it was in the linear analysis, with a poorer model fit but unlike the linear analysis where all of the variables were significant, none of the variables are significant here.

Table A2.27: Multinomial logit regression, financial variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Perception of financial situation (quite difficult)	1.525	.372	0.744	.165
Perception of financial situation (getting by)	1.278	.258	0.865	.170
Perception of financial situation (doing alright)	1.198	.258	0.774	.156
Perception of financial situation (comfortable)	1.385	.305	0.876	.169
Income poverty (below 60% median/in poverty)	0.890	.083	1.003	.286
F(10, 188) = 2.85, <i>p</i> < .01, N = 5617				

Table A2.28 gives the model for school related variables. As with the above table, the model is significant as in the linear analysis but again with a poorer model fit. Achievement is significant, with a negative relationship to high well-being as is qualifying for free school meals (again negative). School type, which was significant in the linear model, is not significant.

Table A2.28: Multinomial logit regression, school related variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Achievement	1.008	.017	0.945***	.014
SEN (yes)	1.101	.127	1.161	.131
School readiness	1.003	.003	0.998	.003
School year (year 3)	0.807	.157	0.932	.224
Absence from school	1.004	.051	0.995	.042
Free school meals (yes)	0.820	.108	0.747*	.099
Gifted and talented (yes)	1.052	.119	0.949	.106
School type (Voluntary aided)	1.196	.114	0.988	.101
School type (Voluntary controlled)	1.021	.112	0.853	.115
School type (Foundation)	0.807	.178	0.975	.395
F(20, 178) = 3.92, $p < .001$, N = 4738				

The below table shows the multinomial logit regression for the parent involvement variables. The model is not significant, the linear equivalent was.

Table A2.29: Multinomial logit regression, parental involvement in school variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Has parent attended parents' evening (yes)	1.054	.268	0.766	.164
Were steps taken to get child into school (yes)	0.788	.125	0.976	.149
Religion demonstrated to get into school (yes)	1.154	.087	1.017	.089
F(6, 192) = 1.96, $p > .05$, N = 5613				

Tables A2.30 and A2.31 show the results for parent life satisfaction and child health. As in the linear regression models neither is significant.

Table A2.30: Multinomial logit regression, parent life satisfaction

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Parent life satisfaction	0.976	.017	1.006	.019
F(2, 196) = 2.02, $p > .05$, N = 5372				

Table A2.31: Multinomial logit regression, child health

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Child health	0.968	.207	0.970	.210
F(2, 196) = 0.01, $p > .05$, N = 5624				

Table A2.32 shows the results for the SDQ variables. The model is significant, with a poorer model fit than the equivalent linear analysis. The results vary from the linear model with only the hyperactivity variable being significant, suggesting a slight increase in the likelihood of reporting high affective well-being for those children who exhibit more hyperactive behaviour.

Table A2.32: Multinomial logit regression, SDQ variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
SDQ Prosocial behaviour	.952	.026	1.023	.028
SDQ Conduct problems	1.002	.034	1.001	.034
SDQ Emotional difficulties	.985	.024	.956	.024
SDQ Hyperactivity	1.011	.019	1.039*	.030
SDQ Peer relationship problems	1.027	.028	1.015	.030
F(10, 188) = 2.54, <i>p</i> < .01, N = 5469				

The child social life variables model is significant as it was in the linear analysis, but, as with all of the significant logit models so far, with a poorer model fit. It again finds a positive effect on affective well-being for having lots of friends and not feeling left out.

Table A2.33: Multinomial logit regression, child social life variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Number of friends (some)	0.833	.115	1.063	.170
Number of friends (lots)	0.617***	.075	1.352*	.180
Feel left out (some of the time)	1.275	.176	0.689*	.109
Feel left out (never)	0.958	.135	1.619**	.264
F(8, 190) = 35.39, <i>p</i> < .001, N = 5547				

Table A2.34 shows the school perceptions and experiences group. The model is significant, again the model fit is poorer than the equivalent linear analysis. The variable results vary. Liking school, teacher thinking the child is clever, being fed up at school are significant but were not in the linear analysis. Answering questions in school and feeling safe in the playground are no longer significant.

Table A2.34: Multinomial logit regression, school perceptions and experiences variables

Variables	Low		High	
	<i>RRR</i>	<i>SE</i>	<i>RRR</i>	<i>SE</i>
Constant	-	-	-	-
Like school (a bit)	0.843	.111	0.719*	.106
Like school (a lot)	0.679**	.084	0.881	.130
Teacher thinks clever (some of the time)	0.732	.156	0.642*	.142
Teacher thinks clever (all of the time)	0.531**	.118	0.793	.181
School interesting (some of the time)	1.094	.141	0.877	.130
School interesting (all of the time)	0.902	.121	1.096	.160
Fed up at school (some of the time)	0.911	.113	0.631**	.096
Fed up at school (never)	0.831	.110	0.940	.137
Answer questions at school (some of the time)	0.936	.115	0.826	.101
Answer questions at school (all of the time)	0.777	.105	1.069	.129
Try best at school (some of the time)	1.484	.466	1.275	.407
Try best at school (all of the time)	1.498	.460	1.222	.366
Safe in playground (some of the time)	0.849	.161	0.897	.201
Safe in playground (all of the time)	0.763	.144	1.435	.325
Behave (some of the time)	1.453	.390	0.914	.276
Behave (all of the time)	1.326	.365	1.061	.327
Tired in school (some of the time)	1.231*	.124	0.879	.092
Tired in school (never)	1.068	.122	1.295*	.162
Bullied (some of the time)	1.244	.171	1.201	.192
Bullied (never)	1.231	.175	1.880***	.281
Bully (some of the time)	1.154	.341	0.533*	.163
Bully (never)	1.012	.286	0.719	.187

F(44, 154) = 16.83, $p < 0.001$. N= 5303

Table A2.35 shows the final multinomial logit model, which includes all of the variable groups that were significant. Unlike the equivalent linear model the parent involvement in school variables are not included as that model was not significant. As with the previous models, the model fit is poorer than for the linear analysis.

Table A2.35: Multi nomial logit regression, included groups

Variables	Low		High	
	RRR	SE	RRR	SE
Constant	-	-	-	-
Perception of financial situation (quite difficult)	1.313	.350	.671	.200
Perception of financial situation (getting by)	1.114*	.265	.933	.250
Perception of financial situation (doing alright)	1.062	.261	.776	.202
Perception of financial situation (comfortable)	1.221	.311	.937	.243
Income poverty (below 60% median/in poverty)	1.085	.137	.980	.132
Achievement	1.018	.019	.926***	.017
SEN (yes)	1.008	.127	1.148	.132
School readiness	1.004	.003	.999	.003
School year (year 3)	.742	.15	1.093	.248
Absence from school	1.032	.057	1.009	.056
Free school meals (yes)	.863	.135	.727	.123
Gifted and talented (yes)	1.068	.131	.932	.117
School type (Voluntary aided)	1.100	.114	.950	.108
School type (Voluntary controlled)	.962	.113	.889	.124
School type (Foundation)	.704	.169	1.115	.459
SDQ Prosocial behaviour	.989	.031	.985	.031
SDQ Conduct problems	1.026	.037	1.013	.039
SDQ Emotional difficulties	.987	.026	.959	.027
SDQ Hyperactivity	1.000	.021	1.026	.023
SDQ Peer relationship problems	1.028	.034	1.024	.039
Number of friends (some)	.897	.141	1.247	.225
Number of friends (lots)	.761	.109	1.420*	.211
Feel left out (some of the time)	1.171	.213	.928	.147
Feel left out (never)	.976	.181	1.156	.242
Like school (a bit)	.864	.127	.718*	.114
Like school (a lot)	.644**	.095	.862	.134
Teacher thinks clever (some of the time)	.595*	.135	.538*	.144
Teacher thinks clever (all of the time)	.430**	.103	.668	.182
School interesting (some of the time)	1.124	.159	.861	.140
School interesting (all of the time)	.987	.152	1.105	.176
Fed up at school (some of the time)	.827	.114	.654*	.110
Fed up at school (never)	.787	.122	.912	.153
Answer questions at school (some of the time)	1.052	.142	.990	.133
Answer questions at school (all of the time)	.885	.132	1.225	.168
Try best at school (some of the time)	1.498	.511	1.337	.479
Try best at school (all of the time)	1.480	.475	1.310	.451
Safe in playground (some of the time)	.734	.157	1.041	.260
Safe in playground (all of the time)	.651*	.133	1.510	.376
Behave (some of the time)	1.393	.441	1.166	.411
Behave (all of the time)	1.326	.419	1.417	.503
Tired in school (some of the time)	1.212	.134	.901	.112
Tired in school (never)	1.093	.131	1.287	.177
Bullied (some of the time)	1.612	.193	1.402	.248
Bullied (never)	1.230	.207	2.106***	.362
Bully (some of the time)	1.425	.514	.518	.181
Bully (never)	1.232	.429	.816	.247

F(92, 106)= 10.21, $p < 0.001$. N= 4341

In both approaches the demographic, parent life satisfaction, and health groups/variables were excluded. In the multinomial logit analysis parental involvement in school was also excluded.

Appendix 3: Additional analysis of the Millennium Cohort Study (MCS)

These tables present the results of analysis as conducted in Chapter 5, including the school readiness variable (which was excluded from the main analysis due to high missing). As in Chapter 5, constants are not shown due to Secure Data Service restrictions.

Table A3.1: Second model results (including school readiness)

	B	S.E.
Fixed		
Constant	-	-
Sampling strata (ref. Advantaged)		
Disadvantaged	0.040	.024
Ethnic	0.030	.030
Parent relationship stability (not stable)	-0.053	.054
Key Stage 1 achievement	-0.018**	.005
Special Educational Needs (yes)	0.035	.037
School Readiness (age 3)	-0.002	.001
Parent demonstrated religion for school (yes)	-0.063*	.028
Life satisfaction of reporting parent	0.006	.006
SDQ: Peer relationship problems	-0.010	.009
SDQ: Hyperactivity/inattention	0.001	.006
SDQ: Emotional Difficulties	-0.012	.006
Number of friends (ref. Not many)		
Some	0.068*	.029
A lot	0.238***	.031
Feel left out (ref. All of the time)		
Some of the time	-0.027	.041
Never	0.301***	.045
Random		
School level (S.D.)	0.000 (.000-.000)	.000
SEN (S.D.)	0.298 (.263-.340)	.020
Emotional Difficulties (S.D.)	0.057 (.050-.066)	.004
Feel left out		
Some of the time (S.D.)	0.000 (.000-.000)	.000
Never (S.D.)	0.214 (.197-.232)	.009
Pupil level (S.D.)	0.661 (.619-.706)	.022
Wald $\chi^2(15) = 672.73, p < .001, LL = -4743.28,$ LR test: $\chi^2(5) = 40.99, p < .001, N = 4476 (1935)$ VPC: 23.98%		

The inclusion of the school readiness variable in the second model makes little difference compared to the model presented in Chapter 5. School readiness itself is not significant, although the amount of variance explained at the school level has increased slightly. The strata variables as well as the SDQ: emotional difficulties variables are no longer significant, perhaps suggesting that a higher level of school readiness may counter child emotional difficulties.

Table A3.2: Third model results (including school readiness)

	B	S.E.
Fixed		
Constant	-	-
Sampling strata (ref. Advantaged)		
Disadvantaged	.012	.023
Ethnic	.017	.042
Parent relationship stability (not stable)	-.048	.043
Key Stage 1 achievement	-.023***	.006
Special Educational Needs (yes)	.015	.033
School Readiness (age 3)	-.001	.001
Parent demonstrated religion for school (yes)	-.029	.029
Life satisfaction of reporting parent	.009	.008
SDQ: Peer relationship problems	-.003	.010
SDQ: Hyperactivity/inattention	.010	.006
SDQ: Emotional Difficulties	-.009	.009
Number of friends (ref. Not many)		
Some	.049	.048
A lot	.140**	.046
Feel left out (ref. All of the time)		
Some of the time	-.022	.046
Never	.172**	.050
How much do you like school? (ref. Not at all)		
A bit	-.034	.035
A lot	.050	.043
How often does your teacher think you are clever? (ref. Never)		
Some of the time	.011	.086
All of the time	.149	.092
How often is school interesting? (ref. Never)		
Some of the time	-.070	.062
All of the time	.019	.066
How often do you get fed up at school? (ref. All of the time)		
Some of the time	-.067	.052
Never	.024	.049
How much do you like answering questions in class? (ref. Don't like it)		
A bit	-.023	.046
A lot	.096*	.046
How often do you feel safe in the playground? (ref. Never)		
Some of the time	.142*	.065
All of the time	.294***	.063

Table A3.2 continued

How often do you behave well in class? (ref. Never)		
Some of the time	.055	.145
All of the time	.121	.124
How often do you get tired at school? (ref. All of the time)		
Some of the time	-.070*	.027
Never	.061*	.027
How often do other children bully you? (ref. All of the time)		
Some of the time	.068	.060
Never	.168*	.067
How often are you horrible to other children at school? (ref. All of the time)		
Some of the time	-.349**	.106
Never	-.218*	.106
Random		
School level (S.D.)	.000 (.000-.000)	.000
SEN (S.D.)	.227 (.196-.263)	.017
Emotional Difficulties (S.D.)	.054 (.045-.065)	.005
Feel left out (ref. All of the time)		
Some of the time (S.D.)	.000 (.000-.000)	.000
Never (S.D.)	.178 (.160-.199)	.010
Tired at school (ref. All of the time)		
Some of the time (S.D.)	.000 (.000-.000)	.000
Never (S.D.)	.227 (.203-.254)	.013
Pupil level (S.D.)	.610 (.558-.690)	.034
Wald $\chi^2(35) = 2641.81, p < .001, LL = -4313.36, LR \text{ test: } \chi^2(7) = 38.38, p < .001,$ N=4256(1882) VPC: 27.53%		

Again there are few differences compared to the model presented in Chapter 5, the only being that the variable 'how often does your teacher think you are clever' is not significant when the school readiness variable is included. Again the VPC for school-level is larger but too much cannot be read into this or taken from it given the effect of including school readiness on the sample size.

Appendix 4: Preliminary analysis of The Children’s Society Well-being Survey

The appendix gives the details of the preliminary analysis conducted on the Children’s Society Well-being Survey. Table A4.1 shows the correlation between the outcome variable (life satisfaction) and the predictor relating to happiness with school. As can be seen the two are significantly related but not to such an extent as to cause a problem for later analysis. The correlations with age are also shown, showing the negative relationship between age and life satisfaction and age and happiness with school that we would expect.

Table A4.1: Pairwise correlations between life satisfaction and continuous predictor variables

	Life satisfaction	Age	Happiness with school
Life satisfaction	1.00		
Age	-0.155***	1.00	
Happiness with school	0.424***	-0.264***	1.00

Table A4.2 shows the results for the investigation between the outcome variable and the binary predictors. Disability status, number of homes lived in and living with the same adults as last year are found to be significantly related to level of life satisfaction. Gender, country of birth and school type are not.

Table A4.2: Results of t-tests for binary predictor variables and life satisfaction

Gender
Mean(female) = -0.038, mean(male) = 0.038, t(5091) = 1.352, $p > .05$.
Country of birth
Mean(other) = -0.112, mean(UK) = 0.036, t(4921) = -1.445, $p > .05$.
Disability
Mean(no) = 0.086, mean(yes) = -1.236, t(4796) = 8.332, $p < .001$
Number of homes
Mean(one) = 0.124, mean(two) = -0.301, t(5085) = 5.894, $p < .001$
Living with the same adults this time last year
Mean(yes) = 0.126, mean(no) = -0.710, t(4980) = 8.803, $p < .001$
School type (binary, comprehensive/state v grammar/independent)
Mean(comp/state) = -0.007, mean(grammar/ind) = .064, t(5210) = -0.804, $p > .05$

Table A4.3 gives the equivalent results for categorical predictor variables. Number of adults with paid job in home, achievement and school type were significant, ethnicity was not.

Table A4.3: Results of ANOVA for categorical variables and life satisfaction

Ethnicity
F(5, 4999) = 1.65, $p > .05$
No. adults with paid job
F(3, 4870) = 6.86, $p < .001$
Achievement
F(4, 4957) = 2.51, $p < .05$
School type
F(7, 5204) = 21.85, $p < .001$

Table A4.4 gives the results of a linear regression predicting life satisfaction using all of the available predictors. Unlike in the bivariate analysis above gender was found to be statistically significantly related to life satisfaction. Similarly, there was a significant results for ethnicity, with Indian children reporting lower life satisfaction than white children but disability status was no longer significant. Other results were broadly similar to those in the bivariate analyses.

Table A4.4: Linear regression predicting life satisfaction with all predictor variables (categorical school type)

	<i>B</i>	<i>S.E. B</i>
Constant	0.572**	.208
Gender (female)	-0.205***	.058
Age	-0.017	.025
Country of birth (UK)	-0.027	.111
Disabled (yes)	-0.084	.193
Number of homes (two)	-0.306***	.080
Living with the same adults (no)	-0.626***	.103
Happiness with school	0.289***	.207
Ethnicity (ref. white)		
Mixed	0.088	.138
Indian	-0.463*	.193
Pakistani/Bangladeshi	-0.112	.136
Black	0.203	.135
Other	0.045	.165
No. adults with paid job (ref. none)		
One	0.267*	.135
Two	0.283*	.130
More than two	0.355*	.149
Achievement (ref. lowest band)		
Second lowest band	-0.066	.102
Middle band	-0.119	.104
Second highest band	-0.048	.119
Highest band	-0.094	.104
School type (ref. primary)		
Junior	-0.060	.116
Middle	-0.103	.413
Independent	-0.161	.156
Comprehensive (to 16)	-0.166	.131
Comprehensive (to 18)	-0.276*	.117
Other secondary	-0.261	.174
Grammar	-0.433*	.203
Model stats		
F(26, 3807) = 33.41, $p < .001$, $R^2 = .186$, N= 3834		

Table A4.5 presents the same linear regression but instead using a binary school type variable for comparison. The results are broadly similar, but age is now significant. The binary school type variable is not significant, suggesting that it is the more detailed categorical variable that is capturing the relevant information.

Table A4.5: Linear regression predicting life satisfaction with all predictor variables (binary school type)

	<i>B</i>	<i>S.E. B</i>
Constant	0.449*	.200
Gender (female)	-0.211***	.058
Age	-0.060***	.014
Country of birth (UK)	-0.029	.111
Disabled (yes)	-0.085	.193
Number of homes (two)	-0.304***	.080
Living with the same adults (no)	-0.621***	.103
Happiness with school	0.291***	.012
Ethnicity (ref. white)		
Mixed	0.092	.138
Indian	-0.453*	.193
Pakistani/Bangladeshi	-0.108	.134
Black	0.204	.134
Other	0.056	.165
No. adults with paid job (ref. none)		
One	0.257	.134
Two	0.270*	.130
More than two	0.338*	.149
Achievement (ref. lowest band)		
Second lowest band	-0.070	.100
Middle band	-0.121	.099
Second highest band	-0.049	.110
Highest band	-0.094	.100
School type (grammar/independent)	-0.050	.114
Model stats		
F(20, 3813) = 43.00, $p < .001$, $R^2 = .184$, N= 3834		

Appendix 5: Understanding Society Initial Analysis

This appendix presents the results of the initial factor analysis used to investigate the life satisfaction outcome and investigation of differences in life satisfaction between children in schools with one child in the sample and children in schools with multiple children in the sample.

Factor analysis creating life satisfaction outcome variable

Table A5.1: Factor analysis results

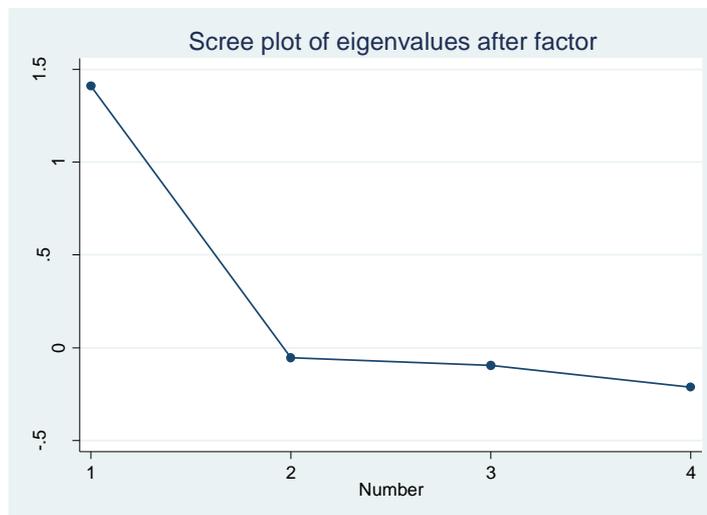
Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	1.410	1.464	1.343	1.343
Factor 2	-0.053	0.042	-0.051	1.293
Factor 3	-0.095	0.117	-0.091	1.202
Factor 4	-0.212	.	-0.202	1.000

LR test: $\text{Chi}^2(6) = 2466.20, p < .001$

Table A5.2: Factor loadings

Variable	Factor 1	Uniqueness
Happiness with appearance	0.553	0.694
Happiness with family	0.603	0.637
Happiness with friends	0.502	0.748
Happiness with life as a whole	0.700	0.510

Figure A5.1: Screeplot of Factor Analysis



The results support the suggestion of a single outcome measuring life satisfaction, this is used as the outcome variable.

Investigation of differences in life satisfaction between children included and excluded from multilevel analysis

It was necessary to remove children from the sample where they were the only child from their school included in the sample. This was done in order to ensure that the school samples were large enough to ensure the accuracy of the analysis. Prior to

doing this analysis was conducted to ensure that excluding this group of children did not bias the results. This is shown below:

Table A5.3: Results of t-tests comparing those included and excluded from analysis

Life satisfaction
Mean(excluded) = -0.014, mean(included) = 0.010, t(3456) = -0.795, $p > .05$
Number of friends
Mean(excluded) = 7.003, mean(included) = 7.948, t(3246) = -3.481, $p < .05$
How do you feel about your school work?
Mean(excluded) = 2.630, mean(included) = 2.644, t(3450) = -0.314, $p > .05$
How do you feel about your school?
Mean(excluded) = 2.335, mean(included) = 2.393, t(3451) = -1.147, $p > .05$
Age
Mean(excluded) = 11.820, mean(included) = 12.925, t(3469) = -19.826, $p < .001$

The results of the t-test show that there are differences in number of friends and age. Children who are excluded from the analysis had fewer friends than those included and were younger. This is likely due to younger children attending primary rather than secondary schools which are typically smaller, meaning that they will have fewer potential friends and fewer other children to be included in the sample. However most importantly these results show that there is no statistically significant difference in life satisfaction between those included and excluded from the multilevel analysis.

Table A5.4: Results of Chi² test comparing the gender of those included and excluded from analysis

	Included as multiple children in school		Total
	Excluded from analysis	Included in analysis	
Gender			
Male	703	1012	1715
Female	738	1018	1756
Total	1441	2030	3471
Pearson Chi ² (1) = 0.384, $p > .05$			

Table A5.5: Results of Chi² test comparing whether there are siblings in the home of those included and excluded from analysis

	Included as multiple children in school		Total
	Excluded from analysis	Included in analysis	
Siblings at home			
Yes	1199	1818	3017
No	237	208	445
Total	1436	2026	3462
Pearson Chi ² (1) = 29.190, $p < .05$			

Table A5.6: Results of Chi² test comparing smoking status of those included and excluded from analysis

	Included as multiple children in school		Total
Ever tried smoking	Excluded from analysis	Included in analysis	
Yes	78	139	217
No	1355	1873	3228
Total	1433	2012	3445
Pearson Chi ² (1) = 3.045, <i>p</i> > .05			

Table A5.7: Results of Chi² test comparing truanting status of those included and excluded from analysis

	Included as multiple children in school		Total
Ever truanted from school	Excluded from analysis	Included in analysis	
Yes	139	229	368
No	1291	1784	3075
Total	1430	2013	3443
Pearson Chi ² (1) = 2.401, <i>p</i> > .05			

The results of the Chi² tests show that there are statistically significant differences in likelihood of living with siblings between the two groups. This may be because of the younger age of the excluded group.

Table A5.8: Results of ANOVA for categorical variables and life satisfaction

Feel supported by family	F(1, 3459) = 0.27, <i>p</i> > .05
Frequency of arguing with mother	F(1, 3410) = 0.74, <i>p</i> > .05
Frequency of arguing with father	F(1, 3386) = 0.09, <i>p</i> > .05
Importance of doing well in exams	F(1, 3359) = 7.30, <i>p</i> < .01
Religion	F(1, 3231) = 1.21, <i>p</i> > .05
Ethnicity	F(1, 3082) = 8.49, <i>p</i> < .01

The ANOVA analysis found statistically significant differences between the groups in regard to the importance of doing well in exams and ethnicity. The difference in the importance of doing well in exams is again likely due to the younger age of the children who will be excluded from the multilevel analysis. Exams and examination success is likely to be less of a pressing issue for younger children. The difference in relation to ethnicity is less easy to explain.

The results of these analyses were further investigated using a random intercept multilevel model including all of the children in the sample. This analysis was

conducted in order to investigate whether the statistically significant differences identified in the above analyses were likely to have implications for the multilevel models. As Table A5.9 shows, age and number of friends were significant but none of the other significant variables were significant in the multilevel model. Together the results of these analyses indicate that limiting the multilevel analysis to only those children in schools with multiple children will have no undesirable impacts on the results.

Table A5.9: Two-level multilevel model predicting life satisfaction including predictor variables investigated above

	B	S.E.
Fixed		
Constant	1.542***	.208
Number of friends	0.009***	.002
How feel about school work	-0.139***	.013
How feel about school	-0.165***	.011
Age	-0.045***	.008
Gender (female)	-0.169***	.028
Siblings in the home (yes)	0.011	.042
Ever smoked (yes)	-0.037	.062
Ever truanted (yes)	-0.042	.050
Feel supported by parents (most all/things)		
Some things	-0.456***	.036
Do not feel supported	-0.791***	.142
How often quarrel with mother (ref. most days)		
More than once a week	-0.001	.055
Less than once a week	0.091	.055
Hardly ever	0.150**	.052
Don't have/see	-0.142	.0157
How often quarrel with father (ref. most days)		
More than once a week	0.072	.068
Less than once a week	0.013	.063
Hardly ever	0.124*	.058
Don't have/see	-0.006	.073
Importance of GCSEs (ref. not at all important)		
Not very important	0.012	.034
Important	0.057	.199
Very important	-0.237	.199
Ethnicity (ref. white)		
Mixed ethnicity	0.058	.063
Asian	0.073	.067
Black	0.094	.056
Other	-0.020	.099
Random		
School level (S.D)	0.118 (.043-.331)	.062
Pupil level (S.D)	0.671 (.644-.700)	.014
LL = -2681.032, LR test: $\chi^2(1) = 0.96, p > .05, N = 2539 (1744)$		

Appendix 6: Preliminary analysis of Understanding Society

Descriptives for all potential predictor variables

This section gives descriptive information for all of the potential predictor variables in this analysis. Both variables included in Chapter 7 and those given only here are described.

Table A6.1 shows the demographic variables. The sample is relatively evenly split between the genders but includes comparatively fewer younger children. The majority are living with siblings and belong to a religion. Most respondents are white but other ethnicities are well represented making up nearly 40% of the sample

Table A6.1: Demographic variables

	Possible responses					Missing	
Gender	Male 1012 (49.85%)			Female 1018 (50.15%)			0
Age	10 101 (4.98%)	11 325 (16.01%)	12 404 (19.90%)	13 409 (20.15%)	14 378 (18.62%)	15 413 (20.34%)	0
Siblings in home	Yes 1818 (89.56%)			No 208 (10.25%)			4 (0.20%)
Religious (binary)	No religion 662 (32.61%)			Some religion 1235 (60.84%)			133 (6.55%)
Ethnicity	White 1246 (61.38%)	Mixed ethnicity 117 (5.76%)	Asian 278 (13.69%)	Black 148 (7.29%)	Other 20 (0.99%)		221 (10.89%)

Table A6.2 shows the family relationship variables which give information about the child's relationships with their parents, the amount of time they spend with them, and how supported they feel by them. The majority of children report feeling supported by their family for most things or more. Only a very small number reported not feeling supported at all and so groups were combined. Most children eat with their family regularly. Around half of children report not quarrelling with their mother or father, with quarrelling less common with fathers. However children were more likely to report talking to their mother about things that matter.

Table A6.2: Family relationship variables

	Possible responses					Missing
Feel supported by family	Most/all things 1595 (78.57%)			Some things/not at all 430 (21.18%)		5 (0.25%)
Evening meal with family (last 7 days)	None 162 (7.98%)	1-2 times 360 (17.73%)	3-5 times 544 (26.80%)	6-7 times 957 (47.16%)		7 (0.34%)
Quarrel with mother	Most days 235 (11.58%)	> once per week 359 (17.68%)	< once per week 448 (22.07%)	Hardly ever 940 (46.31%)	Don't have mother 14 (0.69%)	34 (1.67%)
Quarrel with father	Most days 175 (8.62%)	> once per week 203 (10.00%)	< once per week 328 (16.16%)	Hardly ever 1127 (55.52%)	Don't have a father 151 (7.44%)	46 (2.27%)
Talk to mother, things that matter	Most days 750 (36.95%)	> once per week 472 (23.25%)	< once per week 345 (17.00%)	Hardly ever 440 (21.67%)	Don't have mother 12 (0.59%)	11 (0.54%)
Talk to father, things that matter	Most days 347 (17.09%)	> once per week 354 (17.44%)	< once per week 403 (19.85%)	Hardly ever 748 (36.85%)	Don't have a father 146 (7.19%)	32 (1.58%)

Table A6.3 reports the details of the SDQ (Strengths and Difficulties Questionnaire) variables. These were used in Chapter 5 and give an overview of the psychological and behavioural adjustment demonstrated by the children in the sample.

Table A6.3: SDQ variables

	Possible responses	Missing
SDQ: Emotional symptoms	S.D. 2.150, Min. -2.947, Max. 7.253	17 (0.84%)
SDQ: Conduct problems	S.D. 1.819, Min. -2.291, Max. 7.709	16 (0.79%)
SDQ: Hyperactivity/ inattention	S.D. 2.301, Min. -4.020, Max. 5.980	17 (0.84%)
SDQ: Peer relationship problems	S.D. 1.587, Min. -1.707, Max. 8.293	16 (0.79%)
SDQ: Prosocial behaviour	S.D. 1.887, Min. -7.549, Max. 2.451	12 (0.59%)
SDQ: Total difficulties	S.D. 5.410, Min. -10.770, Max. 19.230	20 (0.99%)

Table A6.4 shows the variables available in the dataset relating to children's experiences of schooling, including continuous measures relating to how they feel about their school work and school as a whole. The vast majority of children in the sample reported that doing well in their GCSEs was important to them, despite the relatively young age of the sample. Most parents were felt to be interested in school and attended parent's evenings. Over 11% of children had truanted from school at some point and over half experienced others misbehaving in their lessons over half of the time. However, very few reported frequently misbehaving in class themselves. Most were never bullied, physically or otherwise, a small number were bullied frequently. Less than 10% of children reported bullying others, physically or otherwise. There were a high number of missing cases for variables relating to educational aspirations (what would like to do at 16 (10.15%) and whether would like to go to university (15.76%)) and so these variables were not included.

Table A6.4: School related variables

	Possible responses					Missing
How feel about schoolwork	S.D. 1.290, Min. -1.644, Max. 4.356					6 (0.30%)
How feel about your school	S.D. 1.477, Min. -1.393, Max. 4.607					8 (0.39%)
Importance of doing well in GCSEs	Very important 1526 (75.17%)	Important 404 (19.90%)		Not important ⁷⁴ 43 (2.12%)		57 (2.81%)
Parents interested in how does at school	Always or nearly always 1662 (81.87%)			Less often ⁷⁵ 336 (16.55%)		32 (1.58%)
Parents attend parent's evenings	Always or nearly always 1639 (80.74%)	Sometimes 302 (14.88%)		Hardly ever/never 62 (3.10 %)		27 (1.33%)
Ever truanted	Yes 229 (11.28%)			No 1784 (87.88%)		17 (0.84%)
How often others misbehave in class	In most/all classes 548 (27.00%)	> half of classes 459 (22.61%)	Approx. half of classes 332 (16.35%)	Now and then 606 (29.85%)	Not a problem at all 65 (3.20%)	20 (0.99%)

⁷⁴ Responses of 'not very important' and 'not at all important' grouped.

⁷⁵ Responses of 'sometimes', 'hardly ever' and 'never' grouped.

Table A6.4 continued

How often misbehave in school	In most/all classes 55 (2.71%)	> half of classes 124 (6.11%)	Approx. half of classes 125 (6.16%)	Now and then 958 (47.19%)	Not a problem at all 748 (36.85%)	20 (0.99%)	
How often physically bullied at school	Never 1652 (81.38%)		Not much ⁷⁶ 271 (13.35%)		Quite a lot ⁷⁷ /a lot ⁷⁸ 82 (4.04%)		25 (1.23%)
How often bullied in other ways at school	Never 1430 (70.44%)		Not much 425 (20.94%)		Quite a lot 92 (4.53%)		A lot 59 (2.91%) 24 (1.18%)
Physically bully others at school	Never 1886 (92.91%)			Yes ⁷⁹ 126 (6.21%)			18 (0.89%)
Bully in other ways at school	Never 1834 (90.34%)			Yes ⁸⁹ 175 (8.62%)			21 (1.03%)

Health and risk behaviour variables are shown in Table A6.5. Over 7% of children report exercising less than once a week, even fewer had tried a cigarette however. Far more had tried an alcoholic drink but very few reported drinking regularly.

Table A6.5: Health and risk behaviours variables

	Possible responses						Missing
Days per week exercise	Every day 567 (27.93%)	5-6 355 (17.49%)	3-4 548 (27.00%)	1-2 394 (19.41%)	< 1 93 (4.58%)	Never/ hardly ever 56 (2.76%)	17 (0.84%)
Ever smoke cigarettes	Yes 139 (6.85%)			No 1873 (92.27%)			18 (0.89%)
Ever had an alcoholic drink	Yes 689 (33.94%)			No 1313 (64.68%)			28 (1.38%)
Drink alcohol regularly	Yes 111 (5.47%)			No 1873 (92.27%)			46 (2.27%)
Hours spent watching TV (school day)	None/less than an hour 464 (22.97%)	1-3 1182 (58.23%)		4-6 314 (15.47%)		7 + 60 (2.96%)	10 (0.49%)

⁷⁶ 1-3 times in the last 6 months

⁷⁷ More than 4 times in the last 6 months

⁷⁸ A few times every week

⁷⁹ Responses of 'not much' (a few times every week), 'quite a lot', and 'a lot' grouped.

Table 7.6 shows the variables relating to children’s social lives. Most children in the sample had their own mobile phone and were a member of a social networking site.

Table A6.6: Social life variables

	Possible responses		Missing
Number of close friends	S.D. 7.980, Min. -7.948, Max. 74.052		133 (6.55%)
Have own mobile phone	Yes 1745 (85.96%)	No 277 (13.65%)	8 (0.39%)
Use social network	Yes 1434 (70.64%)	No 501 (24.68%)	95 (4.67%)

Table A6.7 gives the variables based on responses from the respondent’s mother. The majority were married, with nearly one fifth separated, divorced or widowed. Nearly two-thirds were working, and a quarter worked in the home. Similarly, a quarter of mothers were not born in the UK. Nearly 16% of mothers had no qualifications, a similar percentage had a degree. Most mothers belonged to a religion and were in good health. However, nearly one third had a longstanding illness or disability. Mothers, like the children, were asked how frequently they quarrel with and talk to their children. The variable referring to how often the mother praised the child was recoded to be binary because of the very small number of cases reporting seldom or never praising the child. Similarly, the variables relating to slapping or spanking the child and to cuddling the child was recoded to include 3 potential responses because of the low number of respondents reporting slapping or spanking very often and cuddling never.

The reason for focusing on the mother of the respondent rather than the father is that unfortunately responses for fathers were missing in over 45% of cases.

Table A6.7: Mother variables

	Possible responses						Missing
Marital status	Single 263 (12.96%)		Married 1270 (62.56%)		Sep/divorced/wid. 397 (19.56%)		100 (4.93%)
Current economic activity	Employed 1217 (59.95%)	Unemployed 94 (4.63%)		Work in home 506 (24.93%)	Other 113 (5.57%)		100 (4.93%)
UK born	Yes 1427 (70.30%)			No 503 (24.78%)			100 (4.93%)
Highest qualification	Degree 333 (16.40%)	Other degree 275 (13.55%)	A-level etc 311 (15.32%)	GCSE etc 516 (25.42%)	Other 163 (8.33%)	None 324 (15.96%)	102 (5.02%)
Living with biological parents at 16	Yes 1462 (72.02%)			No 466 (22.96%)			102 (5.02%)
English is first language	Yes 1498 (73.79%)			No 432 (21.28%)			100 (4.93%)
Belong to a religion	Yes 1225 (60.34%)			No 705 (34.73%)			100 (4.93%)
General health	Poor 107 (5.27%)	Fair 276 (13.60%)	Good 621 (30.59%)	Very good 610 (30.05%)	Excellent 315 (15.52%)		101 (4.98%)
Longstanding illness or disability	No 1320 (65.02%)			Yes 610 (30.05%)			100 (4.93%)
Paid employment last week	Yes 1163 (57.29%)			No 767 (37.78%)			100 (4.93%)
How often quarrel with children	Most days 439 (21.63%)	> once a week 494 (24.33%)		< once a week 422 (20.79%)	Hardly ever 564 (27.78%)		111 (5.47%)
How often talk about important matters with children	Hardly ever 57 (2.81%)	< once a week 160 (7.88%)		> once a week 462 (22.76%)	Most days 1242 (61.18%)		109 (5.37%)
How often praise child	Less often (sometimes, seldom, never) 405 (19.95%)			Very often 1518 (74.78%)			107 (5.27%)
How often children are involved in setting rules	Never 318 (15.67%)	Seldom 358 (17.64%)		Sometimes 934 (46.01%)	Very often 296 (14.58%)		124 (6.11%)
How often slap or spank child	Sometimes/very often 122 (6.01%)		Seldom 314 (15.47%)		Never 1487 (73.25%)		107 (5.27%)
How often hug or cuddle child	Seldom/never 71 (3.50%)		Sometimes 292 (14.38%)		Very often 1562 (76.95%)		105 (5.17%)

Table A6.7 continued

How often shout at child	Very often 511 (25.17%)	Sometimes 989 (48.72%)	Seldom 338 (16.65%)	Never 87 (4.29%)	105 (5.17%)	
Perception of current financial situation	Very difficult 163 (8.03%)	Quite difficult 296 (14.58%)	Getting by 617 (30.39%)	Doing alright 559 (27.54%)	Living comfortably 291 (14.33%)	104 (5.12%)

Preliminary analysis

This section gives the detailed results of the preliminary analysis conducted on this dataset prior to the multilevel analysis. The results are discussed in more detail in Chapter 7. Tables A6.8-A6.12 give the results of the binomial analyses investigating the relationships between the available predictor variables and the life satisfaction outcome.

Table A6.8: T-test results for binary variables and life satisfaction

Gender
Mean(male) = 0.072, mean(female) = -0.072, $t = 3.930$, $p < .001$
Religious
Mean(no religion) = -0.082, mean(religion) = 0.0586, $t = -3.535$, $p < .001$
Member of social network
Mean(no) = 0.066, mean(yes) = -0.029, $t = 2.224$, $p < .05$
Own a mobile phone
Mean(no) = 0.093, mean(yes) = -0.016, $t = 2.033$, $p < .05$
Feel supported by family
Mean(sometimes/no) = -0.547, mean(yes) = 0.147, $t = -16.468$, $p < .001$
Siblings in home
Mean(no) = -0.010, mean(yes) = 0.003, $t = -0.207$, $p > .05$
Parents interested in how does at school
Mean(less often/no) = -0.430, mean(often/always) = 0.089, $t = -10.807$, $p < .001$
Parents attend parents' evenings
Mean(hardly ever/no) = -0.587, mean(sometimes/yes) = 0.017, $t = -5.662$, $p < .001$
Truant
Mean(yes) = -0.311, mean(no) = 0.037, $t = -6.048$, $p < .001$
Physically bully others
Mean(yes) = -0.351, mean(no) = 0.022, $t = -4.948$, $p < .001$
Bully in other ways
Mean(yes) = -0.344, mean(no) = 0.032, $t = -5.804$, $p < .001$
Ever smoked cigarettes
Mean(yes) = -0.328, mean(no) = 0.022, $t = -4.845$, $p < .001$
Ever had an alcoholic drink
Mean(yes) = -0.194, mean(no) = 0.095, $t = -7.530$, $p < .001$
Drink regularly
Mean(yes) = -0.207, mean(no) = 0.006, $t = -2.641$, $p < .01$

Table A6.9: ANOVA results for categorical variables and life satisfaction

Ethnicity
F(4, 1801) = 3.29, $p < .05$
Time spent watching TV
F(3, 2010) = 2.34, $p > .05$
Number of meals with family
F(3, 2013) = 9.50, $p < .001$
Talk with mother
F(4, 2010) = 32.62, $p < .001$
Talk with father
F(4, 1988) = 31.70, $p < .001$
Quarrelling with mother
F(4, 1987) = 21.78, $p < .001$
Quarrelling with father
F(4, 1974) = 14.21, $p < .001$
Importance of GCSEs
F(2, 1969) = 24.29, $p < .001$
Frequency of trouble in class
F(4, 2004) = 20.25, $p < .001$
How often misbehave in class
F(4, 2003) = 11.09, $p < .001$
How often physically bullied by others
F(2, 2001) = 48.82, $p < .001$
How often bullied in other ways
F(2, 2002) = 117.35, $p < .001$
Frequency of exercise
F(5, 2004) = 16.39, $p < .001$

Table A6.10: Pairwise correlations between continuous variables and life satisfaction

	1	2	3	4	5	6	7	8	9	10	11
1: Life satisfaction	1										
2: SDQ emotional difficulties	-0.399***	1.000									
3: SDQ conduct problems	-0.290***	0.234***	1.000								
4: SDQ hyperactivity	-0.276***	0.265***	0.511***	1.000							
5: SDQ peer relationship problems	-0.354***	0.370***	0.203***	0.154***	1.000						
6: SDQ pro social behaviour	0.195***	0.066**	-0.348***	-0.263***	-0.119***	1.000					
7: SDQ total difficulties	-0.478***	0.697***	0.706***	0.747***	0.573***	-0.237***	1.000				
8: Number of friends	0.081***	-0.102***	0.069**	0.022	-0.141***	-0.015	-0.049*	1.000			
9: How feel about school work	-0.419***	0.228***	0.326***	0.402***	0.182***	-0.263***	0.424***	-0.015	1.000		
10: How feel about school	-0.455***	0.270***	0.281***	0.283***	0.259***	-0.199***	0.398***	-0.018	0.475***	1.000	
11: Age	-0.140***	-0.036	-0.020	0.006	-0.000	-0.110***	-0.018	0.019	0.063**	0.140***	1.00

The following tables present similar results for the variables based on the responses of mothers.

Table A6.11: T-test results for binary variables and life satisfaction, mother variables

Born in UK
Mean(yes) = -0.019, mean(no) = 0.092, $t = -2.605$, $p < .01$
English as first language
Mean(yes) = -0.020, mean(no) = 0.114, $t = -2.995$, $p < .01$
Religious
Mean(yes) = 0.021, mean(no) = -0.010, $t = 0.803$, $p > .05$
Living with biological parents at 16
Mean(yes) = 0.021, mean(no) = -0.028, $t = 1.105$, $p > .05$
Longstanding illness or disability
Mean(no) = 0.056, mean(yes) = -0.091, $t = 3.661$, $p < .001$
Paid employment last week
Mean(no) = 0.044, mean(yes) = -0.013, $t = 1.484$, $p > .05$
Praise child
Mean(less often) = -0.084, mean(often) = 0.033, $t = -2.548$, $p < .05$

Table A6.12: ANOVA results for categorical variables and life satisfaction, mother variables

Marital status
$F(2, 1921) = 10.94$, $p < .001$
Employment status
$F(3, 1920) = 2.55$, $p > .05$
Highest qualification
$F(5, 1916) = 1.36$, $p > .05$
General health
$F(4, 1918) = 4.68$, $p < .001$
Quarrel with child
$F(3, 1909) = 3.87$, $p < .01$
Talk about things that matter with child
$F(3, 1911) = 5.34$, $p < .01$
Involve child in rules
$F(3, 1896) = 0.11$, $p > .05$
Slap child
$F(2, 1914) = 0.68$, $p > .05$
Cuddle or hug child
$F(2, 1916) = 9.55$, $p < .001$
Yell at child
$F(3, 1915) = 4.02$, $p < .01$
Perception of current financial situation
$F(4, 1915) = 2.70$, $p < .05$

Because both the youth and adult questionnaires included questions regarding the frequency of quarrelling and talking about things that matter it was possible to compare results to see whether parent and child perceptions were similar. These results are shown below in Tables A6.13 and A6.14. The results found that the responses given by mothers and their children were significantly similar, and as such only the child response will be used in the multilevel analysis.

Table A6.13: Chi² investigating similarities between mother and child responses to frequency of quarrelling

	Most days	> once a week	< once a week	Hardly ever	Total
Most days	93	65	26	43	227
> once a week	126	115	63	41	345
< once a week	103	127	109	87	426
Hardly ever	112	179	218	381	890
Total	434	486	416	552	1888
Chi ² (9)= 253.547, <i>p</i> < .001					

Table A6.14: Chi² investigating similarities between mother and child responses to frequency of talking about things that matter

	Hardly ever	< once a week	> once a week	Most days	Total
Hardly ever	21	61	107	219	408
< once a week	16	36	101	172	325
> once a week	11	28	108	308	455
Most days	8	35	143	537	723
Total	56	160	459	1236	1911
Chi ² (9)= 95.739, <i>p</i> < .001					

As previously, linear regression was used to further investigate relationship between predictors and the subjective well-being outcome. The results are shown below.

Table A6.15: Linear regression predicting life satisfaction – all variables

	<i>B</i>	<i>S.E. B</i>
Constant	-0.479	0.353
Gender (female)	-0.162***	0.040
Age	-0.029*	0.014
Ethnicity (ref. white)		
Mixed ethnicity	0.110	0.080
Asian	0.068	0.077
Black	0.121	0.083
Other	0.119	0.175
Whether belong to a religion (yes)	0.054	0.043
Member of a social network (yes)	0.088*	0.043
Hours per day spent watching tv (ref. none/less than an hour)		
1-3 hours	-0.033	0.043
4-6 hours	0.058	0.059
7 or more hours	0.156	0.120
Own a mobile phone (yes)	0.031	0.059
Number of friends	0.001	0.002
Number of times in last 7 days eaten evening meal with family (ref. none)		
1-2 times	-0.015	0.078
3-5 times	-0.076	0.074
6-7 times	-0.014	0.071
Feel supported by parents (most of/all the time)	0.261***	0.049

Table A6.15 continued

Siblings in home (yes)	0.003	0.060
How often quarrel with mother (ref. don't have/see)		
Most days	-	-
More than once a week	-0.055	0.070
Less than once a week	0.098	0.072
Hardly ever	0.112	0.071
How often quarrel with father (ref. don' have/see)		
Most days	0.515	0.628
More than once a week	0.630	0.628
Less than once a week	0.534	0.626
Hardly ever	0.633	0.625
How often talk to mother about things that matter (ref. don't have/see)		
Hardly ever	-	-
Less than once a week	0.131*	0.059
More than once a week	0.041	0.061
Most days	0.111	0.061
How often talk to father about things that matter (ref. don't have/see)		
Hardly ever	-0.526	0.626
Less than once a week	-0.506	0.628
More than once a week	-0.400	0.630
Most days	-0.324	0.630
SDQ: emotional difficulties	0.033	0.019
SDQ: conduct problems	0.086***	0.019
SDQ: hyperactivity	0.102***	0.017
SDQ: peer relationship problems	-	-
SDQ: pro social behaviour	0.017	0.011
SDQ: total difficulties	-0.092***	0.014
How feel about school work	-0.129***	0.017
How feel about school	-0.109***	0.015
Importance of GCSEs (ref. not important)		
Important	-0.209	0.152
Very important	-0.324*	0.151
Parents interested in how does at school (yes)	0.152**	0.051
Parents attend parents' evenings (yes)	0.133	0.125
Ever truanted from school (no)	0.009	0.065
How often trouble in class (ref. most/all classes)		
More than half	-0.024	0.051
About half	0.009	0.057
Now and then	-0.019	0.050
Not a problem	0.017	0.121
How often misbehave at school (ref. most/all classes)		
More than half of classes	-0.010	0.137
About half of classes	0.083	0.140
Now and then	-0.041	0.127
Not a problem	0.010	0.132
How often physically bullied at school (ref. quite a lot/a lot)		
Not much	0.025	0.106
Never	-0.042	0.107
How often bullied in other ways at school (ref. quite a lot/a lot)		
Not much	-0.046	0.082
Never	0.160	0.086

Table A6.15 continued

Bully others physically at school (no)	-0.139	0.087
Bully others in other ways (no)	0.087	0.071
How often exercise (ref. never)		
Less than once a week	0.029	0.143
1-2 days	-0.013	0.118
3-4 days	0.010	0.117
5-6 days	0.046	0.120
every day	0.118	0.118
Ever smoked cigarettes (no)	-0.082	0.079
Ever drank alcohol (no)	0.072	0.044
Whether drink alcohol regularly (no)	0.011	0.079
Marital status (mother) (ref. single)		
Married	-0.022	0.063
Separated/divorced/widowed	-0.068	0.065
Current economic activity (mother) (ref. employed)		
Unemployed	0.131	0.128
Work in home	0.198	0.102
Other	0.213	0.114
UK born (mother) (no)	-0.155*	0.069
Highest qualification (mother) (ref. no qualifications)		
Other	0.062	0.078
GCSE etc	-0.051	0.060
A-level etc	-0.138*	0.067
Other degree	-0.062	0.069
Degree	-0.102	0.069
Living with biological parents at 16 (mother) (no)	0.006	0.042
English as first language (mother) (no)	0.065	0.080
Whether belong to a religion (mother) (no)	0.148***	0.042
General health (mother) (ref. poor)		
Fair	0.056	0.085
Good	0.014	0.080
Very good	0.034	0.083
Excellent	0.066	0.090
Long term illness or disability (mother) (yes)	-0.021	0.042
Did paid work last week (mother) (yes)	0.102	0.095
How often quarrel with children (mother) (ref. most days)		
More than once a week	-0.050	0.053
Less than once a week	-0.051	0.059
Hardly ever	-0.031	0.060
How often talk to about important matters with children (mother) (ref. hardly ever)		
Less than once a week	-0.072	0.114
More than once a week	0.031	0.104
Most days	-0.050	0.102
How often praise child (mother) (very often)	-0.003	0.047
How often involve child in rule setting (mother) (ref. never)		
Seldom	0.015	0.060
Sometimes	0.007	0.051
Very often	-0.077	0.064
How often spank or slap child (mother) (ref. sometimes/very often)		
Seldom	-0.250**	0.086
Never	-0.154	0.079

Table A6.15 continued

How often hug or cuddle child (mother) (ref. seldom/never)		
Sometimes	-0.013	0.101
Very often	0.102	0.097
How often yell at child (mother) (ref. very often)		
Sometimes	0.011	0.046
Seldom	-0.013	0.059
Never	-0.101	0.102
Perception of current financial situation (mother) (ref. very difficult)		
Quite difficult	-0.064	0.076
Getting by	0.023	0.068
Doing alright	0.009	0.073
Living comfortably	0.039	0.080
F(107, 1191) = 12.04, $p < .001$, $R^2 = .520$, N= 1299		

SDQ peer omitted from this model, the correlation between this and number of friends was investigated in order to see whether this was the cause. The result was $r = -0.141$, $p < .001$, a small but significant correlation meaning that it was unlikely that this was the cause. It is most likely due to the inclusion of the SDQ total difficulties variable, which will be excluded from the multilevel analysis as in previous chapters.

Table A6.16: Linear regression predicting life satisfaction – demographics

	<i>B</i>	<i>S.E. B</i>
Constant	0.027	0.069
Gender (female)	-0.161***	0.040
Age	-0.070***	0.013
Ethnicity (ref. white)		
Mixed ethnicity	-0.017	0.083
Asian	0.096	0.059
Black	0.180*	0.076
Other	0.046	0.195
Whether belong to a religion (yes)	0.099*	0.045
Siblings in home (yes)	-0.042	0.066
F(8,1684) = 7.84, $p < .001$, $R^2 = .036$, N= 1693		

Table A6.17: Linear regression predicting life satisfaction – social life variables

	<i>B</i>	<i>S.E. B</i>
Constant	0.141*	0.059
Member of a social network (yes)	-0.099*	0.045
Own a mobile phone (yes)	-0.092	0.060
Number of friends	0.010***	0.002
F(3, 1797) = 7.45, $p < .001$, $R^2 = .012$, N= 1801		

Table A6.18: Linear regression predicting life satisfaction – family relationships variables

	<i>B</i>	<i>S.E. B</i>
Constant	-0.573*	0.239
Number of times in last 7 days eaten evening meal with family (ref. none)		
1-2 times	-0.037	0.073
3-5 times	-0.059	0.069
6-7 times	-0.005	0.066
Feel supported by parents (most of/all the time)	0.516***	0.044
How often quarrel with mother (ref. don't have/see)		
Most days	0.206	0.446
More than once a week	0.232	0.445
Less than once a week	0.352	0.444
Hardly ever	0.432	0.443
How often quarrel with father (ref. don't have/see)		
Most days	0.452	0.320
More than once a week	0.505	0.319
Less than once a week	0.527	0.315
Hardly ever	0.627*	0.314
How often talk to mother about things that matter (ref. don't have/see)		
Hardly ever	-0.470	0.496
Less than once a week	-0.274	0.498
More than once a week	-0.367	0.497
Most days	-0.241	0.497
How often talk to father about things that matter (ref. don't have/see)		
Hardly ever	-0.512	0.316
Less than once a week	-0.441	0.318
More than once a week	-0.268	0.317
Most days	-0.244	0.319
F(20, 1930) = 21.97, $p < .001$, $R^2 = .185$, N= 1951		

Table A6.19: Linear regression predicting life satisfaction – SDQ variables

	<i>B</i>	<i>S.E. B</i>
Constant	-0.004	0.016
SDQ: emotional difficulties	0.070***	0.014
SDQ: conduct problems	0.082***	0.013
SDQ: hyperactivity	0.009	0.016
SDQ: peer relationship problems	0.060***	0.009
SDQ: pro social behaviour	-0.112***	0.008
F(20, 1930) = 21.97, $p < .001$, $R^2 = .264$, N= 2009		

Table A6.20: Linear regression predicting life satisfaction – school related variables

	<i>B</i>	<i>S.E. B</i>
Constant	-0.647***	0.180
How feel about school work	-0.154***	0.014
How feel about school	-0.154***	0.013
Importance of GCSEs (ref. not important)		
Important	-0.277*	0.120
Very important	-0.293*	0.118
Parents interested in how does at school (yes)	0.290***	0.044
Parents attend parents' evenings (yes)	0.257**	0.097
Ever truanted from school (no)	0.082	0.052
How often trouble in class (ref. most/all classes)		
More than half	-0.005	0.045
About half	0.010	0.051
Now and then	0.023	0.045
Not a problem	0.129	0.095
How often misbehave at school (ref. most/all classes)		
More than half of classes	-0.042	0.116
About half of classes	-0.029	0.116
Now and then	-0.165	0.103
Not a problem	-0.149	0.106
How often physically bullied at school (ref. quite a lot/a lot)		
Not much	0.094	0.095
Never	0.066	0.095
How often bullied in other ways at school (ref. quite a lot/a lot)		
Not much	0.117	0.075
Never	0.436***	0.076
Bully others physically at school (no)	0.017	0.075
Bully others in other ways (no)	0.084	0.062
F(21, 1871) = 45.26, $p < .001$, $R^2 = .337$, N= 1893		

Table A6.21: Linear regression predicting life satisfaction – health and risk behaviours variables

	<i>B</i>	<i>S.E. B</i>
Constant	-0.682***	0.139
Hours per day spent watching tv (ref. none/less than an hour)		
1-3 hours	-0.086	0.045
4-6 hours	-0.122*	0.059
7 or more hours	-0.062	0.112
How often exercise (ref. never)		
Less than once a week	0.145	0.139
1-2 days	0.166	0.118
3-4 days	0.302**	0.116
5-6 days	0.440***	0.119
every day	0.555***	0.115
Ever smoked cigarettes (no)	0.165*	0.075
Ever drank alcohol (no)	0.252***	0.040
Whether drink alcohol regularly (no)	0.075	0.081
F(11, 1940) = 13.81, $p < .001$, $R^2 = .073$, N= 1952		

Table A6.22: Linear regression predicting life satisfaction – mother variables

	<i>B</i>	<i>S.E. B</i>
Constant	-0.332	0.224
Marital status (mother) (ref. single)		
Married	-0.100	0.060
Separated/divorced/widowed	-0.281***	0.067
Current economic activity (mother) (ref. employed)		
Unemployed	0.117	0.127
Work in home	0.117	0.103
Other	0.135	0.122
UK born (mother) (no)	-0.003	0.070
Highest qualification (mother) (ref. no qualifications)		
Other	-0.014	0.081
GCSE etc	-0.055	0.064
A-level etc	-0.141*	0.071
Other degree	-0.127	0.075
Degree	-0.113	0.073
Living with biological parents at 16 (mother) (no)	-0.036	0.045
English as first language (mother) (no)	0.105	0.078
Whether belong to a religion (mother) (no)	0.008	0.043
General health (mother) (ref. poor)		
Fair	0.088	0.095
Good	0.070	0.091
Very good	0.122	0.094
Excellent	0.248*	0.102
Long term illness or disability (mother) (yes)	-0.065	0.046
Did paid work last week (mother) (yes)	0.051	0.096
How often quarrel with children (mother) (ref. most days)		
More than once a week	-0.043	0.058
Less than once a week	0.048	0.063
Hardly ever	0.109	0.061
How often talk to about important matters with children (mother) (ref. hardly ever)		
Less than once a week	0.005	0.130
More than once a week	0.100	0.119
Most days	0.162	0.116
How often praise child (mother) (very often)	0.038	0.050
How often involve child in rule setting (mother) (ref. never)		
Seldom	-0.021	0.064
Sometimes	-0.032	0.054
Very often	-0.062	0.068
How often spank or slap child (mother) (ref. sometimes/very often)		
Seldom	-0.092	0.090
Never	-0.050	0.082
How often hug or cuddle child (mother) (ref. seldom/never)		
Sometimes	-0.025	0.109
Very often	0.144	0.104
How often yell at child (mother) (ref. very often)		
Sometimes	0.106*	0.050
Seldom	0.044	0.065
Never	-0.122	0.104

Table A5.22 continued

Perception of current financial situation (mother) (ref. very difficult)		
Quite difficult	-0.001	0.081
Getting by	0.058	0.074
Doing alright	0.131	0.077
Living comfortably	0.133	0.086
F(41,1842) = 2.92, $p < .001$, $R^2 = .061$, N= 1884		

Appendix 7: Weighted Add Health Descriptives

This appendix presents the descriptives from Chapter 9 with the addition of weighted proportions. All of the potential variables are given here, only those included in the analysis were given in Chapter 9.

Descriptives for all potential predictor variables

Table A7.1 shows the demographic characteristics of the respondent children and their parents. These are very similar to those used in previous chapters, with the exception of the reported education level of the parent which is included because of the association between parental education and child outcomes, as well as it being a potential indicator of how education is considered in the household.

Table A7.1: Independent variables, wave 1 demographic variables

Question	Possible Responses						Missing
Age	12 168 (4.58%) .047	13 725 (19.77%) .223	14 882 (24.05%) .250	15 919 (25.05%) .239	16 893 (24.35%) .223	17 79 (2.15%) .018	2 (0.05%) .001
Gender	Male 1713 (46.70%) .497			Female 1955 (53.30%) .503			0
Ethnicity	White 2346 (63.96%) .718	African American 824 (22.46%) .142	Native American 125 (3.41%) .034	Asian 140 (3.82%) .034	Other 224 (6.11%) .069		9 (0.25%) .002
Ethnicity the same as reporting parent	Yes 2050 (55.89%) .629			No 1070 (29.17%) .223			548 (14.94%) .148
Reporting parent born in the USA	Yes 2982 (81.30%) .820			No 335 (9.13%) .093			351 (9.57%) .086
Ethnicity of reporting parent	White 2393 (65.24%) .730	African American 695 (18.95%) .124	Native American 50 (1.36%) .014	Asian 95 (2.59%) .021		435 (11.86%) .112	
Marital status of reporting parent	Single/never married 209 (5.70%) .054	Married 2379 (64.86%) .666	Widowed 105 (2.86%) .026	Divorced 470 (12.81%) .129	Separated 160 (4.36%) .041		345 (9.41%) .085
Marital status of reporting parent (binary)	Single 944 (25.74%) .249			Married 2379 (64.86%) .666			345 (9.41%) .085
Reporting parent education level	Below high school 445 (12.13%) .136	High school or equivalent 1000 (27.26%) .292	Post high school (not college grad) 975 (26.58%) .272	College graduate 532 (14.50%) .131	Beyond college 359 (9.79%) .081		357 (9.73%) .089
Reporting parent disabled	Yes 175 (4.77%) .047			No 3144 (85.71%) .867			349 (9.51%) .086

Table A7.2 gives detail regarding the neighbourhood in which the child lives, giving some idea of the environment in which they are developing.

Table A7.2: Independent variables, wave 1 neighbourhood context variables

Question	Possible Responses			Missing
Urbanicity	Completely urban 1858 (50.65%) .525		Not completely urban 1781 (48.56%) .467	29 (0.79%) .008
Dispersion in household income	Min. -0.30, Max. 0.07, S.D. 0.04 (Min. 0.62, Max. 0.99, Mean 0.92)			159 (4.33%) .046
Proportion of persons with income below the poverty level	Low 2058 (56.11%) .567	Medium 823 (22.44%) .234	High 758 (20.67%) .191	29 (0.79%) .008
Unemployment rate	Low 1963 (53.52%) .543	Medium 861 (23.47%) .232	High 743 (20.26%) .196	101 (2.75%) .030

Table A7.3 gives the available variables relating to the school a child attends and their relationship with schooling, for example how often they miss school with or without a valid reason. Whether a child has ever skipped or repeated a grade reflects one of the differences between US and English education. Very few children had skipped a grade, more had repeated a grade. A (perhaps) surprisingly large number of children had been suspended from school at some point. The overall grade variable was created by summing the responses for the most recent grade variables. A higher score indicates a poorer overall grade. Grades are self-reported, rather than coming from an administrative source as with the MCS. These variables combine to give a good overall picture of children's relationships with school.

Table A7.3: Independent variables, wave 1 school related variables

Question	Possible Responses						Missing
School grade	7 th 841 (22.93%) .259	8 th 847 (23.09%) .237	9 th 886 (24.15%) .239	10 th 823 (22.44%) .205	11 th 265 (7.22%) .059	12 th 0	6 (0.16%) .002
Frequency of excused absence from school	Never 416 (11.34%) .109	1 or 2 times 1156 (31.52%) .310	3 to 10 times 1639 (44.68%) .448	More than 10 times 449 (12.24%) .131			8 (0.22%) .002
Frequency of skipping school	Min. -.963, Max. 98.036, SD. 4.456 (Min. 0, Max. 99, Mean .963)						11 (0.30%) .004
Ever skipped a grade	Yes 75 (2.04%) .017			No 3588 (97.82%) .982			5 (0.14%) .001
Ever repeated a grade	Yes 597 (16.28%) .164			No 3066 (83.59%) .835			5 (0.14%) .002
Ever been suspended	Yes 860 (23.45%) .235			No 2803 (76.42%) .763			5 (0.14%) .001
Ever been expelled	Yes 125 (3.41%) .037			No 3540 (96.51%) .963			3 (0.08%) .000
Most recent grade: English	A 1074 (29.28%) .287	B 1371 (37.38%) .365	C 799 (21.78%) .228	D or lower 357 (9.73%) .100		67 (1.83%) .020	
Most recent grade: Maths	A 1023 (27.89%) .276	B 1179 (32.14%) .328	C 866 (23.61%) .231	D or lower 515 (14.04%) .144		85 (2.32%) .021	

Table A7.3 continued

Most recent grade: History	A 1211 (33.02%) .325	B 1082 (29.50%) .296	C 659 (17.97%) .179	D or lower 364 (9.92%) .101	352 (9.60%) .099
Most recent grade: Science	A 1167 (31.82%) .319	B 1138 (31.03%) .306	C 757 (20.64%) .210	D or lower 377 (10.28%) .108	229 (6.24%) .057
Overall grade	Min. -4.42, Max. 7.58, S.D. 2.99 (Min. 4, Max. 16, Mean 8.42)				559 (15.24%) .146
Overall grade (excluding history)					

Table A7.4 gives the health and risk behaviours variables available in the dataset. Most children reported being in good health with few having missed school regularly because of health problems, but over 16% had needed but not obtained medical attention at some point.

Table A7.4: Independent variables, wave 1 health and risk behaviours variables

Question	Possible Responses					Missing
Child health	Excellent 1057 (28.82%) .281	Very good 1515 (41.30%) .407	Good 860 (23.45%) .241	Fair 216 (5.89%) .065	Poor 18 (0.49%) .006	2 (0.05%) 0
Child health (binary)	Good-Excellent 3432 (93.57%) .929		Fair/poor 234 (6.38%) .071			2 (0.05%) 0
Have nothing for breakfast	Yes 596 (16.25%) .163		No 3069 (83.67%) .836			3 (0.08%) 0
Needed but did not get medical attention	Yes 618 (16.85%) .159		No 3047 (83.07%) .839			3 (0.08%) 0
Health caused school absence	Never 2414 (65.81%) .661	A few times 1109 (30.23%) .299	About once a week 110 (3.00%) .031	Almost every day 18 (0.49%) .004	Every day 5 (0.14%) .001	12 (0.33%) .004
Health caused school absence (binary)	Yes 1242 (33.86%) .335		No 2414 (65.81%) .661			12 (0.33%) .004
Does child report getting enough sleep	Yes 2801 (76.36%) .775		No 863 (23.53%) .224			4 (0.11%) .001
Learned about proper diet	Yes 3225 (87.92%) .879		No 437 (11.91%) .119			6 (0.16%) .002
Learned the importance of exercise	Yes 3395 (92.56%) .924		No 266 (7.25%) .074			7 (0.19%) .002

Table A7.4 continued

Learned about smoking	Yes 3408 (92.91%) .928	No 255 (6.95%) .070	5 (0.14%) .002
Learned about obesity	Yes 2097 (57.17%) .568	No 1565 (42.67%) .430	6 (0.16%) .002
Learned about drinking	Yes 3464 (94.44%) .944	No 199 (5.43%) .054	5 (0.14%) .002
Learned about drug abuse	Yes 3519 (95.94%) .958	No 144 (3.93%) .041	5 (0.14%) .002
Learned about pregnancy	Yes 3102 (84.57%) .832	No 555 (15.13%) .165	11 (0.30%) .003
Learned about AIDs	Yes 3362 (91.66%) .915	No 299 (8.15%) .083	7 (0.19%) .002
Learned about strangers	Yes 2831 (77.18%) .771	No 830 (22.63%) .227	7 (0.19%) .002
Ever smoked a cigarette	Yes 1841 (50.19%) .512	No 1803 (49.15%) .481	24 (0.65%) .008
Drink alcohol more than 2-3 times	Yes 1764 (48.09%) .488	No 1874 (51.09%) .503	30 (0.82%) .009

Table A7.5 reports the characteristics of the child's reporting parent and household, only available in wave 1. These variables refer to the health and medical care of the parent, as well as their reported happiness, religion and financial situation.

Table A7.5: Independent variables, wave 1 reporting parent and household characteristics

Question	Possible Responses				Missing	
Reporting parent happy	Yes 3202 (87.30%) .879		No 114 (3.11%) .034		352 (9.60%) .087	
Receiving benefits	Yes 299 (8.15%) .088		No 3015 (82.20%) .824		354 (9.65%) .088	
Frequency attend religious service	Once per week or more 1320 (35.99%) .342	At least once a month 637 (17.37%) .177	Less than once a month 775 (21.13%) .216	Never 380 (10.36%) .119	556 (15.16%) .146	
Importance of religion	Very important 2103 (57.33%) .555	Fairly important 843 (22.98%) .249	Fairly unimportant 138 (3.76%) .043	Not important at all 28 (0.76%) .008	556 (15.16%) .146	
Enough money for bills	Yes 2705 (73.75%) .754		No 542 (14.78%) .142		421 (11.48%) .104	
Health	Excellent 759 (20.69%) .203	Very good 1156 (31.52%) .320	Good 976 (26.61%) .267	Fair 333 (9.08%) .095	Poor 100 (2.73%) .031	344 (9.38%) .085
Health (binary)	Fair/poor 433 (11.80%) .126		Good-Excellent 2891 (78.82%) .789		344 (9.38%) .085	
Obtaining medical care for family	Very easy 2196 (59.87%) .606	Somewhat easy 681 (18.57%) .182	Somewhat hard 264 (7.20%) .072	Very hard 177 (4.83%) .054	350 (9.54%) .086	
Obtaining medical care for family (binary)	Easy 2877 (78.44%) .788		Hard 441 (12.02%) .126		350 (9.54%) .086	

Table A7.6 gives information about the financial situation of the reporting child, whether they have a paid job and receive an allowance. Approximately half of children report being in employment, with a similar number receiving an allowance.

Table A7.6: Independent variables, wave 1 child money variables

Question	Possible Responses		Missing
Does child work for pay	Yes 1882 (51.31%) .527	No 1775 (48.39%) .470	11 (0.30%) .003
How much weekly allowance do you get? (\$)	Min. -6.68, Max. 83.32, S.D. 9.14 (Min. 0, Max. 90, Mean 6.68)		44 (1.20%) .011
Do you get an allowance?	Yes 1999 (54.50%) .534	No 1625 (44.30%) .455	44 (1.20%) .011

Table A7.7 details the variables available in the dataset which give an overview of the child's perceptions of the neighbourhood in which they live. Most have positive feelings about their neighbourhood but a significant minority do not feel safe where they live for example. Only around one fifth of children use the recreation facilities in their neighbourhood.

Table A7.7: Independent variables, wave 1 child perceptions of neighbourhood

Question	Possible Responses					Missing
Know most people in neighbourhood	Yes		No			11 (0.30%) .003
	2777 (75.71%) .758		880 (23.99%) .239			
Stop and talk with neighbour (past month)	Yes		No			11 (0.30%) .003
	2948 (80.37%) .808		709 (19.33%) .189			
Neighbours look out for each other	Yes		No			70 (1.91%) .019
	2710 (73.88%) .739		888 (24.21%) .242			
Use recreation center in neighbourhood	Yes		No			15 (0.41%) .004
	724 (19.74%) .188		2929 (79.85%) .808			
Feel safe in neighbourhood	Yes		No			12 (0.33%) .003
	3278 (89.37%) .888		378 (10.31%) .109			
Happy living in neighbourhood	Very much	Quite a bit	Somewhat	Very little	Not at all	11 (0.30%) .003
	1343 (36.61%) .370	1276 (34.76%) .353	750 (20.45%) .197	187 (5.10%) .048	101 (2.75%) .029	

Table A7.8: Independent variables, wave 1 child social life

Question	Possible Responses				Missing
How many times did you hang out with friends in the past week	Not at all	1 or 2 times	3 or 4 times	5 or more times	2 (0.05%) 0
	352 (9.60%) .098	879 (23.96%) .231	1010 (27.54%) .277	1425 (38.85%) .394	

Table A7.9 gives the variables regarding the reporting child's perceptions of the relationship they have, primarily with their family. There are a lot of these variables and as such some may need to be simplified for the final analysis. The frequency of eating dinner with parents was included because this is often considered an important measure of children's family relationships, for example in the Health Behaviour of School-aged Children studies.

There are a high number of missing cases for the variables relating to relationships with fathers which may be due to the child not having a father, or due to other reasons, as such these cannot be included in the analysis.

Table A7.9: Independent variables, wave 1 child perceptions of relationships

Question	Possible Responses					Missing
Frequency eat dinner with parent	Min. -5.05, Max. 1.95, S.D. 2.36 (Min. 0, Max, 7, Mean 5.05)					23 (0.63%) .006
Close to Mum	Not at all 14 (0.38%) .004	Very little 81 (2.21%) .023	Somewhat 237 (6.46%) .062	Quite a bit 662 (18.05%) .181	Very much 2543 (69.33%) .695	131 (3.57%) .036
How much does your Mum care?	Not at all 10 (0.27%) .004	Very little 19 (0.52%) .005	Somewhat 62 (1.69%) .019	Quite a bit 247 (6.73%) .068	Very much 3201 (87.27%) .869	129 (3.52%) .036
Close to Dad	Not at all 34 (0.93%) .010	Very little 98 (2.67%) .030	Somewhat 297 (8.10%) .077	Quite a bit 677 (18.46%) .192	Very much 1549 (42.23%) .430	1013 (27.62%) .262
How much does your Dad care?	Not at all 8 (0.22%) .004	Very little 27 (0.74%) .008	Somewhat 84 (2.29%) .023	Quite a bit 287 (7.82%) .084	Very much 2249 (61.31%) .620	1013 (27.62%) .262
Mum warm and loving	Strongly agree 1918 (52.29%) .525	Agree 1322 (36.04%) .363	Neither 175 (4.77%) .046	Disagree 84 (2.29%) .020	Strongly disagree 37 (1.01%) .010	132 (3.60%) .037
Mum encourages independence	Strongly agree 1514 (41.28%) .396	Agree 1468 (40.02%) .410	Neither 391 (10.66%) .109	Disagree 127 (3.46%) .040	Strongly disagree 34 (0.93%) .009	134 (3.65%) .038
Mum helps to understand right and wrong	Strongly agree 1415 (38.58%) .382	Agree 1573 (42.88%) .432	Neither 351 (9.57%) .094	Disagree 157 (4.28%) .046	Strongly disagree 39 (1.06%) .010	133 (3.63%) .037

Table 7.9 continue

Satisfied with communication with mother	Strongly agree 1465 (39.94%) .399	Agree 1401 (38.20%) .384	Neither 347 (9.46%) .097	Disagree 246 (6.71%) .063	Strongly disagree 76 (2.07%) .020	133 (3.63%) .037
Satisfied with relationship with mother	Strongly agree 1873 (51.06%) .510	Agree 1303 (35.52%) .361	Neither 189 (5.15%) .050	Disagree 124 (3.38%) .032	Strongly disagree 47 (1.28%) .011	132 (3.60%) .037
Dad warm and loving	Strongly agree 1172 (31.95%) .323	Agree 1079 (29.42%) .301	Neither 258 (7.03%) .072	Disagree 98 (2.67%) .028	Strongly disagree 45 (1.23%) .014	1016 (27.70%) .262
Satisfied with communication with father	Strongly agree 961 (26.20%) .267	Agree 1131 (30.83%) .311	Neither 278 (7.58%) .079	Disagree 214 (5.83%) .061	Strongly disagree 66 (1.80%) .019	1018 (27.75%) .263
Satisfied with relationship with father	Strongly agree 1156 (31.52%) .321	Agree 1101 (30.02%) .304	Neither 209 (5.70%) .062	Disagree 139 (3.79%) .038	Strongly disagree 46 (1.25%) .012	1017 (27.73%) .263
Adults care about you	Not at all 28 (0.76%) .010	Very little 75 (2.04%) .021	Somewhat 329 (8.97%) .091	Quite a bit 1099 (29.96%) .302	Very much 2122 (57.85%) .573	15 (0.41%) .004
Parents care about you	Not at all 15 (0.41%) .005	Very little 26 (0.71%) .006	Somewhat 81 (2.21%) .023	Quite a bit 370 (10.09%) .100	Very much 3166 (86.31%) .863	10 (0.27%) .003
Friends care about you	Not at all 19 (0.52%) .007	Very little 68 (1.85%) .021	Somewhat 439 (11.97%) .117	Quite a bit 1533 (41.79%) .427	Very much 1599 (43.59%) .426	10 (0.27%) .003
Family understand you	Not at all 94 (2.56%) .025	Very little 307 (8.37%) .087	Somewhat 1092 (29.77%) .292	Quite a bit 1347 (36.72%) .366	Very much 817 (22.27%) .228	11 (0.30%) .003
Want to leave home	Not at all 1800 (49.07%) .506	Very little 830 (22.63%) .217	Somewhat 595 (16.22%) .160	Quite a bit 261 (7.12%) .066	Very much 164 (4.47%) .045	18 (0.49%) .006

Table 7.9 continued

Family has fun together	Not at all 79 (2.15%) .021	Very little 277 (7.55%) .078	Somewhat 891 (24.29%) .245	Quite a bit 1352 (36.86%) .363	Very much 1052 (28.68%) .288	17 (.046%) .005
Family pays attention to you	Not at all 36 (0.98%) .010	Very little 198 (5.40%) .056	Somewhat 770 (20.99%) .214	Quite a bit 1448 (39.48%) .388	Very much 1206 (32.88%) .329	10 (0.27%) .003

Table A7.10 gives the variables relating to the child's own perception of their intelligence and their performance on the Picture Vocabulary Test which is a shortened version of the Peabody Picture Vocabulary Test which provides a measure of verbal abilities. The below average response to the intelligence question includes moderately and slightly below average, above average includes slightly and moderately above average.

Table A7.10: Independent variables, wave 1 child intelligence

Question	Possible Responses				Missing
Picture vocabulary test score	Min -75.68, Max. 37.32, S.D. 14.33 (Min. 26, Max. 139, Mean 101.68)				137 (3.74%) .039
Perception of own intelligence	Below average 213 (5.81%) .067	Average 1377 (37.54%) .391	Above average 1827 (49.81%) .481	Extremely above average 242 (6.60%) .059	9 (0.25%) .002

Table A7.11: Independent variables, wave 1 child school perceptions

Question	Possible Responses					Missing
Feel close to people at school	Strongly agree 763 (20.80%) .204	Agree 1797 (48.99%) .503	Neither 703 (7.96%) .184	Disagree 292 (7.96%) .078	Strongly disagree 109 (2.97%) .031	4 (0.11%) .001
Feel part of your school	Strongly agree 1035 (28.22%) .281	Agree 1792 (48.85%) .486	Neither 467 (12.73%) .129	Disagree 271 (7.39%) .074	Strongly disagree 99 (2.70%) .029	4 (0.11%) .001

Table 7.11 continued

Students at school are prejudiced	Strongly agree 448 (12.21%) .121	Agree 952 (25.95%) .265	Neither 886 (24.15%) .247	Disagree 960 (26.17%) .262	Strongly disagree 410 (11.18%) .099	12 (0.33%) .005
Happy at your school	Strongly agree 968 (26.39%) .266	Agree 1545 (42.12%) .426	Neither 601 (16.38%) .159	Disagree 361 (9.84%) .097	Strongly disagree 187 (5.10%) .050	6 (0.16%) .002
Teachers treat students fairly	Strongly agree 640 (17.45%) .174	Agree 1508 (41.11%) .418	Neither 839 (22.87%) .224	Disagree 517 (14.09%) .142	Strongly disagree 160 (4.36%) .041	4 (0.11%) .001
Feel safe in your school	Strongly agree 948 (25.85%) .258	Agree 1685 (45.94%) .466	Neither 586 (15.98%) .157	Disagree 333 (9.08%) .085	Strongly disagree 111 (3.03%) .033	5 (0.14%) .002
Teachers care about you	Not at all 122 (3.33%) .041	Very little 333 (9.08%) .088	Somewhat 1220 (33.26%) .339	Quite a bit 1339 (36.50%) .354	Very much 634 (17.28%) .172	20 (0.55%) .007
Have trouble getting along with teachers	Never 1388 (37.84%) .380	A few times 1613 (43.97%) .433	Once a week 346 (9.43%) .098	Almost every day 204 (5.56%) .055	Every day 113 (3.08%) .033	4 (0.11%) .001
Have trouble paying attention in school	Never 927 (25.27%) .253	A few times 1735 (47.30%) .469	Once a week 564 (15.38%) .156	Almost every day 320 (8.72%) .088	Every day 118 (3.22%) .034	4 (0.11%) .001
Have trouble getting homework done	Never 1142 (31.13%) .307	A few times 1549 (42.23%) .419	Once a week 558 (15.21%) .157	Almost every day 290 (7.91%) .079	Every day 125 (3.41%) .037	4 (0.11%) .001
Have trouble getting along with other students	Never 1391 (37.92%) .372	A few times 1674 (45.64%) .460	Once a week 316 (8.62%) .087	Almost every day 174 (4.74%) .047	Every day 109 (2.97%) .033	4 (0.11%) .001

Table 7.11 continued

How much do you want to go to college	1 (Low) 94 (2.56%) .030	2 73 (1.99%) .021	3 316 (8.62%) .092	4 460 (12.54%) .124	5 (High) 2715 (74.02%) .730	10 (0.27%) .003				
How likely do you think it is that you will go to college	1 (Low) 133 (3.63%) .043	2 130 (3.54%) .039	3 477 (13.00%) .138	4 843 (22.98%) .240	5 (High) 2073 (56.52%) .536	12 (0.33%) .003				
Disparity between wanting to go and likelihood of going to college	-4 3 (0.08%) .001	-3 5 (0.14%) .002	-2 36 (0.98%) .010	-1 211 (5.75%) .055	0 2367 (64.53%) .625	1 794 (21.65%) .230	2 194 (5.29%) .060	3 24 (0.65%) .007	4 22 (0.60%) .008	12 (0.33%) .003
	Min. -4.28, Max. 3.72, S.D. 0.79 (Min. -4, Max. 4, Mean 0.28)									

Table A7.12 gives demographic variables. The marital status of parents is not included at wave 2, nor is education level. There are again a high number of missing cases for father variables, likely due to the specification of resident father in the question.

Table A7.12: Independent variables, wave 2 demographic variables

Question	Possible Responses						Missing
Age	12 0	13 229 (6.24%) .065	14 735 (20.04%) .223	15 883 (24.07%) .253	16 938 (25.57%) .242	17 882 (24.05%) .217	1 (0.03%) 0
Resident mother disabled	Yes 160 (4.36%) .046			No 3372 (91.93%) .918			136 (3.71%) .037
Resident father disabled	Yes 155 (4.23%) .045			No 2580 (70.34%) .718			933 (25.44%) .237
Respondent physically disabled	Yes 17 (0.46%) .005			No 3648 (99.45%) .994			3 (0.08%) .001

Table A7.13: Independent variables, wave 2 neighbourhood context variables

Question	Possible Responses			Missing
Urbanicity	Completely urban 1838 (50.11%) .518	Not completely urban 1781 (48.56%) .470		49 (1.34%) .012
Dispersion in household income	Min. -0.30, Max. 0.07, S.D. 0.04 (Min. 0.62, Max. 0.99, Mean 0.92)			174 (4.74%) .048
Proportion of persons with income below the poverty level	Low 2057 (56.08%) .567	Medium 818 (22.30%) .235	High 744 (20.28%) .186	49 (1.34%) .012
Unemployment rate	Low 1953 (53.24%) .543	Medium 861 (23.47%) .232	High 731 (19.93%) .191	123 (3.35%) .035

Table A7.14: Independent variables, wave 2 school related variables

Question	Possible Responses						Missing	
School grade	7 th 24 (0.65%) .006	8 th 820 (22.36%) .257	9 th 878 (23.94%) .249	10 th 864 (23.56%) .225	11 th 810 (22.08%) .202	12 th 266 (7.25%) .059	6 (0.16%) .003	
Frequency of excused absence from school	Never 429 (11.70%) .116		1 or 2 times 1153 (31.43%) .311		3 to 10 times 1636 (44.60%) .447		More than 10 times 448 (12.21%) .126	2 (0.05%) 0
Frequency of skipping school	Min. -1.17, Max. 68.83, S.D. 4.15 (Min. 0, Max. 70, Mean 1.17)						4 (0.11%) 0	
Ever been suspended	Yes 436 (11.89%) .121			No 3232 (88.11%) .879			0	
Ever been expelled	Yes 62 (1.69%) .016			No 3606 (98.31%) .984			0	
Most recent grade: English	A 1050 (28.63%) .289	B 1369 (37.32%) .353	C 789 (21.51%) .225	D or lower 363 (9.90%) .103		97 (2.64%) .030		
Most recent grade: Maths	A 937 (25.55%) .254	B 1071 (29.20%) .293	C 877 (23.91%) .234	D or lower 533 (14.53%) .154		250 (6.82%) .065		
Most recent grade: History	A 1136 (30.97%) .313	B 1037 (28.27%) .276	C 715 (19.49%) .199	D or lower 317 (8.64%) .089		463 (12.63%) .123		
Most recent grade: Science	A 1037 (28.27%) .282	B 1105 (30.13%) .300	C 750 (20.45%) .201	D or lower 395 (10.77%) .112		381 (10.39%) .105		
Overall grade	Min. -4.50, Max. 7.50, S.D. 2.98 (Min. 4, Max. 16, Mean 8.50)						847 (23.09%) .223	

Table A7.15: Independent variables, wave 2 health and risk behaviours variables

Question	Possible Responses					Missing
Child health	Excellent 1104 (30.10%) .296	Very good 1488 (40.57%) .399	Good 873 (23.80%) .247	Fair 199 (5.43%) .057	Poor 4 (0.11%) .001	0
Child health (binary)	Good-Excellent 3465 (94.47%) .942		Fair/poor 203 (5.53%) .058			0
Needed but did not get medical attention	Yes 677 (18.46%) .179		No 2990 (81.52%) .821			1 (0.03%) 0
Health caused school absence	Never 1240 (33.81%) .340	A few times 1217 (33.18%) .333	About once a week 94 (2.56%) .030	Almost every day 15 (0.41%) .005	Every day 4 (0.11%) .002	1098 (29.93%) .290
Health caused school absence (binary)	Yes 1330 (36.26%) .370		No 1240 (33.81%) .340			1098 (29.93%) .290
Health limits attending school	Yes 178 (4.85%) .052		No 3484 (94.98%) .947			6 (0.16%) .002
Does child report getting enough sleep	Yes 2648 (72.19%) .733		No 1019 (27.78%) .267			1 (0.03%) 0
Ever smoked a cigarette	Yes 1535 (41.85%) .436		No 2110 (57.52%) .436			23 (0.63%) .007
Drink alcohol more than 2-3 times since last interview	Yes 1630 (44.44%) .458		No 2010 (54.80%) .535			28 (0.76%) .007

Table A7.16: Independent variables, wave 2 child money variables

Question	Possible Responses		Missing
Does child work for pay	Yes 1965 (53.57%) .553	No 1698 (46.29%) .446	5 (0.14%) .001
How much weekly allowance do you get? (\$)	Min. -7.63, Max. 82.37, S.D. 10.75 (Min. 0, Max. 90, Mean 7.63)		42 (1.15%) .011
Do you get an allowance?	Yes 1934 (52.73%) .511	No 1692 (46.13%) .479	42 (1.15%) .011

Table A7.17: Independent variables, wave 2 child perceptions of neighbourhood

Question	Possible Responses					Missing
Know most people in neighbourhood	Yes 2751 (75.00%) .755	No 911 (24.84%) .243				6 (0.16%) .001
Stop and talk with neighbour (past month)	Yes 2938 (80.10%) .799	No 724 (19.74%) .199				6 (0.16%) .001
Neighbours look out for each other	Yes 2645 (72.11%) .725	No 975 (26.58%) .260				48 (1.31%) .015
Use recreation center in neighbourhood	Yes 714 (19.47%) .189	No 2946 (80.32%) .810				8 (0.22%) .002
Feel safe in neighbourhood	Yes 3279 (89.39%) .894	No 379 (10.33%) .104				10 (0.27%) .002
Happy living in neighbourhood	Very much 1271 (34.65%) .348	Quite a bit 1300 (35.44%) .353	Somewhat 777 (21.18%) .210	Very little 200 (5.45%) .056	Not at all 114 (3.11%) .032	6 (0.16%) .001

Table A7.18: Independent variables, wave 2 child social life

Question	Possible Responses				Missing
How many times did you hang out with friends in the past week	Not at all 220 (6.00%) .057	1 or 2 times 850 (23.17%) .226	3 or 4 times 1061 (28.93%) .287	5 or more times 1537 (41.90%) .430	0

Table A7.19 gives the relationship perception variables. New variables included relate to the child's perception of the level of disappointment parents would express if they did not graduate from college or high school. These are included as a gauge of the pressure or support children may experience in their academic life. This effect may be contradictory, with parents who would be highly disappointed by their child not graduating might express this through support, or equally through pressure. Likewise, parents who are felt to be less likely to be disappointed may hypothetically be completely disinterested and unsupportive of their child, or potentially laid back about their child's academic career which may positively affect the child as they experience less pressure.

Again there are a high number of missing cases for variables relating to relationships with fathers. The questionnaire suggests that the majority of these cases are cases where the father is not present in the household, and therefore the question has been skipped. However the coding of the variable means that it is not possible to identify whether missing cases are due to the father being absent or the child refusing to answer the questions, and so again they cannot be included.

Table A7.19: Independent variables, wave 2 child perceptions of relationships

Question	Possible Responses					Missing
Frequency eat dinner with parent	Min. -4.84, Max. 2.16, S.D. 2.37 (Min. 0, Max. 7, Mean 4.84)					33 (0.90%) .008
Close to Mum	Not at all 30 (0.82%) .007	Not very 70 (1.91%) .021	Somewhat 333 (9.08%) .087	Quite close 1102 (30.04%) .312	Extremely close 2001 (54.55%) .536	132 (3.60%) .037
How much does your Mum care?	Not at all 4 (0.11%) .001	Very little 83 (2.26%) .026	Somewhat 59 (1.61%) .016	Quite a bit 296 (8.07%) .081	Very much 3093 (84.32%) .839	133 (3.63%) .037
Talked to mum about personal problem	Yes 1464 (39.91%) .388		No 2072 (56.49%) .576			132 (3.60%) .036
Close to Dad	Not at all 70 (1.91%) .021	Not very 132 (3.60%) .035	Somewhat 478 (13.03%) .131	Quite close 939 (25.60%) .266	Extremely close 1118 (30.48%) .311	931 (25.38%) .237
How much does your Dad care?	Not at all 8 (0.22%) .002	Very little 79 (2.15%) .024	Somewhat 119 (3.24%) .034	Quite a bit 417 (11.37%) .123	Very much 2109 (57.50%) .579	936 (25.52%) .238
Talked to dad about personal problem	Yes 555 (15.13%) .146		No 2182 (59.49%) .618			931 (25.38%) .237
Mum warm and loving	Strongly agree 1780 (48.53%) .485	Agree 1406 (38.33%) .388	Neither 227 (6.19%) .056	Disagree 87 (2.37%) .026	Strongly disagree 29 (0.79%) .007	139 (3.79%) .038
Mum encourages independence	Strongly agree 1518 (41.38%) .390	Agree 1486 (40.51%) .418	Neither 373 (10.17%) .111	Disagree 120 (3.27%) .034	Strongly disagree 29 (0.79%) .009	142 (3.87%) .039

Table A7.19 continued

Mum helps to understand right and wrong	Strongly agree 1230 (33.53%) .326	Agree 1652 (45.04%) .454	Neither 415 (11.31%) .115	Disagree 195 (5.32%) .057	Strongly disagree 39 (1.06%) .011	137 (3.74%) .038
Satisfied with communication with mother	Strongly agree 1312 (35.77%) .357	Agree 1490 (40.62%) .413	Neither 413 (11.26%) .110	Disagree 246 (6.71%) .064	Strongly disagree 71 (1.94%) .019	136 (3.71%) .037
Satisfied with relationship with mother	Strongly agree 1681 (45.83%) .460	Agree 1438 (39.20%) .398	Neither 229 (6.24%) .056	Disagree 133 (3.63%) .036	Strongly disagree 48 (1.31%) .012	139 (3.79%) .038
Dad warm and loving	Strongly agree 1155 (31.49%) .318	Agree 1153 (31.43%) .319	Neither 275 (7.50%) .081	Disagree 105 (2.86%) .033	Strongly disagree 47 (1.28%) .012	933 (25.44%) .237
Satisfied with communication with father	Strongly agree 833 (22.71%) .236	Agree 1191 (32.47%) .329	Neither 364 (9.92%) .103	Disagree 267 (7.28%) .075	Strongly disagree 79 (2.15%) .020	934 (25.46%) .238
Satisfied with relationship with father	Strongly agree 1039 (28.33%) .287	Agree 1178 (32.12%) .332	Neither 265 (7.22%) .072	Disagree 187 (5.10%) .055	Strongly disagree 65 (1.77%) .017	934 (25.46%) .238
Adults care about you	Not at all 22 (0.60%) .007	Very little 107 (2.92%) .031	Somewhat 302 (8.23%) .090	Quite a bit 955 (26.04%) .268	Very much 2261 (61.64%) .599	21 (0.57%) .006
Parents care about you	Not at all 20 (0.55%) .006	Very little 66 (1.80%) .020	Somewhat 95 (2.59%) .026	Quite a bit 398 (10.85%) .114	Very much 3076 (83.86%) .831	13 (0.35%) .003
Friends care about you	Not at all 23 (0.63%) .006	Very little 63 (1.72%) .018	Somewhat 417 (11.37%) .118	Quite a bit 1286 (35.06%) .353	Very much 1859 (50.68%) .499	20 (0.54%) .006
Family understand you	Not at all 139 (3.79%) .039	Very little 315 (8.59%) .085	Somewhat 1148 (31.30%) .314	Quite a bit 1210 (32.99%) .330	Very much 841 (22.93%) .228	15 (0.41%) .004

Table A7.19 continued

Want to leave home	Not at all 1651 (45.01%) .465	Very little 729 (19.87%) .200	Somewhat 712 (19.41%) .187	Quite a bit 314 (8.56%) .082	Very much 236 (6.43%) .060	26 (0.71%) .007
Family has fun together	Not at all 114 (3.11%) .032	Very little 326 (8.89%) .089	Somewhat 989 (26.96%) .279	Quite a bit 1226 (33.42%) .333	Very much 998 (27.21%) .264	15 (0.41%) .004
Family pays attention to you	Not at all 45 (1.23%) .010	Very little 178 (4.85%) .050	Somewhat 768 (20.94%) .217	Quite a bit 1452 (39.59%) .400	Very much 1207 (32.91%) .318	18 (0.49%) .005
Mum disappointment if child does not graduate from college	Low 191 (5.21%) .056	2 177 (4.83%) .050	3 589 (16.06%) .161	4 626 (17.07%) .177	High 1938 (52.84%) .513	147 (4.01%) .043
Talked with mum about school work and grades in last 4 weeks	Yes 2536 (69.14%) .682			No 1000 (27.26%) .282		132 (3.60%) .036
Talked with mum about other school in last 4 weeks	Yes 2294 (62.54%) .620			No 1242 (33.86%) .344		132 (3.60%) .036
Dad disappointment if child does not graduate from college	Low 171 (4.66%) .050	2 156 (4.25%) .045	3 470 (12.81%) .134	4 507 (13.82%) .151	High 1422 (38.77%) .379	942 (25.68%) .241
Talked with dad about school work and grades in last 4 weeks	Yes 1629 (44.41%) .443			No 1108 (30.21%) .321		931 (25.38%) .237
Talked with dad about other school in last 4 weeks	Yes 1456 (39.69%) .398			No 1456 (39.69%) .365		931 (25.38%) .237

Table A7.20: Independent variables, wave 2 child intelligence

Question	Possible Responses				Missing
Perception of own intelligence	Below average 182 (4.96%) .053	Average 1317 (35.91%) .371	Above average 1902 (51.85%) .510	Extremely above average 260 (7.09%) .064	7 (0.19%) .002

Table A7.21: Independent variables, wave 2 child school perceptions

Question	Possible Responses					Missing
Feel close to people at school	Strongly agree 680 (18.54%) .192	Agree 1777 (48.45%) .483	Neither 762 (20.77%) .207	Disagree 341 (9.30%) .089	Strongly disagree 106 (2.89%) .028	2 (0.05%) 0
Feel part of your school	Strongly agree 984 (26.83%) .273	Agree 1721 (46.92%) .464	Neither 584 (15.92%) .156	Disagree 273 (7.44%) .077	Strongly disagree 102 (2.78%) .028	4 (0.11%) .001
Students at school are prejudiced	Strongly agree 406 (11.07%) .118	Agree 1008 (27.48%) .285	Neither 1083 (29.53%) .303	Disagree 807 (22.00%) .199	Strongly disagree 354 (9.65%) .091	10 (0.27%) .004
Happy at your school	Strongly agree 924 (25.19%) .261	Agree 1535 (41.85%) .416	Neither 676 (18.43%) .179	Disagree 335 (9.13%) .090	Strongly disagree 196 (5.34%) .054	2 (0.05%) .001
Teachers treat students fairly	Strongly agree 522 (14.23%) .145	Agree 1538 (41.93%) .421	Neither 872 (23.77%) .232	Disagree 597 (16.28%) .165	Strongly disagree 137 (3.74%) .036	2 (0.05%) 0
Feel safe in your school	Strongly agree 959 (26.15%) .258	Agree 1689 (46.05%) .461	Neither 632 (17.23%) .172	Disagree 284 (7.74%) .080	Strongly disagree 103 (2.81%) .029	1 (0.03%) 0
Teachers care about you	Not at all 149 (4.06%) .044	Very little 304 (8.29%) .081	Somewhat 1245 (33.94%) .346	Quite a bit 1240 (33.81%) .338	Very much 711 (19.38%) .186	19 (0.52%) .006

Table A7.21 continued

Have trouble getting along with teachers	Never 1502 (40.95%) .395	A few times 1609 (43.87%) .445	Once a week 299 (8.15%) .089	Almost every day 194 (5.29%) .052	Every day 64 (1.74%) .020	0				
Have trouble paying attention in school	Never 926 (25.25%) .248	A few times 1725 (47.03%) .477	Once a week 571 (15.57%) .155	Almost every day 342 (9.32%) .092	Every day 103 (2.81%) .028	1 (0.03%) 0				
Have trouble getting homework done	Never 1090 (29.72%) .292	A few times 1561 (42.56%) .433	Once a week 622 (16.96%) .167	Almost every day 283 (7.72%) .078	Every day 111 (3.03%) .029	1 (0.03%) 0				
Have trouble getting along with other students	Never 1456 (39.69%) .392	A few times 1703 (46.43%) .468	Once a week 271 (7.39%) .075	Almost every day 139 (3.79%) .039	Every day 98 (2.67%) .027	1 (0.03%) 0				
How much do you want to go to college	1 (Low) 123 (3.35%) .036	2 110 (3.00%) .032	3 336 (9.16%) .100	4 478 (13.03%) .136	5 (High) 2602 (70.94%) .692	19 (0.52%) .005				
How likely do you think it is that you will go to college	1 (Low) 164 (4.47%) .047	2 157 (4.28%) .049	3 491 (13.39%) .145	4 735 (20.04%) .210	5 (High) 2100 (57.25%) .541	21 (0.58%) .008				
Disparity between wanting to go and likelihood of going to college	-4 3 (0.08%) .001	-3 3 (0.08%) .001	-2 42 (1.15%) .012	-1 227 (6.19%) .064	0 2455 (66.93%) .645	1 679 (18.51%) .197	2 205 (5.59%) .063	3 20 (0.55%) .007	4 13 (0.35%) .004	21 (0.58%) .008
	Min. -4.24, Max. 3.76, S.D. 0.77 (Min. -4, Max. 4, Mean 0.24)									

The variable shown in Table 9.25 is new to wave 2 and refers to the amount of control a child feels that they have regarding their future. This is potentially interesting because of the significance of autonomy to subjective well-being and the increasing role of autonomy throughout adolescence

Table A7.22: Independent variables, wave 2 child perception of control over future

Question	Possible responses					Missing
You can pretty much determine what will happen in your life	Strongly agree 538 (14.67%) .134	Agree 1385 (37.76%) .382	Neither 1150 (31.35%) .321	Disagree 508 (13.85%) .140	Strongly disagree 71 (1.94%) .018	16 (0.44%) .006

Weighted descriptives of variables included in potential outcome variables

Table A7.23: Feelings Scale (CES-D) Wave1

How often was each of the following true during the last week?	Most/all of the time	A lot of the time	Sometimes	Never/rarely	Missing
You were bothered by things that usually don't bother you	82 (1.70%) .0153	253 (5.23%) .0527	1519 (31.42%) .3048	2967 (61.38%) .6242	13 (0.27%) .0030
You didn't feel like eating, your appetite was poor	98 (2.03%) .0206	301 (6.23%) .0608	1315 (27.20%) .2683	3111 (64.36%) .6485	9 (0.19%) .0017
You felt that you could not shake off the blues, even with help from your family and your friends	99 (2.05%) .0206	256 (5.30%) .0508	958 (19.82%) .1955	3507 (72.55%) .7300	14 (0.29%) .0032
You felt that you were just as good as other people	1743 (36.06%) .3545	1514 (31.32%) .3183	1022 (21.14%) .2134	542 (11.21%) .1111	13 (0.27%) .0027
You had trouble keeping your mind on what you were doing	209 (4.32%) .0437	609 (12.60%) .1248	2066 (42.74%) .4244	1938 (40.09%) .4048	12 (0.25) .0024
You felt depressed	138 (2.85%) .0279	316 (6.54%) .0628	1358 (28.09%) .2749	3009 (62.25%) .6307	13 (0.27%) .0027
You felt that you were too tired to do things	122 (2.52%) .0262	466 (9.64%) .0894	2183 (45.16%) .4521	2053 (42.47%) .4303	10 (0.21%) .0020
You felt hopeful about the future	1461 (30.22%) .2856	1603 (33.16%) .3418	1205 (24.93%) .2498	549 (11.36%) .1194	16 (0.33%) .0034

Table A7.23 continued

You thought your life had been a failure	60 (1.24%) .0113	114 (2.36%) .0237	560 (11.58%) .1144	4086 (84.53%) .8478	14 (0.29%) .0028
You felt fearful	47 (0.97%) .0105	112 (2.32%) .0215	1142 (23.62%) .2444	3523 (72.88%) .7216	10 (0.21%) .0020
You were happy	1806 (37.36%) .3707	2002 (41.41%) .4136	883 (18.27%) .1845	134 (2.77%) .0298	9 (0.19%) .0014
You talked less than usual	130 (2.69%) .0254	341 (7.05%) .0726	1632 (33.76%) .3396	2720 (56.27%) .5603	11 (0.23%) .0020
You felt lonely	97 (2.01%) .0185	281 (5.81%) .0583	1299 (26.87%) .2627	3144 (65.04%) .6577	13 (0.27%) .0027
People were unfriendly to you	64 (1.32%) .0119	191 (3.95%) .0408	1368 (28.30%) .2860	3202 (66.24%) .6596	9 (0.19%) .0017
You enjoyed life	2354 (48.70%) .4856	1517 (31.38%) .3141	758 (15.68%) .1547	194 (4.01%) .0436	11 (0.23%) .0020
You felt sad	92 (1.90%) .0199	236 (4.88%) .0473	1918 (39.68%) .3878	2580 (53.37%) .5438	8 (0.17%) .0012
You felt that people disliked you	79 (1.63%) .0162	214 (4.43%) .0430	1376 (28.47%) .2858	3153 (65.23%) .6528	12 (0.25%) .0022
It was hard to get started doing things	54 (1.12%) .0111	336 (6.95%) .0695	2064 (42.70%) .4273	2368 (48.99%) .4900	12 (0.25%) .0021
You felt life was not worth living	34 (0.70%) .0064	118 (2.44%) .0251	403 (8.34%) .0803	4268 (88.29%) .8862	11 (0.23%) .0020
PA scale Cronbach's alpha = 0.7184					

First line gives unweighted frequencies and percentages, the second line gives weighted proportions. Bold black = positive affect scale, bold red = depressive affect scale.

Table A7.24: Feelings Scale (CES-D) Wave 2

How often was each of the following true during the last week?	Most/all of the time	A lot of the time	Sometimes	Never/rarely	Missing
You were bothered by things that usually don't bother you	91 (1.88%) .0188	316 (6.54%) .0637	1685 (34.86%) .3422	2735 (56.58%) .5736	7 (0.14%) .0016
You didn't feel like eating, your appetite was poor	98 (2.03%) .0192	343 (7.10%) .0671	1334 (27.60%) .2720	3055 (63.20%) .6410	4 (0.08%) .0007
You felt that you could not shake off the blues, even with help from your family and your friends	103 (2.13%) .0198	285 (5.90%) .0579	1026 (21.22%) .2047	3406 (70.46%) .7137	14 (0.29%) .0038
You felt that you were just as good as other people	1803 (37.30%) .3624	1621 (33.53%) .3417	886 (18.33%) .1857	515 (10.65%) .1080	9 (0.19%) .0023
You had trouble keeping your mind on what you were doing	175 (3.62%) .0381	632 (13.07%) .1332	2156 (44.60%) .4375	1864 (38.56%) .3897	7 (0.14%) .0016
You felt depressed	134 (2.77%) .0269	298 (6.16%) .0625	1404 (29.04%) .2861	2991 (61.87%) .6230	7 (0.14%) .0016
You felt that you were too tired to do things	110 (2.28%) .0235	511 (10.57%) .1045	2224 (46.01%) .4521	1985 (41.06%) .4189	4 (0.08%) .0010
You felt hopeful about the future	1523 (31.51%) .3049	1675 (34.65%) .3471	1141 (23.60%) .2423	481 (9.95%) .1018	14 (0.29%) .0039
You thought your life had been a failure	38 (0.79%) .0091	125 (2.59%) .0257	575 (11.89%) .1197	4083 (84.46%) .8415	13 (0.27%) .0040
You felt fearful	32 (0.66%) .0075	131 (2.71%) .0279	1060 (21.93%) .2201	3606 (74.60%) .7433	5 (0.10%) .0012
You were happy	1817 (37.59%) .3713	1994 (41.25%) .4169	896 (18.54%) .1851	122 (2.52%) .0257	5 (0.10%) .0009
You talked less than usual	107 (2.21%) .0212	356 (7.36%) .0755	1814 (37.53%) .3655	2549 (52.73%) .5360	8 (0.17%) .0019
You felt lonely	90 (1.86%) .0176	279 (5.77%) .0594	1274 (26.35%) .2511	3183 (65.85%) .6696	8 (0.17%) .0022
People were unfriendly to you	45 (0.93%) .0099	173 (3.58%) .0361	1426 (29.50%) .2992	3184 (65.87%) .6532	6 (0.12%) .0016

Table A7.24 continued

You enjoyed life	2307 (47.72%) .4657	1600 (33.10%) .3403	754 (15.60%) .1557	168 (3.48%) .0373	5 (0.10%) .0009
You felt sad	81 (1.68%) .0168	237 (4.90%) .0474	1941 (40.15%) .3986	2568 (53.12%) .5356	7 (0.14%) .0016
You felt that people disliked you	55 (1.14%) .0112	150 (3.10%) .0307	1327 (27.45%) .2757	3295 (68.16%) .6807	7 (0.14%) .0017
It was hard to get started doing things	69 (1.43%) .0162	361 (7.47%) .0744	2084 (43.11%) .4243	2314 (47.87%) .4838	6 (0.12%) .0014
You felt life was not worth living	38 (0.79%) .0077	75 (1.55%) .0150	379 (7.84%) .0784	4330 (89.57%) .8952	12 (0.25%) .0037
PA scale Cronbach's alpha = 0.7298					

Table A7.25: Wave 1 Personality section questions

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Missing
You have a lot of good qualities	6 (0.12%) .0016	53 (1.10%) .0112	374 (7.74%) .0768	2584 (53.45%) .5440	1801 (37.26%) .3629	16 (0.33%) .0035
You have a lot to be proud of	10 (0.21%) .0021	90 (1.86%) .0187	354 (7.32%) .0739	2305 (47.68%) .4842	2060 (42.61%) .4180	15 (0.31%) .0032
You like yourself just the way you are	41 (0.85%) .0077	410 (8.48%) .0831	667 (13.80%) .1338	2038 (42.16%) .4289	1666 (34.46%) .3441	12 (0.25%) .0024
You feel you are doing everything just about right	37 (0.77%) .0058	432 (8.94%) .0853	1039 (21.49%) .2171	2422 (50.10%) .5036	891 (18.43%) .1857	13 (0.27%) .0026
You feel socially accepted	28 (0.58%) .0056	175 (3.62%) .0367	498 (10.30%) .0965	2715 (56.16%) .5704	1402 (29.00%) .2873	16 (0.33%) .0035
You feel loved and wanted	17 (0.35%) .0033	73 (1.51%) .0152	378 (7.82%) .0790	2289 (47.35%) .4768	2064 (42.70%) .4229	13 (0.27%) .0027
Cronbach's Alpha for scale = 0.8438						

Table A7.26: Wave 2 Personality section questions

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Missing
You have a lot of good qualities	7 (0.14%) .0012	31 (0.64%) .0070	300 (6.21%) .0599	2462 (50.93%) .5249	2021 (41.81%) .4043	13 (0.27%) .0027
You have a lot to be proud of	9 (0.19%) .0016	57 (1.18%) .0129	313 (6.47%) .0657	2200 (45.51%) .4678	2243 (46.40%) .4487	12 (0.25%) .0033
You like yourself just the way you are	50 (1.03%) .0106	341 (7.05%) .0716	596 (12.33%) .1198	2070 (42.82%) .4376	1768 (36.57%) .3582	9 (0.19%) .0023
You feel you are doing everything just about right	39 (0.81%) .0074	328 (6.79%) .0702	912 (18.87%) .1816	2437 (50.41%) .5120	1105 (22.86%) .2256	13 (0.27%) .0033
You feel socially accepted	30 (0.62%) .0066	113 (2.34%) .0254	481 (9.95%) .0975	2566 (53.08%) .5367	1631 (33.74%) .3306	13 (0.27%) .0032
You feel loved and wanted	9 (0.19%) .0018	77 (1.59%) .0161	285 (5.90%) .0587	2274 (47.04%) .4750	2176 (45.01%) .4452	13 (0.27%) .0032
Cronbach's Alpha for scale = 0.8541						

Appendix 8: Preliminary analysis of Add Health

Preliminary analysis results and discussion

This appendix presents the results of the preliminary analysis run on the Add Health dataset. The Bonferroni correction was applied to the results as 4 outcomes (resulting in a cut-off p value of 0.0125) were being predicted simultaneously, those coefficients that were significant at $p < .05$ but not at $p < .0125$ are highlighted in yellow.

Results are shown below in Tables A8.1- A8.13.

Table A8.1: Wave 2 demographic variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	0.878**	.331	0.403	.342	1.637***	.253	1.592***	.256
Age	-0.047*	.020	-0.027	.020	-0.079***	.016	-0.078***	.016
Gender (female)	-0.098*	.039	0.011	.040	-0.259***	.033	-0.240***	.033
Mother disabled (yes)	-0.188	.101	-0.101	.096	-0.215	.111	-0.223	.113
Child disabled (yes)	0.388*	.187	0.465**	.342	0.068	.231	0.088	.225
Model stats	n = 3519 F(4, 127) = 3.83, $p < .01$ R ² = .008 p=.0057		n = 3507 F(4, 127) = 2.69, $p < .05$ R ² = .003 p=.0341		n = 3514 F(4, 127) = 22.27, $p < .001$ R ² = .028 p=.0000		n = 3514 F(4, 127) = 19.63, $p < .001$ R ² = .026 p=.0000	

In the Feelings Scale models very little was significant once the Bonferroni correction had been applied. In the model based on the factor only whether the child reported being disabled was significant, perhaps unexpectedly the result was significant, suggesting that children who are disabled report higher well-being than those who do not report being disabled. It should be noted that very few children reported being physically disabled which may account for this result. For the variables based on the personality questions age and gender are significant, with girls reporting lower well-being than boys and well-being decreasing with age as would be expected and has been found in previous analyses.

Table A8.2: Wave 2 neighbourhood context variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-0.025	.073	-0.027	.075	-0.146*	.073	-0.142	.072
Urbanicity	0.091*	.045	0.076	.048	0.095*	.043	0.092*	.043
Income dispersion	0.998	.578	1.082	.614	0.267	.578	0.277	.587
Proportion in poverty - medium	-0.117	.062	-0.122	.065	-0.030	.059	-0.028	.059
Proportion in poverty - high	-0.140	.076	-0.119	.079	-0.018	.067	-0.019	.068
Unemployment – medium	-0.136**	.047	-0.119*	.049	0.032	.051	0.029	.051
Unemployment - high	-0.087	.082	-0.060	.085	0.122	.067	0.125	.067
Model stats	n = 3470 F(6, 125) = 5.05, p < .001 R ² = .012 p=.0001		n = 3459 F(6, 125) = 3.56, p < .01 R ² = .009 p=.0027		n = 3464 F(6, 125) = 1.46, p > .05 R ² = .004 p=.1972		n = 3464 F(6, 125) = 1.43, p > .05 R ² = .004 p=.2079	
Reference categories for poverty and unemployment variables = low.								

For the neighbourhood context models only those predicting the variables based on the Feelings Scale were significant. However, with the Bonferroni correction applied only the level of unemployment in the neighbourhood was significant, and only for the first model. Perhaps strangely, this found that children in areas with medium levels of unemployment reported lower well-being than those in areas with low levels of unemployment.

English grades is the most related to subjective well-being. Well-being decreases progressively as grades get lower for the Feelings Scale variables, in the personality question models only having grade D or lower is significant, causing a significant reduction in well-being. The reported maths grade is not significant in any of the models, while reporting a science grade of C was significantly negative, although when the Bonferroni correction was applied it was no longer significant in the first Feelings Scale model, however having a D grade or lower was significant in this model.

Table A8.4: Wave 2 health and risk behaviours (continuous) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>						
Constant	0.167**	.052	0.167**	.055	0.228***	.045	0.228***	.045
General health – Very good	-0.169***	.038	-0.165***	.041	-0.336***	.039	-0.340***	.039
General health – Good	-0.526***	.050	-0.498***	.056	-0.608***	.050	-0.615***	.050
General health – Fair/Poor	-0.742***	.088	-0.597***	.085	-0.829***	.093	-0.828***	.094
Needed but did not get medical care (yes)	-0.151**	.053	-0.005	.054	-0.248***	.050	-0.238***	.050
Health limits attending school (yes)	-0.521***	.081	-0.404***	.087	-0.160	.085	-0.162	.084
Get enough sleep (yes)	0.227***	.045	0.112*	.045	0.389***	.038	0.382***	.038
Ever smoked (yes)	-0.072	.041	-0.026	.043	-0.141***	.038	-0.135***	.038
Drank alcohol more than 2 or 3 times (yes)	-0.021	.039	-0.017	.040	-0.089*	.039	-0.082*	.039
Model stats	n = 3619 F(8, 123) = 32.26, p < .001 R ² = .106 p=.0000		n = 3609 F(8, 123) = 18.00, p < .001 R ² = .061 p=.0000		n = 3615 F(8, 123) = 52.37, p < .001 R ² = .157 p=.0000		n = 3615 F(8, 123) = 50.04, p < .001 R ² = .153 p=.0000	
Health reference group = excellent Health limits attending school question = Because of a physical, learning, or emotional condition you have had for at least a year do you have any limitations attending school or in your ability to do regular work?								

The fair and poor responses to the general health question were grouped together due to small number of poor cases which would have affected results.

General health is significant across all models, with poorer health associated with lower subjective well-being, as was getting enough sleep, where getting enough sleep was associated with higher subjective well-being. Drinking alcohol was not significantly related to any of the outcome variables once the Bonferroni correction is applied. Smoking, however, was significant in the personality question models, associated with lower well-being. In contrast, health limits on attending school is significant in the Feelings Scale models. Finally, needing but not getting medical care was significant in 3 of the 4 models – only in the factor based Feelings Scale model was it not significant.

Table A8.5: Wave 2 high and risk behaviours (binary) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>						
Constant	-0.538***	.092	-0.396***	.088	-0.564***	.100	-0.561***	.099
General health (binary) – Good	0.511***	.085	0.377***	.079	0.505***	.088	0.500***	.088
Needed but did not get medical care (yes)	-0.187**	.053	-0.039	.053	-0.287***	.051	-0.277***	.051
Health limits attending school (yes)	-0.556***	.086	-0.439***	.092	-0.187*	.087	-0.189*	.086
Get enough sleep (yes)	0.250***	.048	0.133**	.048	0.419***	.041	0.412***	.041
Ever smoked (yes)	-0.121**	.043	-0.073	.046	-0.197***	.037	-0.192***	.038
Drank alcohol more than 2 or 3 times (yes)	-0.027	.040	-0.022	.042	-0.099*	.039	-0.092*	.039
Model stats	n = 3619 F(6, 125) = 23.13, p < .001 R ² = .068 p = .0000		n = 3609 F(6, 125) = 10.78, p < .001 R ² = .028 p = .0000		n = 3615 F(6, 125) = 54.25, p < .001 R ² = .106 p = .0000		n = 3615 F(6, 125) = 50.22, p < .001 R ² = .101 p = .0000	

The results for the health and risk behaviours models, but using a binary general health variable as opposed to a categorical variable, were very similar. The general health variable is significant for all models as above, and needing but not getting medical care was significant for 3 of the models but again not the factor based Feelings Scale model. However, in these models drinking alcohol is significant in the personality questions models, as is smoking which is also significant for the first Feelings Scale model.

Table A8.6: Wave 2 child money variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-0.124**	.045	-0.121**	.046	-0.010	.048	-0.012	.048
Work for pay (yes)	0.080*	.038	0.084*	.041	-0.005	.038	-0.004	.038
Allowance (continuous)	-0.006**	.002	-0.003	.002	0.000	.002	0.000	.002
Allowance (binary)	0.151**	.053	0.119	.061	0.076	.052	0.079	.052
Model stats	n = 3619 F(3, 128) = 4.88, p < .01 R ² = .005 p = .0030		n = 3610 F(3, 128) = 3.22, p < .05 R ² = .0004 p = .0249		n = 3614 F(3, 128) = 1.43, p > .05 R ² = .002 p = .2365		n = 3614 F(3, 128) = 1.57, p > .05 R ² = .002 p = .2003	

Only the first model is significant overall. Getting an allowance is found to have a significant, positive effect, however the continuous variable shows a negative relationship, suggesting that for every dollar increase in allowance the level of well-being the child reports decreases by a small but significant amount. There may be an interaction or u-shaped relationship affecting this result.

Table A8.7: Wave 2 neighbourhood perceptions variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	B	SE B	B	SE B	B	SE B	B	SE B
Constant	-0.688***	.135	-0.596***	.140	0.035	.179	0.041	.182
Know most people in neighbourhood (false)	0.070	.044	0.084	.045	-0.048	.048	-0.045	.048
Stop and talk with neighbour (past month) (no)	-0.093	.050	-0.085	.045	-0.158**	.048	-0.165**	.048
Neighbours look out for each other (false)	-0.015	.054	0.005	.057	-0.111*	.044	-0.109*	.045
Use recreation center in neighbourhood (yes)	0.076	.049	0.094	.053	0.139*	.056	0.141*	.055
Feel safe in neighbourhood (yes)	0.217**	.061	0.154*	.066	0.047	.068	0.036	.069
Happy living in neighbourhood (very little)	0.212	.139	0.148	.133	0.057	.166	0.055	.168
Happy living in neighbourhood (somewhat)	0.371**	.117	0.302*	.115	0.073	.164	0.078	.165
Happy living in neighbourhood (quite a bit)	0.488***	.113	0.360**	.110	0.225	.174	0.227	.175
Happy living in neighbourhood (very much)	0.733***	.119	0.616***	.115	0.599**	.172	0.606**	.174
Model stats	n = 3609 F(9, 122) = 14.57, p < .001 R ² = .051 p = .0000		n = 3598 F(9, 122) = 9.63, p < .001 R ² = .036 p = .0000		n = 3601 F(9, 122) = 24.01, p < .001 R ² = .080 p = .0000		n = 3601 F(9, 122) = 24.35, p < .001 R ² = .081 p = .0000	
Reference category for happy living in neighbourhood = not at all								

All of the neighbourhood models are significant, and the most consistent variable is the happy living in neighbourhood variable. Feeling safe in the neighbourhood is surprisingly only significant for one of the models. Knowing most of the people in the neighbourhood is not significant in any of the models, nor is feeling that neighbours look out for each other. Talking with neighbours is significant in the personality question models, while using the recreation center is significant in the final model.

Table A8.8: Wave 2 child social life variable

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>						
Constant	-0.168*	.082	-0.171	.087	-0.064	.073	-0.067	.074
Hang out with friends in the past week (1 or 2 times)	0.108	.090	0.084	.093	0.070	.084	0.069	.085
Hang out with friends in the past week (3 or 4 times)	0.209*	.081	0.187*	.088	0.106	.077	0.112	.077
Hang out with friends in the past week (5 or more)	0.194*	.087	0.199*	.091	0.099	.074	0.101	.075
Model stats	n = 3659 F(3, 128) = 3.47, p < .05 R ² = .003		n = 3647 F(3, 128) = 3.49, p < .05 R ² = .004		n = 3653 F(3, 128) = 0.79, p > .05 R ² = .001		n = 3653 F(3, 128) = 0.90, p > .05 R ² = .001	
	p = .0183		p = .0177		p = .5040		p = .4450	
Reference = not at all								

None of the child social life models is significant.

Table A8.9: Wave 2 relationship perceptions variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-2.138***	.432	-1.474**	.517	0.214	.632	0.237	.624
Frequency eat dinner with parent	0.031***	.008	0.027**	.008	0.010	.008	0.011	.008
Close to Mum (not very)	0.045	.211	0.064	.200	-0.115	.312	-0.145	.321
Close to Mum (somewhat close)	0.022	.196	0.065	.191	-0.293	.317	-0.297	.323
Close to Mum (quite close)	-0.012	.201	0.003	.197	-0.349	.305	-0.354	.311
Close to Mum (extremely close)	-0.019	.197	0.001	.193	-0.376	.308	-0.381	.313
How much does Mum care about you? (very little)	0.476	.330	-0.245	.429	0.979*	.448	0.960*	.433
How much does Mum care about you? (somewhat)	0.420	.338	-0.309	.437	0.949*	.451	0.899*	.440
How much does Mum care about you? (quite a bit)	0.418	.314	-0.344	.420	0.990*	.441	0.954*	.428
How much does Mum care about you? (very much)	0.462	.304	-0.285	.404	0.982*	.439	0.946*	.425
Talked to mum about personal problem (yes)	-0.107**	.040	0.008	.041	-0.168***	.040	-0.160***	.039
Talked with mum about school work and grades (yes)	0.060	.043	0.064	.045	-0.038	.040	-0.038	.040
Talked with mum about other school (yes)	0.163**	.050	0.173**	.052	0.036	.035	0.044	.035

Table A8.9 continued

Mum warm and loving most of the time (agree)	-0.182***	.047	-0.170**	.049	-0.102*	.043	-0.110*	.042
Mum warm and loving most of the time (neither)	-0.334**	.102	-0.310**	.106	-0.352**	.099	-0.356***	.098
Mum warm and loving most of the time (disagree)	-0.180	.156	-0.183	.148	-0.204	.179	-0.218	.189
Mum warm and loving most of the time (strongly dis.)	-0.260	.240	-0.268	.251	0.143	.195	0.102	.193
Mum encourages independence (agree)	0.005	.050	-0.015	.053	-0.115*	.046	-0.120**	.045
Mum encourages independence (neither)	-0.040	.073	-0.084	.074	-0.048	.056	-0.055	.056
Mum encourages independence (disagree)	-0.151	.128	-0.158	.113	-0.308**	.115	-0.324**	.115
Mum encourages independence (strongly disagree)	-0.146	.212	-0.026	.233	0.032	.265	0.039	.263
Mum helps to understand right/wrong (agree)	0.007	.053	0.005	.053	-0.171***	.045	-0.179***	.044
Mum helps to understand right/wrong (neither)	0.030	.071	0.027	.072	-0.111	.067	-0.114	.066
Mum helps to understand right/wrong (disagree)	0.113	.098	0.124	.097	-0.117	.098	-0.131	.096
Mum helps to understand right/wrong (strongly dis.)	0.337	.186	0.265	.183	-0.017	.288	-0.023	.285
Satisfied with communication w/ mother (agree)	0.021	.057	0.041	.059	-0.229***	.056	-0.227***	.055
Satisfied with communication w/ mother (neither)	0.190*	.081	0.250**	.082	-0.102	.076	-0.085	.075
Satisfied with communication w/ mother (disagree)	0.256**	.093	0.420***	.097	-0.209	.117	-0.186	.112
Satisfied with communication w/ mother (strongly dis.)	-0.109	.200	0.075	.193	-0.607**	.229	-0.580*	.224
Satisfied with relationship with mother (agree)	-0.042	.050	-0.095	.049	-0.221***	.053	-0.233***	.052
Satisfied with relationship with mother (neither)	-0.215*	.107	-0.237*	.105	-0.455***	.117	-0.482***	.117
Satisfied with relationship with mother (disagree)	-0.470**	.134	-0.591***	.131	-0.504**	.154	-0.504**	.150
Satisfied with relationship with mother (strongly dis.)	-0.000	.206	.000	.193	-0.130	.324	-0.112	.317
Adults care about you (very little)	0.403	.387	0.644	.449	-0.737	.388	-0.720	.392
Adults care about you (somewhat)	0.047	.330	0.301	.398	-1.018**	.368	-1.013**	.373
Adults care about you (quite a bit)	0.247	.343	0.485	.411	-0.778*	.368	-0.765*	.372
Adults care about you (very much)	0.439	.346	0.684	.414	-0.682	.369	-0.662	.373
Mum disappointment not graduate from college (2)	0.119	.125	0.123	.132	0.004	.099	0.003	.099
Mum disappointment not graduate from college (3)	0.120	.106	0.096	.114	0.014	.076	0.022	.075
Mum disappointment not graduate from college (4)	0.159	.099	0.143	.114	0.102	.078	0.111	.078
Mum disappointment not graduate college (5 - high)	0.215*	.094	0.198	.105	0.139*	.069	0.146*	.069
Parents care about you (very little)	0.786*	.350	0.531	.371	0.131	.609	0.167	.606
Parents care about you (somewhat)	0.673*	.318	0.594	.352	-0.289	.581	-0.251	.578
Parents care about you (quite a bit)	0.661*	.311	0.526	.363	0.079	.571	0.130	.568
Parents care about you (very much)	0.623	.318	0.467	.343	0.081	.577	0.137	.575

Table A8.9 continued

Friends care about you (very little)	0.201	.423	0.105	.467	-0.103	.489	-0.161	.480
Friends care about you (somewhat)	0.121	.397	-0.005	.420	-0.055	.456	-0.132	.445
Friends care about you (quite a bit)	0.196	.393	0.088	.415	0.000	.455	-0.073	.445
Friends care about you (very much)	0.296	.393	0.207	.417	0.047	.455	-0.021	.444
Family understand you (very little)	0.115	.126	0.009	.121	0.420**	.127	0.426**	.128
Family understand you (somewhat)	0.225	.114	0.076	.109	0.553***	.121	0.553***	.122
Family understand you (quite a bit)	0.317**	.115	0.141	.109	0.662***	.120	0.656***	.121
Family understand you (very much)	0.278*	.130	0.087	.124	0.753***	.131	0.739***	.132
Want to leave home (very little)	-0.070	.046	-0.035	.045	-0.102*	.046	-0.094*	.046
Want to leave home (somewhat)	-0.117*	.058	-0.070	.059	-0.098*	.044	-0.084	.043
Want to leave home (quite a bit)	-0.089	.064	-0.016	.062	-0.123	.064	-0.110	.063
Want to leave home (very much)	-0.179	.094	-0.087	.093	-0.056	.093	-0.034	.093
Family has fun together (very little)	0.232	.168	0.160	.153	0.291	.148	0.278	.148
Family has fun together (somewhat)	0.339*	.168	0.260	.151	0.326*	.155	0.317*	.154
Family has fun together (quite a bit)	0.416*	.173	0.343*	.158	0.396**	.149	0.390*	.149
Family has fun together (very much)	0.443*	.177	0.379*	.157	0.379*	.153	0.378*	.153
Family pays attention to you (very little)	-0.342	.228	-0.063	.227	-0.604*	.236	-0.591*	.240
Family pays attention to you (somewhat)	-0.289	.236	-0.037	.234	-0.637**	.234	-0.610*	.236
Family pays attention to you (quite a bit)	-0.255	.236	-0.033	.234	-0.636**	.222	-0.613**	.225
Family pays attention to you (very much)	-0.249	.243	-0.039	.239	-0.505*	.229	-0.478*	.232
Model stats	n = 3454 F(64, 67) = 14.77, p < .001 R ² = .168 p = .0000		n = 3448 F(64, 67) = 8.17, p < .001 R ² = .135 p = .0000		n = 3453 F(64, 67) = 24.41, p < .001 R ² = .332 p = .0000		n = 3453 F(64, 67) = 25.39, p < .001 R ² = .340 p = .0000	
Reference for close to mum = not close at all, for mum care, want to leave home, family has fun together, family pays attention to you = not at all, mum warm and loving, encourages independence, understand right and wrong, mum communication, mum relationship = strongly agree. Ref for adults care about you, parents care about you, friends care about you, family understand you = not a lot. Ref for disappointment if not graduate from college = 1 (low)								

In the Feelings Scale models eating dinner with parents is associated with increased well-being. Perhaps surprisingly, being close to mother is not significant in any of the models, neither is the child's perception of how much their mother cares about them. Talking to mother about personal

problems is significant in the personality question models, although strangely has a negative effect, while talking to mother about other school related things is significant in the Feelings Scale models. Mum warm and loving was significant throughout, while mum encourages independence and helps to understand right and wrong is significant in the personality questions models. Being satisfied with communication with mother is significant across models, although the coefficients for the personality questions models intuitively make more sense. Being satisfied with the relationship with mother is significant throughout. Mum disappointment if you don't graduate from college, parents care about you, friends care about you and want to leave home are not significant at any stage. Adults care about you is significant in the personality question models, as is the family has fun together and family pays attention to you. Family understands you is significant throughout these models, as well as one significant coefficient in the first Feelings Scale model.

Table A8.10: Wave 2 child intelligence variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>						
Constant	-0.569***	.084	-0.503***	.093	-0.407***	.079	-0.420***	.079
Perception of own intelligence (average)	0.404***	.087	0.320**	.093	0.309***	.085	0.317***	.085
Perception of own intelligence (above average)	0.725***	.091	0.644***	.096	0.527***	.085	0.543***	.085
Perception of own intelligence (extremely above)	0.712***	.115	0.621***	.125	0.729***	.105	0.743***	.106
Model stats	n = 3655 F(3, 128) = 34.30, p < .001 R ² = .042		n = 3644 F(3, 128) = 29.05, p < .001 R ² = .037		n = 3650 F(3, 128) = 28.66, p < .001 R ² = .027		n = 3650 F(3, 128) = 30.10, p < .001 R ² = .028	
	p = .0000		p = .0000		p = .0000		p = .0000	
Reference category = below average								

All of the coefficients in all of the models are significant, suggesting that a child's perception of their intelligence is important to their subjective well-being.

Table A8.11: Wave 2 school perceptions (disparity) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	0.016	.158	-0.092	.179	0.986***	.164	0.984***	.166
Trouble getting along with teachers (a few times)	0.028	.039	0.024	.041	0.042	.044	0.043	.044
Trouble getting along with teachers (once a week)	-0.001	.073	-0.011	.081	0.051	.073	0.050	.074
Trouble getting along with teachers (almost daily)	0.006	.085	0.038	.088	0.057	.094	0.062	.094
Trouble getting along with teachers (daily)	0.072	.180	0.161	.186	0.062	.183	0.042	.184
Have trouble paying attention in school (a few times)	-0.018	.054	0.008	.055	-0.179***	.048	-0.174***	.048
Have trouble paying attention in school (once a week)	-0.052	.071	0.028	.071	-0.305***	.067	-0.294***	.067
Have trouble paying attention in school (almost daily)	-0.193*	.078	-0.100	.082	-0.384***	.081	-0.375***	.081
Have trouble paying attention in school (daily)	0.075	.141	0.180	.148	-0.320	.184	-0.295	.184
Have trouble getting homework done (a few times)	-0.089	.049	-0.080	.056	-0.118**	.040	-0.113**	.184
Have trouble getting homework done (once a week)	-0.095	.055	-0.081	.059	-0.122*	.059	-0.121*	.059
Have trouble getting homework done (almost daily)	-0.078	.080	-0.030	.085	-0.297***	.080	-0.287***	.080
Have trouble getting homework done (daily)	-0.431**	.128	-0.353**	.118	-0.349*	.148	-0.345*	.149
Trouble getting along with students (a few times)	-0.039	.038	0.004	.039	-0.020	.034	-0.022	.034
Trouble getting along with students (once a week)	-0.172*	.072	-0.065	.075	-0.037	.075	-0.044	.077
Trouble getting along with students (almost daily)	-0.288**	.090	-0.198*	.097	-0.080	.118	-0.095	.120
Trouble getting along with other students (daily)	-0.253*	.109	-0.140	.105	0.181	.132	0.158	.133
Feel close to people at school (agree)	0.042	.065	0.021	.068	-0.018	.049	-0.020	.049
Feel close to people at school (neither)	0.081	.078	0.048	.082	-0.013	.069	-0.016	.068
Feel close to people at school (disagree)	0.116	.085	0.099	.089	-0.050	.095	-0.052	.093
Feel close to people at school (strongly disagree)	-0.285	.178	-0.217	.185	-0.336*	.169	-0.347*	.166
Feel part of your school (agree)	-0.173**	.054	-0.189**	.056	-0.220***	.040	-0.232***	.041
Feel part of your school (neither)	-0.295***	.067	-0.308***	.070	-0.342***	.077	-0.355***	.077
Feel part of your school (disagree)	-0.507***	.086	-0.485***	.091	-0.571***	.112	-0.574***	.113
Feel part of your school (strongly disagree)	-0.294*	.146	-0.174	.142	-0.751***	.183	-0.783***	.184
Students at school are prejudiced (agree)	0.001	.058	-0.023	.059	-0.100	.059	-0.106	.060
Students at school are prejudiced (neither)	-0.095	.060	-0.132*	.065	-0.111	.062	-0.114	.063
Students at school are prejudiced (disagree)	-0.117	.066	-0.142*	.067	-0.128*	.060	-0.134*	.059
Students at school are prejudiced (strongly disagree)	-0.017	.080	-0.063	.083	0.125	.072	0.120	.071

Table A8.11 continued

Happy at your school (agree)	-0.077	.055	-0.090	.060	-0.143**	.045	-0.141**	.046
Happy at your school (neither)	-0.156*	.064	-0.147*	.069	-0.249**	.073	-0.240**	.073
Happy at your school (disagree)	-0.175*	.080	-0.175*	.081	-0.161*	.081	-0.152	.080
Happy at your school (strongly disagree)	-0.031	.125	-0.048	.140	-0.023	.108	-0.010	.108
Teachers treat students fairly (agree)	0.068	.072	0.038	.076	0.005	.044	-0.002	.045
Teachers treat students fairly (neither)	0.020	.073	0.013	.072	-0.041	.050	-0.043	.050
Teachers treat students fairly (disagree)	-0.015	.088	-0.021	.091	-0.081	.065	-0.083	.066
Teachers treat students fairly (strongly disagree)	0.109	.120	0.079	.122	-0.098	.125	-0.099	.126
Feel safe in your school (agree)	-0.143**	.053	-0.123*	.058	-0.178***	.041	-0.183***	.041
Feel safe in your school (neither)	-0.269***	.058	-0.210***	.058	-0.262***	.056	-0.264***	.057
Feel safe in your school (disagree)	-0.200*	.079	-0.079	.075	-0.228**	.075	-0.222**	.074
Feel safe in your school (strongly disagree)	-0.226	.125	-0.097	.138	-0.146	.141	-0.130	.141
Teachers care about you (very little)	0.300**	.107	0.361**	.111	-0.297*	.139	-0.286*	.141
Teachers care about you (somewhat)	0.509***	.108	0.532***	.123	-0.130	.139	-0.119	.140
Teachers care about you (quite a bit)	0.607***	.112	0.659***	.128	-0.026	.132	-0.014	.133
Teachers care about you (very much)	0.663***	.115	0.711***	.129	0.116	.142	0.132	.142
Disparity (want and likelihood) college	-0.031	.024	-0.001	.027	-0.053*	.026	-0.052*	.026
Disparity (want and likelihood) college squared	-0.055**	.016	-0.046**	.017	-0.028*	.012	-0.028*	.012
Model stats	n = 3606 F(46, 85) = 10.20, p < .001 R ² = .150 p = .0000		n = 3599 F(46, 85) = 7.51, p < .001 R ² = .106 p = .0000		n = 3600 F(46, 85) = 19.47, p < .001 R ² = .218 p = .0000		n = 3600 F(46, 85) = 20.72, p < .001 R ² = .218 p = .0000	
Reference categories: Getting along with teachers, paying attention, getting homework done, getting along with other students ref = never. Close to school, part of school, students prejudiced, happy to be at your school, teachers treat students fairly, feel safe in school = strongly agree. Teachers care = not at all.								

Trouble getting along with teachers, feel close to people at school, students at school are prejudiced, and teachers treat students fairly are not significant at any stage. Trouble paying attention at school and happy at school are significant in the personality question models only, while trouble getting along with students and teachers care about you are significant only in the Feelings Scale models. Trouble getting homework done, feel part of school, feel safe in school, and disparity between wanting to go and likelihood of going to college are all significant across models.

Table A8.12: Wave 2 school perceptions (original) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-0.379*	.217	-0.536*	.244	0.855***	.189	0.844***	.192
Trouble getting along with teachers (a few times)	0.043	.039	0.043	.039	0.054	.041	0.056	.041
Trouble getting along with teachers (once a week)	0.024	.070	0.016	.077	0.069	.072	0.069	.073
Trouble getting along with teachers (almost daily)	0.094	.084	0.130	.088	0.130	.092	0.139	.092
Trouble getting along with teachers (daily)	0.144	.179	0.237	.179	0.115	.188	0.100	.188
Have trouble paying attention in school (a few times)	-0.031	.052	-0.007	.053	-0.189***	.047	-0.185***	.046
Have trouble paying attention in school (once a week)	-0.074	.067	0.001	.068	-0.320***	.067	-0.310***	.066
Have trouble paying attention in school (almost daily)	-0.204**	.074	-0.114	.077	-0.393***	.080	-0.383***	.080
Have trouble paying attention in school (daily)	0.036	.134	0.132	.142	-0.359*	.176	-0.336	.176
Have trouble getting homework done (a few times)	-0.078	.049	-0.068	.055	-0.105**	.038	-0.101*	.038
Have trouble getting homework done (once a week)	-0.087	.053	-0.074	.059	-0.108	.058	-0.107	.058
Have trouble getting homework done (almost daily)	-0.064	.078	-0.015	.084	-0.279***	.077	-0.268**	.077
Have trouble getting homework done (daily)	-0.404**	.122	-0.325**	.113	-0.327*	.138	-0.322*	.139
Trouble getting along with students (a few times)	0.029	.038	0.014	.038	-0.010	.034	-0.011	.034
Trouble getting along with students (once a week)	-0.148*	.075	-0.040	.076	-0.020	.072	-0.026	.073
Trouble getting along with students (almost daily)	-0.264**	.088	-0.166	.094	-0.044	.116	-0.057	.117
Trouble getting along with other students (daily)	-0.195	.111	-0.074	.104	0.221	.134	0.201	.134
Feel close to people at school (agree)	0.045	.062	0.021	.064	-0.014	.050	-0.017	.050
Feel close to people at school (neither)	0.087	.077	0.050	.079	-0.001	.071	-0.004	.071
Feel close to people at school (disagree)	0.081	.081	0.060	.085	-0.066	.098	-0.070	.097
Feel close to people at school (strongly disagree)	-0.293	.177	-0.237	.183	-0.325	.169	-0.338*	.166
Feel part of your school (agree)	-0.147**	.051	-0.157**	.053	-0.201***	.039	-0.211***	.040
Feel part of your school (neither)	-0.227**	.071	-0.230**	.074	-0.293***	.077	-0.302***	.078
Feel part of your school (disagree)	-0.437***	.090	-0.405***	.097	-0.525***	.114	-0.524***	.115
Feel part of your school (strongly disagree)	-0.263	.137	-0.119	.132	-0.734***	.179	-0.764***	.180
Students at school are prejudiced (agree)	0.004	.056	-0.020	.056	-0.093	.059	-0.097	.059
Students at school are prejudiced (neither)	-0.088	.058	-0.128*	.062	-0.094	.062	-0.097	.063
Students at school are prejudiced (disagree)	-0.102	.064	-0.127	.065	-0.111	.058	-0.116*	.058
Students at school are prejudiced (strongly disagree)	-0.005	.080	-0.052	.082	0.140*	.070	0.136	.069

Table A8.12 continued

Happy at your school (agree)	-0.074	.054	-0.087	.058	-0.143**	.044	-0.141**	.044
Happy at your school (neither)	-0.168**	.062	-0.160*	.067	-0.265***	.070	-0.256***	.069
Happy at your school (disagree)	-0.178*	.079	-0.172*	.079	-0.183*	.082	-0.175*	.081
Happy at your school (strongly disagree)	-0.032	.118	-0.044	.131	-0.045	.104	-0.031	.104
Teachers treat students fairly (agree)	0.054	.069	0.025	.072	0.000	.044	-0.008	.044
Teachers treat students fairly (neither)	0.002	.073	-0.009	.071	-0.047	.049	-0.049	.048
Teachers treat students fairly (disagree)	-0.029	.083	-0.040	.084	-0.079	.061	-0.081	.061
Teachers treat students fairly (strongly disagree)	0.103	.121	0.064	.120	-0.072	.124	-0.074	.125
Feel safe in your school (agree)	-0.139*	.054	-0.118*	.059	-0.169***	.042	-0.174***	.042
Feel safe in your school (neither)	-0.258***	.059	-0.198**	.059	-0.249***	.056	-0.250***	.056
Feel safe in your school (disagree)	-0.189*	.077	-0.059	.074	-0.216**	.075	-0.209**	.074
Feel safe in your school (strongly disagree)	-0.255*	.127	-0.134	.136	-0.141	.140	-0.127	.139
Want to attend college (2)	0.070	.158	0.129	.160	-0.270	.143	-0.275	.145
Want to attend college (3)	0.133	.173	0.272	.179	-0.116	.156	-0.112	.157
Want to attend college (4)	0.227	.183	0.412*	.196	-0.093	.168	-0.077	.168
Want to attend college (5 high)	0.276	.175	0.494**	.182	-0.045	.167	-0.025	.167
Likelihood of attending college (2)	-0.129	.156	-0.147	.155	-0.130	.139	-0.141	.141
Likelihood of attending college (3)	-0.037	.147	-0.138	.152	0.075	.136	0.065	.137
Likelihood of attending college (4)	0.102	.142	-0.023	.149	0.051	.147	0.044	.146
Likelihood of attending college (5 high)	0.283*	.142	0.146	.142	0.278	.145	0.276	.144
Teachers care about you (very little)	0.259*	.111	0.302**	.114	-0.319*	.135	-0.311*	.137
Teachers care about you (somewhat)	0.432***	.105	0.432***	.116	-0.166	.135	-0.158	.136
Teachers care about you (quite a bit)	0.496***	.109	0.521***	.123	-0.088	.129	-0.083	.130
Teachers care about you (very much)	0.532***	.110	0.554***	.121	0.038	.138	0.048	.139
Model stats	n = 3615 F(52, 79) = 10.78, p < .001 R ² = .176 p = .0000		n = 3608 F(52, 79) = 7.55, p < .001 R ² = .139 p = .0000		n = 3609 F(52, 79) = 20.85, p < .001 R ² = .235 p = .0000		n = 3609 F(52, 79) = 22.65, p < .001 R ² = .237 p = .0000	
Likelihood and wanting to attend college ref = 1 low								

The results for these models are very similar to those for the previous model. The changed variables, the inclusion of separate variables for wanting to go to college and perceived likelihood of attending as opposed to the disparity between the two variables, are less significant than the disparity variable.

Table A8.13: Wave 2 perception of future in own control variable

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	0.176*	.069	0.179*	.075	0.647***	.049	0.658***	.049
Can determine what will happen in your life (agree)	-0.127	.074	-0.155	.081	-0.604***	.057	-0.622***	.057
Can determine what will happen in your life (neither)	-0.237**	.078	-0.259**	.085	-0.760***	.060	-0.770***	.059
Can determine what will happen in life (disagree)	-0.313***	.081	-0.297**	.094	-0.948***	.070	-0.954***	.069
Can determine what will happen in life (strongly dis)	-0.421**	.158	-0.420*	.173	-0.785***	.192	-0.783***	.192
Model stats	n = 3648 F(4, 127) = 5.70, p < .001 R ² = .010 p = .0000		n = 3640 F(4, 127) = 4.14, p < .01 R ² = .001 p = .0035		n = 3647 F(4, 127) = 56.33, p < .001 R ² = .076 p = .0000		n = 3647 F(4, 127) = 58.73, p < .001 R ² = .077 p = .0000	
Reference strongly agree								

All of these models are significant and most of the coefficients are significant showing that children who perceive their future to be within their control report higher well-being.

The following Tables A8.14- A8.25 report the regression analyses which include predictor variables from wave 1 and wave 2. Where there is no updated table this is because those variables were not recorded at wave 1.

Table A8.14: Waves 1 and 2 demographics (binary) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	0.467	.297	0.070	.315	1.413***	.267	1.358***	.269
Age	-0.041*	.017	-0.026	.018	-0.072***	.016	-0.071***	.016
Gender (female)	-0.079*	.040	0.027	.039	-0.257***	.037	-0.239***	.037
Mother disabled (yes)	-0.124	.108	-0.059	.099	-0.256*	.118	-0.262*	.120
Child disabled (yes)	0.463*	.179	0.525**	.154	0.048	.050	0.066	.243
W1 race (African American)	-0.087	0.073	-0.034	.072	0.264***	.050	0.267***	.051
W1 race (Native American)	-0.057	.109	0.004	.108	-0.079	.106	-0.088	.106
W1 race (Asian)	-0.226	.118	-0.178	.125	-0.143	.106	-0.152	.108
W1 race (Other)	-0.331***	.083	-0.308***	.086	-0.104	.095	-0.097	.096
Reporting parent marital status (binary) (Married)	0.167**	.051	0.145**	.054	0.119**	.042	0.122**	.062
Reporting parent education (high school)	0.128*	.065	0.117	.068	0.040	.067	0.068	.069
Reporting parent education (post high school)	0.310***	.065	0.285***	.071	0.080	.068	0.087	.069
Reporting parent education (college graduate)	0.391***	.076	0.373***	.079	-0.040	.077	-0.032	.078
Reporting parent education (beyond college)	0.386***	.081	0.363***	.083	0.019	.080	0.031	.080
Model stats	n = 3177 F(13, 118) = 8.39, p < .001 R ² = .048 p = .0000		n = 3166 F(13, 118) = 6.86, p < .001 R ² = .035 p = .0000		n = 3175 F(13, 118) = 10.30, p < .001 R ² = .040 p = .0000		n = 3175 F(13, 118) = 9.44, p < .001 R ² = .037 p = .0000	
Race ref cat = white, marital status ref category = not married/separated, parent education = below high school								

Table A8.15: Waves 1 and 2 demographics (categorical) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>						
Constant	0.355	.303	-0.008	.325	1.417***	.273	1.366	.274
Age	-0.042*	.017	-0.026	.018	-0.072***	.016	-0.071***	.016
Gender (female)	-0.079*	.040	0.027	.039	-0.257***	.037	-0.239***	.037
Mother disabled (yes)	-0.127	.108	-0.062	.098	-0.257*	.119	-0.263*	.121
Child disabled (yes)	0.456*	.182	0.517**	.160	0.045	.251	0.063	.245
W1 race (African American)	-0.068	.071	-0.023	.070	0.261***	.050	0.264***	.051
W1 race (Native American)	-0.050	.109	0.009	.108	-0.079	.106	-0.088	.106
W1 race (Asian)	-0.226	.119	-0.178	.127	-0.143	.106	-0.152	.108
W1 race (Other)	-0.328***	.083	-0.306***	.086	-0.103	.096	-0.097	.096
Reporting parent marital status (Married)	0.299***	.079	0.233*	.092	0.114	.073	0.112	.072
Reporting parent marital status (Widowed)	0.227	.146	0.187	.150	0.036	.127	0.019	.128
Reporting parent marital status (Divorced)	0.147	.091	0.091	.100	-0.012	.073	-0.016	.073
Reporting parent marital status (Separated)	0.187	.104	0.129	.115	-0.015	.121	-0.019	.120
Reporting parent education (high school)	0.127	.064	0.116	.069	0.040	.068	0.048	.069
Reporting parent education (post high school)	0.309***	.065	0.284***	.071	0.080	.068	0.087	.068
Reporting parent education (college graduate)	0.386***	.077	0.370***	.080	-0.040	.077	-0.031	.078
Reporting parent education (beyond college)	0.384***	.080	0.362***	.082	0.019	.081	0.031	.080
Model stats	n = 3177 F(16, 115) = 6.89, p < .001 R ² = .049		n = 3166 F(16, 115) = 5.49, p < .001 R ² = .036		n = 3175 F(16, 115) = 8.67, p < .001 R ² = .040		n = 3175 F(16, 115) = 8.08, p < .001 R ² = .040	
	p = .0000		p = .0000		p = .0000		p = .0000	
Reference category for marital status = single/never married								

Table A8.16: Waves 1 and 2 school related variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	0.285	.231	-0.004	.240	0.923***	.182	0.893	.184
Grade (school year)	0.005	.021	0.027	.022	-0.071***	.018	-0.068***	.018
Frequency of excused absence – 1 or 2 times	0.059	.079	0.063	.082	-0.018	.064	-0.013	.063
Frequency of excused absence – 3-10 times	0.051	.072	0.095	.074	-0.122	.068	-0.120	.068
Frequency of excused absence – > 10 times	-0.094	.087	-0.006	.083	-0.190*	.090	-0.175	.089
Frequency skipped school	-0.009	.007	-0.008	.007	-0.009	.008	-0.009	.008
Ever suspended	-0.180*	.075	-0.168*	.082	-0.020	.067	-0.012	.064
Ever expelled	0.082	.175	0.102	.184	0.046	.171	0.057	.0173
English grade – most recent (B)	-0.115*	.056	-0.120*	.059	0.022	.050	0.013	.050
English grade – most recent (C)	-0.234**	.066	-0.241***	.065	-0.066	.065	-0.076	.064
English grade – most recent (D or lower)	-0.330**	.099	-0.315**	.108	-0.206*	.083	-0.216**	.082
Maths grade – most recent (B)	0.125*	.057	0.144*	.059	0.093	.055	0.100	.056
Maths grade – most recent (C)	0.002	.059	0.032	.062	-0.063	.067	-0.050	.067
Maths grade – most recent (D or lower)	0.034	.082	0.067	.079	-0.139	.081	-0.127	.081
Science grade – most recent (B)	-0.024	.057	0.005	.060	-0.051	.045	-0.046	.045
Science grade – most recent (C)	-0.061	.063	-0.044	.067	-0.133*	.059	-0.135*	.058
Science grade – most recent (D or lower)	-0.122	.085	-0.052	.090	-0.146	.101	-0.150	.100
W1 English grade – most recent (B)	-0.069	.060	-0.079	.063	-0.024	.050	-0.025	.051
W1 English grade – most recent (C)	-0.136*	.065	-0.153*	.068	-0.042	.066	-0.043	.066
W1 English grade – most recent (D or lower)	-0.058	.084	-0.040	.087	-0.040	.088	-0.055	.088
W1 Maths grade – most recent (B)	-0.091	.053	-0.098	.056	-0.053	.063	-0.050	.062
W1 Maths grade – most recent (C)	-0.042	.072	-0.032	.075	-0.022	.069	-0.016	.069
W1 Maths grade – most recent (D or lower)	-0.031	.079	-0.062	.080	0.024	.088	0.024	.088
W1 Science grade – most recent (B)	-0.092	.053	-0.096	.054	0.067	.058	0.065	.058
W1 Science grade – most recent (C)	-0.201**	.068	-0.198*	.075	0.021	.062	0.013	.063
W1 Science grade – most recent (D or lower)	-0.128	.091	-0.125	.099	-0.014	.084	-0.023	.085

Table A8.17 continued

	n = 2945 F(25, 106) = 7.81, p < .001 R ² = .066 p = .0000	n = 2942 F(25, 106) = 6.19, p < .001 R ² = .056 p = .0000	n = 2944 F(25, 106) = 5.19, p < .001 R ² = .043 p = .0000	n = 2944 F(25, 106) = 5.26, p < .001 R ² = .043 p = .0000
Model stats				

Table A8.17: Waves 1 and 2 health and risk behaviours (categorical) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	B	SE B	B	SE B	B	SE B	B	SE B
Constant	-0.045	0.119	0.019	0.122	0.145	0.144	0.117	0.141
General health – Very good	-0.109**	0.041	-0.113*	0.044	-0.258***	0.043	-0.262***	0.043
General health – Good	-0.400***	0.058	-0.388***	0.063	-0.479***	0.055	-0.486***	0.055
General health – Fair/Poor	-0.558***	0.098	-0.434***	0.092	-0.668***	0.099	-0.668***	0.099
Needed but did not get medical care (yes)	-0.112*	0.056	0.017	0.056	-0.229***	0.052	-0.219***	0.052
Health limits attending school (yes)	-0.498***	0.081	-0.390***	0.089	-0.144	0.081	-0.143	0.081
Get enough sleep (yes)	0.213***	0.045	0.101*	0.044	0.379***	0.039	0.372***	0.039
Ever smoked (yes)	-0.078	0.040	-0.033	0.044	-0.145***	0.038	-0.139***	0.038
Drank alcohol more than 2 or 3 times (yes)	-0.019	0.039	-0.017	0.041	-0.086*	0.039	-0.080*	0.040
W1 General health – Very good	-0.110*	0.045	-0.095*	0.047	-0.191***	0.040	-0.187***	0.040
W1 General health – Good	-0.220***	0.055	-0.200***	0.056	-0.269***	0.058	-0.269***	0.057
W1 General health – Fair/Poor	-0.311***	0.088	-0.274**	0.082	-0.289**	0.096	-0.279**	0.094
W1 Needed but did not get medical care (yes)	-0.135*	0.059	-0.070	0.058	-0.032	0.045	-0.029	0.046
Learned importance of proper diet (yes)	0.163*	0.072	0.154*	0.071	0.002	0.048	0.003	0.049
Learned importance of exercise (yes)	0.044	0.080	0.048	0.085	0.135	0.075	0.139	0.076
Learned about smoking (yes)	-0.014	0.096	0.029	0.112	0.046	0.097	0.056	0.097
Learned about health problems - obesity (yes)	0.122***	0.035	0.118**	0.039	0.061	0.034	0.061	0.034
Learned about drinking (yes)	0.025	0.094	-0.001	0.108	-0.027	0.122	-0.029	0.119
Learned about drug abuse (yes)	0.083	0.134	0.009	0.142	-0.095	0.104	-0.084	0.104

Table A8.17 continued

Learned about pregnancy (yes)	0.044	0.068	0.034	0.069	0.013	0.053	0.021	0.054
Learned about AIDs (yes)	-0.017	0.094	-0.043	0.098	0.025	0.085	0.026	0.085
Learned about stranger danger (yes)	-0.095	0.048	-0.074	0.048	0.082	0.047	0.075	0.047
Model stats	n = 3600 F(21, 110) = 14.71, p < .001 R ² = .127 p = .0000	n = 3590 F(21, 110) = 8.38, p < .001 R ² = .076 p = .0000	n = 3596 F(21, 110) = 22.54 p < .001 R ² = .172 p = .0000	n = 3596 F(21, 110) = 21.40 p < .001 R ² = .168 p = .0000				
Health reference = excellent								

Table A8.18: Waves 1 and 2 health and risk behaviours (binary) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-1.000***	0.165	-0.785***	0.169	-0.887***	0.182	-0.906***	0.179
General health (binary) - good	0.384***	0.089	0.261**	0.082	0.411***	0.093	0.407***	0.093
Needed but did not get medical care (yes)	-0.134*	0.056	-0.004	0.054	-0.257***	0.054	-0.247***	0.054
Health limits attending school (yes)	-0.526***	0.083	-0.420***	0.092	-0.164	0.086	-0.164	0.086
Get enough sleep (yes)	0.233***	0.046	0.119*	0.046	0.405***	0.041	0.399***	0.041
Ever smoked (yes)	-0.127**	0.043	-0.080	0.047	-0.202***	0.038	-0.197***	0.038
Drank alcohol more than 2 or 3 times (yes)	-0.025	0.040	-0.022	0.042	-0.095*	0.040	-0.089*	0.041
W1 General health (binary) - good	0.302***	0.076	0.274***	0.071	0.230**	0.086	0.223**	0.085
W1 Needed but did not get medical care (yes)	-0.170**	0.057	-0.103	0.056	-0.074	0.046	-0.071	0.047
Learned importance of proper diet (yes)	0.155*	0.072	0.146*	0.072	-0.002	0.049	-0.001	0.049
Learned importance of exercise (yes)	0.080	0.083	0.081	0.087	0.168*	0.076	0.172*	0.077
Learned about smoking (yes)	-0.010	0.095	0.031	0.114	0.038	0.098	0.049	0.099
Learned about health problems - obesity (yes)	0.107**	0.036	0.105*	0.040	0.047	0.034	0.048	0.035
Learned about drinking (yes)	-0.008	0.100	-0.031	0.117	-0.073	0.122	-0.075	0.119
Learned about drug abuse (yes)	0.087	0.139	0.025	0.149	-0.094	0.110	-0.083	0.110
Learned about pregnancy (yes)	0.057	0.063	0.047	0.065	0.033	0.053	0.041	0.054
Learned about AIDs (yes)	0.037	0.092	0.012	0.096	0.091	0.087	0.093	0.088
Learned about stranger danger (yes)	-0.115*	0.049	-0.094	0.049	0.061	0.048	0.054	0.049
Model stats	n = 3600 F(17, 114) = 10.81, p < .001 R ² = .089 p = .0000		n = 3590 F(17, 114) = 5.66, p < .001 R ² = .043 p = .0000		n = 3596 F(17, 114) = 20.66, p < .001 R ² = .116 p = .0000		n = 3596 F(17, 114) = 19.17, p < .001 R ² = .112 p = .0000	

Table A8.19: Waves 1 and 2 parent and household characteristics (binary) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-0.436***	0.101	-0.431***	0.099	0.047	0.121	0.036	0.123
Reporting parent happy (yes)	0.144	0.100	0.152	0.100	-0.077	0.117	-0.070	0.120
Reporting parent receiving public assistance (yes)	-0.196*	0.079	-0.171*	0.082	-0.026	0.083	-0.032	0.085
Reporting parent health binary (good)	0.140*	0.056	0.098	0.059	0.057	0.068	0.055	0.067
Reporting parent access to medical care binary (easy)	0.243***	0.051	0.248***	0.053	0.034	0.059	0.041	0.058
Model stats	n = 3275 F(4, 127) = 12.02, p < .001 R ² = .019 p = .0000		n = 3265 F(4, 127) = 9.80, p < .001 R ² = .016 p = .0000		n = 3273 F(4, 127) = 0.31, p > .05 R ² = .001 p = .8711		n = 3273 F(4, 127) = 0.34, p > .05 R ² = .001 p = .8511	

Table A8.20: Waves 1 and 2 parent and household characteristics (continuous) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	0.059	0.114	-0.004	0.113	0.288*	0.133	0.284*	0.135
Reporting parent happy (yes)	0.163	0.104	0.184	0.104	-0.112	0.119	-0.107	0.122
Reporting parent receiving public assistance (yes)	-0.172*	0.084	-0.159	0.085	0.009	0.083	0.004	0.084
Reporting parent general physical health	-0.117*	0.055	-0.115*	0.055	-0.088	0.053	-0.090	0.052
Reporting parent general physical health	-0.165**	0.059	-0.131*	0.057	-0.201***	0.052	-0.196***	0.053
Reporting parent general physical health	-0.288***	0.070	-0.253***	0.066	-0.112	0.081	-0.105	0.081
Reporting parent general physical health	-0.016	0.146	0.091	0.145	-0.287*	0.133	-0.293*	0.133
Parent access to family medical care (somewhat easy)	-0.144**	0.052	-0.109*	0.052	-0.086	0.052	-0.092	0.053
Parent access to family medical care (somewhat hard)	-0.198**	0.065	-0.227***	0.067	0.070	0.077	0.063	0.078
Parent access to family medical care (very hard)	-0.385***	0.089	-0.349***	0.092	-0.177	0.094	-0.190*	0.093
Model stats	n = 3275 F(9, 122) = 8.22, p < .001 R ² = .030 p = .0000		n = 3265 F(9, 122) = 6.98, p < .001 R ² = .025 p = .0000		n = 3273 F(9, 122) = 3.08, p < .01 R ² = .011 p = .0023		n = 3273 F(9, 122) = 3.02, p < .01 R ² = .011 p = .0027	
Ref for access to family care = very easy.								

Table A8.21: Waves 1 and 2 child social life variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	B	SE B						
Constant	-0.234*	0.104	-0.251*	0.111	-0.013	0.083	-0.019	0.085
Hang out with friends in the past week (1 or 2 times)	0.097	0.090	0.071	0.093	0.080	0.083	0.079	0.085
Hang out with friends in the past week (3 or 4 times)	0.196*	0.083	0.171	0.088	0.126	0.078	0.131	0.078
Hang out with friends in the past week (5 or more)	0.196*	0.091	0.198*	0.093	0.115	0.079	0.117	0.079
W1 Hang out with friends in the past week (1 or 2 times)	0.119	0.089	0.143	0.089	-0.069	0.066	-0.065	0.066
W1 Hang out with friends in the past week (3 or 4 times)	0.114	0.080	0.124	0.081	-0.093	0.055	-0.088	0.056
W1 Hang out with friends in the past week (5 or more)	0.033	0.079	0.052	0.076	-0.064	0.064	-0.060	0.065
Model stats	n = 3657 F(6, 125) = 2.62, p < .05 R ² = .005 p = .0199		n = 3645 F(6, 125) = 2.85, p < .05 R ² = .006 p = .0124		n = 3651 F(6, 125) = 0.92, p > .05 R ² = .001 p = .4813		n = 3651 F(6, 125) = 0.92, p > .05 R ² = .001 p = .4799	

Table A8.22: Waves 1 and 2 relationship perception variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	B	SE B	B	SE B	B	SE B	B	SE B
Constant	-1.680	1.003	-1.753	1.043	0.919	0.903	0.919	0.903
Frequency eat dinner with parent	0.028**	0.009	0.026**	0.009	0.009	0.008	0.010	0.008
Close to Mum (not very)	-0.145	0.234	-0.174	0.223	-0.297	0.314	-0.339	0.320
Close to Mum (somewhat close)	-0.169	0.229	-0.149	0.222	-0.508	0.335	-0.525	0.341
Close to Mum (quite close)	-0.199	0.228	-0.208	0.221	-0.583	0.325	-0.603	0.331
Close to Mum (extremely close)	-0.183	0.227	-0.193	0.223	-0.605	0.331	-0.628	0.336
How much does Mum care about you? (very little)	-0.596	0.661	-0.775	0.667	0.139	0.569	0.223	0.569
How much does Mum care about you? (somewhat)	-0.585	0.706	-0.794	0.688	0.127	0.591	0.175	0.590
How much does Mum care about you? (quite a bit)	-0.619	0.634	-0.800	0.637	0.231	0.568	0.294	0.567
How much does Mum care about you? (very much)	-0.588	0.634	-0.746	0.633	0.189	0.566	0.254	0.565

Table 8.22 continued

Talked to mum about personal problem (yes)	-0.089*	0.040	0.020	0.041	-0.160***	0.038	-0.152***	0.038
Talked with mum about school work and grades (yes)	0.033	0.040	0.040	0.043	-0.055	0.040	-0.054	0.040
Talked with mum about other school (yes)	0.160**	0.053	0.169**	0.055	0.033	0.033	0.040	0.034
Mum warm and loving most of the time (agree)	-0.143***	0.042	-0.137**	0.043	-0.088*	0.044	-0.095*	0.044
Mum warm and loving most of the time (neither)	-0.311**	0.108	-0.286*	0.109	-0.311**	0.098	-0.316**	0.098
Mum warm and loving most of the time (disagree)	-0.129	0.165	-0.154	0.156	-0.187	0.179	-0.195	0.180
Mum warm and loving most of the time (strongly dis.)	-0.146	0.266	-0.139	0.279	0.314	0.171	0.283	0.169
Mum encourages independence (agree)	0.013	0.050	-0.004	0.052	-0.112*	0.051	-0.115*	0.050
Mum encourages independence (neither)	-0.065	0.072	-0.088	0.074	-0.037	0.059	-0.041	0.058
Mum encourages independence (disagree)	-0.107	0.127	-0.102	0.113	-0.282*	0.120	-0.295*	0.120
Mum encourages independence (strongly disagree)	-0.281	0.221	-0.137	0.245	-0.045	0.261	-0.041	0.258
Mum helps to understand right/wrong (agree)	0.027	0.051	0.025	0.054	-0.149***	0.044	-0.157***	0.043
Mum helps to understand right/wrong (neither)	0.053	0.070	0.056	0.072	-0.076	0.067	-0.078	0.066
Mum helps to understand right/wrong (disagree)	0.124	0.108	0.131	0.108	-0.083	0.103	-0.092	0.102
Mum helps to understand right/wrong (strongly dis.)	0.300	0.190	0.227	0.185	-0.269	0.276	-0.285	0.274
Satisfied with communication w/ mother (agree)	-0.001	0.056	0.016	0.056	-0.240***	0.055	-0.238***	0.054
Satisfied with communication w/ mother (neither)	0.184*	0.074	0.239**	0.080	-0.105	0.078	-0.091	0.077
Satisfied with communication w/ mother (disagree)	0.213*	0.093	0.360***	0.098	-0.252*	0.108	-0.228*	0.103
Satisfied with communication w/ mother (strongly dis.)	-0.077	0.198	0.075	0.197	-0.487*	0.221	-0.465*	0.216
Satisfied with relationship with mother (agree)	-0.027	0.051	-0.073	0.051	-0.205***	0.052	-0.216***	0.051
Satisfied with relationship with mother (neither)	-0.237*	0.108	-0.268*	0.110	-0.480***	0.116	-0.506***	0.115
Satisfied with relationship with mother (disagree)	-0.480***	0.136	-0.576***	0.130	-0.527***	0.143	-0.529***	0.140
Satisfied with relationship with mother (strongly dis.)	-0.200	0.210	-0.155	0.203	-0.387	0.304	-0.377	0.299
Adults care about you (very little)	0.227	0.440	0.535	0.557	-1.009*	0.495	-1.003*	0.495
Adults care about you (somewhat)	-0.153	0.400	0.187	0.526	-1.267*	0.486	-1.277*	0.486
Adults care about you (quite a bit)	0.033	0.416	0.349	0.540	-1.061*	0.490	-1.064*	0.490
Adults care about you (very much)	0.220	0.414	0.538	0.539	-0.986*	0.486	-0.983*	0.487
Mum disappointment not graduate from college (2)	0.106	0.131	0.142	0.140	-0.007	0.095	-0.012	0.095
Mum disappointment not graduate from college (3)	0.101	0.110	0.107	0.123	-0.016	0.075	-0.010	0.075
Mum disappointment not graduate from college (4)	0.108	0.097	0.123	0.113	0.065	0.076	0.072	0.077
Mum disappointment not graduate college (5 - high)	0.183	0.096	0.193	0.106	0.109	0.071	0.114	0.071

Table 8.22 continued

Parents care about you (very little)	0.921**	0.333	0.695	0.397	0.237	0.564	0.289	0.558
Parents care about you (somewhat)	0.930**	0.307	0.852*	0.371	-0.099	0.547	-0.047	0.541
Parents care about you (quite a bit)	0.945**	0.321	0.816*	0.385	0.274	0.531	0.344	0.524
Parents care about you (very much)	0.886**	0.316	0.739	0.376	0.282	0.532	0.353	0.525
Friends care about you (very little)	0.107	0.372	0.025	0.423	-0.051	0.502	-0.107	0.489
Friends care about you (somewhat)	-0.048	0.350	-0.153	0.379	-0.121	0.481	-0.197	0.467
Friends care about you (quite a bit)	0.046	0.347	-0.051	0.373	-0.071	0.477	-0.143	0.463
Friends care about you (very much)	0.114	0.345	0.032	0.372	-0.049	0.476	-0.112	0.461
Family understand you (very little)	0.061	0.145	-0.065	0.140	0.393**	0.136	0.397**	0.137
Family understand you (somewhat)	0.192	0.128	0.030	0.121	0.490***	0.129	0.488***	0.130
Family understand you (quite a bit)	0.280*	0.133	0.093	0.125	0.561***	0.130	0.556***	0.130
Family understand you (very much)	0.250	0.140	0.045	0.134	0.637***	0.142	0.624***	0.142
Want to leave home (very little)	-0.088	0.048	-0.059	0.047	-0.089*	0.044	-0.082	0.043
Want to leave home (somewhat)	-0.123*	0.058	-0.082	0.058	-0.090	0.047	-0.076	0.046
Want to leave home (quite a bit)	-0.046	0.070	0.014	0.070	-0.083	0.071	-0.073	0.070
Want to leave home (very much)	-0.212*	0.098	-0.121	0.097	-0.028	0.094	-0.006	0.095
Family has fun together (very little)	0.158	0.184	0.102	0.170	0.277	0.144	0.271	0.143
Family has fun together (somewhat)	0.282	0.176	0.224	0.158	0.346*	0.145	0.343*	0.143
Family has fun together (quite a bit)	0.365*	0.176	0.310	0.161	0.434**	0.139	0.432**	0.139
Family has fun together (very much)	0.418*	0.180	0.363*	0.163	0.422**	0.149	0.415**	0.148
Family pays attention to you (very little)	-0.250	0.247	-0.022	0.255	-0.521*	0.226	-0.523*	0.228
Family pays attention to you (somewhat)	-0.296	0.240	-0.096	0.249	-0.611**	0.219	-0.596**	0.218
Family pays attention to you (quite a bit)	-0.269	0.247	-0.086	0.253	-0.628**	0.212	-0.617**	0.211
Family pays attention to you (very much)	-0.297	0.254	-0.129	0.259	-0.508*	0.213	-0.493*	0.212
W1 Close to Mum (not very)	0.217	0.364	0.228	0.294	-0.308	0.346	-0.382	0.343
W1 Close to Mum (somewhat close)	0.369	0.367	0.402	0.287	-0.275	0.327	-0.334	0.325
W1 Close to Mum (quite close)	0.325	0.364	0.366	0.282	-0.232	0.329	-0.288	0.328
W1 Close to Mum (extremely close)	0.205	0.369	0.270	0.287	-0.296	0.334	-0.342	0.332
W1 How much does Mum care about you? (very little)	-0.303	0.431	-0.339	0.422	-0.441	0.486	-0.397	0.485
W1 How much does Mum care about you? (somewhat)	-0.023	0.340	0.090	0.296	0.136	0.436	0.144	0.430
W1 How much does Mum care about you? (quite a bit)	0.229	0.300	0.236	0.262	0.369	0.406	0.378	0.398
W1 How much does Mum care about you? (very much)	0.165	0.296	0.143	0.259	0.374	0.406	0.380	0.397

Table 8.22 continued

W1 Frequency eat dinner with parent	0.011	0.008	0.006	0.009	0.006	0.008	0.006	0.008
W1 Mum warm and loving most of the time (agree)	-0.090*	0.043	-0.095*	0.045	0.016	0.044	0.010	0.044
W1 Mum warm and loving most of the time (neither)	0.007	0.094	0.023	0.096	0.042	0.086	0.042	0.086
W1 Mum warm and loving most of the time (disagree)	-0.021	0.150	-0.010	0.150	0.073	0.146	0.067	0.145
W1 Mum warm and loving most of the time (strong dis.)	0.018	0.188	-0.062	0.204	0.147	0.147	0.142	0.145
W1 Mum encourages independence (agree)	-0.037	0.041	-0.050	0.042	-0.025	0.040	-0.025	0.040
W1 Mum encourages independence (neither)	0.070	0.060	0.034	0.060	-0.057	0.066	-0.051	0.065
W1 Mum encourages independence (disagree)	0.025	0.085	-0.016	0.083	0.112	0.103	0.095	0.103
W1 Mum encourages independence (strongly disagree)	0.156	0.221	0.212	0.225	-0.032	0.181	-0.064	0.181
W1 Mum helps to understand right/wrong (agree)	-0.021	0.052	-0.014	0.055	-0.036	0.048	-0.039	0.047
W1 Mum helps to understand right/wrong (neither)	-0.062	0.064	-0.077	0.065	-0.030	0.070	-0.036	0.070
W1 Mum helps to understand right/wrong (disagree)	0.035	0.086	0.012	0.091	-0.103	0.092	-0.113	0.092
W1 Mum helps to understand right/wrong (strongly dis.)	0.461*	0.185	0.391*	0.183	0.628*	0.271	0.605*	0.271
W1 Satisfied with communication w/ mother (agree)	-0.047	0.052	-0.045	0.054	0.003	0.053	0.006	0.052
W1 Satisfied with communication w/ mother (neither)	0.054	0.080	0.080	0.082	0.032	0.083	0.048	0.082
W1 Satisfied with communication w/ mother (disagree)	0.098	0.100	0.128	0.100	0.207*	0.099	0.218*	0.099
W1 Satisfied with communication w/ mother (strong dis.)	-0.019	0.165	0.093	0.163	0.430**	0.160	0.459**	0.159
W1 Satisfied with relationship with mother (agree)	-0.081	0.057	-0.069	0.060	-0.123*	0.048	-0.127**	0.048
W1 Satisfied with relationship with mother (neither)	-0.150	0.111	-0.148	0.109	-0.191	0.112	-0.200	0.112
W1 Satisfied with relationship with mother (disagree)	-0.094	0.148	-0.164	0.149	-0.223	0.148	-0.218	0.149
W1 Satisfied with relationship with mother (strongly dis.)	0.004	0.197	0.025	0.196	-0.477*	0.229	-0.470*	0.226
W1 Adults care about you (very little)	0.336	0.338	0.478	0.378	-0.042	0.215	-0.050	0.208
W1 Adults care about you (somewhat)	0.382	0.300	0.484	0.343	-0.047	0.193	-0.047	0.186
W1 Adults care about you (quite a bit)	0.414	0.296	0.520	0.340	0.130	0.197	0.130	0.191
W1 Adults care about you (very much)	0.416	0.295	0.552	0.339	0.168	0.197	0.169	0.190
W1 Parents care about you (very little)	-0.360	0.512	-0.272	0.574	0.098	0.302	0.102	0.296
W1 Parents care about you (somewhat)	-0.079	0.432	0.014	0.485	0.075	0.237	0.094	0.232
W1 Parents care about you (quite a bit)	-0.073	0.408	0.020	0.463	-0.015	0.218	0.006	0.213
W1 Parents care about you (very much)	-0.142	0.392	-0.034	0.451	-0.076	0.201	-0.057	0.197

Table 8.22 continued

W1 Friends care about you (very little)	-0.118	0.378	-0.318	0.448	0.425	0.258	0.431	0.251
W1 Friends care about you (somewhat)	0.254	0.335	0.010	0.401	0.236	0.221	0.258	0.216
W1 Friends care about you (quite a bit)	0.278	0.334	-0.002	0.406	0.328	0.225	0.344	0.219
W1 Friends care about you (very much)	0.334	0.337	0.071	0.409	0.389	0.225	0.402	0.218
W1 Family understands you (very little)	0.104	0.137	0.083	0.144	0.178	0.123	0.181	0.122
W1 Family understands you (somewhat)	-0.004	0.124	0.002	0.125	0.159	0.129	0.162	0.128
W1 Family understands you (quite a bit)	0.051	0.139	0.017	0.141	0.266*	0.132	0.263*	0.132
W1 Family understands you (very much)	-0.037	0.143	-0.059	0.146	0.214	0.137	0.211	0.137
W1 Want to leave home (very little)	0.024	0.044	0.048	0.043	-0.015	0.039	-0.017	0.039
W1 Want to leave home (somewhat)	0.003	0.064	0.004	0.066	-0.028	0.048	-0.027	0.048
W1 Want to leave home (quite a bit)	-0.119	0.083	-0.069	0.085	-0.060	0.073	-0.060	0.074
W1 Want to leave home (very much)	0.185	0.104	0.238*	0.112	0.014	0.092	0.012	0.091
W1 Family has fun together (very little)	0.132	0.173	0.137	0.161	0.025	0.167	0.015	0.167
W1 Family has fun together (somewhat)	0.133	0.164	0.094	0.154	0.138	0.162	0.138	0.162
W1 Family has fun together (quite a bit)	0.169	0.162	0.159	0.153	0.090	0.160	0.088	0.160
W1 Family has fun together (very much)	0.117	0.168	0.112	0.159	0.032	0.169	0.026	0.168
W1 Family pays attention to you (very little)	-0.292	0.243	-0.145	0.223	-0.337	0.242	-0.348	0.242
W1 Family pays attention to you (somewhat)	-0.097	0.262	0.041	0.243	-0.191	0.239	-0.214	0.239
W1 Family pays attention to you (quite a bit)	0.013	0.268	0.123	0.250	-0.206	0.243	-0.225	0.244
W1 Family pays attention to you (very much)	0.031	0.272	0.151	0.257	-0.167	0.247	-0.179	0.247
Model stats	n = 3354 F(121, 10) = 17.42, p < .001 R ² = .206 p = .0000		n = 3348 F(121, 10) = 5.29, p < .01 R ² = .169 p = .0032		n = 3353 F(121, 10) = 17.51, p < .001 R ² = .357 p = .0000		n = 3353 F(121, 10) = 16.12, p < .001 R ² = .365 p = .0000	

Table A8.23: Waves 1 and 2 intelligence variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>						
Constant	-0.615***	0.099	-0.579***	0.108	-0.490***	0.112	-0.505***	0.112
Perception of own intelligence (average)	0.311***	0.090	0.262**	0.099	0.338***	0.085	0.343***	0.085
Perception of own intelligence (above average)	0.480***	0.098	0.457***	0.106	0.535***	0.084	0.544***	0.084
Perception of own intelligence (extremely above)	0.443***	0.125	0.393**	0.137	0.727***	0.113	0.730***	0.114
W1 PVT	0.013***	0.002	0.012***	0.002	-0.004**	0.001	-0.004**	0.001
W1 Perception of own intelligence (average)	0.177*	0.074	0.170	0.094	0.018	0.075	0.023	0.075
W1 Perception of own intelligence (above average)	0.288***	0.082	0.258*	0.101	0.116	0.086	0.127	0.087
W1 Perception of own intelligence (extremely above)	0.275**	0.102	0.298*	0.120	0.161	0.126	0.178	0.128
Model stats	n = 3512 F(7, 124) = 32.37, p < .001 R ² = .087 p = .0000		n = 3502 F(7, 124) = 24.34, p < .001 R ² = .071 p = .0000		n = 3509 F(7, 124) = 14.64, p < .001 R ² = .032 p = .0000		n = 3509 F(7, 124) = 15.20, p < .001 R ² = .033 p = .0000	

Table A8.24: Waves 1 and 2 school perceptions (disparity) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	B	SE B	B	SE B	B	SE B	B	SE B
Constant	-0.234	0.188	-0.367	0.205	1.083***	0.190	1.083***	0.190
Trouble getting along with teachers (a few times)	0.026	0.040	0.030	0.042	-0.004	0.044	-0.003	0.044
Trouble getting along with teachers (once a week)	-0.000	0.069	-0.003	0.076	-0.018	0.077	-0.018	0.078
Trouble getting along with teachers (almost daily)	0.012	0.084	0.048	0.087	-0.030	0.090	-0.026	0.090
Trouble getting along with teachers (daily)	0.124	0.163	0.244	0.176	-0.034	0.170	-0.052	0.170
Have trouble paying attention in school (a few times)	-0.015	0.054	0.007	0.056	-0.167***	0.050	-0.163**	0.050
Have trouble paying attention in school (once a week)	-0.037	0.072	0.033	0.073	-0.269***	0.070	-0.258***	0.070
Have trouble paying attention in school (almost daily)	-0.174*	0.084	-0.081	0.088	-0.333***	0.081	-0.323***	0.081
Have trouble paying attention in school (daily)	0.049	0.143	0.132	0.147	-0.330	0.180	-0.307	0.180
Have trouble getting homework done (a few times)	-0.071	0.048	-0.067	0.051	-0.100*	0.040	-0.095*	0.040
Have trouble getting homework done (once a week)	-0.084	0.055	-0.074	0.057	-0.084	0.060	-0.081	0.060
Have trouble getting homework done (almost daily)	-0.056	0.078	-0.009	0.081	-0.241**	0.079	-0.228**	0.080
Have trouble getting homework done (daily)	-0.412**	0.130	-0.319*	0.124	-0.329*	0.148	-0.320*	0.150
Trouble getting along with students (a few times)	-0.040	0.038	0.004	0.040	-0.017	0.036	-0.018	0.036
Trouble getting along with students (once a week)	-0.169*	0.077	-0.070	0.081	-0.077	0.076	-0.086	0.078
Trouble getting along with students (almost daily)	-0.272**	0.091	-0.193	0.101	-0.090	0.110	-0.105	0.112
Trouble getting along with other students (daily)	-0.247*	0.114	-0.164	0.109	0.162	0.128	0.135	0.129
Feel close to people at school (agree)	0.067	0.059	0.052	0.061	-0.023	0.048	-0.024	0.047
Feel close to people at school (neither)	0.101	0.070	0.073	0.074	-0.005	0.067	-0.008	0.067
Feel close to people at school (disagree)	0.171*	0.082	0.159	0.089	-0.034	0.093	-0.036	0.091
Feel close to people at school (strongly disagree)	-0.190	0.176	-0.107	0.187	-0.342*	0.169	-0.350*	0.166
Feel part of your school (agree)	-0.154**	0.054	-0.167**	0.055	-0.181***	0.041	-0.191***	0.042
Feel part of your school (neither)	-0.262***	0.071	-0.274***	0.073	-0.250**	0.079	-0.257**	0.079
Feel part of your school (disagree)	-0.466***	0.091	-0.458***	0.097	-0.437***	0.106	-0.434***	0.107
Feel part of your school (strongly disagree)	-0.269	0.145	-0.163	0.143	-0.691***	0.189	-0.715***	0.190

Table A8.24 continued

Students at school are prejudiced (agree)	-0.019	0.062	-0.039	0.061	-0.060	0.058	-0.064	0.058
Students at school are prejudiced (neither)	-0.120	0.064	-0.148*	0.066	-0.069	0.061	-0.071	0.061
Students at school are prejudiced (disagree)	-0.120	0.072	-0.138	0.071	-0.078	0.061	-0.082	0.061
Students at school are prejudiced (strongly disagree)	0.014	0.090	-0.018	0.089	0.119	0.076	0.118	0.075
Happy at your school (agree)	-0.078	0.056	-0.094	0.061	-0.112*	0.044	-0.111*	0.044
Happy at your school (neither)	-0.171**	0.063	-0.162*	0.068	-0.211**	0.070	-0.202**	0.070
Happy at your school (disagree)	-0.201*	0.083	-0.212*	0.084	-0.108	0.079	-0.099	0.078
Happy at your school (strongly disagree)	-0.053	0.132	-0.084	0.143	0.000	0.108	0.013	0.107
Teachers treat students fairly (agree)	0.065	0.067	0.031	0.071	0.047	0.045	0.039	0.045
Teachers treat students fairly (neither)	0.004	0.070	-0.006	0.069	-0.001	0.050	-0.003	0.049
Teachers treat students fairly (disagree)	-0.019	0.083	-0.031	0.086	-0.029	0.064	-0.031	0.064
Teachers treat students fairly (strongly disagree)	0.103	0.117	0.080	0.119	-0.056	0.120	-0.055	0.120
Feel safe in your school (agree)	-0.136*	0.054	-0.120*	0.058	-0.171***	0.040	-0.175***	0.039
Feel safe in your school (neither)	-0.267***	0.060	-0.223***	0.059	-0.268***	0.059	-0.273***	0.059
Feel safe in your school (disagree)	-0.200*	0.083	-0.093	0.082	-0.256**	0.076	-0.251**	0.075
Feel safe in your school (strongly disagree)	-0.205	0.125	-0.100	0.138	-0.190	0.128	-0.177	0.127
Teachers care about you (very little)	0.202	0.112	0.245*	0.114	-0.255*	0.120	-0.247*	0.122
Teachers care about you (somewhat)	0.387***	0.109	0.393**	0.121	-0.129	0.115	-0.120	0.116
Teachers care about you (quite a bit)	0.476***	0.111	0.515***	0.124	-0.071	0.112	-0.064	0.113
Teachers care about you (very much)	0.532***	0.114	0.564***	0.126	0.052	0.117	0.064	0.117
Disparity (want and likelihood) college	-0.025	0.023	0.007	0.025	-0.057*	0.025	-0.056*	0.025
Disparity (want and likelihood) college squared	-0.045**	0.015	-0.036*	0.016	-0.024	0.012	-0.023*	0.012
W1 Feel close to people at school (agree)	-0.049	0.045	-0.069	0.046	0.082	0.048	0.082	0.048
W1 Feel close to people at school (neither)	0.041	0.059	-0.017	0.062	0.138*	0.057	0.135*	0.056
W1 Feel close to people at school (disagree)	-0.234*	0.091	-0.257*	0.103	0.103	0.097	0.102	0.096
W1 Feel close to people at school (strongly disagree)	-0.091	0.146	-0.146	0.144	0.149	0.124	0.138	0.124
W1 Feel part of your school (agree)	-0.051	0.050	-0.056	0.053	-0.123**	0.043	-0.128**	0.042
W1 Feel part of your school (neither)	0.008	0.072	0.033	0.075	-0.230***	0.068	-0.236***	0.067
W1 Feel part of your school (disagree)	-0.055	0.105	-0.094	0.110	-0.163	0.085	-0.179*	0.086
W1 Feel part of your school (strongly disagree)	-0.081	0.146	-0.131	0.156	-0.216	0.175	-0.231	0.174

Table A8.24 continued

W1 Students at school are prejudiced (agree)	0.055	0.069	0.048	0.066	-0.159**	0.059	-0.163**	0.059
W1 Students at school are prejudiced (neither)	0.071	0.072	0.054	0.066	-0.107	0.063	-0.109	0.063
W1 Students at school are prejudiced (disagree)	-0.013	0.081	-0.040	0.077	-0.162*	0.065	-0.169*	0.064
W1 Students at school are prejudiced (strong dis)	-0.056	0.084	-0.088	0.082	0.021	0.067	0.017	0.067
W1 Happy at your school (agree)	-0.053	0.048	-0.054	0.051	-0.040	0.043	-0.044	0.043
W1 Happy at your school (neither)	-0.000	0.064	-0.004	0.067	-0.054	0.059	-0.060	0.059
W1 Happy at your school (disagree)	-0.125	0.078	-0.090	0.081	-0.212**	0.072	-0.213**	0.071
W1 Happy at your school (strongly disagree)	0.039	0.107	0.105	0.109	-0.073	0.117	-0.068	0.116
W1 Teachers treat students fairly (agree)	-0.010	0.051	-0.010	0.055	-0.101*	0.045	-0.105*	0.046
W1 Teachers treat students fairly (neither)	0.032	0.060	0.048	0.064	-0.111	0.058	-0.108	0.057
W1 Teachers treat students fairly (disagree)	0.068	0.075	0.076	0.082	-0.041	0.079	-0.042	0.080
W1 Teachers treat students fairly (strongly disagree)	0.180	0.118	0.225	0.122	-0.227	0.115	-0.221	0.115
W1 Feel safe in your school (agree)	-0.039	0.054	-0.037	0.056	-0.048	0.045	-0.050	0.046
W1 Feel safe in your school (neither)	-0.054	0.061	-0.020	0.063	0.013	0.063	0.016	0.064
W1 Feel safe in your school (disagree)	-0.045	0.088	-0.045	0.091	-0.036	0.067	-0.034	0.068
W1 Feel safe in your school (strongly disagree)	0.037	0.135	0.165	0.129	0.035	0.115	0.031	0.116
W1 Teachers care about you (very little)	0.411**	0.144	0.454**	0.157	-0.063	0.133	-0.051	0.132
W1 Teachers care about you (somewhat)	0.453***	0.134	0.517***	0.142	-0.005	0.127	0.006	0.126
W1 Teachers care about you (quite a bit)	0.513***	0.136	0.570***	0.151	0.125	0.135	0.136	0.134
W1 Teachers care about you (very much)	0.444**	0.145	0.501**	0.158	0.134	0.147	0.143	0.147
W1 Trouble getting along with teachers (a few times)	0.054	0.037	0.026	0.039	0.104*	0.040	0.105*	0.040
W1 Trouble getting along with teachers (once a week)	0.015	0.077	-0.038	0.081	0.209**	0.063	0.204**	0.062
W1 Trouble getting along with teachers (almost daily)	-0.173*	0.084	-0.213*	0.093	0.169	0.091	0.161	0.090
W1 Trouble getting along with teachers (daily)	0.177	0.106	0.084	0.106	0.405***	0.107	0.401***	0.108
W Trouble paying attention in school (few times)	0.017	0.044	0.043	0.048	-0.007	0.047	-0.008	0.047
W1 Trouble paying attention in school (once a week)	0.020	0.066	0.049	0.068	-0.050	0.058	-0.046	0.058
W1 Trouble paying attention in school (almost daily)	-0.014	0.072	-0.007	0.076	-0.159*	0.071	-0.155*	0.071
W1 Trouble paying attention in school (daily)	-0.018	0.113	0.008	0.127	-0.167	0.119	-0.167	0.119
W1 Have trouble getting homework done (a few times)	-0.080	0.044	-0.068	0.049	-0.035	0.044	-0.031	0.044
W1 Have trouble getting homework done (once a week)	-0.071	0.065	-0.060	0.069	-0.042	0.062	-0.049	0.062
W1 Have trouble getting homework done (almost daily)	-0.066	0.079	-0.032	0.085	-0.095	0.081	-0.101	0.082
W1 Have trouble getting homework done (daily)	-0.023	0.124	-0.070	0.134	0.238*	0.120	0.231	0.120

Table A8.24 continued

W1 Trouble getting along with students (a few times)	-0.016	0.036	-0.009	0.037	-0.054	0.041	-0.056	0.040
W1 Trouble getting along with students (once a week)	0.063	0.061	0.115	0.065	0.050	0.065	0.057	0.065
W1 Trouble getting along with students (almost daily)	0.007	0.077	0.099	0.081	-0.029	0.090	-0.027	0.090
W1 Trouble getting along with other students (daily)	0.042	0.115	0.066	0.128	0.035	0.099	0.061	0.099
W1 Disparity (want and likelihood) college	-0.004	0.024	-0.010	0.025	0.010	0.024	0.009	0.024
W1 Disparity (want and likelihood) college squared	-0.034**	0.012	-0.037**	0.013	-0.004	0.010	-0.005	0.010
Model stats	n = 3587 F(92, 39) = 6.73, p < .001 R ² = .180 p = .0000		n = 3580 F(92, 39) = 6.66, p < .001 R ² = .142 p = .0000		n = 3581 F(92, 39) = 12.84, p < .001 R ² = .252 p = .0000		n = 3581 F(92, 39) = 13.40, p < .001 R ² = .253 p = .0000	

Table A8.25: Waves 1 and 2 school perceptions (original) variables

Variable	Feelings Scale		Feelings Scale FA		Personality Qs		Personality Qs FA	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Constant	-0.929**	0.307	-1.173***	0.340	1.136***	0.211	1.116***	0.213
Trouble getting along with teachers (a few times)	0.041	0.039	0.048	0.040	0.010	0.042	0.011	0.042
Trouble getting along with teachers (once a week)	0.031	0.066	0.032	0.070	-0.007	0.078	-0.006	0.079
Trouble getting along with teachers (almost daily)	0.084	0.083	0.124	0.087	0.030	0.090	0.038	0.090
Trouble getting along with teachers (daily)	0.159	0.167	0.275	0.177	0.012	0.177	-0.004	0.176
Have trouble paying attention in school (a few times)	-0.039	0.051	-0.022	0.053	-0.175***	0.049	-0.172***	0.049
Have trouble paying attention in school (once a week)	-0.076	0.067	-0.013	0.068	-0.285***	0.070	-0.276***	0.070
Have trouble paying attention in school (almost daily)	-0.199*	0.078	-0.112	0.081	-0.345***	0.082	-0.336***	0.082
Have trouble paying attention in school (daily)	0.014	0.140	0.089	0.143	-0.369*	0.171	-0.348*	0.171
Have trouble getting homework done (a few times)	-0.080	0.045	-0.078	0.046	-0.092*	0.038	-0.087*	0.038
Have trouble getting homework done (once a week)	-0.103	0.054	-0.097	0.056	-0.078	0.057	-0.076	0.057
Have trouble getting homework done (almost daily)	-0.064	0.074	-0.019	0.078	-0.239**	0.076	-0.227**	0.076
Have trouble getting homework done (daily)	-0.419**	0.125	-0.327**	0.118	-0.317*	0.143	-0.308*	0.144

Table A8.25 continued

Trouble getting along with students (a few times)	-0.042	0.038	-0.001	0.039	-0.010	0.036	-0.011	0.036
Trouble getting along with students (once a week)	-0.143	0.076	-0.043	0.078	-0.063	0.076	-0.071	0.077
Trouble getting along with students (almost daily)	-0.263**	0.093	-0.181	0.105	-0.070	0.107	-0.085	0.109
Trouble getting along with other students (daily)	-0.198	0.115	-0.107	0.107	0.198	0.130	0.174	0.130
Feel close to people at school (agree)	0.069	0.057	0.050	0.059	-0.020	0.049	-0.021	0.049
Feel close to people at school (neither)	0.089	0.072	0.055	0.075	-0.001	0.069	-0.004	0.069
Feel close to people at school (disagree)	0.133	0.081	0.116	0.087	-0.050	0.097	-0.054	0.096
Feel close to people at school (strongly disagree)	-0.196	0.180	-0.119	0.189	-0.337*	0.170	-0.347*	0.167
Feel part of your school (agree)	-0.131*	0.050	-0.138**	0.050	-0.167***	0.041	-0.175***	0.041
Feel part of your school (neither)	-0.192**	0.073	-0.195**	0.074	-0.207*	0.079	-0.212**	0.079
Feel part of your school (disagree)	-0.404***	0.089	-0.387***	0.094	-0.407***	0.107	-0.400***	0.108
Feel part of your school (strongly disagree)	-0.261	0.142	-0.149	0.138	-0.682***	0.187	-0.705***	0.188
Students at school are prejudiced (agree)	-0.002	0.060	-0.022	0.059	-0.053	0.058	-0.056	0.059
Students at school are prejudiced (neither)	-0.102	0.064	-0.131*	0.066	-0.054	0.062	-0.055	0.062
Students at school are prejudiced (disagree)	-0.099	0.071	-0.116	0.069	-0.066	0.061	-0.069	0.060
Students at school are prejudiced (strongly disagree)	0.035	0.088	0.001	0.086	0.126	0.077	0.126	0.076
Happy at your school (agree)	-0.077	0.054	-0.092	0.058	-0.112**	0.042	-0.111**	0.042
Happy at your school (neither)	-0.199**	0.063	-0.192**	0.068	-0.222**	0.067	-0.213**	0.067
Happy at your school (disagree)	-0.230**	0.081	-0.239**	0.081	-0.124	0.079	-0.116	0.078
Happy at your school (strongly disagree)	-0.094	0.124	-0.121	0.133	-0.028	0.101	-0.017	0.101
Teachers treat students fairly (agree)	0.057	0.064	0.023	0.068	0.042	0.044	0.034	0.044
Teachers treat students fairly (neither)	-0.015	0.069	-0.027	0.069	-0.008	0.049	-0.011	0.049
Teachers treat students fairly (disagree)	-0.031	0.081	-0.045	0.083	-0.030	0.061	-0.032	0.061
Teachers treat students fairly (strongly disagree)	0.117	0.116	0.093	0.114	-0.050	0.117	-0.049	0.118
Feel safe in your school (agree)	-0.128*	0.052	-0.113*	0.056	-0.159***	0.042	-0.163***	0.042
Feel safe in your school (neither)	-0.248***	0.061	-0.202***	0.060	-0.248***	0.058	-0.251***	0.059
Feel safe in your school (disagree)	-0.168*	0.082	-0.057	0.082	-0.239**	0.079	-0.233**	0.077
Feel safe in your school (strongly disagree)	-0.217	0.129	-0.110	0.139	-0.195	0.128	-0.182	0.127
Want to attend college (2)	0.018	0.158	0.087	0.157	-0.285	0.149	-0.292	0.151
Want to attend college (3)	0.017	0.164	0.163	0.165	-0.108	0.160	-0.110	0.161
Want to attend college (4)	0.107	0.168	0.295	0.172	-0.073	0.172	-0.063	0.172
Want to attend college (5 high)	0.092	0.169	0.309	0.167	-0.057	0.171	-0.044	0.171

Table A8.25 continued

Likelihood of attending college (2)	-0.228	0.163	-0.257	0.160	-0.197	0.144	-0.212	0.146
Likelihood of attending college (3)	-0.085	0.150	-0.197	0.151	0.065	0.142	0.053	0.143
Likelihood of attending college (4)	0.018	0.146	-0.126	0.147	0.061	0.151	0.051	0.150
Likelihood of attending college (5 high)	0.134	0.146	-0.029	0.144	0.273	0.154	0.265	0.153
Teachers care about you (very little)	0.186	0.112	0.218	0.114	-0.282*	0.118	-0.276*	0.120
Teachers care about you (somewhat)	0.347**	0.105	0.338**	0.113	-0.164	0.112	-0.158	0.113
Teachers care about you (quite a bit)	0.411***	0.107	0.432***	0.116	-0.129	0.111	-0.125	0.112
Teachers care about you (very much)	0.443***	0.107	0.457***	0.115	-0.013	0.114	-0.006	0.114
W1 Feel close to people at school (agree)	-0.033	0.042	-0.049	0.043	0.094*	0.047	0.095*	0.047
W1 Feel close to people at school (neither)	0.068	0.056	0.017	0.058	0.147*	0.056	0.145*	0.055
W1 Feel close to people at school (disagree)	-0.219*	0.089	-0.235*	0.100	0.120	0.096	0.120	0.094
W1 Feel close to people at school (strongly disagree)	-0.102	0.149	-0.157	0.147	0.148	0.124	0.136	0.124
W1 Feel part of your school (agree)	-0.038	0.046	-0.042	0.049	-0.120**	0.043	-0.125**	0.042
W1 Feel part of your school (neither)	0.038	0.070	0.067	0.072	-0.235**	0.071	-0.241***	0.070
W1 Feel part of your school (disagree)	-0.019	0.098	-0.047	0.102	-0.164	0.084	-0.179*	0.085
W1 Feel part of your school (strongly disagree)	-0.033	0.136	-0.075	0.145	-0.206	0.166	-0.218	0.164
W1 Students at school are prejudiced (agree)	0.060	0.066	0.055	0.064	-0.161**	0.058	-0.165**	0.058
W1 Students at school are prejudiced (neither)	0.066	0.070	0.050	0.066	-0.109	0.063	-0.112	0.064
W1 Students at school are prejudiced (disagree)	0.014	0.077	-0.008	0.074	-0.148*	0.064	-0.154*	0.063
W1 Students at school are prejudiced (strong dis)	-0.038	0.082	-0.066	0.080	0.038	0.067	0.035	0.067
W1 Happy at your school (agree)	-0.043	0.044	-0.042	0.047	-0.037	0.042	-0.041	0.042
W1 Happy at your school (neither)	0.004	0.064	0.001	0.066	-0.055	0.058	-0.062	0.058
W1 Happy at your school (disagree)	-0.092	0.079	-0.057	0.081	-0.190*	0.073	-0.191**	0.072
W1 Happy at your school (strongly disagree)	0.034	0.098	0.098	0.100	-0.064	0.111	-0.060	0.110
W1 Teachers treat students fairly (agree)	-0.018	0.051	-0.019	0.056	-0.114*	0.045	-0.118*	0.045
W1 Teachers treat students fairly (neither)	0.017	0.059	0.030	0.064	-0.121*	0.057	-0.118*	0.056
W1 Teachers treat students fairly (disagree)	0.063	0.072	0.071	0.078	-0.046	0.078	-0.047	0.080
W1 Teachers treat students fairly (strongly disagree)	0.131	0.114	0.173	0.118	-0.278*	0.114	-0.275*	0.114
W1 Feel safe in your school (agree)	-0.030	0.050	-0.029	0.051	-0.038	0.044	-0.039	0.045
W1 Feel safe in your school (neither)	-0.042	0.061	-0.008	0.062	0.017	0.062	0.020	0.062
W1 Feel safe in your school (disagree)	-0.036	0.084	-0.037	0.089	-0.026	0.068	-0.023	0.068
W1 Feel safe in your school (strongly disagree)	0.051	0.126	0.177	0.120	0.078	0.117	0.076	0.118

Table A8.25 continued

W1 Teachers care about you (very little)	0.354**	0.134	0.386**	0.141	-0.064	0.133	-0.055	0.132
W1 Teachers care about you (somewhat)	0.381**	0.123	0.435**	0.131	-0.023	0.126	-0.016	0.124
W1 Teachers care about you (quite a bit)	0.429***	0.125	0.473***	0.138	0.098	0.133	0.105	0.131
W1 Teachers care about you (very much)	0.346*	0.132	0.393**	0.142	0.096	0.144	0.100	0.143
W1 Trouble getting along with teachers (a few times)	0.046	0.037	0.016	0.039	0.100*	0.041	0.101*	0.041
W1 Trouble getting along with teachers (once a week)	0.025	0.070	-0.028	0.073	0.208**	0.066	0.204**	0.065
W1 Trouble getting along with teachers (almost daily)	-0.174*	0.088	-0.213*	0.096	0.186*	0.089	0.178*	0.088
W1 Trouble getting along with teachers (daily)	0.139	0.100	0.047	0.100	0.382***	0.106	0.376***	0.108
W Trouble paying attention in school (few times)	0.038	0.042	0.066	0.046	-0.003	0.046	-0.003	0.046
W1 Trouble paying attention in school (once a week)	0.025	0.062	0.058	0.063	-0.049	0.058	-0.044	0.058
W1 Trouble paying attention in school (almost daily)	0.010	0.070	0.024	0.074	-0.158*	0.070	-0.153*	0.071
W1 Trouble paying attention in school (daily)	0.025	0.112	0.057	0.126	-0.144	0.118	-0.141	0.118
W1 Have trouble getting homework done (a few times)	-0.068	0.041	-0.053	0.047	-0.025	0.044	-0.020	0.045
W1 Have trouble getting homework done (once a week)	-0.035	0.061	-0.019	0.065	-0.006	0.063	-0.011	0.063
W1 Have trouble getting homework done (almost daily)	-0.018	0.077	0.020	0.081	-0.056	0.082	-0.061	0.082
W1 Have trouble getting homework done (daily)	0.030	0.117	-0.021	0.129	0.262*	0.116	0.255*	0.115
W1 Trouble getting along with students (a few times)	-0.004	0.036	0.005	0.037	-0.052	0.040	-0.053	0.040
W1 Trouble getting along with students (once a week)	0.101	0.065	0.153*	0.068	0.070	0.063	0.078	0.063
W1 Trouble getting along with students (almost daily)	0.036	0.079	0.131	0.081	-0.038	0.087	-0.035	0.087
W1 Trouble getting along with other students (daily)	0.012	0.109	0.046	0.122	-0.008	0.099	0.018	0.097
W1 Want to attend college (2)	0.191	0.225	0.260	0.238	-0.175	0.155	-0.170	0.155
W1 Want to attend college (3)	0.220	0.213	0.259	0.221	-0.137	0.141	-0.134	0.142
W1 Want to attend college (4)	0.264	0.219	0.301	0.230	-0.152	0.148	-0.147	0.149
W1 Want to attend college (5 high)	0.362	0.215	0.409	0.228	-0.095	0.133	-0.088	0.134
W1 Likelihood of attending college (2)	0.357*	0.151	0.368*	0.156	0.020	0.147	0.039	0.148
W1 Likelihood of attending college (3)	0.141	0.132	0.151	0.133	0.005	0.132	0.021	0.135
W1 Likelihood of attending college (4)	0.138	0.129	0.153	0.133	-0.111	0.129	-0.098	0.131
W1 Likelihood of attending college (5 high)	0.288*	0.128	0.325*	0.135	-0.073	0.129	-0.056	0.131
Model stats	n = 3586 F(104, 27) = 4.88, p < .001, R ² = .209,		n = 3579 F(104, 27) = 5.06, p < .001, R ² = .180		n = 3580 F(104, 27) = 21.98, p < .001, R ² = .269		n = 3580 F(104, 27) = 19.91, p < .001, R ² = .272	
	p = .0000		p = .0000		p = .0000		p = .0000	

Appendix 9: Descriptives and preliminary analysis of HBSC USA

This appendix presents the descriptive information for all of the variables potentially included in the analysis of the HBSC (Health Behaviors in School-aged Children) datasets. This is followed by the preliminary analysis conducted and summarised in Chapter 9.

Descriptives for predictor variables

Table A9.1: Independent Variables: Demographic characteristics

Variable	Wave	Potential responses								Missing
Gender	2001/02	Male 7088 (47.84%)				Female 7729 (52.16%)				0
	2005/06	4456 (48.29%)				4742 (51.39)				29 (0.31%)
	2009/10	6502 (51.43%)				6136 (48.54%)				4 (0.03%)
Age	2001/02	10 25 (0.17%)	11 2177 (14.69%)	12 3055 (20.62%)	13 2876 (19.41%)	14 2747 (18.54%)	15 2666 (17.99%)	16 1175 (7.93)	1796 (0.65%)	0
	2005/06	- -	989 ⁸⁰ (10.72%)	2005 (21.73%)	1899 (20.58%)	1660 (17.99%)	1543 (16.72%)	950 (10.30%)	55 (0.60%)	126 (1.37%)
	2009/10	1157 ⁸¹ (9.15%)	1828 (14.46%)	2229 (17.63%)	2473 (19.56%)	2143 (16.95%)	1888 (14.93%)	772 (6.11%)	133 ⁸² (1.05%)	19 (0.15%)
School grade	2001/02	5 th -	6 th 3741 (25.25%)	7 th 2907 (19.62%)	8 th 2764 (18.65%)	9 th 2751 (18.57%)	10 th 2654 (17.91%)			0
	2005/06	-	2404 (26.05%)	1880 (20.37%)	1830 (19.83%)	1486 (16.10%)	1627 (17.63%)			0
	2009/10	1717 (13.58%)	2050 (16.22%)	2421 (19.15%)	2475 (19.58%)	2072 (16.39%)	1907 (15.08%)			0

⁸⁰ Includes 11 or younger

⁸¹ Includes 10 or younger

⁸² Includes 17 or older

Table A9.1 continued

Race/ethnicity	2001/02	White 7408 (50.00%)	African Ameri. 2893 (19.52%)	Hispanic/Latino 2453 (16.56%)	Asian 651 (4.39%)	Native Ameri. 971 (6.55%)	Pacific Island. 262 (1.77%)	179 (1.21%)
	2005/06	3974 (43.07%)	1698 (18.40%)	2165 (23.46%)	324 (3.51%)	494 (5.35%)	166 (1.81%)	406 (4.40%)
	2009/10	5334 (42.19%)	2126 (16.82%)	3187 (25.21%)	598 (4.73%)	619 (4.90%)	225 (1.78%)	553 (4.37%)
Live with mother (mother in main home)	2001/02	Yes 13299 (89.76%)			No 1518 (10.24%)			0
	2005/06	8184 (88.70%)			1043 (11.30%)			0
	2009/10	11242 (88.93%)			1400 (11.07%)			0
Live with father (main home)	2001/02	Yes 9220 (62.23%)			No 5597 (37.77%)			0
	2005/06	5499 (59.60%)			3728 (40.40%)			0
	2009/10	7903 (62.51%)			4739 (37.49%)			0
Number of brothers and sisters (lives with)	2001/02	None 1735 (11.71%)	One 4735 (31.96%)	Two 3966 (26.77%)	Three 2042 (13.78%)	Four or more 1727 (11.66%)	612 (4.13%)	
	2005/06	955 (10.35%)	2783 (30.16%)	2417 (26.19%)	1359 (14.73%)	1363 (14.77%)	350 (3.79%)	
	2009/10	1207 (9.55%)	3652 (28.89%)	3450 (27.29%)	1822 (14.41%)	2026 (16.03%)	485 (3.84%)	

Table A9.2: Independent Variables: Family socio-economics/financial

Variable	Wave	Potential responses					Missing
Family well off	2001/02	Very well off 4108 (27.72%)	Quite well off 3597 (24.28%)	Average 4515 (30.47%)	Not very well off 713 (4.81%)	Not at all well off 502 (3.39%)	1382 (9.33%)
	2005/06	1533 (16.61%)	2338 (25.34%)	4187 (45.38%)	708 (7.67%)	208 (2.25%)	253 (2.74%)
	2009/10	2130 (16.85%)	2833 (22.41%)	5582 (44.15%)	1028 (8.13%)	303 (2.40%)	766 (6.06%)

Table A9.2 continued

Number of family holidays in past 12 months	2001/02	Not at all 2676 (18.06%)	Once 3643 (24.59%)	Twice 3359 (22.67%)	More than twice 3941 (26.60%)	1198 (8.09%)
	2005/06	1821 (19.74%)	2248 (24.36%)	2104 (22.80%)	2997 (32.48%)	57 (0.62%)
	2009/10	2708 (21.42%)	3208 (25.38%)	2763 (21.86%)	3870 (30.61%)	93 (0.74%)
Family own a car or van	2001/02	No 526 (3.55%)	Yes, one 2601 (17.55%)		Yes, two or more 10538 (71.12%)	1152 (7.77%)
	2005/06	266 (2.88%)	1761 (19.09%)		7162 (77.62%)	38 (0.41%)
	2009/10	488 (3.86%)	2582 (20.42%)		9529 (75.38%)	43 (0.34%)
Family own a computer	2001/02	None 1785 (12.05%)	One 7098 (47.90%)	Two 3588 (24.22%)	More than two 2299 (15.52%)	47 (0.32%)
	2005/06	781 (8.46%)	3658 (39.64%)	2470 (26.77%)	2282 (24.73%)	36 (0.39%)
	2009/10	693 (5.48%)	4339 (34.32%)	3665 (28.99%)	3909 (30.92%)	36 (0.28%)
Own bedroom	2001/02	No 3476 (23.46%)		Yes 10194 (68.80%)		1147 (7.74%)
	2005/06	2306 (24.99%)		6878 (74.54%)		43 (0.47%)
	2009/10	3612 (28.57%)		8959 (70.87%)		71 (0.56%)
Mother job	2001/02	No 2340 (15.79%) ⁸³		Yes 9316 (62.87%)		3161 (21.33%)
	2005/06	2008 (21.76%)		6434 (69.73%)		785 (8.51%)
	2009/10	2911 (23.03%)		8672 (68.60%)		1059 (8.38%)
Father job	2001/02	No 585 (3.95%)		Yes 10513 (70.95%)		3719 (25.10%)
	2005/06	713 (7.73%)		7024 (76.12%)		1490 (16.15%)
	2009/10	1007 (7.97%)		9547 (75.52%)		2088 (16.52%)

⁸³ For the 2001/02 and 2005/06 waves the responses 'do not know' and 'do not have/see' mother were coded as missing.

It is noticeable that there appears to be a likely effect of the recession on the number of children reporting their family being well off. Similarly there has been a significant increase in the prevalence of computer ownership, which may affect the stability of the FAS (Family Affluence Scale).

Table A9.3 presents health and risk behaviours. The time spent watching TV variable was created by averaging responses for weekends and weekdays to provide an overview. A variable relating to time spent on computers was not included due to inconsistency in the question across surveys. It was originally intended to include a variable relating to whether respondents had ever used marijuana. However because of the very high number of missing cases for this variable (10041, 67.77%) for this variable in the 2001/02 wave this was not possible. Indeed this wave has a comparatively high number of missing cases for nearly all of the health and risk behaviours variables, especially those relating to the use of tobacco and alcohol. It is not clear from the literature accompanying the data why this should be the case. There was also a large increase in the number of children reporting injuries in this wave, despite the wording of the question not changing.

Table A9.3: Independent Variables: Health and risk behaviours

Variable	Wave	Potential responses						Missing
Hours spent watching TV per day	2001/02	none 123 (0.83%)	< 0.5 220 (1.48%)	0.5-1 2022 (13.65%)	2-3 4994 (33.70%)	4 2187 (14.76%)	>4 4368 (29.48%)	903 (6.09%)
	2005/06	113 (1.22%)	230 (2.49%)	1795 (19.45%)	3467 (37.57%)	1182 (12.81%)	2144 (23.24%)	296 (3.21%)
	2009/10	260 (2.06%)	442 (3.50%)	3045 (24.09%)	4612 (36.48%)	1453 (11.49%)	2339 (18.50%)	491 (3.88%)
Overall health	2001/02	Poor 330 (2.23%)		Fair 2753 (18.58%)	Good 7492 (50.56%)	Excellent 3695 (24.94%)		547 (3.69%)
	2005/06	303 (3.28%)		1906 (20.66%)	4921 (53.33%)	1962 (21.26%)		135 (1.46%)
	2009/10	382 (3.02%)		2321 (18.36%)	6461 (51.11%)	3305 (26.14%)		173 (1.37%)
Frequency of exercise	2001/02	Never/< 1 p/w 1093 (7.38%)	1 day p/w 1118 (7.55%)	2-3 days p/w 3233 (21.82%)	4-6 days p/w 5165 (34.86%)	Every day 3821 (25.79%)		387 (2.61%)
	2005/06	654 (7.09%)	641 (6.95%)	1984 (21.50%)	3436 (37.24%)	2387 (25.87%)		125 (1.35%)
	2009/10	780 (6.17%)	799 (6.32%)	2659 (21.03%)	4785 (37.85%)	3356 (26.55%)		263 (2.08%)
Thoughts about body	2001/02	Much too thin 376 (2.54%)	A bit too thin 1590 (10.73%)	About right 7933 (53.54%)	A bit too fat 3998 (26.98%)	Much too fat 650 (4.39%)		270 (1.82%)
	2005/06	148 (1.60%)	899 (9.74%)	5198 (56.33%)	2515 (27.26%)	393 (4.26%)		74 (0.80%)
	2009/10	244 (1.93%)	1247 (9.86%)	7503 (59.35%)	3084 (24.39%)	387 (3.06%)		177 (1.40%)
On a diet	2001/02	No – weight is fine 8620 (58.18%)		No – want to lose weight 2992 (20.19%)		Yes 2962 (19.99%)		243 (1.64%)
	2005/06	5021 (54.42%)		2033 (22.03%)		2060 (22.33%)		113 (1.22%)
	2009/10	7338 (58.04%)		2728 (21.58%)		2320 (18.35%)		256 (2.02%)
Ever smoked tobacco	2001/02	No 9459 (63.84%)			Yes 3942 (26.60%)			1416 (9.56%)
	2005/06	6846 (74.20%)			2043 (22.14%)			338 (3.66%)
	2009/10	10233 (80.94%)			1932 (15.28%)			477 (3.77%)

Table A9.3 continued

Currently smoke (frequency)	2001/02	Don't smoke 11449 (77.27%)	< once p/w 858 (5.79%)	At least once p/w 415 (2.80%)	Every day 616 (4.16%)	1479 (9.98%)	
	2005/06	7954 (86.20%)	429 (4.65%)	199 (2.16%)	284 (3.08%)	361 (3.91%)	
	2009/10	11071 (87.57%)	502 (3.97%)	266 (2.10%)	270 (2.14%)	533 (4.22%)	
Currently smoke (binary)	2001/02	No 11449 (77.27%)		yes 1889 (12.75%)		1479 (9.98%)	
	2005/06	7954 (86.20%)		912 (9.88%)		361 (3.91%)	
	2009/10	11071 (87.57%)		1038 (8.21%)		533 (4.22%)	
Ever been drunk	2001/02	No 10419 (70.32%)	Once 1322 (8.92%)	2-3 times 772 (5.21%)	4-10 times 328 (2.21%)	> 10 times 482 (3.25%)	1494 (10.08)
	2005/06	7040 (76.30%)	773 (8.38%)	445 (4.82%)	190 (2.06%)	231 (2.50%)	548 (5.94%)
	2009/10	10371 (82.04%)	889 (7.03%)	407 (3.22%)	168 (1.33%)	181 (1.43%)	626 (4.95%)
Ever been drunk (binary)	2001/02	No 10419 (70.32%)		Yes 2904 (19.60%)		1494 (10.08%)	
	2005/06	7040 (76.30%)		1639 (17.76%)		548 (5.94%)	
	2009/10	10371 (82.04%)		1645 (13.01%)		626 (4.95%)	
Injuries that required medical attention in past 12 months (binary)	2001/02	No 2731 (18.43%)		Yes 11756 (79.34%)		330 (2.23%)	
	2005/06	4993 (54.11%)		4077 (44.19%)		157 (1.70%)	
	2009/10	6635 (52.48%)		5741 (45.41%)		266 (2.10%)	

Table A9.4 gives the psychosomatic health variables available in each of the HBSC datasets.

Table A9.4: Independent Variables: Psychosomatic health

Variable	Wave	Potential responses					Missing
In the past 6 months how often have you had:		Rarely/never	Approx. 1 p/m	Approx. 1 p/w	> 1 p/w	Every day	
Headaches	2001/02	5727 (38.65%)	3340 (22.54%)	1978 (13.35%)	1919 (12.95%)	1298 (8.76%)	555 (3.75%)
	2005/06	3817 (41.37%)	2474 (26.81%)	1177 (12.76%)	908 (9.84%)	706 (7.65%)	145 (1.57%)
	2009/10	5348 (42.30%)	2868 (22.69%)	1590 (12.58%)	1406 (11.12%)	980 (7.75%)	450 (3.56%)
Stomach aches	2001/02	6293 (42.47%)	4213 (28.43%)	1680 (11.34%)	1311 (8.85%)	690 (4.66%)	630 (4.25%)
	2005/06	3976 (43.09%)	2887 (31.29%)	895 (9.70%)	884 (9.58%)	421 (4.56%)	164 (1.78%)
	2009/10	5838 (46.18%)	3443 (27.23%)	1362 (10.77%)	951 (7.52%)	541 (4.28%)	507 (4.01%)
Back ache	2001/02	7932 (53.53%)	2383 (16.08%)	1417 (9.56%)	1090 (7.36%)	1288 (8.69%)	707 (4.77%)
	2005/06	4878 (52.87%)	1695 (18.37%)	859 (9.31%)	847 (9.18%)	762 (8.26%)	186 (2.02%)
	2009/10	7114 (56.27%)	2012 (15.92%)	1106 (8.75%)	886 (7.01%)	951 (7.52%)	573 (4.53%)
Irritability or bad temper	2001/02	4794 (32.35%)	3355 (22.64%)	2252 (15.20%)	1787 (12.06%)	1890 (12.76%)	739 (4.99%)
	2005/06	3062 (33.19%)	2224 (24.10%)	1351 (14.64%)	1208 (13.09%)	1186 (12.85%)	196 (2.12%)
	2009/10	4918 (38.90%)	2723 (21.54%)	1673 (13.23%)	1391 (11.00%)	1393 (11.02%)	544 (4.30%)
Feeling low	2001/02	7291 (49.21%)	2687 (18.13%)	1450 (9.79%)	1262 (8.52%)	1283 (8.66%)	844 (5.70%)
	2005/06	4840 (52.45%)	1779 (19.28%)	796 (8.63%)	827 (8.96%)	754 (8.17%)	231 (2.50%)
	2009/10	6791 (53.72%)	2179 (17.24%)	1164 (9.21%)	959 (7.59%)	905 (7.16%)	644 (5.09%)
Feeling nervous	2001/02	5586 (37.70%)	3131 (21.13%)	2233 (15.07%)	1640 (11.07%)	1436 (9.69%)	791 (5.34%)
	2005/06	3294 (35.70%)	2190 (23.73%)	1235 (13.38%)	1365 (14.79%)	932 (10.10%)	211 (2.29%)
	2009/10	4785 (37.85%)	2694 (21.31%)	2017 (15.95%)	1338 (10.58%)	1173 (9.28%)	635 (5.02%)
Difficulty sleeping	2001/02	7070 (47.72%)	2084 (14.06%)	1581 (10.67%)	1388 (9.37%)	1947 (13.14%)	747 (5.04%)
	2005/06	4228 (45.82%)	1394 (15.11%)	1036 (11.23%)	912 (9.88%)	1477 (16.01%)	180 (1.95%)
	2009/10	6051 (47.86%)	1875 (14.83%)	1251 (9.90%)	1163 (9.20%)	1779 (14.07%)	523 (4.14%)
Feeling dizzy	2001/02	9257 (62.48%)	2049 (13.83%)	1063 (7.17%)	892 (6.02%)	872 (5.89%)	684 (4.62%)
	2005/06	5924 (64.20%)	1349 (14.62%)	640 (6.94%)	594 (6.44%)	533 (5.78%)	187 (2.03%)
	2009/10	8063 (63.78%)	1738 (13.75%)	839 (6.64%)	788 (6.23%)	685 (5.42%)	529 (4.18%)

Table A9.4 continued

Sum of health complaints	2001/02	Min. 0, Max. 32, Mean 8.86, S.D. 6.93		1645 (11.10%)
	2005/06	Min. 0, Max. 32, Mean 9.00, S.D. 6.75		437 (4.74%)
	2009/10	Min. 0, Max. 32, Mean 8.30, S.D. 6.90		1101 (8.71%)
Two or more health complaints more than once per week ⁸⁴	2001/02	8245 (55.65%)	4927 (33.25%)	1645 (11.10%)
	2005/06	5195 (56.30%)	3595 (38.96%)	437 (4.74%)
	2009/10	7578 (59.94%)	3963 (31.35%)	1101 (8.71%)

Table A9.5 shows variables relating the respondent's relationships and social life. It shows that there seem to be fewer children reporting having few friends in the later waves. The 'Don't have/don't see' option for easy to talk to parents variable coded as very difficult (as in Klocke et al., 2013) for clarity. All variables are relatively stable over time.

⁸⁴ See Currie et al. 2012.

Table A9.5: Independent Variables: Relationships and social

Variable	Wave	Potential responses				Missing
Number of close friends	2001/02	None 165 (1.11%)	One 191 (1.29%)	Two 419 (2.83%)	Three or more 13208 (89.14%)	834 (5.63%)
	2005/06	80 (0.87%)	124 (1.34%)	266 (2.88%)	8418 (91.23%)	339 (3.67%)
	2009/10	169 (1.34%)	212 (1.68%)	408 (3.23%)	11296 (89.35%)	557 (4.41%)
Easy to talk to mother	2001/02	Very difficult 1941 (13.10%)	Difficult 2274 (15.35%)	Easy 4457 (30.08%)	Very easy 5217 (35.21%)	928 (6.26%)
	2005/06	1303 (14.12%)	1536 (16.65%)	2933 (31.79%)	3171 (34.37%)	284 (3.08%)
	2009/10	1616 (12.78%)	1877 (14.85%)	3479 (27.52%)	4953 (39.18%)	717 (5.67%)
Easy to talk to father	2001/02	Very difficult 4518 (30.49%)	Difficult 3014 (20.34%)	Easy 3803 (25.67%)	Very easy 2713 (18.31%)	769 (5.19%)
	2005/06	2983 (32.33%)	2001 (21.69%)	2497 (27.06%)	1525 (16.53%)	221 (2.40%)
	2009/10	3559 (28.15%)	2295 (18.15%)	3143 (24.86%)	2995 (23.69%)	650 (5.14%)
Number of evenings per week with friends	2001/02	Min. 0, Max. 7, Mean 2.59, S.D. 2.16				508 (3.43%)
	2005/06	Min. 0, Max. 7, Mean 2.34, S.D. 2.01				221 (2.40%)
	2009/10	Min. 0, Max. 7, Mean 2.17, S.D. 2.09				320 (2.53%)

Table A9.6 gives the school perceptions and experiences predictor variables available in the student dataset.

Table A9.6: Independent Variables: School perceptions and experiences

	Wave	Potential responses					Missing
Bullied at school in the last couple of months	2001/02	Never 9475 (63.95%)	Once or twice 2676 (18.06%)	2/3 times p/m 646 (4.36%)	Once p/w 440 (2.97%)	Multiple p/w 626 (4.22%)	954 (6.44%)
	2005/06	6241 (67.64%)	1629 (17.65%)	404 (4.38%)	230 (2.49%)	384 (4.16%)	339 (3.67%)
	2009/10	8730 (69.06%)	2018 (15.96%)	514 (4.07%)	334 (2.64%)	512 (4.05%)	534 (4.22%)
Bully others at school in the last couple of months	2001/02	Never 8658 (58.43%)	Once or twice 3338 (22.53%)	2/3 times p/m 800 (5.40%)	Once p/w 412 (2.78%)	Multiple p/w 502 (3.39%)	1107 (7.47%)
	2005/06	5678 (61.54%)	2233 (24.20%)	453 (4.91%)	232 (2.51%)	260 (2.82%)	371 (4.02%)
	2009/10	8618 (68.17%)	2417 (19.12%)	454 (3.59%)	219 (1.73%)	246 (1.95%)	688 (5.44%)
How do you feel about school	2001/02	Don't like it all 1496 (10.10%)	Don't like very much 2842 (19.18%)	Like it a little 6580 (44.41%)	Like it a lot 3332 (22.49%)		567 (3.83%)
	2005/06	939 (10.18%)	1762 (19.10%)	4142 (44.89%)	2140 (23.19%)		244 (2.64%)
	2009/10	922 (7.29%)	1971 (15.59%)	5565 (44.02%)	3825 (30.26%)		359 (2.84%)
Students enjoy being together	2001/02	Strong disagree 713 (4.81%)	Disagree 1095 (7.39%)	Neither 3895 (26.29%)	Agree 4988 (33.66%)	Strong agree 3149 (21.25%)	977 (6.59%)
	2005/06	513 (5.56%)	736 (7.98%)	2780 (30.13%)	3577 (38.77%)	1334 (14.46%)	287 (3.11%)
	2009/10	520 (4.11%)	742 (5.87%)	3111 (24.61%)	4925 (38.96%)	2707 (21.41%)	637 (5.04%)
Students accept me as I am	2001/02	Strong disagree 876 (5.91%)	Disagree 795 (5.37%)	Neither 2195 (14.81%)	Agree 5335 (36.01%)	Strong agree 4634 (31.27%)	982 (6.63%)
	2005/06	623 (6.75%)	573 (6.21%)	1552 (16.82%)	3777 (40.93%)	2380 (25.79%)	322 (3.49%)
	2009/10	595 (4.71%)	657 (5.20%)	1953 (15.45%)	4772 (37.75%)	3957 (31.30%)	708 (5.60%)
Pressure from school work	2001/02	Not at all 2685 (18.12%)	A little 5149 (34.75%)	Some 3627 (24.48%)	A lot 2645 (17.85%)		711 (4.80%)
	2005/06	1554 (16.84%)	3082 (33.40%)	2340 (25.36%)	1934 (20.96%)		317 (3.44%)
	2009/10	2522 (19.95%)	4720 (37.34%)	2826 (22.35%)	2067 (16.35%)		507 (4.01%)
Teacher perception of school performance	2001/02	Very good 3594 (24.26%)	Good 5542 (37.40%)	Average 4159 (28.07%)	Below average 891 (6.01%)		631 (4.26%)
	2005/06	2323 (25.18%)	3595 (38.96%)	2468 (26.75%)	580 (6.29%)		261 (2.83%)
	2009/10	3761 (29.75%)	4851 (38.37%)	3006 (23.78%)	541 (4.28%)		483 (3.82%)

A supplementary questionnaire to the child questionnaire was given to school administrators from the 2001/02 wave onwards (a lead health teacher was also surveyed in the 2001/02 wave only). There are few variables that are consistent across all three waves. They are given below in Table A9.7. It would have been desirable to include information at the school level of the proportion of students entitled or receiving free or reduced meals. Unfortunately this information was not collected consistently over the 3 waves and where it was collected the number of missing cases was very high (25.48-47.94% of cases). There are considerable missing cases for all of the variables, meaning that their inclusion would significantly reduce the sample size at both levels. As such they are not used in further analysis.

Table A9.7: Independent Variables: School perceptions and experiences

	Wave	Potential responses		Missing
PE required by school	2001/02	No 33 (9.71%)	Yes 286 (84.12%)	21 (6.17%)
	2005/06	14 (6.17%)	178 (78.41%)	35 (15.42%)
	2009/10	10 (3.18%)	272 (86.62%)	32 (10.19%)
PE clubs in school	2001/02	No 112 (32.94%)	Yes 221 (62.06%)	17 (5.00%)
	2005/06	34 (14.98%)	155 (68.28%)	38 (16.74%)
	2009/10	56 (17.83%)	224 (71.34%)	34 (10.83%)
USDA reimbursable breakfasts	2001/02	No 16 (4.71%)	Yes 249 (73.24%)	75 (22.06%)
	2005/06	13 (5.73%)	156 (68.72%)	58 (25.55%)
	2009/10	57 (18.15%)	216 (68.79%)	41 (13.06%)
USDA reimbursable lunches	2001/02	No 29 (8.53%)	Yes 292 (85.88%)	19 (5.59%)
	2005/06	14 (6.17%)	173 (76.21%)	40 (17.62%)
	2009/10	43 (13.69%)	231 (73.57%)	40 (12.74%)

Table A9.7 continued

Written school plan for responding to violence	2001/02	No 3 (0.88%)	Yes 319 (93.82%)	18 (5.29%)
	2005/06	8 (3.52%)	183 (80.62%)	36 (15.86%)
	2009/10	8 (2.55%)	270 (85.99%)	36 (11.46%)
School provides mental health and social services	2001/02	No 8 (2.35%)	Yes 317 (93.24%)	15 (4.41%)
	2005/06	5 (2.20%)	184 (81.06%)	38 (16.74%)
	2009/10	18 (5.73%)	262 (83.44%)	34 (10.83%)

Preliminary analysis

2001/02

For this, and all further waves of data, the outcome variable is continuous. The measures used to investigate the relationship between the outcome variable and predictor variables is therefore adjusted to reflect this.

Table A9.8 presents pairwise correlation of the continuous predictor variables and the outcome variable.

Table A9.8: pairwise correlations between continuous predictor variables and life satisfaction

	Cantril's ladder	Age	Grade	Health complaints	Evenings per week with friends
Cantril's ladder	1.00				
Age	-0.12***	1.00			
Grade	-0.11***	0.92***	1.00		
Health complaints	-0.37***	0.08***	0.07***	1.00	
Evenings per week with friends	0.04***	0.12***	0.09***	0.04***	1.00

Tables A9.9-A9.10 present the other bivariate analyses. Only whether mother was employed was not significant.

Table A9.9: Results of t-tests for binary predictor variables and life satisfaction

Gender
Mean(male) = 0.105, mean(female) = -0.095, $t(14357) = 5.812, p < .001$
Live with mother
Mean(yes) = 0.056, mean(no) = -0.496, $t(14357) = 9.702, p < .001$
Live with father
Mean(yes) = 0.144, mean(no) = -0.240, $t(14357) = 10.849, p < .001$
Have own bedroom
Mean(no) = -0.144, mean(yes) = 0.049, $t(13425) = -4.716, p < .001$
Mother employed
Mean(no) = -0.017, mean(yes) = 0.043, $t(11477) = -1.291, p > .05$
Father employed
Mean(no) = -0.429, mean(yes) = 0.069, $t(10917) = -5.742, p < .001$
Tried smoking
Mean(no) = 0.253, mean(yes) = -0.609, $t(13164) = 22.348, p < .001$
Currently smoke
Mean(no) = 0.149, mean(yes) = -0.914, $t(13106) = 20.979, p < .001$
Ever been drunk
Mean(no) = 0.186, mean(yes) = -0.655, $t(13096) = 19.620, p < .001$
Injured in the past 12 months
Mean(no) = -0.187, mean(yes) = 0.044, $t(14233) = -5.243, p < .001$
Reports multiple health concerns
Mean(no) = 0.475, mean(yes) = -0.745, $t(12994) = -34.494, p < .001$

Table A9.10: Results of ANOVA for categorical variables and life satisfaction

Ethnicity
F(5, 14196) = 13.41, $p < .001$
Number of siblings
F(4, 13775) = 5.94, $p < .001$
Family well off
F(4, 13209) = 349.71, $p < .001$
Holidays with family
F(3, 13373) = 107.37, $p < .001$
Family car/vehicle
F(2, 13420) = 37.12, $p < .001$
Computers in household
F(3, 14315) = 8.62, $p < .001$
Time spent watching TV
F(5, 13546) = 7.11, $p < .001$
Overall health
F(3, 14018) = 840.88, $p < .001$
Amount of exercise
F(4, 14037) = 41.50, $p < .001$
Perception of body
F(4, 14193) = 204.74, $p < .001$
Dieting
F(2, 14230) = 191.41, $p < .001$
Frequency of smoking
F(3, 13104) = 158.91, $p < .001$
Frequency of getting drunk
F(4, 13093) = 113.02, $p < .001$
Number of close friends
F(3, 13763) = 28.55, $p < .001$
Easy to talk to mum
F(3, 13692) = 370.16, $p < .001$
Easy to talk to dad
F(3, 13847) = 299.55, $p < .001$
Bullied in school
F(4, 13628) = 101.07, $p < .001$
Bully others
F(4, 13485) = 47.99, $p < .001$
Feelings about school
F(3, 13992) = 315.38, $p < .001$
Students enjoy being together
F(4, 13635) = 119.95, $p < .001$
Students are accepting
F(4, 13630) = 324.30, $p < .001$
Pressure from schoolwork
F(3, 13854) = 152.83, $p < .001$

Table A9.11 presents linear regression including all of the variables, followed by tables presenting linear regression predicting life satisfaction using variable groups. The full model predicted approximately 36% of the variance in life satisfaction family being well off, health and students being accepting appearing to be particularly relevant.

Table A9.11: Linear regression, all predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-1.495***	0.381
Gender (female)	0.004	0.041
Age	0.032	0.033
Grade	-0.020	0.036
Ethnicity (Ref. white)		
Black	0.224***	0.062
Hispanic/Latino	-0.042	0.057
Asian	-0.138	0.089
Native American	-0.135	0.081
Pacific Islander	0.096	0.148
Live with mother (no)	-0.272***	0.075
Live with father (no)	-0.129**	0.045
Number of siblings (Ref. none)		
One	0.017	0.063
Two	0.025	0.066
Three	-0.063	0.076
Four or more	0.129	0.084
Family well off (Ref. very well off)		
Quite well off	-0.291***	0.050
Average	-0.572***	0.050
Not well off	-1.146***	0.093
Not at all well off	-0.747***	0.115
Family holidays in the past 12 months (Ref. none)		
One	0.176**	0.059
Two	0.162**	0.060
More than two	0.288***	0.059
Family vehicle (Ref. none)		
One	-0.018	0.131
Two or more	0.080	0.126
Family computer (Ref. none)		
One	-0.066	0.072
Two	0.012	0.078
More than two	0.062	0.083
Own bedroom (yes)	0.067	0.049
Mother employed (yes)	-0.034	0.047
Father employed (yes)	0.004	0.085
Time spent watching TV per day (Ref. none)		
Less than half an hour	0.033	0.259
Half an hour to an hour	0.189	0.221
Two to three hours	0.117	0.218
Four hours	0.207	0.221
More than four hours	0.092	0.219
Overall health (Ref. excellent)		
Good	-0.525***	0.047
Fair	-1.213***	0.065
Poor	-1.922***	0.149

Table A9.11 continued

Exercise (days per week) (Ref. none/less than one day)		
1 day per week	0.074	0.101
2-3 days per week	-0.016	0.084
4-6 days per week	0.000	0.081
Every day	0.129	0.084
Body perception (Ref. much too thin)		
A bit too thin	0.381**	0.145
About right	0.459**	0.137
A bit too fat	0.430**	0.145
Much too fat	0.173	0.167
On a diet (Ref. no weight is fine)		
No but want to lose weight	-0.046	0.061
Yes	-0.089	0.060
Tried smoking (yes)	-0.076	0.057
Frequency of smoking (Ref. doesn't smoke)		
Less than once per week	0.153	0.130
At least once per week, not every day	-0.180	0.148
Every day	0.000	(omitted)
Currently smoke (yes)	-0.214	0.119
Number of times drunk (Ref. never)		
Once	0.221	0.131
Two-three times	0.403**	0.135
Four-ten times	0.174	0.164
More than ten times	0.000	(omitted)
Ever been drunk (binary) (yes)	-0.314*	0.126
Injured in the past 12 months (yes)	0.012	0.057
Number of health complaints	-0.051***	0.005
Reports multiple health complaints (yes)	0.100	0.061
Number of close friends (Ref. none)		
One	0.350	0.253
Two	0.188	0.223
Three or more	0.194	0.198
Easy to talk to mother (Ref. very difficult)		
Difficult	0.185*	0.072
Easy	0.382***	0.066
Very easy	0.589***	0.067
Easy to talk to father (Ref. very difficult)		
Difficult	0.127*	0.055
Easy	0.260***	0.055
Very easy	0.294***	0.063
Evenings per week with friends	0.024*	0.010
Bullied in school (Ref. not at all)		
Once or twice	-0.061	0.049
Two-three times per month	0.026	0.097
About once per week	-0.295*	0.114
Several times per week	-0.266*	0.104
Bully others (Ref. not at all)		
Once or twice	-0.079	0.045
Sometimes	0.016	0.085
About once per week	-0.089	0.117
Several times per week	-0.159	0.115

Table A9.11 continued

Like school (Ref. don't like it at all)		
Don't like it very much	0.155*	0.076
Like it a little	0.305***	0.071
Like it a lot	0.566***	0.078
Students like being together (Ref. strongly disagree)		
Disagree	0.123	0.119
Neither agree nor disagree	0.072	0.105
Agree	0.095	0.105
Strongly agree	0.074	0.108
Students are accepting (Ref. strongly disagree)		
Disagree	0.371**	0.116
Neither agree nor disagree	0.518***	0.100
Agree	0.738***	0.097
Strongly agree	0.853***	0.099
Pressure from school work (Ref. not at all)		
A little	-0.116*	0.054
Some	-0.129*	0.059
A lot	-0.281***	0.064
F(90, 7114)= 46.99, $p < .001$. $R^2 = 0.37$, Adjusted $R^2 = .36$, N= 7205		

Table A9.12 shows that only a small amount of variance is explained by demographic factors.

Table A9.12: Linear regression, demographic predictor variables

Variables	B	SE B
Constant	0.520***	0.076
Gender (female)	-0.212***	0.035
Age	-0.123***	0.029
Grade	-0.041	0.031
Ethnicity (Ref. white)		
Black	0.443***	0.048
Hispanic/Latino	-0.111*	0.050
Asian	-0.382***	0.085
Native American	-0.171*	0.073
Pacific Islander	-0.045	0.133
Live with mother (no)	-0.581***	0.060
Live with father (no)	-0.454***	0.038
Number of siblings (Ref. none)		
One	0.028	0.058
Two	0.030	0.060
Three	-0.087	0.068
Four or more	-0.148*	0.071
F(14, 13619)= 42.72, $p < .001$. $R^2 = 0.04$, Adjusted $R^2 = .04$, N= 13634		

The following regression which includes variables relating to the financial situation of the child and family explains a greater proportion of the variance, with very large coefficients for the variable relating to the child's perception of how well off their family is.

Table A9.13: Linear regression, financial predictor variables

Variables	B	SE B
Constant	-0.216	0.154
Family well off (Ref. very well off)		
Quite well off	-0.597***	0.050
Average	-1.210***	0.049
Not well off	-2.145***	0.092
Not at all well off	-1.235***	0.110
Family holidays in the past 12 months (Ref. none)		
One	0.383***	0.059
Two	0.449***	0.061
More than two	0.537***	0.059
Family vehicle (Ref. none)		
One	0.212	0.127
Two or more	0.326**	0.122
Family computer (Ref. none)		
One	0.099	0.071
Two	0.109	0.076
More than two	0.058	0.082
Own bedroom (yes)	0.014	0.046
Mother employed (yes)	-0.025	0.048
Father employed (yes)	0.243**	0.087
F(15, 9853)= 83.92, $p < .001$. $R^2 = 0.11$, Adjusted $R^2 = .11$, N= 9869		

Table A9.14 presents the regression with health and risk behaviour predictors, it explains the largest amount of variance of all of the group models. All variables with the exception of time spent watching TV are significant.

Table A9.14: Linear regression, health and risk behaviour predictor variables

Variables	B	SE B
Constant	-0.059	0.225
Time spent watching TV per day (Ref. none)		
Less than half an hour	0.164	0.229
Half an hour to an hour	0.374	0.191
Two to three hours	0.331	0.188
Four hours	0.366	0.190
More than four hours	0.251	0.188
Overall health (Ref. excellent)		
Good	-0.776***	0.042
Fair	-1.775***	0.056
Poor	-2.805***	0.126
Exercise (days per week) (Ref. none/less than one day)		
1 day per week	0.184*	0.089
2-3 days per week	0.197**	0.074
4-6 days per week	0.258***	0.071
Every day	0.342***	0.073
Body perception (Ref. much too thin)		
A bit too thin	0.442***	0.124
About right	0.756***	0.115
A bit too fat	0.529***	0.124
Much too fat	-0.016*	0.145

Table A9.14 continued

On a diet (Ref. no weight is fine)		
No but want to lose weight	-0.134*	0.055
Yes	-0.091	0.055
Tried smoking (yes)	-0.337***	0.050
Frequency of smoking (Ref. doesn't smoke)		
Less than once per week	0.271*	0.112
At least once per week, not every day	0.067	0.131
Every day	0.000	(omitted)
Currently smoke (yes)	-0.411***	0.102
Number of times drunk (Ref. never)		
Once	0.343**	0.116
Two-three times	0.426***	0.122
Four-ten times	0.290*	0.147
More than ten times	0.000	(omitted)
Ever been drunk (binary) (yes)	-0.580***	0.111
Injured in the past 12 months (yes)	-0.053	0.044
F(27, 11546)= 105.12, $p < .001$. $R^2 = 0.20$, Adjusted $R^2 = .20$, N= 11574		

The regression predicting life satisfaction using psychosomatic health variables shown in Table A9.15 explains a surprisingly large amount of variance given that it only includes two predictor variables.

Table A9.15: Linear regression, psychosomatic health predictor variables

Variables	B	SE B
Constant	0.036	.026
Number of health complaints	-0.107***	.004
Reports multiple health complaints (yes)	-0.048	.054
F(2, 12993)= 1031.91, $p < .001$. $R^2 = 0.14$, Adjusted $R^2 = .14$, N= 12996		

Table A9.16: Linear regression, relationships and social predictor variables

Variables	B	SE B
Constant	-2.381***	0.162
Number of close friends (Ref. none)		
One	0.630**	0.212
Two	0.817***	0.184
Three or more	1.052***	0.157
Easy to talk to mother (Ref. very difficult)		
Difficult	0.370***	0.062
Easy	0.871***	0.056
Very easy	1.244***	0.056
Easy to talk to father (Ref. very difficult)		
Difficult	0.346***	0.048
Easy	0.800***	0.046
Very easy	0.872***	0.052
Evenings per week with friends	0.032***	0.008
F(10, 13063)= 162.48, $p < .001$. $R^2 = 0.11$, Adjusted $R^2 = .11$, N= 13074		

As can be seen in Table A9.17 all of the school predictors are significantly associated with life satisfaction in the school predictor model.

Table A9.17: Linear regression, school perceptions predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-1.503***	0.107
Bullied in school (Ref. not at all)		
Once or twice	-0.196***	0.044
Two-three times per month	-0.144	0.084
About once per week	-0.489***	0.099
Several times per week	-0.562***	0.088
Bully others (Ref. not at all)		
Once or twice	-0.183***	0.040
Sometimes	-0.140*	0.074
About once per week	-0.280**	0.101
Several times per week	-0.427***	0.093
Like school (Ref. don't like it at all)		
Don't like it very much	0.257***	0.066
Like it a little	0.628***	0.061
Like it a lot	1.079***	0.067
Students like being together (Ref. strongly disagree)		
Disagree	0.031	0.099
Neither agree nor disagree	0.067	0.087
Agree	0.267**	0.087
Strongly agree	0.333***	0.090
Students are accepting (Ref. strongly disagree)		
Disagree	0.634***	0.100
Neither agree nor disagree	0.806***	0.085
Agree	1.218***	0.081
Strongly agree	1.518***	0.082
Pressure from school work (Ref. not at all)		
A little	-0.174***	0.048
Some	-0.366***	0.052
A lot	-0.619***	0.056
F(22, 12702)= 101.54, $p < .001$. $R^2 = 0.15$, Adjusted $R^2 = .156$, N= 12725		

2005/06

Table A9.18 presents pairwise correlation of the continuous predictor variables and the outcome variable in 2005/06.

Table A9.18 : Pairwise correlations between continuous predictor variables and life satisfaction

	Cantril's ladder	Age	Grade	Health complaints	Evenings per week with friends
Cantril's ladder	1.00				
Age	-0.06***	1.00			
Grade	-0.07***	0.91***	1.00		
Health complaints	-0.35***	0.09***	0.10***	1.00	
Evenings per week with friends	0.03**	0.06***	0.03**	0.02	1.00

Unlike in the 2001/02 data all of the predictors assessed with t-tests and ANOVA were significantly associated with the outcome, including whether mother was employed.

Table A9.19: Results of t-tests for binary predictor variables and life satisfaction

Gender
Mean(male) = 0.094, mean(female) = -0.085, t(9055) = 4.348, $p < .001$
Live with mother
Mean(yes) = 0.064, mean(no) = -0.526, t(9062) = 9.010, $p < .001$
Live with father
Mean(yes) = 0.153, mean(no) = -0.228, t(9062) = 9.126, $p < .001$
Have own bedroom
Mean(no) = -0.248, mean(yes) = 0.082, t(9042) = -6.950, $p < .001$
Mother employed
Mean(no) = -0.166, mean(yes) = 0.071, t(8318) = -4.739, $p < .001$
Father employed
Mean(no) = -0.430, mean(yes) = 0.097, t(7621) = -6.938, $p < .001$
Tried smoking
Mean(no) = 0.182, mean(yes) = -0.622, t(8758) = 16.520, $p < .001$
Currently smoke
Mean(no) = 0.102, mean(yes) = -0.932, t(8735) = 15.241, $p < .001$
Ever been drunk
Mean(no) = 0.127, mean(yes) = -0.545, t(8550) = 12.610, $p < .001$
Injured in the past 12 months
Mean(no) = 0.046, mean(yes) = -0.050, t(8932) = 2.318, $p < .05$
Reports multiple health concerns
Mean(no) = 0.442, mean(yes) = -0.635, t(8661) = 26.306, $p < .001$

Table A9.20: Results of ANOVA for categorical variables and life satisfaction

Ethnicity
F(5, 8699) = 9.24, $p < .001$
Number of siblings
F(4, 8747) = 9.43, $p < .001$
Family well off
F(4, 8844) = 294.81, $p < .001$
Holidays with family
F(3, 9028) = 102.45, $p < .001$
Family car/vehicle
F(2, 9047) = 38.19, $p < .001$
Computers in household
F(3, 9049) = 24.40, $p < .001$
Time spent watching TV
F(5, 8815) = 11.77, $p < .001$
Overall health
F(3, 8954) = 364.13, $p < .001$
Amount of exercise
F(4, 8965) = 41.44, $p < .001$
Perception of body
F(4, 9021) = 92.28, $p < .001$
Dieting
F(2, 8976) = 74.92, $p < .001$
Frequency of smoking
F(3, 8733) = 85.47, $p < .001$
Frequency of getting drunk
F(4, 8547) = 41.75, $p < .001$
Number of close friends
F(3, 8757) = 9.66, $p < .001$
Easy to talk to mum
F(3, 8811) = 239.75, $p < .001$
Easy to talk to dad
F(3, 8872) = 186.95, $p < .001$
Bullied in school
F(4, 8759) = 56.40, $p < .001$
Bully others
F(4, 8731) = 36.98, $p < .001$
Feelings about school
F(3, 8849) = 222.93, $p < .001$
Students enjoy being together
F(4, 8809) = 67.71, $p < .001$
Students are accepting
F(4, 8777) = 148.48, $p < .001$
Pressure from schoolwork
F(3, 8777) = 72.59, $p < .001$

The linear regression with all predictor variables explains slightly less of the variance in this dataset compared to the 2001/2 dataset, 29% compared to 36%. Again family being well off and health were particularly important, but liking school now had larger coefficients than whether students are accepting.

Table A9.21: Linear regression, all predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-1.787***	0.426
Gender (female)	0.081	0.046
Age	0.073*	0.035
Grade	-0.077*	0.038
Ethnicity (Ref. white)		
Black	0.091	0.068
Hispanic/Latino	-0.021	0.058
Asian	-0.283*	0.113
Native American	-0.105	0.097
Pacific Islander	0.191	0.155
Live with mother (no)	-0.167*	0.076
Live with father (no)	0.000	0.049
Number of siblings (Ref. none)		
One	0.102	0.074
Two	-0.024	0.077
Three	-0.041	0.086
Four or more	-0.044	0.089
Family well off (Ref. very well off)		
Quite well off	-0.455***	0.065
Average	-0.706***	0.062
Not well off	-1.266***	0.100
Not at all well off	-1.421***	0.167
Family holidays in the past 12 months (Ref. none)		
One	0.142*	0.066
Two	0.097	0.068
More than two	0.160*	0.065
Family vehicle (Ref. none)		
One	0.030	0.154
Two or more	0.125	0.149
Family computer (Ref. none)		
One	0.205*	0.093
Two	0.161	0.097
More than two	0.296**	0.099
Own bedroom (yes)	0.103	0.054
Mother employed (yes)	0.079	0.051
Father employed (yes)	0.025	0.076
Time spent watching TV per day (Ref. none)		
Less than half an hour	0.476	0.244
Half an hour to an hour	0.431*	0.209
Two to three hours	0.359	0.207
Four hours	0.353	0.212
More than four hours	0.398	0.209
Overall health (Ref. excellent)		
Good	-0.264***	0.056
Fair	-0.558***	0.074
Poor	-0.962***	0.147

Table A9.21 continued

Exercise (days per week) (Ref. none/less than one day)		
1 day per week	-0.018	0.115
2-3 days per week	0.077	0.095
4-6 days per week	0.157	0.091
Every day	0.183	0.095
Body perception (Ref. much too thin)		
A bit too thin	0.016	0.196
About right	0.273	0.187
A bit too fat	0.179	0.195
Much too fat	0.120	0.217
On a diet (Ref. no weight is fine)		
No but want to lose weight	-0.007	0.067
Yes	0.045	0.066
Tried smoking (yes)	-0.172*	0.067
Frequency of smoking (Ref. doesn't smoke)		
Less than once per week	0.439**	0.168
At least once per week, not every day	0.337	0.197
Every day	0.000	(omitted)
Currently smoke (yes)	-0.447**	0.147
Number of times drunk (Ref. never)		
Once	-0.291	0.158
Two-three times	-0.092	0.166
Four-ten times	-0.024	0.197
More than ten times	0.000	(omitted)
Ever been drunk (binary) (yes)	0.127	0.150
Injured in the past 12 months (yes)	-0.052***	0.044
Number of health complaints	-0.039	0.005
Reports multiple health complaints (yes)	-0.006	0.065
Number of close friends (Ref. none)		
One	-0.048	0.290
Two	0.046	0.259
Three or more	0.076	0.229
Easy to talk to mother (Ref. very difficult)		
Difficult	0.228**	0.080
Easy	0.462***	0.075
Very easy	0.628***	0.077
Easy to talk to father (Ref. very difficult)		
Difficult	0.118	0.062
Easy	0.197**	0.062
Very easy	0.300***	0.074
Evenings per week with friends	0.017	0.011
Bullied in school (Ref. not at all)		
Once or twice	-0.142*	0.056
Two-three times per month	-0.308**	0.109
About once per week	-0.045	0.140
Several times per week	-0.354**	0.115
Bully others (Ref. not at all)		
Once or twice	-0.042	0.051
Sometimes	-0.077	0.102
About once per week	0.200	0.134
Several times per week	-0.143	0.139

Table A9.21 continued

Like school (Ref. don't like it at all)		
Don't like it very much	0.381***	0.084
Like it a little	0.484***	0.079
Like it a lot	0.679***	0.087
Students like being together (Ref. strongly disagree)		
Disagree	0.125	0.128
Neither agree nor disagree	0.089	0.113
Agree	0.153	0.114
Strongly agree	0.196	0.122
Students are accepting (Ref. strongly disagree)		
Disagree	0.081	0.124
Neither agree nor disagree	0.024	0.107
Agree	0.244*	0.104
Strongly agree	0.377**	0.108
Pressure from school work (Ref. not at all)		
A little	-0.046	0.064
Some	-0.107	0.068
A lot	-0.102	0.073
F(90, 5760)= 27.15, $p < .001$. $R^2 = 0.30$, Adjusted $R^2 = 0.29$, N= 5851		

Table A9.22: Linear regression, demographic predictor variables

Variables	B	SE B
Constant	0.469***	0.094
Gender (female)	-0.162***	0.042
Age	0.004	0.034
Grade	-0.097**	0.037
Ethnicity (Ref. white)		
Black	0.166**	0.060
Hispanic/Latino	-0.228***	0.054
Asian	-0.406***	0.113
Native American	-0.318**	0.095
Pacific Islander	0.029	0.155
Live with mother (no)	-0.509***	0.069
Live with father (no)	-0.371***	0.045
Number of siblings (Ref. none)		
One	0.146*	0.074
Two	0.086	0.076
Three	-0.020	0.084
Four or more	-0.124	0.085
F(14, 8296)= 19.28, $p < .001$. $R^2 = 0.03$, Adjusted $R^2 = .03$, N= 8311		

Table A9.23: Linear regression, financial predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-0.288	0.175
Family well off (Ref. very well off)		
Quite well off	-0.699***	0.065
Average	-1.172***	0.060
Not well off	-2.183***	0.096
Not at all well off	-2.136***	0.159
Family holidays in the past 12 months (Ref. none)		
One	0.316***	0.066
Two	0.361***	0.068
More than two	0.512***	0.064
Family vehicle (Ref. none)		
One	0.249	0.150
Two or more	0.348*	0.145
Family computer (Ref. none)		
One	0.246**	0.089
Two	0.171	0.093
More than two	0.251**	0.094
Own bedroom (yes)	0.110*	0.051
Mother employed (yes)	0.169**	0.050
Father employed (yes)	0.201**	0.075
F(15, 7203)= 70.42, $p < .001$. $R^2 = 0.13$, Adjusted $R^2 = .13$, N= 7219		

While the amount of variance explained in the financial situation model has increased slightly, the variance explained in the health and risk behaviours model has decreased compared to the 2001/02 analysis. Many of the models had a slight decrease, as did the overall model as discussed above.

Table A9.24: Linear regression, health and risk behaviour predictor variables

Variables	B	SE B
Constant	-0.255	0.254
Time spent watching TV per day (Ref. none)		
Less than half an hour	0.575**	0.220
Half an hour to an hour	0.544**	0.186
Two to three hours	0.435*	0.184
Four hours	0.272	0.189
More than four hours	0.362	0.185
Overall health (Ref. excellent)		
Good	-0.605***	0.052
Fair	-1.322***	0.067
Poor	-2.289***	0.130
Exercise (days per week) (Ref. none/less than one day)		
1 day per week	0.095	0.108
2-3 days per week	0.197*	0.088
4-6 days per week	0.312***	0.084
Every day	0.399***	0.087
Body perception (Ref. much too thin)		
A bit too thin	0.202	0.171
About right	0.584***	0.161
A bit too fat	0.369*	0.169
Much too fat	0.165	0.192
On a diet (Ref. no weight is fine)		
No but want to lose weight	-0.052	0.063
Yes	0.028	0.062
Tried smoking (yes)	-0.390***	0.062
Frequency of smoking (Ref. doesn't smoke)		
Less than once per week	0.614***	0.150
At least once per week, not every day	0.490**	0.178
Every day	0.000	(omitted)
Currently smoke (yes)	-0.761***	0.130
Number of times drunk (Ref. never)		
Once	-0.210	0.151
Two-three times	-0.016	0.161
Four-ten times	0.000	(omitted)
More than ten times	-0.118	0.183
Ever been drunk (binary) (yes)	-0.039	0.141
Injured in the past 12 months (yes)	-0.099*	0.041
F(27, 8039)= 51.69, $p < .001$. $R^2 = 0.15$, Adjusted $R^2 = .15$, N= 11574		

Table A9.25: Linear regression, psychosomatic health predictor variables

Variables	B	SE B
Constant	0.022	.032
Number of health complaints	-0.099***	.004
Reports multiple health complaints (yes)	-0.047	.061
F(2, 8660)= 617.93, $p < .001$. $R^2 = 0.12$, Adjusted $R^2 = .12$, N= 8663		

Table A9.26: Linear regression, relationships and social predictor variables

Variables	B	SE B
Constant	-1.804***	0.217
Number of close friends (Ref. none)		
One	0.213	0.272
Two	0.408	0.242
Three or more	0.609**	0.213
Easy to talk to mother (Ref. very difficult)		
Difficult	0.385***	0.072
Easy	0.878***	0.066
Very easy	1.189***	0.066
Easy to talk to father (Ref. very difficult)		
Difficult	0.309***	0.056
Easy	0.690***	0.054
Very easy	0.830***	0.064
Evenings per week with friends	0.014	0.010
F(10, 8535)= 98.96, $p < .001$. $R^2 = 0.10$, Adjusted $R^2 = .10$, N= 8546		

Table A9.27: Linear regression, school perceptions predictor variables

Variables	B	SE B
Constant	-1.230***	0.121
Bullied in school (Ref. not at all)		
Once or twice	-0.161**	0.053
Two-three times per month	-0.357***	0.098
About once per week	-0.175	0.128
Several times per week	-0.519***	0.105
Bully others (Ref. not at all)		
Once or twice	-0.213***	0.047
Sometimes	-0.392***	0.093
About once per week	-0.097	0.127
Several times per week	-0.641***	0.122
Like school (Ref. don't like it at all)		
Don't like it very much	0.496***	0.077
Like it a little	0.813***	0.071
Like it a lot	1.224***	0.078
Students like being together (Ref. strongly disagree)		
Disagree	0.127	0.111
Neither agree nor disagree	0.176	0.097
Agree	0.328**	0.097
Strongly agree	0.473***	0.105
Students are accepting (Ref. strongly disagree)		
Disagree	0.109	0.112
Neither agree nor disagree	0.305**	0.095
Agree	0.708***	0.091
Strongly agree	0.988***	0.095
Pressure from school work (Ref. not at all)		
A little	-0.188**	0.059
Some	-0.349***	0.062
A lot	-0.519***	0.065
F(22, 8477)= 60.33, $p < .001$. $R^2 = 0.14$, Adjusted $R^2 = .13$, N= 8500		

2009/10

Table A9.28 presents pairwise correlation of the continuous predictor variables and the outcome variable.

Table A9.28: pairwise correlations between continuous predictor variables and life satisfaction

	Cantril's ladder	Age	Grade	Health complaints	Evenings per week with friends
Cantril's ladder	1.00				
Age	-0.12***	1.00			
Grade	-0.12***	0.93***	1.00		
Health complaints	-0.36***	0.12***	0.12***	1.00	
Evenings per week with friends	0.04***	0.09***	0.06***	0.01	1.00

Again, all of the variables included in the t-tests and ANOVA were significantly related to life satisfaction.

Table A9.29: Results of t-tests for binary predictor variables and life satisfaction

Gender
Mean(male) = 0.071, mean(female) = -0.074, t(12418) = 4.032, $p < .001$
Live with mother
Mean(yes) = 0.048, mean(no) = -0.395, t(12420) = 7.692, $p < .001$
Live with father
Mean(yes) = 0.182, mean(no) = -0.308, t(12420) = 13.292, $p < .001$
Have own bedroom
Mean(no) = -0.229, mean(yes) = 0.091, t(12356) = -8.066, $p < .001$
Mother employed
Mean(no) = -0.039, mean(yes) = 0.054, t(11406) = -2.200, $p < .05$
Father employed
Mean(no) = -0.247, mean(yes) = 0.116, t(10405) = -5.606, $p < .001$
Tried smoking
Mean(no) = 0.161, mean(yes) = -0.818, t(11970) = 20.039, $p < .001$
Currently smoke
Mean(no) = 0.098, mean(yes) = -0.967, t(11920) = 16.626, $p < .001$
Ever been drunk
Mean(no) = 0.128, mean(yes) = -0.796, t(11833) = 17.626, $p < .001$
Injured in the past 12 months
Mean(no) = 0.070, mean(yes) = -0.079, t(12173) = 4.119, $p < .001$
Reports multiple health concerns
Mean(no) = 0.415, mean(yes) = -0.808, t(11388) = 32.554, $p < .001$

Table A9.30: Results of ANOVA for categorical variables and life satisfaction

Ethnicity
F(5, 11893) = 16.62, $p < .001$
Number of siblings
F(4, 11957) = 5.24, $p < .001$
Family well off
F(4, 11710) = 362.83, $p < .001$
Holidays with family
F(3, 12336) = 120.37, $p < .001$
Family car/vehicle
F(2, 12387) = 45.07, $p < .001$
Computers in household
F(3, 12392) = 12.80, $p < .001$
Time spent watching TV
F(5, 11957) = 14.65, $p < .001$
Overall health
F(3, 12261) = 451.19, $p < .001$
Amount of exercise
F(4, 12188) = 56.15, $p < .001$
Perception of body
F(4, 12279) = 130.79, $p < .001$
Dieting
F(2, 12187) = 125.96, $p < .001$
Frequency of smoking
F(3, 11918) = 92.20, $p < .001$
Frequency of getting drunk
F(4, 11830) = 80.65, $p < .001$
Number of close friends
F(3, 11906) = 12.82, $p < .001$
Easy to talk to mum
F(3, 11757) = 398.36, $p < .001$
Easy to talk to dad
F(3, 11823) = 294.22, $p < .001$
Bullied in school
F(4, 11932) = 73.69, $p < .001$
Bully others
F(4, 11784) = 47.91, $p < .001$
Feelings about school
F(3, 12084) = 319.49, $p < .001$
Students enjoy being together
F(4, 11831) = 89.08, $p < .001$
Students are accepting
F(4, 11770) = 196.28, $p < .001$
Pressure from schoolwork
F(3, 11944) = 95.01, $p < .001$

In the linear regression including all of the predictor variables for the 2009/10 data the amount of variance explained had increased slightly compared to the 2005/06 model but was not quite as large as that for 2001/02. Again there were large coefficients for family being well off and health with fairly large coefficients for talking to mother and liking school.

Table A9.31: Linear regression, all predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-1.669***	0.348
Gender (female)	0.075	0.041
Age	0.035	0.033
Grade	-0.024	0.036
Ethnicity (Ref. white)		
Black	0.068	0.062
Hispanic/Latino	-0.205***	0.050
Asian	-0.373***	0.084
Native American	-0.166	0.087
Pacific Islander	0.073	0.137
Live with mother (no)	-0.293***	0.071
Live with father (no)	-0.105*	0.045
Number of siblings (Ref. none)		
One	0.064	0.069
Two	-0.029	0.071
Three	0.090	0.079
Four or more	0.019	0.080
Family well off (Ref. very well off)		
Quite well off	-0.446***	0.059
Average	-0.754***	0.055
Not well off	-1.401***	0.085
Not at all well off	-0.593***	0.149
Family holidays in the past 12 months (Ref. none)		
One	0.115*	0.057
Two	0.146*	0.060
More than two	0.233***	0.057
Family vehicle (Ref. none)		
One	0.037	0.130
Two or more	0.183	0.127
Family computer (Ref. none)		
One	-0.042	0.102
Two	-0.098	0.104
More than two	-0.114	0.105
Own bedroom (yes)	0.152**	0.047
Mother employed (yes)	-0.042	0.044
Father employed (yes)	-0.044	0.067
Time spent watching TV per day (Ref. none)		
Less than half an hour	0.161	0.162
Half an hour to an hour	0.190	0.138
Two to three hours	0.256	0.137
Four hours	0.165	0.144
More than four hours	0.281*	0.141
Overall health (Ref. excellent)		
Good	-0.361***	0.048
Fair	-0.688***	0.066
Poor	-0.790***	0.134

Table A9.31 continued

Exercise (days per week) (Ref. none/less than one day)		
1 day per week	0.108	0.110
2-3 days per week	0.264**	0.089
4-6 days per week	0.290**	0.086
Every day	0.329***	0.090
Body perception (Ref. much too thin)		
A bit too thin	0.155	0.154
About right	0.432**	0.145
A bit too fat	0.289	0.153
Much too fat	-0.129	0.187
On a diet (Ref. no weight is fine)		
No but want to lose weight	0.001	0.060
Yes	0.094	0.059
Tried smoking (yes)	-0.146*	0.071
Frequency of smoking (Ref. doesn't smoke)		
Less than once per week	0.059	0.174
At least once per week, not every day	0.235	0.197
Every day	0.000	(omitted)
Currently smoke (yes)	-0.188	0.160
Number of times drunk (Ref. never)		
Once	-0.428*	0.196
Two-three times	-0.043	0.207
Four-ten times	-0.170	0.241
More than ten times	0.000	(omitted)
Ever been drunk (binary) (yes)	0.034	0.191
Injured in the past 12 months (yes)	-0.044	0.039
Number of health complaints	-0.041***	0.005
Reports multiple health complaints (yes)	-0.070	0.063
Number of close friends (Ref. none)		
One	0.074	0.234
Two	0.207	0.210
Three or more	0.287	0.182
Easy to talk to mother (Ref. very difficult)		
Difficult	0.236**	0.074
Easy	0.444***	0.069
Very easy	0.639***	0.069
Easy to talk to father (Ref. very difficult)		
Difficult	0.084	0.059
Easy	0.240***	0.058
Very easy	0.214**	0.063
Evenings per week with friends	0.030**	0.010
Bullied in school (Ref. not at all)		
Once or twice	-0.099	0.052
Two-three times per month	-0.113	0.101
About once per week	-0.275*	0.124
Several times per week	-0.492***	0.108
Bully others (Ref. not at all)		
Once or twice	-0.013	0.048
Sometimes	-0.132	0.108
About once per week	-0.089	0.149
Several times per week	0.089	0.147

Table A9.31 continued

Like school (Ref. don't like it at all)		
Don't like it very much	0.192*	0.088
Like it a little	0.370***	0.082
Like it a lot	0.570***	0.086
Students like being together (Ref. strongly disagree)		
Disagree	0.261	0.135
Neither agree nor disagree	0.114	0.119
Agree	0.083	0.118
Strongly agree	0.215	0.121
Students are accepting (Ref. strongly disagree)		
Disagree	0.100	0.131
Neither agree nor disagree	0.199	0.114
Agree	0.354**	0.111
Strongly agree	0.470***	0.114
Pressure from school work (Ref. not at all)		
A little	-0.079	0.053
Some	-0.093	0.059
A lot	-0.115	0.065
F(90, 7026)= 37.71, $p < .001$. $R^2 = 0.33$, Adjusted $R^2 = .32$, N= 7117		

Table A9.32: Linear regression, demographic predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	0.599***	0.083
Gender (female)	-0.149***	0.037
Age	-0.030	0.030
Grade	-0.105**	0.032
Ethnicity (Ref. white)		
Black	0.087	0.054
Hispanic/Latino	-0.214***	0.045
Asian	-0.428***	0.086
Native American	-0.414***	0.085
Pacific Islander	-0.250	0.136
Live with mother (no)	-0.464***	0.060
Live with father (no)	-0.469***	0.040
Number of siblings (Ref. none)		
One	0.000	0.067
Two	-0.097	0.068
Three	-0.117	0.075
Four or more	-0.153*	0.074
F(14, 11447)= 34.63, $p < .001$. $R^2 = 0.04$, Adjusted $R^2 = .04$, N= 11447		

Table A9.33: Linear regression, financial predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	0.437**	0.147
Family well off (Ref. very well off)		
Quite well off	-0.795***	0.057
Average	-1.203***	0.052
Not well off	-2.346***	0.081
Not at all well off	-1.272***	0.135
Family holidays in the past 12 months (Ref. none)		
One	0.267***	0.057
Two	0.424***	0.059
More than two	0.505***	0.056
Family vehicle (Ref. none)		
One	-0.107	0.122
Two or more	0.151	0.118
Family computer (Ref. none)		
One	-0.006	0.097
Two	-0.034	0.099
More than two	-0.167	0.099
Own bedroom (yes)	0.195***	0.043
Mother employed (yes)	0.019	0.043
Father employed (yes)	0.092	0.065
F(15, 9424)= 88.92, $p < .001$. $R^2 = 0.12$, Adjusted $R^2 = .12$, N= 9440		

Table A9.34: Linear regression, health and risk behaviour predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-0.638**	0.191
Time spent watching TV per day (Ref. none)		
Less than half an hour	0.165	0.153
Half an hour to an hour	0.374**	0.128
Two to three hours	0.391**	0.126
Four hours	0.215	0.133
More than four hours	0.254*	0.129
Overall health (Ref. excellent)		
Good	-0.674***	0.043
Fair	-1.355***	0.058
Poor	-1.984***	0.114
Exercise (days per week) (Ref. none/less than one day)		
1 day per week	0.223*	0.100
2-3 days per week	0.366***	0.081
4-6 days per week	0.454***	0.077
Every day	0.586***	0.080
Body perception (Ref. much too thin)		
A bit too thin	0.496**	0.144
About right	0.936***	0.135
A bit too fat	0.658***	0.143
Much too fat	0.386*	0.173
On a diet (Ref. no weight is fine)		
No but want to lose weight	-0.121*	0.056
Yes	0.013	0.055
Tried smoking (yes)	-0.462***	0.064
Frequency of smoking (Ref. doesn't smoke)		
Less than once per week	-0.020	0.145
At least once per week, not every day	0.000	(omitted)
Every day	-0.091	0.169
Currently smoke (yes)	-0.184	0.131
Number of times drunk (Ref. never)		
Once	-0.027	0.160
Two-three times	0.310	0.174
Four-ten times	0.000	(omitted)
More than ten times	0.062	0.206
Ever been drunk (binary) (yes)	-0.500**	0.154
Injured in the past 12 months (yes)	-0.139***	0.036
F(27, 10768)= 72.27, $p < .001$. $R^2 = 0.15$, Adjusted $R^2 = .15$, N= 10796		

Table A9.35: Linear regression, psychosomatic health predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	0.053*	.026
Number of health complaints	-0.094***	.004
Reports multiple health complaints (yes)	-0.164**	.058
F(2, 11387)= 835.68, $p < .001$. $R^2 = 0.13$, Adjusted $R^2 = .13$, N= 11390		

Table A9.36: Linear regression, relationships and social predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-1.853***	0.160
Number of close friends (Ref. none)		
One	0.003	0.203
Two	0.331	0.182
Three or more	0.476**	0.155
Easy to talk to mother (Ref. very difficult)		
Difficult	0.399***	0.066
Easy	0.913***	0.061
Very easy	1.307***	0.059
Easy to talk to father (Ref. very difficult)		
Difficult	0.326***	0.053
Easy	0.677***	0.050
Very easy	0.851***	0.053
Evenings per week with friends	0.027**	0.009
F(10, 11238)= 155.61, $p < .001$. $R^2 = 0.12$, Adjusted $R^2 = .12$, N= 11249		

Table A9.37: Linear regression, school perceptions predictor variables

Variables	<i>B</i>	<i>SE B</i>
Constant	-1.372***	0.120
Bullied in school (Ref. not at all)		
Once or twice	-0.196***	0.049
Two-three times per month	-0.332***	0.091
About once per week	-0.385**	0.112
Several times per week	-0.575***	0.095
Bully others (Ref. not at all)		
Once or twice	-0.174***	0.045
Sometimes	-0.379***	0.096
About once per week	-0.346**	0.133
Several times per week	-0.273*	0.127
Like school (Ref. don't like it at all)		
Don't like it very much	0.410***	0.079
Like it a little	0.836***	0.072
Like it a lot	1.315***	0.075
Students like being together (Ref. strongly disagree)		
Disagree	0.171	0.115
Neither agree nor disagree	0.110	0.099
Agree	0.198*	0.098
Strongly agree	0.388***	0.102
Students are accepting (Ref. strongly disagree)		
Disagree	0.136	0.114
Neither agree nor disagree	0.294**	0.098
Agree	0.677***	0.094
Strongly agree	0.975***	0.096
Pressure from school work (Ref. not at all)		
A little	-0.165**	0.049
Some	-0.300***	0.054
A lot	-0.439***	0.059
F(22, 11149)= 75.97, $p < .001$. $R^2 = 0.13$, Adjusted $R^2 = .13$, N= 11172		

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Chapter 5: Schools and Child Affective Well-being in England at age 7

Millennium Cohort Study: Linked Education Administrative Dataset

This work was based on the MCS Waves 1-4 Linked Education Administrative Dataset: Secure Data Service access. Thank you to The Centre for Longitudinal Studies, Institute of Education for the use of these data and to the UK Data Archive and Economic and Social Data Service for making them available. However, they bear no responsibility for the analysis or interpretation of these data.

Chapter 6: Schools and Child Life Satisfaction in England at Ages 8-15

The Children's Society Well-being Survey

Many thanks to The Children's Society for allowing access to this dataset.

Chapter 7: School and Child Life Satisfaction in England at Ages 10-15

Understanding Society Wave 1 Special Licence Access: School Codes

Understanding Society is an initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by the National Centre for Social Research.

Chapter 8: Schools and Child Positive Affect in the USA at Ages 12-17

National Longitudinal Study of Adolescent to Adult Health (Add Health)

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Chapter 9: Schools and Child Life Satisfaction in the USA at Ages 10-17

Health Behaviors in School-aged Children (USA)

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