SOCIAL AND EMOTIONAL SKILLS IN CHILDHOOD AND THEIR LONG-TERM EFFECTS ON ADULT LIFE

A review for the Early Intervention Foundation

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Acknowledgements

Executive summary

In this report we assess the evidence on the long-run associations between social and emotional skills in childhood and adult outcomes. We report findings from an extensive literature review, and from our own new research.

There are three key elements:

1. A literature review of evidence relating to the relationship between social and emotional skills in childhood and adult outcomes;
2. New analysis of the British Cohort Study about these relationships across a wide range of outcomes, including a particular focus on the role of social and emotional skills in transmitting 'top job' status between parents and their children;
3. **New, preliminary analysis of how the gaps in some of the skills assessed in part 2 are emerging in children in the UK born around the millennium.**

Introduction: what are social and emotional skills? (Chapter 1)

The introduction section establishes five broad groupings of social and emotional skills in children and outcomes in adult life that underpin the literature review. These are:

1. **Self-perceptions and self-awareness.** These relate to a child's knowledge and perception of themselves and their value, their confidence in their current abilities and a belief in their efficacy in future tasks.
2. **Motivation.** This can be characterised as the reasons for which individuals strive towards goals. It includes the belief that effort leads to achievement, distinguishes whether goals are set by other people or by oneself, and the value that is attached to the goal in question, aspiration and ambition.
3. **Self-control and self-regulation.** These refer to how children manage and express emotions, and the extent to which they overcome short-term impulsivity in order to prioritise higher pursuits.
4. **Social skills.** These describe a child's ability and tendency to interact with others, forge and maintain relationships, and avoid socially unacceptable responses. They cover communication, empathy, kindness, sharing and cooperativeness. They are absent when a child is solitary, shy or withdrawn.
5. *Resilience and coping.* These are demonstrated when an individual is able to adapt positively and purposefully in the face of stress and otherwise difficult circumstances. Resilience is not so much an aspect of character as a developmental process – the ability to summon strength when needed and 'beat the odds' of adversity.

We also consider the literature on how **emotional wellbeing in children** is associated with outcomes in adult life**.** While this is not generally considered a 'skill' that fits within the framework set out for us by EIF when commissioning this report, we included it because we found extensive discussion in the literature of its importance. However, the impact of specific mental health conditions in childhood was not in scope for our review.

Which social and emotional skills have predicted later life outcomes? Findings from our literature review (Chapter 2)

There is a significant body of literature showing the long-term importance of many of the skills identified in the framework set out in Chapter 1. This work shows associations between the adult outcomes and the childhood skills, usually controlling ('adjusting') for other factors and circumstances that may have given rise both to the outcome and the 'predictor'. It is important to bear in mind that while these may be indicative of causal relationships (especially where an extensive set of controls is used), both could be the outcome of a common cause, which may not be sufficiently well accounted for in the regression analysis. A further reason to be cautious is that relationships that may have been causal in the past do not necessarily replicate in the present and future.

- Most prominently, the search revealed a very significant body of work demonstrating the association of **self-control, self-regulation** (and similar concepts) in childhood with many domains of adult life, including mental health, life satisfaction and wellbeing, qualifications, income and labour market outcomes, measures of physical health, obesity, smoking, crime and mortality.

- Research has also shown the importance of some types of self-perceptions and self-awareness. Belief that one's own actions can make a difference – captured by concepts such as **locus of control, self-efficacy** – are shown in the literature to be related to a number of adult outcomes, including mental distress, self-rated health, obesity and unemployment. The literature also shows that **self-esteem** in childhood is associated with both mental and physical health in adult life.

- Social skills have been found to be important as predictors of **non-labour market outcomes**, in particular mental health and wellbeing, health behaviours, and marriage in later life.

- There is limited literature linking measures of **motivation** in childhood to later life outcomes. For example, while there is considerable evidence for the importance of 'intrinsic motivation' (defined as enjoyment of an activity, such as learning, for its own sake) for positive schooling outcomes we found no studies linking measures of intrinsic motivations captured in childhood to longer-term outcomes in adult life. There is some evidence that 'academic motivation' defined in a less precise way, and capturing positive attitudes to schooling in a number of different dimensions, is important for labour market outcomes (e.g. social class) and adult health behaviours (e.g. smoking) later in life. There is little evidence to date on the importance in later life of **resilience** and **coping** demonstrated in childhood.

Emotional wellbeing (often defined as the absence of internalising problems) has been found to be a powerful predictor of adult life satisfaction, mental health and family formation. Some of the literature has also found links from childhood mental health to labour market success

We also considered whether there were reported differences by gender or socioeconomic background in the prevalence of social and emotional skills, or in the importance of these skills for later life outcomes. The most striking gender contrast reported is the consistently higher average scores for boys regarding externalizing behaviour, particularly with regard to conduct problems. There were differentials by socioeconomic status in all of the social and emotional skills. These inequalities serve to perpetuate the cycle of advantage or disadvantage across generations.

> **Box ES1. How we undertook our review** We identified relevant studies by putting a set of defined search terms into key academic search engines. We also searched for published work using the few longitudinal data sources worldwide that span childhood and adult life. Studies eligible for the review were (i) quantitative; (ii) examined measures of the social and emotional skills of children between birth and the age of 16, which could reasonably be characterised by one of the five broad groupings; and (iii) examined association between these measures and later life outcomes, the earliest being at 21 years of age.

The long-term effects of social and emotional skills in childhood: new evidence (Chapter 3)

In this chapter we present new findings on the associations between skills developed in childhood and outcomes in mid-life, which we have undertaken using recent data from the British Cohort Study 1970 (BCS70) at age 42. We examine the link between social and emotional skills measured at age 10 and outcomes in mid-life. Our findings mainly reinforce, and in some cases extend the conclusions drawn from our literature review.

In undertaking our own new work linking childhood social and emotional skills to outcomes in adult life, we use similar concepts, with some important differences that we explain in Chapter 3.

> **Box ES2. How we undertook our empirical work** We estimate a series of multivariate regressions, in which each of the outcomes is used as the dependent variable in turn, and in which a set of social and emotional skills available in the study at age 10 is always included together, namely;
> * Locus of control
> * Self-esteem
> * Academic self-concept
> * Good conduct
> * Conscientiousness
> * Emotional health
> * Social skills
>
> To better understand the effect of a skill at age 10 on a later outcome we include controls for child, parent and family characteristics, and also explore the extent to which associations between childhood skills and outcomes differ by gender and income group. We present our regression results as a series of charts.

We assessed the importance of two separate measures relating to **self-control and self-regulation** – externalising behaviours (conduct and hyperactivity), and 'conscientiousness' (sometimes also referred to as 'application'). Both an absence of externalising behaviours, and especially conscientiousness, appear very important across all of the life domains we considered.

Conscientiousness in childhood is associated with adult wellbeing, educational attainment, partnerships, income, labour market outcomes, and health and health behaviours.

We assessed a number of measures of **self-perceptions and self-awareness,** finding that having an internal locus of control – closely related to more modern notions of efficacy – also appears important in shaping a broad range of outcomes such as educational attainment, labour market success, socioeconomic status, mental health and wellbeing, and some health measures and health behaviours. Self-esteem (taken together with emotional wellbeing, see below, to which it is closely related) matters strongly for outcomes such as life satisfaction and mental health, and health and health behaviours in adult life.

Good **social skills** (in our work, assessed by teachers when children were age 10) were predictors of life satisfaction and wellbeing, labour market success, and good health – and also partnership status, and children.

We found childhood **emotional wellbeing** (defined in our work as an absence of internalising behaviours) at age 10 to be especially important for outcomes relating to mental health and wellbeing in adult life.

These findings are consistent with the literature we surveyed. Our contribution was to examine a wide range of outcomes on a consistent basis using the newest available data on outcomes.

As part of our work we also examined the association of **cognitive skills** developed in childhood and adult outcomes. We found these to be important for many domains of adult life, including education and labour market outcomes, as well as health and health behaviours, but to a lesser extent for mental health and life satisfaction.

We also examined whether educational attainment was the predominant pathway between social and emotional skills in childhood and adult outcomes. The majority of the social and emotional skills we included in our research helped to predict educational success (exceptions being self-esteem, emotional health and sociability). However, for the majority of outcomes, their association with childhood social and emotional skills was effectively independent of educational attainment.

In general, we found only a few differences in associations between childhood skills and adult outcomes when comparing boys and girls, and between children from low versus higher socioeconomic backgrounds.

Box ES3. Policy focus on the intergenerational transmission of 'top jobs'

We examined whether differences in social and emotional skills are one reason why children whose parents have professional occupations are more likely to end up in top professions themselves. This question is important for understanding and designing policies to increase social mobility.

We found that individuals who, when they were children, had parents who were employed in a 'top job' were considerably more likely to be in a top job themselves as an adult. Moreover, social and emotional skills at age 10 accounted for some of the transmission of top job status between generations (in particular, locus of control and conscientiousness). Social and emotional skills transmitted top job advantage predominantly (but not exclusively) through their influence on educational attainment, particularly at age 16. This suggests that interventions to improve these early skills are likely to generate benefits for an individual's educational attainment and their chances of accessing a competitive top job.

Social and emotional skills in childhood in a contemporary cohort of children (Chapter 4)

In this chapter we focus on the social and emotional skills of today's children. We present preliminary work examining how two of the social and emotional skills examined in Chapter 3, good conduct and emotional health, vary by family background and between boys and girls for children born around the millennium.

We find that poorer children exhibit more conduct and emotional problems on average and that his gap appears very early in childhood. By age 3, poorer children display worse conduct, on average, than their wealthier peers, and these differences persist throughout pre-adolescence. Based on the evidence in Chapters 2 and 3, these differences in social and emotional skills are likely to have implications for these children's future development, and may contribute to social inequalities in a wide range of adult life domains.

We find that boys display significantly more conduct problems than girls on average but better emotional health, although the latter difference is small.

Our preliminary findings also suggest that the link between family income and both conduct and emotional health is stronger among today's children than among children born in 1970. By contrast, the differences between boys and girls have remained virtually identical over the last 30 years.

Conclusions (Chapter 5)

A more detailed summary of the evidence, combining the findings of previous literature (Chapter 2) with those from our own analysis (Chapter 3), is presented in Table ES.1, below.

The evidence set out in this report suggests substantial benefits are likely to be gained across people's lives if effective interventions can be found to enhance social and emotional skills in childhood. The importance of a number of particular skills has stood out, including self-regulation and self-control, as well as social skills, some self-perceptions (such as locus of control), and emotional wellbeing.

Although all the evidence we cite is based on observational rather than experimental data, the relationships found typically hold after controlling for a rich set of individual and background controls, making it likely that these are indicative of causal effects.

Table ES.1: Outcomes of childhood social and emotional skills in literature review and new analysis of BCS 70

KEY:
°* significant associations in both literature review and new BCS analysis
°° significant effects in literature, but not tested in BCS analysis
° significant effects in literature, but no independent effect found in BCS analysis
* significant effects in BCS analysis, but not in literature surveyed
(+) and (-) show whether the skill is positively or negatively associated with the outcome
Italicised entries where, unexpectedly, better skill is associated with *worse* outcome.

Child Skill Group	Adult Outcome			
	Mental Health & Wellbeing	Labour Market/ Socioeconomic	Physical Health & Health Behaviours	Other
Self-perceptions and self-awareness	Mental Health °* (+) Wellbeing * (+) Life Satisfaction * (+)	Income °* (+) Unemployment °° (-) Job Satisfaction ° (+) Top Job * (+) Wealth * (+) Degree * (+) Social Housing * (-)	Self-rated Health °* (+) Obesity °* (-) Clinical Problems °° (-) Drinking * (-) Smoking * (-)	Early Motherhood °° (-) Crime °° (-) Partnerships * (+) Political Interest * (+)
Motivation		Education °° (+) Social Class °° (+)	Smoking °° (-)	
Self-control and self-regulation	Life Satisfaction °* (+) Mental Health ° (+) Wellbeing * (+)	Income °* (+) Unemployment °° (-) Top Job * (+) Employment * (+) Degree * (+) Social Housing * (-)	Smoking °* (-) Clinical Problems °° (-) Mortality °° (-) Obesity ° (-) Self-rated Health * (+) Drinking * (-)	Crime °° (-) Partnership * (+) Political Interest * (+) Parent * (-) No. of Children * (-)
Social skills	Life Satisfaction °* (+) Mental Illness °° (-) Wellbeing * (+)	Income °* (+) Job Satisfaction * (+) Social Housing * (-) *Degree * (-)*	Clinical Problems °° (-) Smoking ° (-) Self-rated Health * (+) *Drinking * (+)*	Partnership °* (+) Parent * (+)

Resilience and Coping	**Life Satisfaction** ºº **(+)**	**Occupation** ºº **(+)** **Education** ºº **(+)**		
Emotional Health	**Mental Health** º* **(+)** **Life Satisfaction** º **(+)** **Wellbeing** * **(+)**	**Wealth** ºº **(+)** **Income** º **(+)** **Employment** º **(+)** *Social Housing* * *(+)*	**BMI** ºº **(+)** *Smoking* * *(+)*	**Partnerships** º **(+)**

Chapter 1. Introduction: what are social and emotional skills?

In this report we assess the evidence on the long-run associations between social and emotional skills in childhood and adult outcomes. We make this assessment through an extensive literature review, and from new research undertaken for this report. We find that social and emotional skills developed in childhood help to shape and determine adults' lives in numerous important ways. We report on what these skills are, how they differ between children from different backgrounds, and some of the many ways in which they appear to form adult lives. We start with a discussion of what social and emotional skills are, and how they have been defined for our literature review, as well as in our own new empirical work.

We take it that a skill is a person's capacity to carry out tasks or functions to obtain a desired result. While the term 'cognitive skills' represent a set of skills which enable the use of language, numbers and reasoning, 'social and emotional skills' represent a different set of skills related to one's own self-beliefs, ability to deal with other people, and to master and motivate one's own behaviour.

Defining social and emotional skills in a precise way is not straightforward, and the concepts and language used to describe these in the academic literature have evolved over time, and vary greatly across and even within different disciplines. As one example, in 2012 Heckman and Kautz wrote of non-cognitive or 'soft' skills as personality skills, including – 'conscientiousness, perseverance, sociability, and curiosity.'[1] In 2013 the updated version of their paper[2] renames them 'character' skills, to include 'perseverance ("grit"), self-control, trust, attentiveness, self-esteem and self-efficacy, resilience to adversity, openness to experience, empathy, humility, tolerance of diverse opinions, and the ability to engage productively in society.' There are also several other allied terms in circulation: 'personality', 'soft skills', 'people skills', 'emotional intelligence'. The terminology is overlapping and in places arguably interchangeable.

The way that such skills are referred to in the political and policy debate has also evolved. Recently these ideas have taken on the mantle of 'character skills' within the mainstream UK political debate. Children need to acquire 'character skills', it is asserted, to complement, and perhaps permit, academic attainment. For example, the Secretary of State for Education, Nicky Morgan,[3] sees abilities and traits, including resilience and grit, that help young people persevere with setbacks, confidently engage in debates, and contribute to the wider community, as "equally important" to young people as securing good grades. She announced an initiative on 'character education' to encourage projects to develop "the virtues in pupils that are vital to fulfil their potential and realise their aspirations." In a recent speech the Shadow Education Secretary, Tristram Hunt, declared that building skills such as "resilience, curiosity, self-control and grit" were as essential as academic achievement when it came to succeeding in life.[4] Rabbi Lord Sachs[5] commented that the elements of "character education" such as determination, resilience, respect, kindness, integrity, can be summarised as "old fashioned virtues".

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[1] Heckman J.J. and T.D. Kautz (2012), 'Hard Evidence on Soft Skills',
Working Paper 18121 National Bureau of Economic Research www.nber.org/papers/w18121
[2] Heckman J.J. and T.D. Kautz (2013), 'Fostering and Measuring Skills:
Interventions That Improve Character and Cognition'
Working Paper 19656 National Bureau of Economic Research www.nber.org/papers/w19656
[3] DFE, 16 December 2014
[4] Speech to Demos conference on Character, 8 December 2014
[5] BBC Radio 4 *Today*, 10 December 2014

Several sources[6] have already attempted to bring order to the wide field of possible definitions and measures of childhood social and emotional skills. Following these leads, for the purposes of this review, we construct five broad groupings of social and emotional skills in children: (i) self-perception and self-awareness; (ii) motivation; (iii) self-control and self-regulation; (iv) social skills; and (v) resilience and coping.

(i) **Self-perception and self-awareness** relate to a child's knowledge and perception of themselves and their value, and their confidence in their current abilities and a belief in their efficacy in future tasks.

(ii) **Motivation** can be characterised as the reasons for which individuals strive towards goals. It includes the belief that effort leads to achievement, distinguishes whether goals are set by other people or by oneself, and the value that is attached to the goal in question, aspiration and ambition.

(iii) **Self-control and self-regulation** refer to how children manage and express emotions, and the extent to which they overcome short-term impulsivity in order to prioritise higher pursuits. High self-control is associated with 'conscientiousness', one of the Big Five dimensions of personality.[7] Lack of self-control is comprised of six inter-related characteristics including: (1) impulsivity and inability to delay gratification; (2) lack of persistence, tenacity, or diligence; (3) partaking in novelty or risk-seeking activities; (4) little value of intellectual ability; (5) self-centeredness; and (6) volatile temper.[8] It has elements in common with behavioural difficulties, particularly those grouped as 'externalising'.

(iv) **Social skills** describe a child's ability and tendency to interact with others, forge and maintain relationships, and avoid socially unacceptable responses. They cover communication, empathy, kindness, sharing and cooperativeness. They are absent when a child is solitary, shy or withdrawn.

(v) **Resilience and coping** address the notion of being able to adapt positively and purposefully in the face of stress and otherwise difficult circumstances. Resilience is not so much an aspect of character as a developmental process – the ability to summon strength when needed and 'beat the odds' of adversity. The notion of 'grit', reflecting passion and perseverance, has been linked to resilience, but there have only recently been attempts to measure it,[9] and there is no measure available in prospective studies of children who have now grown up, on which the review and empirical work in this report relies.

In addition, we also consider some of the recent literature on how **emotional wellbeing in children** is associated with outcomes in adult life. While this is not generally considered a 'skill' that fits

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[6] Social and Emotional Aspects of Learning (SEAL), DfE, 2010, 2007; Education Endowment Foundation (EEF), Schoon and Gutman (2013); The Young Foundation, Reeder and Rich (2012).
7   Digman JM (1990), 'Personality Structure: Emergence of the 5-Factor Model', *Annual Review of Psychology* 41: pp. 417–40
[8] Gutman and Schoon, citing Gottfredson, M. R., & Hirschi, T. (1990), *A General Theory of Crime*. Stanford, CA: Stanford University Press
[9] Duckworth, A. L., Peterson, C., Matthews, M. D. and Kelly, D. R.,
'Grit: Perseverance and Passion for Long-Term Goals', *Journal of Personality and Social Psychology* 92, 6: (2007), 1,087–1,101

within the framework set out for us by EIF when commissioning this report, we included it because we found extensive discussion in the literature of its importance. However, the impact of mental health problems, or specific mental health conditions in childhood was not in scope for our review.

These groupings provide a framework for our literature search, and also guide our own empirical work included in this report. We acknowledge, however, the skills captured within these broad groupings are highly interrelated, and moreover that they are clearly not exhaustive. There is not a 1-1 mapping between these and some of the terms most fashionable in the public policy discourse – for example, 'perseverance' and 'grit' – may be related to ideas of self-control and regulation, motivation, and resilience, but they are clearly not encapsulated by any single one of these concepts. They are also captured differently in different studies and other contexts.

While our report does discuss the policy implications of our findings (Chapter 5), an important question, which is outside the scope of this report, is the extent to which these skills are malleable, and whether they can be shaped by interventions in the home, school, or community. In order to address this very issue, this report is commissioned alongside two others, which address directly how children's social and emotional skills can be improved. The implication of our own work is that such improvements, if of sufficient magnitude, may lead to a myriad of benefits to the population later in life.

Box 1.1 A note of caution on causation

Studies in which links are found between childhood skills and outcomes in adulthood are often interpreted as evidence of a causal influence. Identifying causal relationships is important for identifying drivers of change and therefore levers of policy.

In most of the studies covered in our literature, and in our own analysis, associations between the adult outcome and the childhood characteristics are presented controlling ('adjusting') for other factors and circumstances which may have given rise both to the outcome and the skill (the 'predictor'). The more it is possible to control for other factors that may be in play, the stronger is the case for thinking of the relationship as causal. However, even with an extensive set of controls, as included in our own analysis, the childhood skills and outcomes could both still be the product of a common unobserved cause, and hence be superficial manifestations of 'true' unobserved causes in an underlying mechanism rather than causal in their own right. Indeed, it is also possible that the omission of relevant controls could obscure (rather than exaggerate) the existence of an underlying relationship.

The associations reported on in this document thus cannot be guaranteed to identify causal relationships. Another clarification it may be worth making is that even where relationships have been identified as causal, they are not necessarily deterministic. Even if characteristics in childhood will increase the chances or risks of some particular outcome in adulthood, children are not necessarily destined or doomed to a fixed pathway. The literature and our own models are about patterns of tendencies, not certain predictions. Moreover, mechanisms that may have been causal in the past do not necessarily replicate in the present and future, especially when the context in which they are developed has changed.

Structure of this report

This report first presents, in Chapter 2, a review of the existing research literature linking social and emotional skills in childhood to a range of outcomes in adult life. Chapter 3 then presents some new research on the latest evidence from the British Cohort Study born in 1970, linking social and emotional and cognitive skills recorded at age 10 with experiences at age 42, and controlling for a number of factors in the childhood background. Chapter 4 provides a glimpse of the social and emotional skills captured in the contemporary cohort of children, Chapter 5 concludes.

Chapter 2. Which social and emotional skills are predictive of later life outcomes?

Summary of this chapter

Here we present a summary of findings from our literature review on which social and emotional skills in childhood are predictive of later life outcomes, using the framework for defining social and emotional skills outlined in Chapter 1 (see Box 2.1, below, for the review process). Table 2.1 highlights separately for each broad skill group the adult outcomes found in the literature to be significantly associated with this skill group. The outcomes are themselves grouped into broad themes: Mental Health and Wellbeing; Labour Market and Socioeconomic; Physical Health and Health Behaviours; and Other. The plus and minus in parentheses correspond to whether the skill is positively or negatively associated with the outcome. For example, in the literature reviewed, skills related to self-control and self-regulation are positively related to life satisfaction (+), and negatively related to an indicator of mental distress, malaise (-).

Table 2.1: Strong evidence[10] of predictive power of social and emotional skills

Child Skill Group	Adult Outcome			
	Mental Health & Wellbeing	**Labour Market/ Socioeconomic**	**Physical Health & Health Behaviours**	**Other**
Self-perception and self-awareness	Malaise (-) Mental Illness (-)	Income (+) Job Satisfaction (+) Unemployment (-)	Self-rated Health (+) Obesity (-) Clinical Problems (-)	Early Motherhood (-) Crime (-)
Motivation		Education (+) Social Class (+)	Smoking (-)	
Self-control and self-regulation	Life Satisfaction (+) Malaise (-)	Income (+) Unemployment (-)	Obesity (-) Clinical Problems (-) Smoking (-) Mortality (-)	Crime (-)
Social skills	Life Satisfaction (+) Mental Illness (-)	Income (+)	Clinical Problems (-) Smoking (-)	Partnership (+)
Resilience and coping	Life Satisfaction (+)	Occupation (+) Education (+)		
Emotional Health	Life Satisfaction (+) Mental Illness (-)	Income (+) Employment (+) Wealth (+)	BMI (-)	Partnerships (+)

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[10] Evidence is considered strong if associations are found independent of extensive controls, and/or associations have been shown by multiple studies, and/or associations are found for which there is no conflicting evidence among the studies we review

There is extensive literature on the predictive importance of skills pertaining to **self-control** and **self-regulation** (such as conscientiousness and good conduct) in childhood for many domains of adult life, including mental health, life satisfaction and wellbeing, income and labour market outcomes, measures of physical health, obesity, smoking, crime and mortality.

The search also revealed a significant body of work demonstrating the importance of some types of **self-perception** and **self-awareness**. Beliefs that one's own actions can make a difference – captured by concepts such as locus of control**,** self-efficacy – are shown in the literature to be important for a number of adult outcomes, including mental distress, self-rated health, obesity, income and unemployment. The literature also shows that self-esteem in childhood is important for mental health and physical health in adult life.

Social skills have been found to be important primarily as predictors of non-labour market outcomes, in particular mental health and wellbeing, health behaviours, and partnerships in later life. **Emotional wellbeing** (often defined as the absence of internalising problems) has been found to be a powerful predictor of mental wellbeing and socioeconomic outcomes.

There is a limited literature linking measures of **motivation** in childhood to later life outcomes. For example, while there is considerable evidence for the importance of 'intrinsic motivation' (defined as enjoyment of an activity, such as learning, for its own sake) for positive schooling outcomes there are as yet no studies linking measures of intrinsic motivations captured in childhood to longer term outcomes in adult life. There is some evidence that 'academic motivation' defined in a less precise way, and capturing positive attitudes to schooling in several dimensions, is important for labour market outcomes (e.g. social class) and adult health behaviours (e.g. smoking) later in life. There is limited evidence to date on the importance in later life of **resilience** and coping demonstrated in childhood.

Box 2.1 How we undertook our literature review

The review cannot aspire to being completely exhaustive. However, we aim to provide a thorough overview of the evidence in this area, accessible to academics and non-academics alike, by presenting a balanced and contemporary survey of the relevant literature. We incorporate the breadth of the topic area, a variety of disciplines and empirical methodologies, and a wide range of different outlets, with the focus on peer-reviewed journals and academic working papers. Many of the most influential studies on these topics have originated in Britain, where we benefit greatly from the availability of rich longitudinal data from national and sub-national birth cohort studies, and other long-term panels, which follow individuals from childhood into adult life. The review, however, also includes studies using data from Europe, the USA and Australasia.

For this review, three concurrent search strategies were used to secure a representative sample of studies. First, relevant studies were identified through search engines, including, but not restricted to, the Social Science Research Network (SSRN), Open Access Journals Search Engine (OAJSE), ScienceDirect, and PubPsych, as well as Google Scholar, using a comprehensive set of search terms for childhood social and emotional skills (see Appendix 1) and adolescent and adult outcomes. The choice of search terms was designed to be as exhaustive as possible in capturing the wide range of characterisations of social and emotional skills. Similarly, the search engines used provided literature from a variety of disciplines such as economics, psychology, epidemiology, sociology and medicine. Second, given the focus on long-run impacts of skills, manual searches were conducted on longitudinal data sets, which exhibit the required properties of containing appropriate skills

measures in childhood and observing outcomes for the same individuals from early adulthood onwards (see Appendix 2). Finally, we also found studies by examining the references and citations made within (and of) other studies included in the review.

Studies eligible for the review were (i) quantitative; (ii) examined measures of the social and emotional skills of children between birth and the age of 16, which could reasonably be characterised by one of the five broad groupings above; and (iii) examined associations between these measures and later life outcomes, the earliest being at 21 years of age. In order to keep the searches manageable while remaining inclusive, a preference was given to more recent studies over earlier ones, so as to keep the review as contemporary as possible, but without losing vital evidence. For areas in which there was a lack of contemporary evidence with respect to the social and emotional skill and/or adult outcome, older evidence was included. Again, due to the large number of studies returned, we largely excluded working papers and unpublished literature, unless the study was of a particularly high quality and/or represented evidence in an area that was otherwise scarce.

We would note that research that fails to find relationships often fails to get published, and so our review will tend to share such 'publication bias' with the literature in general. However, many researchers have found associations of interest. Furthermore, our own findings in Chapter 3 do report where associations are not significant as well as where they are.

Our preliminary screening based on the eligibility requirements for the review gave rise to 83 studies using the National Child Development Study (NCDS), 1958 cohort; 40 from the British Cohort Study (BCS), 1970; 20 from the National Survey of Health and Development (NSHD), 1946 cohort; 27 using data from the USA or Canada; 4 using data from New Zealand or Australia; and 4 from Europe. However, not all of these studies could be included in the review (the list of references of studies eligible but not included in the review is available upon request).

The studies ultimately included were not a representative sample of studies found, but were chosen to provide, where possible, a similar number of papers relating to each of the five broad groups of skills defined in Chapter 1. So while by far the largest number of papers identified within our search relate to self-regulation and self-control, we do not include such papers in this proportion in our written review (and hence our review over-represents papers that are not on self-regulation and self-control). Within each broad group of skills, studies were chosen so that the review covered, where possible, each of the different types of measures that fall within that particular skill group. Finally, studies were chosen so that they provided balanced coverage across a number of adult outcomes, including labour market, physical health, mental health, wellbeing, crime and others, where possible. Note that in the end we mostly excluded the large number of studies linking social and emotional skills in childhood to educational attainment, other than where those studies consider social and emotional skills for which evidence is otherwise scarce. We do, however, consider this link in our own empirical work set out in Chapter 3.

Note that a number of studies were excluded if they used constructs that were comprised of measures belonging to more than one broad skill group. For example, many studies examined the role of the total score to the Rutter questionnaires. However, the Rutter questionnaire in its entirety captures dimensions of childhood social and emotional development applicable to conduct and hyperactivity, social skills and emotional health, with the independent role of each of these dimensions impossible to determine. Another ground for exclusion was whether the study relied on

social and emotional skills or personality measured in adulthood as an indicator of those skills or traits in childhood.

2.1   Review of literature by broad social and emotional skill groups

2.1.1   Self-perception and self-awareness

Self-perception and self-awareness relate to a child's knowledge and perception of themselves and their value, their confidence in their current abilities and a belief in their efficacy in future tasks. As such, this group of skills is characterised by an individual's own beliefs about themselves.

One of the most common concepts relating to self-perception and self-awareness found in our literature review is **locus of control**, which shares some similarities with more modern notions of 'efficacy', and is designed to measure children's perceived control over their own achievement and outcomes. One instrument designed to capture this is the CAROLOC questionnaire.[11] Items within it include "Do you feel that most of the time it's not worth trying hard because things never turn out right anyway?" and "Are you the kind of person who believes that planning ahead makes things turn out better?" An individual who believes strongly in their own power to affect change is said to have an 'internal' locus of control, while those with an 'external' locus have low levels of perceived control over their outcomes in life. The similar construct of **self-efficacy** measured in some studies captures the strength of an individual's belief in their own ability to complete tasks and achieve goals.

Another concept in the literature linking childhood skills with adult outcomes is **self-esteem**, often implemented by the Lawrence self-esteem questionnaire, or LAWSEQ.[12] Items designed to assist in the identification of children who may suffer from poor self-esteem include "Do you think that other children often say nasty things about you?" and "When you have to say things in front of other children do you usually feel foolish?"[13] Table 2.2 provides an overall summary of findings from our literature search assessing the predictive power of locus of control, efficacy and self-esteem in childhood for later life outcomes. Below it, we set out some findings from key individual papers addressing these skills.

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[11] Gammage, P. (1975), 'Socialisation, schooling and locus of control'. Bristol University: PhD Thesis.
www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/30/1a/13.pdf
[12] Lawrence, D. (1981), 'The Development of a Self-Esteem Questionnaire',
British Journal of Educational Psychology, v51 n2 pp. 245–51
[13] See here for complete list of 20 questions for CARALOC and here 16 in for LAWSEQ

Table 2.2: Self-perception and self-awareness: measures with strong evidence of predictive power

Child Measure	Adult Outcome			
	Mental Health & Wellbeing	Labour Market/ Socioeconomic	Physical Health & Health Behaviours	Other
Internal Locus of Control	Malaise (-)	Income (+) Unemployment (-)	Obesity (-) Self-rated Health (+)	Early Motherhood (-)
Self-Esteem	Mental Illness (-)	Income (+)	Self-rated Health (+) Clinical Problems (-)	Crime (-)
Self-Efficacy		Unemployment (-) Job Satisfaction (+)		

There is evidence on the predictive power of locus of control for adult labour market outcomes in the British Cohort Study, 1970 (BCS) from Blanden et al (2007), Feinstein (2000) and our own empirical work for this report in Chapter 3. Blanden et al show that greater internal locus of control at age 10 is positively associated with earnings at age 30, after adjusting for other aspects of childhood non-cognitive characteristics, cognitive ability, formal educational attainment and labour market attachment measures. The size of the association was found to be similar to that of cognitive ability. Feinstein's analysis (2000) measures locus of control using full CARALOC. He considers educational and labour market outcomes at age 26, qualifications, unemployment and wages. After controlling for parental background and other social and emotional characteristics at 10, he finds a significant boost to qualifications by 26 from locus of control at 10. Among labour market outcomes, he finds a positive association with locus of control for women's wages only, and with self-esteem for men's wages only.

O'Connell and Sheikh (2008) explore the role of childhood locus of control, measured at age 16, in predicting adult earnings at age 33, using the National Child Development Study, 1958 (NCDS). Locus of control is found to have a modest but statistically significant association with adult earnings after adjusting for childhood cognitive ability and school quality, educational attainment, and other childhood achievement-related attitudes. No statistically significant differences in the association are shown between genders. It is worth noting, however, that here internal locus of control is based on a single item – ''I think there is no point in planning for the future, you should take things as they come'' (five categories: ''very true'' to ''not true at all'') – rather than the 20 items of the CARALOC questionnaire.

Macmillan (2013), also using the CARALOC locus of control in BCS, assesses whether it predicts later workless spells. She finds internal locus of control at age 10 is associated with whether the child subsequently experienced a year or more out of work between the ages of 16 and 29 when adjusting for childhood cognitive ability, dimensions of personality and self-esteem. This association no longer remains significant upon the inclusion of behavioural and, in particular, educational outcomes measured at age 16, suggesting that these later adolescent outcomes strongly mediate the association between childhood internal locus of control and adult worklessness.

There are adult health outcomes related to childhood locus of control. Gale et al (2008) investigate the association between internal locus of control at age 10 (CARALOC), and self-reported health outcomes and health behaviours at age 30 in the BCS. The authors find that men and women who had possessed higher internal locus of control were less likely to become overweight or obese, experience psychological distress or to rate their own health as only fair or poor by the age of 30.[14] This was after adjusting for gender, childhood cognitive ability expressed as IQ, educational attainment, parental social class in addition to the child's own social class and earnings in adulthood. For some health outcomes such as being overweight, childhood locus of control was more strongly associated with risk in women than in men. Adults with higher locus of control in childhood were also significantly less likely to report poor health behaviours such as taking no regular exercise at all or being a smoker. However, after fully adjusting for parental, child and adult covariates, the associations diminish to borderline significance, implying at best marginal predictive power for locus of control for these two health behaviours.

A further finding of the study is that adjustment for locus of control significantly weakened the association between IQ and adult obesity (by more than 50%), suggesting that internal locus of control may partially mediate the association between IQ and weight. Overall, Gale and co-authors conclude that having a stronger sense of control over one's own life in childhood appears to protect the individual from poor health outcomes in adult life, and provides predictive power above and beyond childhood IQ.

The association between locus of control (CARALOC) and mental health is further supported by Berrington et al, 2011. Taking a life course approach using the BCS data on girls only, the authors show that external locus of control at age 10 is associated with psychological malaise at age 30 (24-item Rutter Malaise Inventory), after adjusting for conduct problems, cognitive ability, ethnicity and parental social class, education, housing tenure and aspirations in childhood, and some features of adult circumstances such as partnership break up. This study also shows that early motherhood is associated with an external locus of control in childhood.

A study by Ternouth et al (2009), again using the BCS data, also provide evidence on the association between childhood locus of control and adult weight. The authors include childhood BMI in their analyses and find that childhood external locus of control (CARALOC) predicted weight gain between age 10 and age 30 in both men and women after adjusting for gender, childhood self-esteem, parental BMI and parental social class (but not childhood IQ). Prediction was stronger for women than men, a similar result to that found by Gale et al (2008).[15] The predictive power of locus of control was found to be on a par with that of parental social class.

Self-reported health at 30 of the BCS cohort is also studied by Murasko (2007) who finds a statistically significant yet modest association of internal locus of control associated with lower chances of being in either poor or fair health in adulthood. This is despite adjusting for the individual's self-esteem, childhood cognitive ability (not itself a significant predictor) and physical health, mother's educational attainment in childhood and father's social class in childhood and own educational attainment,

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[14] Overweight (≥25) and Obesity (≥30) are defined using BMI, and psychological distress is measured using the Rutter 24-item Malaise Inventory

[15] Both Gale et al (2008) and Ternouth et al (2009) base BMI on self-reported height and weight, which, as they acknowledge, may be subject to greater error than objective measures

The predictive power of self-esteem, in addition to locus of control, is also investigated in both the studies led by Ternouth and Murasko. each using the LAWSEQ self-esteem questionnaire at age 10. Ternouth et al find that after controlling for gender, childhood BMI, parental BMI and social class, lower childhood self-esteem predicted higher weight gain at age 30. However, with the further inclusion of childhood locus of control, self-esteem predicted weight gain only for girls. Murasko et al find self-esteem to be associated with better self-rated health at 30, in the fully adjusted analysis, with the strength of association similar to that found for locus of control.

Self-esteem also features in the study by Trzesniewski et al (2006.) They provide evidence of a long run association between low self-esteem and poor health in adulthood, as well as a diverse range of other adult outcomes including mental health, criminal behaviour and economic prospects. Their data come from the Dunedin birth cohort.[16] Self-esteem was an average of measures at ages 11, 13 and 15 using the Rosenberg Self-Esteem Scale.[17] Outcomes were observed at age 26. Those who had experienced low self-esteem as adolescents were likely to have more physical health problems. These included poor cardiorespiratory health, high waist-to-hip ratios and poor self-perceived health. The analysis adjusted for gender, parental socioeconomic status, childhood BMI and adolescent depression.[18] The latter implies an independent role for self-esteem above and beyond the absence of mental health problems. Adolescent self-esteem also strongly predicted mental health problems at age 26. Adolescents with low self-esteem were more likely to develop major depression disorder and anxiety disorder, and to be dependent on tobacco during adulthood, after adjusting for gender, parental socioeconomic status and adolescent depression.

Further, adolescents in the Dunedin study with low self-esteem grew up to have more criminal convictions during adulthood compared with those with high self-esteem. They were more likely to be convicted of a violent crime and more likely to be convicted of any crime during adulthood, once again, after adjusting for gender, parental socioeconomic status and adolescent depression. Associations between adolescent self-esteem and adult economic prospects were more mixed. Adjusting for IQ in addition to gender, parental socioeconomic status and adolescent depression, adolescents with low self-esteem were less likely to attend college and more likely to report money and work problems. However, they were not more likely to experience long-term unemployment. This latter observation is also supported by Macmillan, whose 2013 study of men in the BCS finds self-esteem, measured by LAWSEQ at age 10, to be unrelated to workless spells in early adulthood.

Other studies on the association between adolescent self-esteem and adult crime present mixed results. Boden et al (2007), using the Christchurch Health and Development Study, also from New Zealand,[19] investigate to what extent self-esteem, measured at age 15, predicts violent offending and hostility, both reported at age 25.[20] Self-esteem was correlated with both violent offending and hostility at age 25. However, in the fully adjusted model including parental living standards and socioeconomic status, maternal age and education, gender, childhood IQ and childhood internalising

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[16] Dunedin Multidisciplinary Health and Development Study, a long-running cohort study of 1,037 people born between April 1972 and March 1973 in Dunedin, New Zealand
[17] Rosenberg, M. (1965), *Society and the Adolescent self-Image*. Middletown, CT, Wesleyan University Press
[18] Adolescent depression was assessed with the Diagnostic Interview Schedule for Children by a psychologist
[19] www.otago.ac.nz/christchurch/research/healthdevelopment/
[20] The former is measured by the Coopersmith Self-Esteem Inventory, and the adult outcomes use the Self-Report Delinquency Inventory and the Symptom Checklist, respectively

and externalising problems, the association between self-esteem and violent offending no longer remains statistically significant, and remains statistically significant but negligible for self-reported hostility.

Evidence on the predictive power of self-esteem for outcomes related to wellbeing is limited. However, Heinonen et al (2005), using data from the Cardiovascular Risk in Young Finns study, find that self-esteem[21] at age 12 predicted pessimism at age 33.[22] A further result of this study showed that not only the level of self-esteem at age 12, but also its change between ages 12 and 18 predicted pessimism at age 33. Thus, although the study does not adjust for possible differences across children and their families, it does suggest that the change in self-esteem within an individual over time is also associated with pessimism as an adult.

As for self-efficacy, there is relatively little longitudinal evidence of an association with adult life (post age 21). We identified one study, Pinquart et al (2003), which found that self-efficacy in adolescence predicts employment outcomes and job satisfaction in adulthood. The authors used an archived data set collected before German unification from the seven districts of Leipzig to investigate whether academic self-efficacy beliefs at ages 12 to 15 were associated with unemployment and job satisfaction at the age of 21. The authors find that higher self-efficacy[23] was associated with lower risk of unemployment and higher levels of job satisfaction. However, the authors adjust only for educational attainment and thus cannot be sure that the observed association is not a result of differences in other child or family characteristics.

There is a vast literature on academic self-concept (see Huang, 2011) but we found little work relating it to outcomes beyond age 21. Sacker and Schoon (2007) find some evidence relating academic confidence to eventual qualifications among members of the NCDS, particularly girls who had left school at 16.

2.1.2 Motivation
Motivation can be characterised as the reasons for which individuals strive towards goals. It includes the belief that effort leads to achievement, distinguishes whether goals are set by other people or by oneself, and assesses the value that is attached to the goal, aspiration or ambition in question. Motivation may come from many sources: fear of failure, fear of disappointing parents or others, the pursuit of a future goal ('extrinsic' motivation), or a love of the activity for its own sake ('intrinsic motivation'), for example.

The role of these different types of motivation in school achievement has been well studied, but is not the focus of this review. In a meta-analysis of studies from several countries, and their own studies of high school and college students in Canada and in Sweden, for example, Taylor et al (2014) find that it is intrinsic motivation only that is associated with subsequent academic achievement.

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[21] Coopersmith Self-Esteem Inventory

[22] Measured using the Life Orientation Test-Revised (LOT-R), capturing the extent to which the individual exhibits a pessimistic life orientation. Example items include: ''In uncertain times, I usually expect the best''; ''If something can go wrong for me, it will''. Previous studies have established good validity and reliability for the LOT-R

[23] The measure of self-efficacy was constructed from items such as ''With new class material I doubt whether I can succeed in it'' and ''I trust myself that I can assume group leadership''. Job satisfaction was measured using a single question, and the respondents were also asked if they were unemployed

"When intrinsically motivated, individuals freely engage in an interesting activity simply for the enjoyment and excitement it brings, rather than to get a reward or to satisfy a constraint. They perceive themselves as the causal agent of their own behaviour outcomes."

There is a set of eight questions put to 16-year-olds in both BCS and NCDS about their attitude to schoolwork, which is labelled in the study documentation as **academic motivation**. It includes items such as "I feel like school is largely a waste of time", "I never take work seriously", "I am always willing to help the teacher", the first two being reverse coded. This does not exactly match up to the idea of 'intrinsic motivation', but they have been used to help predict adult outcomes in these cohorts.

There are other theories of motivation, for example the theory of Expectancy Values.[24] We did not find literature linking them to adult outcomes. An overall summary of findings from our literature search assessing the predictive power of 'academic motivation' so defined is provided in Table 2.3, and below this table we describe the findings from some key individual papers addressing these issues.

Table 2.3: Motivation: measures with strong evidence of predictive power				
Child Measure	**Adult Outcome**			
	Mental Health & Wellbeing	**Labour Market/ Socioeconomic**	**Physical Health & Health Behaviours**	**Other**
Academic Motivation		Social Class (+) Income (+)	Smoking (-) BMI (-) Exercise (+)	Education (+)

Sacker and Schoon's (2007) analysis of the NCDS cohort finds that the academic motivation index is positively related to qualifications gained by age 42, both by cohort members who had left school at 16 and those who had stayed on. Schoon (2008) examines the influences of 'school motivation' on social status attainment at 30/33 (BCS and NCDS respectively) on a pathway from parental social status, childhood cognitive ability, and education. She finds that the most important predictor of qualifications and occupational status, for both men and women, is how long they stayed in education. 'School motivation' is positively associated with duration of education, and is part of the way that social background leads to longer education, but it also adds independently to adult social class, defined using the six-point Registrar General scale (RGSC). The NCDS questions on 'academic motivation' have been used by Breen and Goldthorpe (2001) who label it as 'effort'. Conti and Hansman (2013) use the age 16 academic motivation scale (along with a number of additional items reported by teachers in NCDS) as part of a battery of 'personality' terms to predict a range of health behaviours at age 42. They are interested in whether these factors can explain the 'educational gradient' such that those with lower educational attainment have poorer health later in life. 'Motivation' (mainly academic motivation measured at 16) accounts for variation in the health behaviours at 42. Motivation at 16 was found to make a substantial contribution to explaining the

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[24] Eccles, J. (1983), 'Expectancies, values, and academic behaviors', in J. T. Spence (Ed.), *Achievement and Achievement Motives: Psychological and Sociological Approaches* (pp. 75–146). San Francisco, CA: W. H. Freeman

educational gradient in smoking, BMI and Exercise at 42, after adjusting for gender, age, ethnicity, birth weight, parental and current own socioeconomic status.

Ashby and Schoon (2010) take a different perspective on the motivation of the BCS cohort, comparing responses they made at 16 about the values that would be important to them in a job with their social status and earnings at 34, controlling also for family background and educational attainment. Adolescent ambition was measured using two items capturing the importance placed on being challenged in a job and on moving up and getting ahead. The findings suggest that young people who felt it important to get on in their job earn more money in adulthood than their less ambitious peers. This 'ambition value' was a more important predictor of success for girls than boys, but the level of the chosen career was also important. Teenage career aspirations, defined as a composite measure of educational expectations and occupational aspirations, were also important in predicting occupational status for both men and women, but not for the earnings outcomes of either. Parental expectations and aspirations were very strong predictors of the young person's ambitions.

Gutman, Schoon and Sabates (2012) make another distinction within the responses on career ambition of the 16-year-olds born in 1970, whether the job they aspired to was realistic in terms of their educational expectation. They then look at the labour market situation at age 34. Adolescents were categorised as having ambitions that were either aligned or misaligned with the educational attainment they expected.

The authors found negative associations with log hourly wages at age 34 of misaligned or uncertain ambitions, particularly if the mismatch took the form of an underestimation of the educational attainment necessary for the occupational goals. Hence, pitching an ambition high is not necessarily a formula for reaching it. The contrast to the Ashby and Schoon study suggests further research is required for a full understanding of the relationship between ambition and adult earnings.

2.1.3 Self-control and self-regulation

Self-control and self-regulation refer to how children manage and express emotions, and the extent to which they overcome short-term impulsivity in order to prioritise higher pursuits. Apart from assessment of the ability to delay gratification, measures of self-control and self-regulation used in the longitudinal studies reviewed here are most commonly related to concepts such as conscientiousness or the absence of externalising behaviour problems. The concept of **conscientiousness** appears in the Big Five Personality scheme, OCEAN, standing for Openness to Experience, Consciousness, Extraversion, Agreeableness and Neuroticism.[25] It is broadly defined as the propensity to follow socially prescribed norms and rules, to be goal-directed, and to be able to delay gratification and to control impulses.[26] Individuals attributed with high levels of conscientiousness have a tendency to show self-discipline and a preference for planned rather than spontaneous behaviour. However, there is no single preferred research instrument capturing conscientiousness in longitudinal studies. Bespoke measures are often constructed based on the

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[25] Digman J. M. (1990), 'Personality Structure: Emergence of the 5-Factor Model', *Annual Review of Psychology* 41: pp. 417–40

[26], McCrae, R. R. and Costa, P. T. (1997), 'Personality trait structure as a human universal', *American Psychologist*, 52, pp. 509–16; John, O. P. and Srivastava, S. (1999), 'The big five trait taxonomy: History, measurement and theoretical perspectives', in L. A. Pervin and O. P. John (Eds), *Handbook of Personality: Theory and Research*, The Guildford Press, New York, pp. 102–38

availability of appropriate data. Some key indicators pertain to concentration, perseverance and persistence, and carefulness. As will be seen, many researchers construct their measures of conscientiousness based on items within questions about behaviour of the type developed in Britain by Michael Rutter.[27]

Evidence about self-control, or rather its absences, is collected via questions on **externalising behaviour** in Rutter questionnaires. Children said to exhibit externalising behaviours tend to lack the ability to control, inhibit or regulate certain aspects of their behaviour. This can include behavioural characteristics such as noncompliance, aggression, hyperactivity, poor impulse and emotional control, and conflict with others. In the longitudinal studies reviewed, prevalence and degree of externalising behaviour problems are derived from rating scales and checklists such as the Rutter behavioural scale, the Achenbach Child Behaviour Check List (CBCL),[28] and the Bristol Social Adjustment Guide (BSAG).[29] With respect to the Rutter scale, the conduct and hyperactivity subscales are often combined to form an externalising scale, although some studies consider conduct and hyperactivity measures separately as measures of externalising behaviour.

An overall summary of findings from our literature search assessing the predictive power of self-control and self-regulation in childhood for later life outcomes is provided in Table 2.4, and below this we set out some findings from key individual papers addressing these.

Table 2.4: Self-control and self-regulation: measures with strong evidence of predictive power				
Child Measure	**Adult Outcome**			
	Mental Health & Wellbeing	**Labour Market/ Socioeconomic**	**Physical Health & Health Behaviours**	**Other**
Ability to delay gratification			Obesity (-)	
Conscientiousness	Life Satisfaction (+)	Unemployment (-) Income (+)	Obesity (-) Clinical Problems (-) Smoking (-)	Crime (-)
Good conduct (Low Externalising)	Malaise (-)	Income (+)	Obesity (-) Clinical Problems (-) Mortality (-)	Crime (-)

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[27] Rutter, M., Tizard, J. and Whitmore, K. (1970), *Education, health and behaviour*, London: Longmans

[28] Achenbach, T. M. (1991a), *Manual for the Child Behavior Checklist*/a-18 and 1991 profile, Burlington, VT: University of Vermont

[29] The Bristol Child Adjustment Guide was a questionnaire completed by teachers at NCDS at ages 7 and 11. Stott, D. H. (1969), *The social-adjustment of children: Manual to the Bristol Social-Adjustment Guides*, University of London Press. There were 31 items, many with multiple possible answers. The only coded version of this information available is a reduction into scores on 12 'syndromes' reflecting various idiosyncratically defined domains of behavioural adjustment. It is difficult to extract good representations of the skills reviewed in this report because some of the relevant answers, particularly about positive skills rather than problem behaviour, are submerged in the way the variable has been coded. Carneiro, Crawford and Goodman (2007), for example, use an overall BSAG score as a measure of 'social skills'

Concerning the ablity to delay gratification as a measure of self-control, we found only one study – from the United States – that investigated its long-term predictive power. Schlam et al (2012) assess whether pre-schoolers' performance on a delay of gratification task would predict their BMI 30 years later. They use data from a longitudinal study of children aged 4 attending the Bing Nursery School between 1968 and 1974, who completed a delay of gratification task, administered in an experimental setting. The task involved making the size of a food reward (e.g. one versus two cookies, marshmallows or pretzels) conditional on whether the child could wait until the experimenter returned.[30] The authors find that longer duration of delay of gratification predicted lower BMI 30 years later. The authors only adjust for gender, however.

There is a much broader literature examining the role of childhood conscientiousness and externalising behaviour in determining adult outcomes. Feinstein (2000) constructs a measure similar to conscientiousness, teacher-assessed attentiveness at age 10, and finds it to be strongly positively associated with qualifications and wages at 26 and also, for women, with avoiding unemployment in their twenties. He also finds teacher-assessed antisocial behaviour of boys at 10 to be linked to more unemployment and lower wages at 26, though interestingly, girls rated higher on antisocial behaviour received higher wages. Also, with respect to labour market outcomes, Macmillan (2013), also using the BCS, finds that higher levels of conscientiousness averaged over ages 5 and 10 is associated with a lower likelihood of men spending a year or more out of work between the ages of 16 and 29. In addition to fathers' worklessness, the association holds after adjusting for childhood cognitive outcomes and educational attainment as well as childhood measures of locus of control, self-esteem and other dimensions of childhood personality. Her conscientiousness measure is created using Principle Components Analysis (PCA) based on mother- and teacher-responses to Rutter items relating to concentration, boredom in class, perseverance, failure to complete tasks and whether the child is easily distracted, among others. The predictive power of conscientiousness is found to be very similar to that of cognitive ability. An interesting additional finding is that the association between conscientiousness and later worklessness is strongest in local areas of low unemployment, is smaller but significant in areas of average unemployment, and not significant in areas of very high unemployment. Blanden, Gregg and Macmillan (2007) include various parent and mother reported 'non-cognitive skills' beyond locus of control, to predict adult wages at age 30 in BCS. The variable with the most independent explanatory power, even after accounting for qualifications and labour market outcomes, was what the authors term 'application', a teacher-rated 15 item score reflecting 'concentration, perseverance and ability to understand complex tasks', which extends those used in Feinstein's measure of attentiveness. The Rutter behaviour problem scores were not significant predictors of the labour market outcomes in either of the cohorts analysed in this paper.

In another study, Prevoo and ter Weel (2013) find that 'conscientiousness' in childhood predicts adult wages, using data from the BCS. The authors use a similar, though not identical, set of items to construct the conscientiousness measure to Macmillan (2013). Here, however, conscientiousness is measured at age 16 using items relating to completing tasks, whether the child is easily distracted, and concentration. After adjusting for childhood cognitive ability and other dimensions of childhood personality, gender and region, conscientiousness is associated with higher wages at age 34, and

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[30] For full description of the delay of gratification used, please refer to the Methods section of Schlam et al, 2012

with a higher probability that the individual saves any amount of their monthly income at age 34. Separately adjusting further for the home background, educational attainment, prior Rutter scores, and self-esteem and locus of control, does not substantively impact on the findings.

Prevoo and ter Weel consider a broad range of non-labour market outcomes. Adjusting for childhood cognitive ability, personality, gender and region, the authors find that conscientiousness predicts lower adult BMI, a lower likelihood of being a smoker, an excessive drinker, or having ever been arrested, and higher life satisfaction. However, upon further adjusting for the home background, such as lone mother and/or teenage mother at birth, parental education and social class and parenting style, the associations with BMI, alcohol and arrests are no longer significant. Conscientiousness still, however, predicts a lower likelihood of being a smoker and higher life satisfaction after adjusting for the home environment.

Hampson (2013), using data from a community sample of over 2,000 children in elementary schools in Hawaii, finds that conscientiousness measured at age 10 does predict a lower likelihood of obesity at age 51, after adjusting for other childhood personality traits, childhood socioeconomic status, ethnicity and gender, as well as adult conscientiousness. The measure of childhood conscientiousness used is based on factor analysis of items related to perseverance (e.g. keeps at work until it is completed, thorough), planning (e.g. works systematically) and carefulness (e.g. keeps own things neat, clean and in order).

Lundberg (2013) finds a complex pattern of eventual educational outcomes by adolescent personality types in the US AD Health survey. Conscientiousness turns out to be an asset for the offspring of advantaged parents, with whose resources this trait is seen as complementary. However, for adolescents from less advantaged homes, conscientiousness is not enough, or indeed significantly valuable itself.

Rather it is openness (to new ideas) that helps disadvantaged young people make educational progress; it works as a substitute for parental resources. Although men and women are analysed separately and have somewhat different estimated coefficients, gender differences are not striking

Moffitt et al (2011), using data from the Dunedin study, create a measure that they term 'self-control'. This combines traits related to conscientiousness – such as persistence, and ability to complete tasks and stick to an activity – with a lack of behavioural characteristics commonly associated with externalising behaviour, such as impulsivity, restlessness, aggression and hyperactivity, among others. The authors combine measures of these traits and behaviours across ages 3, 5, 7, 9 and 11 using Principal Components Analysis (PCA). There are several informants, including parents and teachers, as well as an examiner who rated aspects of the child's conscientiousness and externalising behaviour in a testing session. Self-control, as defined, was associated with a wide range of wealth, health and crime outcomes at age 32, adjusting for parental social class and IQ. With respect to wealth, low self-control predicted lower socioeconomic status and gross income and greater self-reported financial struggles, with strengths of associations being almost identical to that observed for cognitive ability (IQ). With respect to health, low self-control

predicted adult clinical health problems[31] and alcohol/tobacco/cannabis or other drug dependence, whereas no such associations were observed with cognitive ability. Finally, low self-control also predicted the likelihood of having a criminal conviction by age 32. Again, no such association was found with cognitive ability.[32] Also, although the predictive power of the self-control measure is strong across a diverse range of outcomes, the authors adjust only for parental social class and childhood IQ. No gender-specific differences in associations were explored.

The power to predict adult criminal activity from externalising behaviour in childhood is studied by Agan (2011) using US data on the children of participants of National Longitudinal Survey of Youth. The measure for externalising behaviour is constructed using items from the Achenbach Child Behaviour checklist when the children were between the ages of 5 and 13, characterised by aggression, noncompliance, impulsivity and high activity levels. Agan finds that after adjusting for ethnicity, gender, cognitive ability, emotional health, educational attainment and family background, externalising behaviour significantly predicts whether the individual had been convicted of a crime by the age of 27. The association remained after the inclusion of family fixed effects where there are siblings being followed, suggesting that unobserved differences in families were not affecting the results.

Using data from the BCS, White et al (2012) assess the predictive power of conduct and hyperactivity problems at age 5, based on the Rutter items, in determining adult obesity. Conduct and hyperactivity problems were significantly predictive of an increased likelihood of being obese at age 30, after adjusting for childhood and paternal BMI, father's social class and maternal educational achievement, childhood cognitive ability, gender and birth weight. The association was found to be stronger if conduct or hyperactivity problems were present at both ages 5 and 10. Ogollah (2010) traces links in the 1958 and 1970 cohort between conduct problems in childhood and physical health problems in adulthood.

A number of studies have shown an association between externalising behaviour and mortality. Maughan et al (2014) use the National Survey of Health and Development 1946 cohort (NSHD) to examine the relationship between adolescent conduct problems and mortality by the age of 65. Conduct problems were measured using teacher-reported questionnaires that were forerunners of the Rutter items, with a seven-item conduct problems measure which included disobedience, lying, punctuality, restlessness, truancy, daydreaming and discipline. This measure was found to predict the probability of dying from coronary heart disease in men and from cancers in women, after adjusting for parental social class and cognitive ability, pointing to gender specific associations between adolescent conduct problems and subsequent mortality risk. Jokela et al (2009) also examine the association between externalising behaviour and mortality up to age 46 in the NCDS 1958. The authors use the Bristol Social Adjustment Guide (BSAG) to construct a measure at ages 7 and 11 of externalising behaviour. It is based on hostility towards children and/or adults, restlessness, and anxiety about acceptance by children and/or adults, although it should be noted that anxiety is not usually included in measures of externalising behaviour. Mortality was found to be predicted by externalising behaviours in childhood, after adjusting for father's social class, family

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[31] Physical health was indexed by five clinical health measures of poor adult health, including metabolic abnormalities, poor respiratory health, periodontal disease, sexually transmitted infection and elevated inflammation level

[32] It is worth noting that the relative roles of conscientiousness and externalising behaviour in driving the observed associations between the self-control measure and adult outcomes is not determined

size and difficulties, and childhood cognitive ability, emotional health and gender. In contrast to Maughan et al, no gender-specific differences were found in the association between childhood externalising behaviour and mortality.

Mental health in adulthood also appears to be predicted by externalising behaviour in childhood. Buchanan et al (2002) use data from the 1958 cohort, NCDS, to assess the association between externalising problems at age 7 and mental health at age 33. Factor analysis was carried out on the Rutter questionnaire, from which came a measure for externalising problems, based on positive responses to being fidgety, destroying things, fighting, not being liked and being irritable, disobedient and unsettled. Mental health at 33 was evaluated using the Rutter malaise inventory. Externalising problems were found to be significant predictors of adult malaise, after adjusting for childhood emotional health and gender, parental socioeconomic status, and level of disadvantage and family structure among others, and gender difference in this association was minimal. The strength of the association for men and women was similar to that associated with being a child with a lone parent, at age 16.

2.1.4 Social skills

Social skills describe a child's ability and tendency to interact with others, forge and maintain relationships, and avoid socially unacceptable responses. They cover communication, empathy, kindness, sharing and cooperativeness and are absent when a child is solitary, shy or withdrawn. The skills to build and maintain relationships and to solve interpersonal problems are identified as aspects of Social and Emotional Learning (SEAL). [33] The research instruments used most often to reflect these abilities highlight an outgoing temperament, as opposed to withdrawal, and are picked up as the **extraversion**, and sometimes the agreeableness, elements of the Big Five Personality scheme. Some researchers have more specific evidence, usually from teachers, on the child's **social functioning** and competencies. These usually describe the extent to which a child interacts, and seeks to interact with other people, or, in the opposite direction, displays aggressive behaviour towards them. Other measures of social skills, such as **sociability,** are based around the popularity and likeability of a child, and incorporate dimensions of positivity. Few studies have found sociability on the labour market, but they are more commonly identified as predictors of non-labour market outcomes, in particular mental health and wellbeing.

An overall summary of findings from our literature search assessing the predictive power of social skills in childhood for later life outcomes is provided in Table 2.5, and below this we set out some findings from key individual papers addressing these.

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[33] DCSF, 2007

Table 2.5: Social skills: measures with strong evidence of predictive power

Child Measure	Adult Outcome			
	Mental Health & Wellbeing	**Labour Market/ Socioeconomic**	**Physical Health & Health Behaviours**	**Other**
Extraversion	Life Satisfaction (+)	Income (+)	Smoking (-)	Partnerships (+) Crime (-)
Social Functioning	Mental Illness (-)			
Sociability	Life Satisfaction (+)		Clinical (-) Smoking (-)	Crime (-)

Considering papers examining solely labour market-related outcomes first, Genowski et al (2013) report on variations in lifetime earnings of a very long-term follow-up of high IQ individuals born in California around 1910. Known as the Terman Study, it is described as the world's oldest prospective study with earnings data. Extraversion, based on indicators including fondness for large groups, popularity with other children and leadership, was found to be strongly associated with own lifetime earnings to age 70. However, this result was only observed for men and was stronger than that observed for cognitive ability. Interestingly, extraversion was strongly predictive of the lifetime family earnings of women in this cohort, suggesting that extraversion in childhood was associated with higher earning partners for women. The analyses also adjusted for family background, early health, number of siblings and whether the men had Second World War combat experience.

Macmillan (2013) considers how social skills relate to unemployment among men born in the British Cohort Study 1970. She finds extraversion was strongly negatively associated with unemployment over ages 16 to 29, and was found to be a stronger predictor than cognitive ability. However, it should be noted that extraversion is defined using Rutter items pertaining to not being solitary or sullen, and being excitable, which are not commonly used proxies for social skills. The analysis adjusts for other dimensions of childhood personality, cognitive ability, educational attainment and father's employment. The two elements are of roughly equal importance in explaining the tendency of unemployed fathers to have unemployed sons. The analysis was not done for women.

Masten et al (2010) follow a relatively smaller US longitudinal sample, Project Competence, over 20 years. Their cascade modelling shows that self-reported and externally reported competence at work in adult life is associated with having got on well with other children, and 'social competence' with peers in childhood.

The latter was based on measurements of popularity among peers and the closeness and length of relationships formed. Sociability in childhood also appears in studies of specific features of career progress. Leadership potential, in the study by Guerin et al (2011), has antecedents in adult social skills that can in turn be traced back to extraversion in adolescence. These data come from the Fullerton Longitudinal Study in the US, covering ages 2 to 29, and the modelling also controls for intelligence. Childhood social competence also features as one of the predictors of self-employment

at age 34 among members of the British Birth Cohort study who were in creative or scientific occupations (Obschonka et al (2012)).

By contrast, Verroneau et al (under review) report on the longitudinal follow-up of a low social status population, the Concordia Cohort in urban Quebec. They found that children rated less likeable by their classmates, and, to a greater extent, as aggressive by their teachers, were less likely to experience upward mobility from their class of origin. The most powerful predictor was, however, educational attainment rather than social skill or the lack of it.

Various authors have looked at a wider range of outcomes associated with social skills in childhood. Prevoo and ter Weel (2013) create measures for extraversion using mother-reported Rutter items at ages 10 and 16, and examine their association with economic and non-labour market outcomes. Although in their study conscientiousness proved the most consistently predictive of a range of outcomes at age 34 (as described in section 2.1.2), extraversion showed the strongest positive association of all personality types with life satisfaction at 34. There were also some significant, though less strong connections discovered with smoking, cannabis use and ever having been arrested. Two studies of the Concordia cohort in Quebec by Temcheff et al (2011a and b) find that peer rated likeability in mid-childhood is associated with better health and fewer visits to medical (and dental) services. They point to the long-term cost savings that could follow from preventative intervention.

Richards and Huppert (2011) look at a number of aspects of adult wellbeing and life satisfaction in the NSHD cohort born in Britain in 1946. They link positive aspects of adolescent temperament (ages 13, 15 and 16), including sociability, to a number of outcomes at ages 36, 43 and 53. Teachers were asked to rate children at 13 and 15 on some positive attributes as well as the more common type of questions and emotional difficulties. The items were: "very popular with children"; "unusually happy and contented"; "makes friends extremely easily"; and "extremely energetic, never tired". The 'positive child' is therefore likely to be a sociable child. The analysis also includes an indicator of extraversion, being in the top half of a score derived from cohort members' own responses at 16 to the Maudsley Personality Inventory, which also covers sociability and energy.
The children rated positive by their teachers showed positive outcomes on certain aspects of midlife wellbeing: a low chance of mental health problems as adults; high social contacts and engagement; and also feeling satisfied with accomplishments in working life. These associations were independent of father's social class, childhood cognition, educational attainment, and midlife occupational social class, and of extraversion at 16 as well as conduct and emotional problems reported by teachers at 13 and 15. On the other hand, there were no independent associations between being a positive child and educational or occupational attainment, being married, engagement in prosocial activities, taking leadership in community activities, and with life satisfaction in general or with family life, once these other factors had been taken into account.

Extraversion was associated with a low probability of lifetime emotional problems, high engagement in social activities, being married, general life satisfaction at 36, and satisfaction with family life, but not with social contact, prosocial activity, leadership activity or work satisfaction. The finding that extroverted teenagers report better life satisfaction in their mid-thirties was echoed for the BCS cohort by Prevoo and ter Weel (2013). Richards and Huppert conclude that positive wellbeing, with its strong sociability component, has a unique impact on these outcomes, and does not merely represent the absence of mental ill-health.

Other studies linking evidence of children's social skills to their mental health as adults have been noted from Australia and Denmark. In the Australian example, Katz et al (2011) found that children who were shy or withdrawn at age 5 were more likely to show 'social impairment' at age 15, which was in turn a predictor of depression at age 20. These subjects were members of the Mater-University of Queensland Study of Pregnancy, followed from before birth to age 20. The analysis used Structural Equation modelling to trace pathways through childhood, adolescence and early adulthood. Withdrawal and impairment were based on mother's report (on the Child Behaviour Check List) and self-report at 15 on the UCLA Life Stress interview.[34] The models controlled for mother's depression and gender, but not for social or educational factors. The link between social functioning as a teenager and depression at 20 was stronger for young women than young men. The Danish study, focussed particularly on schizophrenia, but is unusual in being able to disentangle genetic from other sources of life-course continuity in mental illness. Tsui et al (2013) conducted a prospective study of children selected for risk of schizophrenia on the basis of having a parent with the condition, along with controls drawn from a larger population cohort. This is possible given the register data available in Denmark. Teachers rated behaviour at age 13 for social functioning, and the cohort was assessed in an examination by a psychiatrist at age 31 to 33. Social functioning was based on whether the child joined the class in activities, had friends, was teased, and actively sought friends and whether the child avoided contact with children. Those receiving a schizophrenia related diagnosis as adults were both more likely to have had a schizophrenic parent (genetic risk) and more likely to have had poor social functioning as teenagers. Poor social functioning at 13 was independent of parental schizophrenia and also independently predicted both schizophrenia and other mental illnesses in adulthood. The authors suggest that bad experience such as bullying in teenage years may increase the chances of an inherited tendency turning into to a long-term mental problem in adulthood.

2.1.5   Resilience and coping

Resilience and coping address the notion of being able to adapt positively and purposefully in the face of stress and otherwise difficult circumstances. Resilience is not so much an aspect of character as a developmental process, capturing the ability to summon strength and resources when needed and 'beat the odds' of adversity. As such, there is no direct measure of resilience available in longitudinal studies.

Resilience can be studied by looking at outcomes of childhood that are 'against the odds', and looking for factors that appear protective of otherwise vulnerable children from risk. Schoon (2006), in her analysis of the 1958 NCDS and 1970 BCS cohorts, describes children from disadvantaged backgrounds who emerge from school in the top half of educational attainment as resilient or beaters of the odds. The resilient also do better than expected in a number of adult labour market and psychological domains, sometimes differing for men and women.

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[34] As noted in Chapter 1, CBCL has much in common with the Rutter scales and the SDQ used in UK

Table 2.6: Resilience and coping: strong evidence of predictive power				
Child Measure	**Adult Outcome**			
	Mental Health & Wellbeing	**Labour Market/ Socioeconomic**	**Physical Health & Health Behaviours**	**Other**
Resilience and coping	Life satisfaction (+)	Occupation (+)		Education (+)

2.1.6 Emotional Health

There is a vast literature on emotional problems and difficulties as predictors of adult outcomes.[35] We have not attempted a thorough review as it is not clear that the absence of emotional problems amounts to a 'skill'. Nevertheless, many studies construct proxies for emotional skills, often defined as the absence of internalising problems (an approach taken in our own empirical work set out below in Chapter 3).

A brief summary of some findings from our literature search assessing the predictive power of emotional health in childhood for later life outcomes is provided in Table 2.6.

Table 2.7: Emotional health: measures with strong evidence of predictive power				
Child Measure	**Adult Outcome**			
	Mental Health & Wellbeing	**Labour Market**	**Physical Health & Health Behaviours**	**Other**
Emotional Health	Life satisfaction (+) Mental Illness (-)	Income (+) Employment (+)	BMI (-)	Partnerships (+) Wealth (+)

A recent example of work emphasising the importance of emotional wellbeing in childhood for long-term outcomes is Layard et al (2014), who analyse children in the 1970 BCS cohort at ages 5, 10 and 16,[36] in conjunction with various outcomes up to age 34. This work finds that the most powerful childhood predictor of adult life satisfaction is the child's emotional health (mainly mother-reports on internalising items from Rutter questions). Interestingly, childhood cognitive ability was found to be the least powerful childhood predictor of life satisfaction at 34, but was much more important for income and employment.

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[35] Some examples include citations by Jokela et al (2009); Moffit (1993); Kim-Cohen, Caspi, Moffitt, Harrington, Milne and Poulton (2003); Maughan and Kim-Cohen (2005); Pulkkinen and Pitkanen (1993); Flouri and Malmberg (2011)

[36] At each age, Layard et al use a more extensive list of items from the Rutter questionnaire to mothers – and at 16, the cohort members themselves – than the five parent-reported items from age 10 used in Chapter 3

Prevoo and ter Weel's analysis of multiple outcomes in BCS at age 34 finds an independent influence of emotional stability[37] with only one of 10 outcomes, regular saving behaviour. The construct was significantly correlated with wages before other 'personality' terms were brought in. Richards and Huppert (2011) include child emotional problems among their predictors of life course outcomes and find they predicted poorer mental health and lower life satisfaction. Goodman, Joyce and Smith (2011) look at the adult outcomes, up to age 50, of (clinically treated) emotional maladjustment in childhood for the NCDS cohort, and found that poor emotional health in childhood indeed casts a long shadow, much more than physical illness. There were significant adverse effects on income, wages, employment, social mobility and partnership. Finally there is some evidence to suggest an importance of emotional health for physical health outcomes in adulthood. In analyses of the NSHD cohort, Gaysina and colleagues (2011) report an association between trajectories of emotional problems and trajectories of BMI, which vary by sex.

2.2 How do social and emotional skills differ across children?

We have looked for mention in the papers searched for statistics describing differences among children in their social and emotional skills. The most common factor to be reported is whether or not there are differences between boys and girls, while some studies explicitly report differences by other covariates, such as parental class. A full set of correlations exists in principle but is seldom included in the papers reviewed.

2.2.1 Self-perceptions and self-awareness
Locus of control was reported for 10-year-olds in four studies: Ternouth et al (2009); Gale et al (2008); Flouri (2006); and Conti et al (2011). In all of them, the average scores for boys and girls were very close, though boys had slightly more internal locus of control than girls, significantly so in the case of the samples used in the first two papers mentioned. Feinstein (2000) found that girls had significantly lower locus of control scores at 10, but showed stronger labour market returns to it in their twenties than boys. Contrasts in locus of control by family social class and parental education were wider, with more advantaged families having children with higher internal locus of control (Feinstein (2000), Ternouth et al (2009), Gale et al (2009) and Flouri (2006)).

Self-esteem was significantly lower for girls than boys and for children in socially disadvantaged families, whether measured at age 10 in the BCS (Ternouth et al (2009), Feinstein (2000)), or at age 15 in the Christchurch Health and Development Study (Boden et al (2007)). The latter paper, from New Zealand, also showed a clear deficit of self-esteem for children of low cognitive ability. More recent findings in European studies suggest that a lower level of self-esteem for girls is not universal. Heinonen et al (2005) in Finland found no difference in self-esteem by gender at age 15, but higher values for girls at age 18. In a sample of 206 16-year-olds in Italy in 2000, Caprara and colleagues (2013) found no difference in self-esteem by gender, though they had expected that of girls to be lower.

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[37] This is a construct based on mothers' responses to Rutter questions at both 11 and 19, which has some overlapping membership (miserable, fearful, sullen or tearful) with the five items used from age 10 answers in Chapter 3. The other two items counted within the emotional health score in Chapter 3 are allocated to the extraversion score by Prevoo and ter Weel, who include items counted as externalising by Chapter 3 within 'emotional stability'

2.2.2 Motivation

There are few differences between males and females with respect to ambition at 16 in the BCS (Ashby and Schoon (2010)), though Gutman et al (2012) nevertheless find that having a combination of high educational aspirations for a low-level occupational goal was more common for boys. The latter paper found ambitions to be associated with family social advantage, which was also found by Ashby and Schoon, though their moderate positive correlations were found to be significant mainly for girls.

2.2.3 Self-control and self-regulation

Externalising behaviour has been associated with more problems in boys than girls, and in children from less advantaged backgrounds, in a number of studies. Examples are Colman et al (2009) in the British NSHD Cohort; Jokela et al (2009) and Papageorge et al (2014) in the NCDS cohort; Feinstein (2000) in the BCS cohort; and McCLeod and Kaiser (2004) in the Children of the National Longitudinal Survey of Youth from the USA. The first two of these studies also report higher externalising behaviour in children of lower cognitive ability.

Authors who report the decomposition of externalising behaviour into the conduct and hyperactivity scales show a more nuanced view focussing on misconduct. Maughan et al (2014), using data for ages 13 and 15 in the NSHD, report more conduct problems among boys than girls, which is confirmed by Byford et al (2014), who also report more conduct problems in children of lower cognitive ability. Analysis of the NCDS at ages 7 and 11, in both mother and teacher reports (Ogollah 2010), shows that the more adverse scores for boys are with respect to conduct problems rather than hyperactivity, but that by age 16 this gender difference has gone. In the BCS, ratings of externalising behaviour analysed by Flouri and Malmberg (2009) reveal that both conduct problems and hyperactivity were higher for boys than girls, and for children of less socially advantaged or less educated parents, although the strength of correlation reduced between ages 10 and 16.

Interestingly, the indicator for self-control extracted from the Dunedin cohort at ages 3, 5, 9 and 11, which was a combination of both externalising behaviours and conscientiousness, showed higher mean levels for girls than boys (Moffitt et al (2011)). Correspondingly, Nikolaoy (2012), based on factor analysis of mothers' reports on the behaviour at 16 of the NCDS cohort, finds that girls were more conscientious than boys. This suggests that the self-control measure used by Moffitt et al (2011), although a composite of both externalising and conscientiousness, may be more representative of the latter.

2.2.4 Social skills

An indicator of positive social skill extracted from the age 13 and 15 questions in NSHD, showed a moderate advantage for girls (Xu et al (2013)), but another selection from those questions, the positive child index (Richards and Huppert (2012)), has boys scoring marginally higher. There is, however, the familiar social gradient in positivity, with children from higher social class (and of higher cognitive scores) receiving the highest rating.

Social functioning was not related to gender, social class (or parental schizophrenia) in the study in Denmark by Tsui et al (2013). Similarly, the peer-rated likeability scale constructed for the Canadian Concordia Project (Verronneau et al, under review) was not significantly different by gender or correlated with socioeconomic status.

2.2.5 Emotional Health

Emotional problems are on the whole reported to show few differences by gender or social class (Ogollah (2010); Flouri and Malmberg (2009)).

2.2.6 Summary of differences in social and emotional skills across children

In the studies included in this review, we found relatively few differences between averages for boys and girls in the social and emotional skills analysed. There were even fewer analyses showing gender differences in the values of coefficients linking the skills to adult outcomes, although notable exceptions are highlighted in Section 2.1. The most striking gender contrast reported in section 2.2 is in the consistently higher average scores for boys on externalising behaviour, particularly conduct problems. Some of the studies report positive associations between an advantaged home background and some social and emotional skills. To an extent, therefore, this suggests that socioeconomic advantage in a wide range of adult outcomes may be transmitted through these skills. The evidence suggesting a positive association between cognitive, and social and emotional skills may also play a further role in generating advantage and disadvantage in adult life.

2.3 Conclusions

This search of literature from many disciplines for evidence on long-term links between social and emotional skills in children and their adult lives has been rewarding, though limited in several ways. Firstly, there are not many prospective studies that enable a long-term link to be made, following children into adulthood. Secondly, the data sources available do not necessarily cover a full range of life domains in adults because they were collected in surveys focussed on specific purposes – health, education or employment, for example. They are also constrained by what sort of data has been collected from children in the past, many decades ago for some. This has been shaped by the interests of and definitions used by researchers at that time, and will always be constrained by what is feasible to collect in the field. That said, we have found evidence from a range of countries for a number of social and emotional skills in childhood being associated with adult outcomes.

Skills pertaining to self-control/self-regulation in particular (such as conscientiousness and good conduct), and self-perceptions/self-awareness, appear to have implications across most domains of adult life. Social skills appear particularly important for mental wellbeing, while there is a relative lack of evidence to date for the importance of skills pertaining to motivation and resilience. This does not necessarily imply that such skills are unimportant.

Although the literature suggests there are relatively few differences between girls and boys in these skills (with the notable exception of self-control/self-regulation), differences by socioeconomic status are consistently found. To some extent, the fact that children from more advantaged homes have better social and emotional skills may help to widen socioeconomic gaps in adult outcomes. There is a hint that children from disadvantaged backgrounds may gain from different social skills rather than those already benefitting those from more advantaged homes, so that the improvement of opportunities may not necessarily come from equalising social and emotional skills. The sources of resilience require further study.

Social and emotional skills are diverse and their role in the life-course is complex. The literature reviewed here, however, highlights that taken together they constitute a considerable factor in determining life chances.

Chapter 3. The long-term effects of social and emotional skills in childhood: new evidence

Summary of this chapter

In this chapter we present new work on the associations between skills developed in childhood and outcomes in mid-life, which we have undertaken using new data from the 1970 British Cohort Study (BCS70) at age 42. We examine the adjusted association between social and emotional skills measured at age 10 and outcomes in mid-life. Our findings mainly reinforce, and in some cases extend the conclusions drawn from our literature review.

Table 3.1: Evidence of predictive power of social and emotional skills from our analysis using BCS70				
Child Skill Group (	**Adult Outcome**			
	Mental Health & Wellbeing	**Labour Market/ Socioeconomic**	**Physical Health & Health Behaviours**	**Other**
Self-perceptions and Self-awareness	Wellbeing (+) Life Satisfaction (+) Malaise (-)	Income (+) Top Job (+) Wealth (+) Degree (+) Social Housing (-)	Self-rated Health (+) Obesity (-) Drinking (-) Smoking (-)	Partnership (+) Political Interest (+)
Self-control and Self-regulation	Life Satisfaction (+) Wellbeing (+)	Income (+) Top Job (+) Employment (+) Degree (+) Social Housing (-)	Self-rated Health (+) Drinking (-) Smoking (-)	Partnership (+) Political Interest (+) Parent (-) No. of Children (-)
Social Skills	Wellbeing (+) Life Satisfaction (+)	Income (+) Job Satisfaction (+) Social Housing (-) *Degree (-)*	Self-rated Health (+) Drinking (+)	Partnership (+) Parent (+)
Emotional Health	Wellbeing (+) Malaise (-)	*Social Housing (+)*	*Smoking (+)*	
Cognitive Ability	Wellbeing (+)	Income (+) Top Job (+) Employment (+) Wealth (+) Social Housing (-) *Job Satisfaction (-)*	Self-rated Health (+) Obesity (-) Smoking (-) *Exercise (-)*	Partnership (+) Political Interest (+)

Note: Malaise = mental distress

Table 3.1 above summarises findings from our analysis using the BCS70. As in the summary of evidence from the literature review provided in Chapter 2 (Table 2.1), Table 3.1 highlights the adult

outcomes from our analysis found to be significantly associated with each skill group for the entire sample. The outcomes are grouped using the same themes as those in Table 2.1: Mental Health and Wellbeing; Labour Market and Socioeconomic; Physical Health and Health Behaviours; and Other. The plus and minus in parentheses correspond to whether the skill is positively or negatively associated with the outcome. For example, in our analysis, skills related to self-perception and self-awareness are positively related to wellbeing (+), and negatively related to mental malaise (-). There are also three outcomes, highlighted in italics, for which the association found can be said to be in an 'unexpected' direction. For example, emotional health is associated with a higher likelihood of smoking.

We consider two separate measures relating to **self-control** and **self-regulation** – 'good conduct' (defined in our work as an absence of externalising behaviours), and 'conscientiousness. We find that these are very important for outcomes across all of the life domains considered. For example, conscientiousness in childhood is associated with better self-reported wellbeing, educational attainment, income, labour market and partnership outcomes, and health and health behaviours.

We assess a number of **self-perceptions** and measures of **self-awareness,** finding that having an internal locus of control – closely related to more modern notions of 'efficacy' – also appears important in shaping a broad range of outcomes such as educational attainment, labour market success, socioeconomic status, mental health and wellbeing, and some measures of health and health behaviours. Self-esteem matters strongly for outcomes such as life satisfaction, mental health, and health and health behaviours in adult life.

Good **social skills** (here assessed by teachers) are predictors of life satisfaction and wellbeing, good health, partnership status and children, and some elements of labour market and socioeconomic success.

We found childhood **emotional health** (defined in our work as an absence of internalising behaviours) at age 10 to be especially important for outcomes relating to mental health and wellbeing in adult life.

As part of our work we also examined the association of **cognitive skills** developed in childhood on adult outcomes. These emerged as important for many domains of adult life including education and labour market outcomes, as well as health and health behaviours, but to a lesser extent for mental health and life satisfaction.

We further considered whether **educational attainment** was the predominant pathway between social and emotional skills in childhood and adult outcomes. The majority of associations between childhood social and emotional skills and adult outcomes were independent of educational attainment.

In general, most associations between childhood skills and adult outcomes were similar for boys and girls, and between children from low versus higher socioeconomic backgrounds, with some notable exceptions.

Policy focus on the intergenerational transmission of 'top jobs'
We made a mini case-study on whether differences in social and emotional skills are one reason why children whose parents have managerial or professional occupations are more likely to end up in top occupations themselves. This question is important for understanding why patterns of social mobility occur, and designing policies to increase social mobility. We found that individuals who, as

children, had parents who were employed in a 'top job' were considerably more likely to be in a top job themselves as an adult. Moreover, social and emotional skills at age 10 play a discernible role in transmitting top job status between generations (in particular, locus of control and conscientiousness). Social and emotional skills in childhood transmit top job advantage predominantly (but not exclusively) through their influence on educational attainment, particularly at age 16. This suggests that interventions to improve these early skills are likely to generate benefits for an individual's educational attainment and their chances of accessing a competitive top job.

3.1 Data, definitions and methods

3.1.1 Data

Our analysis is based on data from the 1970 British Cohort Study (BCS70), a study that has followed a large, representative group of individuals born in 1970 since birth, and at regular intervals throughout their lives. Parents and teachers were interviewed a number of times and provided especially rich information about the about the social and emotional development of the study children. The children themselves also sat cognitive tests that give a detailed picture of their cognitive development, while parents provided detailed information about the family background. See the appendix to this chapter on data and methods and the CLS website[38] for more details of the cohort.

The study has continued into adulthood and we now have information about their lives in multiple domains, including their own life satisfaction and wellbeing, their socioeconomic status and employment, family life, health, and activities, most recently when they were aged 42. We use all these data together to examine how the social and emotional skills of children at age 10 are related to lives at age 42.

3.1.2 How we define social and emotional skills

The social and emotional skills that we consider are derived from a snapshot when the children were aged 10, and are closely related both to the framework of definitions that we set out in Chapter 1 and those that we covered in our literature review in Chapter 2. These include measures of self-perception, self-regulation, emotional wellbeing, and social skills:

1. Locus of Control
2. Self-esteem   } **Self-perceptions/Self-awareness**
3. Academic Self-concept

4. Good Conduct (reverse of externalising scale)   } **Self-control/Self-regulation**
5. Conscientiousness

6. Emotional Health (reverse of internalising scale)
7. Social Skills (peer relationships)

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[38] www.cls.ioe.ac.uk

We create a single measure for each child of each of the age 10 skills by adding up a set of question responses for that child and then standardising[39] their total score. More detailed definitions of the measures, and descriptions of how they are constructed, are provided in Appendix 3.[40]

3.1.3 What outcomes do we consider?

We examine the impact of social and emotional skills measured in childhood on 20 outcomes relating to different life domains, measured at age 42. These include wellbeing and mental health, education, socioeconomic status, labour market outcomes, partnerships and children, health, health behaviours and political interest. The full list of outcomes is given below, and in brackets we provide the units in which our results are presented later in the chapter. More detailed definitions of the outcome measures are provided in Appendix 3, as well as some basic descriptions of the binary (yes/no) outcome variables.

1.	Life Satisfaction	(z)	**Mental Health and Wellbeing**
2.	Wellbeing	(z)	
3.	Malaise (mental distress)	(z)	
4.	Has a Degree	(%)	**Education**
5.	Net Family Income	(%)	**Socioeconomic Status**
6.	Net Wealth	(z)	
7.	In Social Housing	(%)	
8.	In Top Job	(%)	**Labour Market**
9.	In Employment	(%)	
10.	Hourly Pay	(%)	
11.	Job Satisfaction	(z)	
12.	In a Partnership	(%)	**Family**
13.	Has Children	(%)	
14.	No. of Children (if any)	(z)	

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[39] Standardising is a simple statistical process where the individual's score is subtracted from the average for everyone in the cohort (the cohort mean), and then divided by the standard deviation. The standard deviation summarises the average level of variability in the sample. This results in a variable with mean = 0, and a standard deviation of 1, which allows us to compare the relative effects of different scales (e.g. for self-esteem and social skills) that are originally measured in different units. This means that the variables have been expressed in terms relative to the average degree of variability with which they are reported

[40] We do not include any of the measures of 'motivation' set out in Chapter 1's framework, nor do we include any concepts of 'resilience' or 'coping' – since none of these are captured directly in the BCS70. While the BCS does have some measures of social and emotional skills at younger (age 5) and older (age 16) ages, for the purposes of this report we have restricted our analysis to skills measured at age 10

15. Poor/Fair Health   (%)
16. Obesity   (%)
         Health

17. Exercise   (z)
18. Smoking   (%)
19. Drinking   (%)
         Health Behaviours

20. Interest in Politics   (z)

Note: Estimates measured as % = percentage points, z = standardised scores, see Box 3.1 for details

3.1.4 How we estimate the importance of social and emotional skills for later life

We use multivariate regressions to examine how the social and emotional skills of children at 10 years of age relate to their outcomes in later life, controlling for a set of possible confounding variables. The methods we use are described in Box 3.1 below, and in further detail in Appendix 4.

The full set of controls we use include child birth weight, gender, ethnicity, number of siblings, parental education and unemployment, gross family income, social housing tenure, mother's mental health and mother's age, and the child's cognitive ability score at 10 (see Appendix 3 for details). In addition we have undertaken these analyses separately for boys and girls, and for study members with low versus higher income backgrounds at age 10, in order to assess whether the effects of social and emotional skills at age 10 are different by gender or by parental income.

We follow common practice of referring to the estimated strengths of association as 'effects', but we urge caution in interpreting them as indicators of causal effects – what would happen to an outcome if one of the skills were increased. This is because we cannot be sure that there is not some common cause of both the childhood skills and adult outcome that is not measured or controlled for in our models. The inclusion of a large set of other variables (as potential 'confounders') available in the cohort study as controls should minimise this danger (see Box 1.1).

Box 3.1 Our statistical methods and how to read the charts

Methods: Our results are created by estimating a series of regression models, in which each of the outcomes is used as the dependent variable in turn. We always include as controls the full set of social and emotional skills at age 10 (defined in section 3.1.2 and whose intercorrelation is described in section 3.2.1).

Understanding the charts and the units in them: We present our results as a series of charts – one for each outcome – in which we show effect sizes from three regression specifications (described further below). In each chart the vertical axis lays out the set of social and emotional skills we are examining, along with cognitive ability. The horizontal axis gives the **estimated change in an outcome associated with a one standard deviation increase to one of the social and emotional skills**. Note that a single standard deviation change in a skill would be considered a large change in that skill – since depending on how it is distributed, the whole of the population is likely to lie within three standard deviations above or below the average.

In the charts, the change in the outcome associated with a standard deviation increase in a skill is given in different units depending on the outcome itself. Outcomes that take a yes/no form (e.g. obtaining a degree) or continuous variables (e.g. wages or family income) are given as a percentage point change (either in the probability of an event occurring, or in the amount of the outcome); for other variables expressed as numeric scores, such as life satisfaction or minutes of exercise, where the proportional rate of change is not appropriate, the raw data have been 'standardised', in the same way as the childhood skills, and the effects on them, are expressed as standard deviations.

Typically, effect sizes are considered large if they are greater than 0.1 standard deviations – or, in other words, if a 1 standard deviation change in a skill results in a 0.1 standard deviation increase in the outcome in question. From Table A3.2 – where we can compare effect sizes across all outcomes (regardless of the units in which they are measured) – we can see that the size of many of the associations between each social and emotional skill (and cognitive ability), and all adult outcomes are broadly similar, at around 0.05 standard deviations, with some that are notably larger. With the simultaneous inclusion of so many social and emotional skills in each regression and the years between the skills and the outcomes, any statistically significant effects of social and emotional skills can be considered striking, even if the effect sizes appear individually modest. (For more on this see Box 3.3.)

Confidence intervals: Each marked point estimate is surrounded by a bar representing the margin of error around its estimate. This is the range in which there is the conventional 95% chance that the true estimate lays, given that these data are drawn from a sample and how well the data fit. Estimates whose margin spans zero are said not to be significantly different from zero. Their possible range could include either positive or negative, and are referred to as 'not significant'. Estimates that do not include zero in their range are thus those that are 'significant'. For these the value on the x axis becomes of interest.

Regression specifications: For each outcome we estimate three different regression specifications, in which an increasing number of additional explanatory variables are included.
The three models are as follows:

 1. The 'Raw' specification (given by a circular marker on the bar in the charts), which has no other additional explanatory variables beyond the full set of skills. This shows uncontrolled statistical associations of the outcome with the set of skills taken together.

2. The 'Conditional' specification (given by a square marker on the bar in the charts), which includes additional childhood controls (described in Section 3.1.4). **This is our preferred specification for understanding the effect of a skill at age 10 on a later outcome** (since possible confounders which may account for some, if not all, of the associations detected in the first specification are controlled for). In general, the allowance for these controls reduces the estimated effect of the skills.

3. The third 'Conditional + Education' specification (given by a triangular marker on the bar in the charts) includes educational attainment alongside the skills and controls in the second model. This specification is designed to show **whether education is a strong mediator, or pathway** between each skill, and the later outcome. If so, the estimated effects are further reduced when educational attainment is controlled for. The reduction of the estimated effect in this case would suggest that the effect of a given skill is mediated by educational attainment.

Much of our discussion of results focuses on the middle specification (the square markers), but the others are included for wider context and information

3.2   Research questions and findings

In this section we set out our findings, addressing the following two questions:

1. How are children's social and emotional skills at age 10 interrelated, and how do they differ by gender and family background?
2. How important are social and emotional skills at age 10 for mid-life outcomes across different domains? Related to this, are there differences between boys and girls in the importance of social and emotional skills at age 10 for mid-life outcomes, and between children from low- and higher-income backgrounds?

3.2.1   How are children's social and emotional skills at age 10 interrelated and how do they differ by family background?

We first show how different social and emotional skills at age 10 are correlated (Table 3.2, below). This table shows that there are positive correlations between different social and emotional skills, meaning that a child with higher skills in one dimension is likely to have higher skills in the other dimensions, too. The correlations (not including those with cognitive ability) range from the relatively low association of 0.1 (e.g. between academic self concept and emotional health), to 0.44 (e.g. between conscientiousness and sociability). As a rough guide, a correlation above 0.3 is considered strong.

Within the group self-perception/self-awareness, notable is the strong correlation between locus of control and self-esteem (0.42). Within this group, correlations with academic self-concept are modest, and this is true for academic self-concept more generally, being the only skill not correlated with any other skill by more than 0.3.

Good conduct (reverse of externalising behaviours scale) is poorly correlated with self-perception/self-awareness measures, and perhaps surprisingly, with the other skill measure belonging to the self-control/self-regulation group, conscientiousness. Good conduct is, however, strongly associated with emotional health (0.43), the reverse of the internalising scale. Conscientiousness is strongly associated with locus of control (0.39) and sociability (0.44). Other than conscientiousness, sociability appears only modestly associated with the other social and emotional skills.

Lastly, locus of control and conscientiousness are by far the social and emotional skills most strongly correlated with cognitive ability at the same age, with both correlations greater than 0.5.

Table 3.2 Correlations between social and emotional skills

	Locus of Control	Self-esteem	Academic Self-concept	Good Conduct	Conscient-iousness	Emotional Health	Sociable
Locus of Control	1	**0.42**	0.28	0.19	**0.39**	0.11	0.23
Self-esteem	**0.42**	1	0.25	0.15	0.23	0.13	0.21
Academic Self-concept	0.28	0.25	1	0.1	0.26	0.06	0.14
Good Conduct	0.19	0.15	0.1	1	0.26	**0.43**	0.25
Conscientiousness	**0.39**	0.23	0.26	0.26	1	0.09	**0.44**
Emotional Health	0.11	0.13	0.06	**0.43**	0.09	1	0.27
Sociable	0.23	0.21	0.14	0.25	**0.44**	0.27	1
Cognitive Ability	**0.51**	0.25	0.26	0.25	**0.56**	0.13	0.25

Note: Correlations above 0.3 are highlighted in blue.

We have also undertaken further analysis that shows how social and emotional skills differ by the child's own characteristics, and the family background factors that we treat as confounders (see Appendix Table A3.1). Boys in the BCS70 had significantly better scores than girls on emotional health and academic self-concept, and significantly lower conscientiousness and more externalising problems (worse conduct). There are strong skill gaps associated with low family income, parents not being employed, the family living in social housing and the mother having been young at the cohort member birth, all indicators of social disadvantage.

The education of both parents is, by contrast, positively related to all skills, especially locus of control. The single factor most strongly correlated with a child's social and emotional skills in our analysis is the mother's malaise, an indicator of her mental health (when the child was age 10). Taken together, our analysis strongly suggests that where there are mental health problems in the parental generation, or socioeconomic disadvantages, children are at greater risk of development of poor social and emotional skills.

3.2.2 How important are social and emotional skills at age 10 for mid-life outcomes across different domains?

In this section we address research question 2, above. Our main analysis is given in the form of charts, and a guide to our statistical methods and how to read the charts is given in Box 3.1.

Adult Wellbeing: The Importance of Social and Emotional Skills in Childhood

We start with a discussion of the importance of social and emotional skills for measures of mental wellbeing in adult life, namely life satisfaction, wellbeing and mental distress. Results are presented in Figures 3.1–3.3 and also summarised in Table 3.3.

Table 3.3: Findings related to wellbeing and mental health at age 42	
Outcome	**Skills at age 10 that are associated with this outcome**
Life satisfaction	High self-esteem
	Positive academic self-concept (boys only, and lower income group only)
	Good conduct
	Conscientiousness
Wellbeing	Internal locus of control
	Positive academic self-concept (boys only)
	Good conduct (girls only)
	Positive emotional wellbeing
	Good social skills
	High cognitive ability
Malaise (Mental distress)	External locus of control
	Positive academic self-concept (girls only)
	Low self-esteem
	Poor conduct (boys only)
	Low conscientiousness
	Low social skills

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (Model 2: see Box 3.1)

Turning first to life satisfaction in Figure 3.1, below, we find that higher self-esteem at age 10 is positively associated with more life satisfaction at age 42 (focusing on the square markers, 1 standard deviation higher in self esteem is associated with 0.06 of a standard deviation more life satisfaction). Similarly, other factors significantly associated with greater life satisfaction are conscientiousness and sociability. Interestingly, higher cognitive ability at age 10 is not significantly associated with greater life satisfaction at age 42, despite its importance (as we will show) for educational attainment and a wide range of other adult outcomes.

Controlling for education (now looking at the triangle markers) does not alter the associations much – suggesting that the effects of self-esteem, conscientiousness and sociability on life satisfaction are not through the pathway of formal qualification attainment. Our sub-group analysis (not shown here but available on request) suggests few differences in these associations between boys and girls, or between children from low versus higher income backgrounds. The exception to this is positive academic self-concept at age 10, which is associated with better life satisfaction at age 42 for boys only, and not for girls, and for children from low-income families only.

Figure 3.3 shows the estimated associations of mental wellbeing at 42 in relation to the social and emotional skills at 10. The associations are of a similar magnitude to those observed for life satisfaction but more of the skills are significant. Above average scores on locus of control, good conduct, emotional health and sociability are associated with a higher score on the wellbeing scale, conditional on childhood and family characteristics. Cognitive ability is shown contributing

significantly (approximately 0.05 standard deviations) to the wellbeing score in the conditional specification (square marker), although the introduction of educational attainment (triangle marker) renders the estimate insignificant. This suggests that formal educational attainment is a pathway from cognitive ability to mental wellbeing, but is not a strong pathway between social and emotional skills and later mental wellbeing. Not shown here is the result that boys with high academic self-concept, but not girls, tend to have higher wellbeing, while the association between good conduct and wellbeing is only for girls.

Turning now to malaise (mental distress), in Figure 3.4. People with better social and emotional skills on the whole have better mental health, represented here by a lower malaise score. The exceptions to this are that the associations with academic self-concept, good conduct and cognitive ability are not significant. In contrast, children exhibiting more internal locus of control, self-esteem, conscientiousness, emotional health or sociability, tended to experience less mental distress in adulthood, with the size of the effect of each skill ranging from approximately 0.04 to 0.06 standard deviations. In contrast, cognitive ability at the same age is not associated with less mental distress. Other than for cognitive ability, allowance for educational attainment makes little difference to the estimated effect of each skill, highlighted by the closeness of the conditional (square marker) and conditional + education (triangle marker) bars. Although not shown here, the estimates for academic self-concept and good conduct are in fact significant for girls, although curiously, girls with higher academic self-concept at 10 showed higher malaise at 42.

Figures 3.1–3.3: Wellbeing Outcomes

Figure 3.1

Figure 3.2

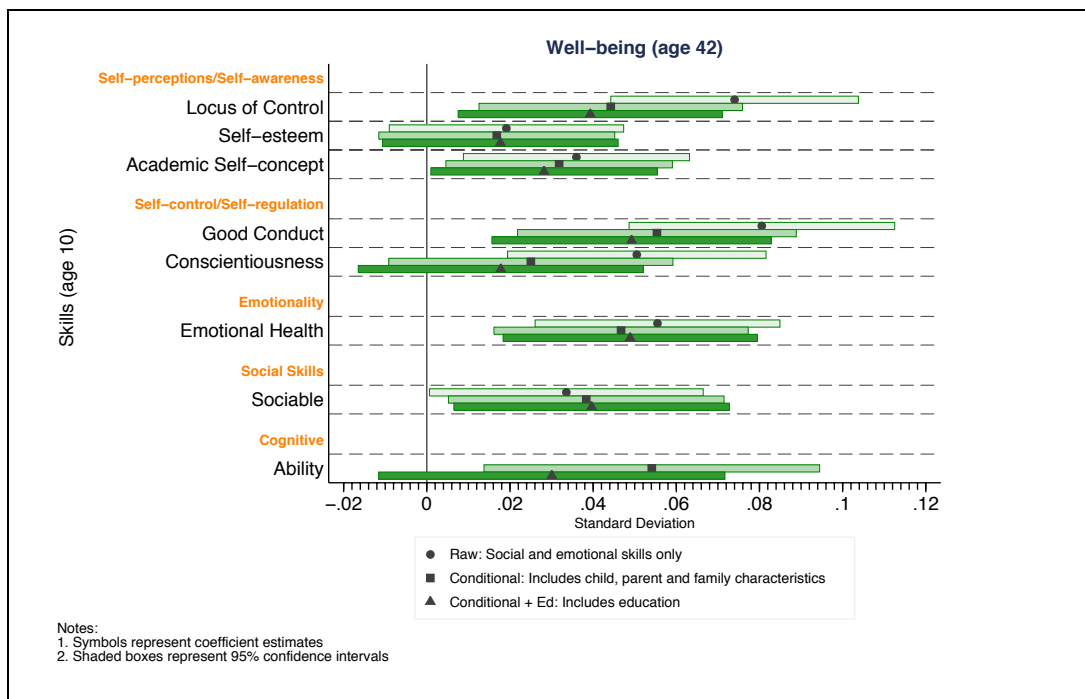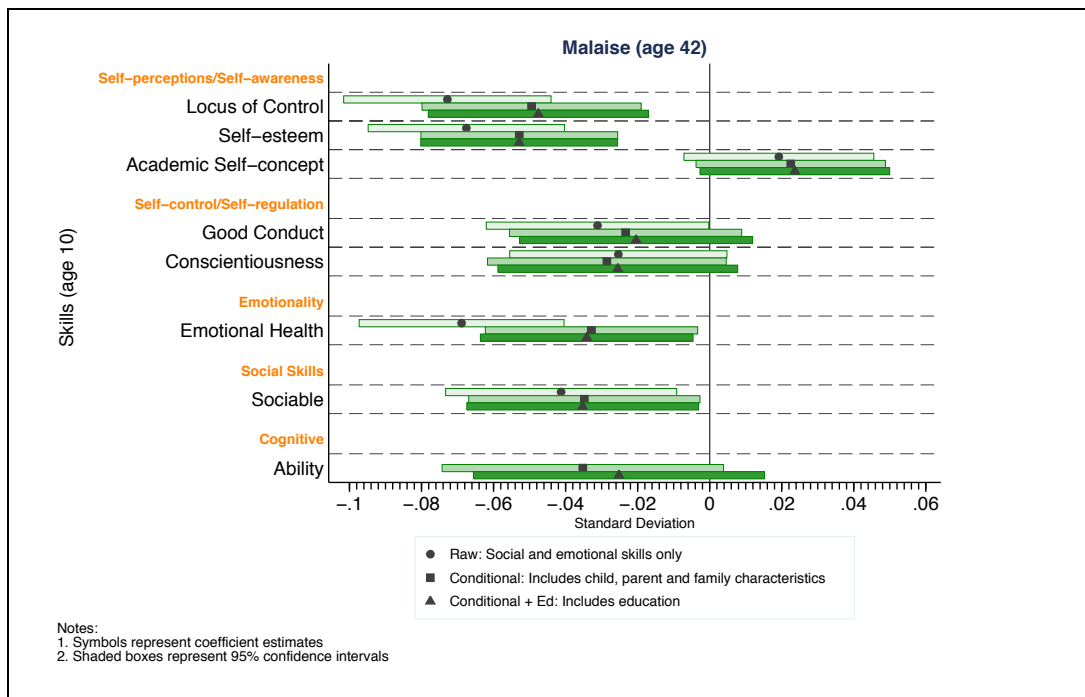**Well–being (age 42)**

Figure 3.3

Malaise (age 42)

Education: The importance of Social and Emotional Skills in Childhood

We now present our analysis for educational attainment. Results are presented in Figures 3.4 and summarised in Table 3.4.

Table 3.4 Findings related to educational attainment at age 30	
Outcome	**Skills at age 10 that are associated with this outcome**
Qualified to degree level or higher	Internal locus of control
	Positive academic self-concept
	Good conduct
	Conscientiousness
	Low sociability (boys only)
	Positive cognitive ability (especially for high-income)

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (see Box 3.1). Skills in italics indicate where the direction of the statistically significant association with the outcome is in the opposite direction to that which might be expected.

From Figure 3.4 and focusing on the square markers, we can see that internal locus of control (3 percentage points (ppts)), positive academic self-concept (2 ppts), good conduct (3 ppts) and conscientiousness (4 ppts) are all positively associated with the chances of obtaining a degree. The strongest predictor, however, is cognitive ability, 1 standard deviation higher predicting a 12 ppts greater likelihood of obtaining a degree. Interestingly, social skills are negatively associated with obtaining a degree (highlighted in italics in Table 3.4, above), although this is observed only for boys.

Figure 3.4: Education Outcome

Figure 3.4
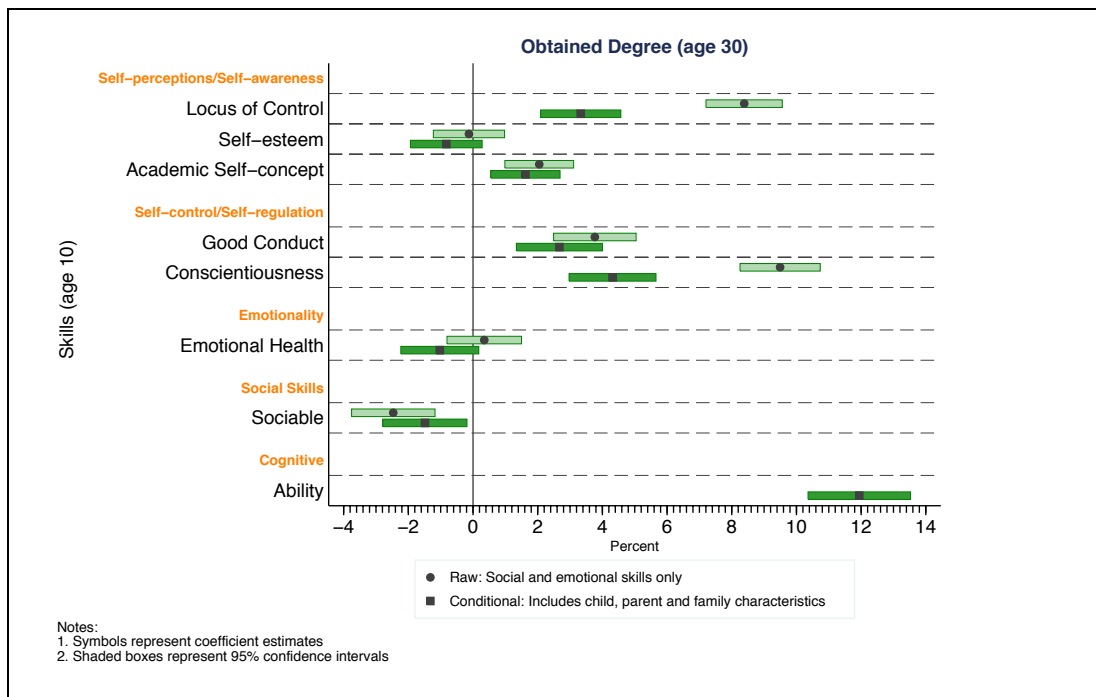
Socioeconomic Status: The Importance of Social and Emotional Skills in Childhood

We next consider the importance of social and emotional skills in childhood for some outcomes related to socioeconomic status in adult life, namely income, wealth and social housing. Results are presented in Figures 3.5–3.7 and also summarised in Table 3.5, below.

Table 3.5: Findings related to socioeconomic status at age 42	
Outcome	**Skills at age 10 that are associated with this outcome**
Net family income	Internal locus of control Good conduct Conscientiousness Cognitive ability (especially for low income children)
Net Wealth	Internal locus of control High self-esteem Conscientiousness High cognitive ability
In social housing	External locus of control Low cognitive ability Low sociability (high income children only) *Emotional health*

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (see Box 3.1). Skills in italics indicate where the direction of the statistically significant association with the outcome is in the opposite direction to that which might be expected

Figure 3.5, below, shows that the relationship of childhood social skills to family income at 42 (focusing on the square markers) is significant for conscientiousness, sociability (borderline), locus of control and good conduct (low externalising). The strongest predictor by far of family income is cognitive ability, where approximately a 13% increase in family income is associated with a 1 standard deviation increase in cognitive ability. Not shown here, estimates for men and women are similar, as are those for low- and high-income groups.

In Figure 3.6, there are fewer significant associations between wealth at 42 with the age 10 social skills. Just three estimated associations are significantly different from zero: locus of control, self esteem and conscientiousness. None of these estimates is affected by the inclusion of education, although both locus of control and conscientiousness appear higher in the raw model (circle marker) than the conditional model (square marker). A standard deviation increase in each of these three skills is associated with approximately 0.04 of a standard deviation increase in net wealth, compared with 0.06 for cognitive ability. There were only minor differences with the two subdivisions of the sample (not shown here). The estimated effect of conscientiousness was stronger among girls, while the estimated effects of locus of control and self-esteem were stronger among boys.

The chances of being a tenant in social housing at age 42 is taken as being an adverse outcome, as it is a majorly disadvantaged group. Thus it would be an advantage to be on the left hand part of the chart in Figure 3.7, the area where the chances of being a social tenant are below average. Based on the conditional specification (square marker) the association is significant for better self-regulation measures (approximately 2 ppts) and sociability (1 ppt), and also cognitive ability (just under 3 ppts) and insignificant for the set of three self-awareness indicators. The chances of being a social tenant at 42, all else equal are, unexpectedly, significantly positively related to better emotional health at age 10 (highlighted in italics in Table 3.5 above). Education does not make much difference to the estimates of social and emotional effects, with the conditional (square marker) and conditional + education (triangle marker) specifications very close to one another.
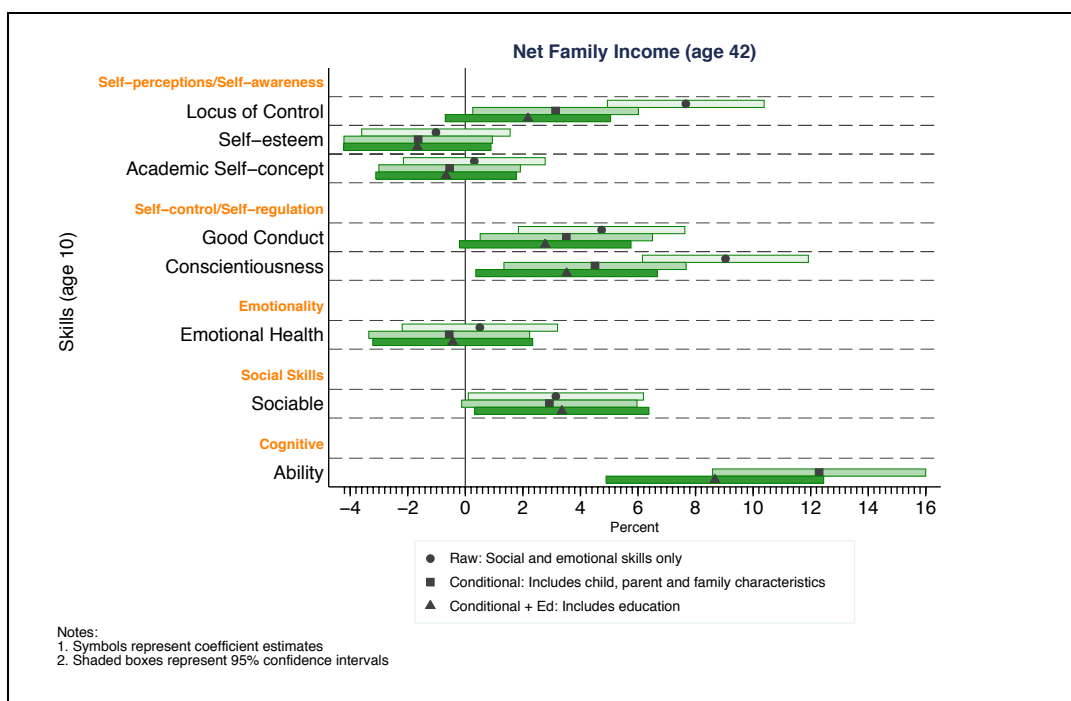
Figures 3.5–3.7: Socioeconomic Outcomes

Figure 3.5

Figure 3.6

Net Wealth (Savings−Debt) (age 42)
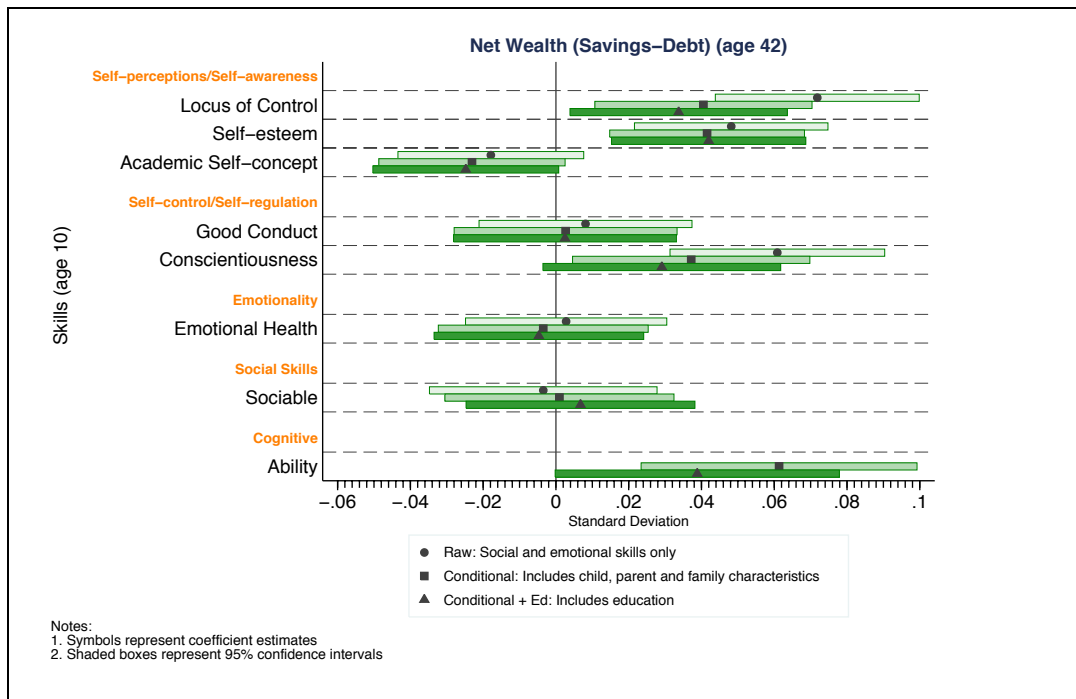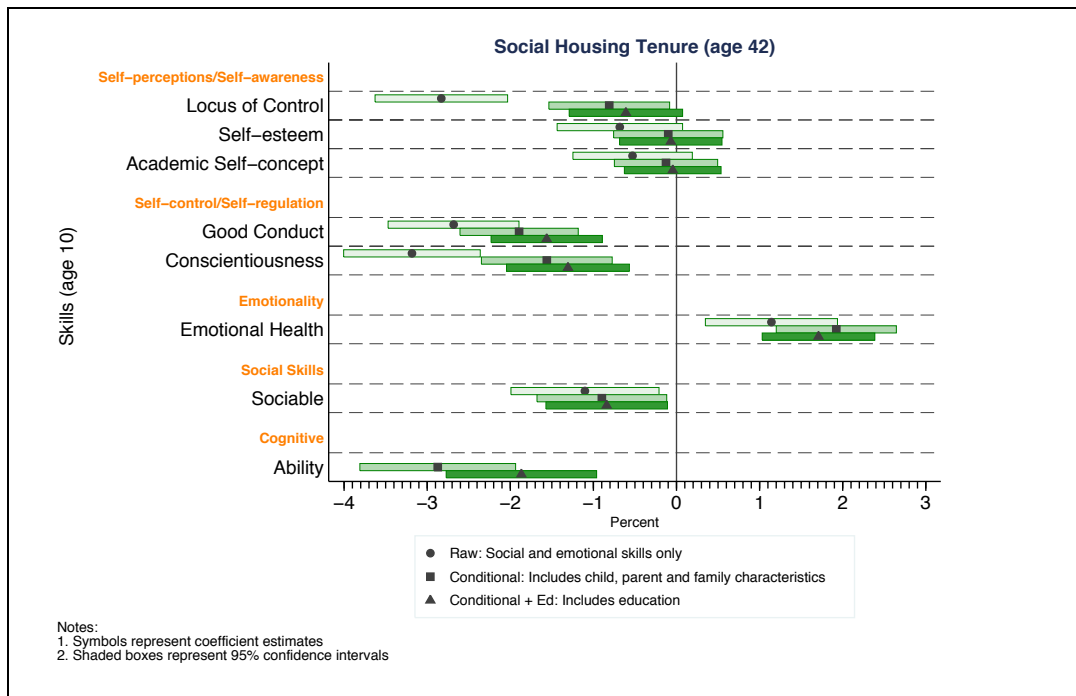
Figure 3.7

Social Housing Tenure (age 42)

Labour Market: The importance of Social and Emotional Skills in Childhood

We next consider the associations between social and emotional skills in childhood for a range of labour market outcomes at age 42, namely being in a 'top job' (for further analysis on top jobs see Box 3.2, below), in employment, hourly pay (for those in work), and an index of job satisfaction. Results are presented in Figures 3.8–3.11 and also summarised in Table 3.6, below.

Table 3.6 Findings related to labour market outcomes at age 42	
Outcome	**Skills at age 10 that are associated with this outcome**
In a 'top job'	Internal locus of control Good conduct Conscientiousness High cognitive ability
In employment	Good conduct Conscientiousness High cognitive ability
Hourly pay (if in employment)	Internal locus of control High self-esteem Conscientiousness Good social skills High cognitive ability
Job satisfaction	Positive emotional wellbeing Good social skills *Low cognitive ability*

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (see Box 3.1). Skills in italics indicate where the direction of the statistically significant association with the outcome is in the opposite direction to that which might be expected

In Figure 3.8, three social and emotional skills significantly predict ever being in a 'top job' in our preferred, conditional specification (square marker); locus of control, good conduct and conscientiousness. Locus of control and conscientiousness remain significant even after controlling for education (triangle marker). The effects of all three significant social and emotional skills are between 1.5 and 3.5 ppts. The single strongest predictor, however, is cognitive ability, where 1 standard deviation above average is associated with a 10 ppts higher likelihood of attaining a top job between the ages of 26 and 42. The conditional + education specification (triangle marker) shows that a significant amount of the association between cognitive ability and top job status works through the level of formal educational attainment. The subgroup analyses suggest greater returns to conscientiousness for boys, and greater returns to social skills for girls. No differences in the associations between skills and top job status are found for the two income groups.

Box 3.2 Policy focus: social mobility in professional careers – how important are social and emotional skills?

Enabling fair access to professional and elite careers has been identified as an important way to increase social mobility from existing low levels.[41] While policies to improve the educational attainment of the poorest children are clearly very important for this, many high status employers also demand a much wider range of 'soft skills' and competencies when choosing the best talent for their top jobs. This can prove advantageous for individuals from more privileged backgrounds, and those with professional (or higher managerial) parents, who typically demonstrate more of these competencies. By the same token, this may be a barrier for individuals from less advantaged backgrounds.

To investigate this issue further, we first illustrate the nature of the problem by setting out the association in Table B1, below, between parents being employed in a top job (when the child is 10 or 16 years old) and the child being employed in a top job themselves in adulthood (age 26 to 42). We find that there is a clear advantage to having parents with professional/managerial careers. Individuals with parents employed in a top job are 23.6 percentage points more likely to access a top job in adulthood than individuals with parents who are not employed in a top job. Specifically, 49.6% of cohort members with a parent in a top job obtain a top job themselves in adulthood, compared to only 26% of cohort members with parents reporting non-top jobs.

Table B3.1: *Top job and non-top job status of parents and cohort members*

		Children (as adults)		
		Non-top job	Top job	Total
Parent	Non-top job	6,797 *74.0%*	2,389 ***26.0%***	9,186 *100.0%*
	Top job	991 *50.4%*	977 ***49.6%***	1,968 *100.0%*
	Total	7,788 *69.8%*	3,366 *30.2%*	11,154 *100.0%*

We subsequently assess whether social and emotional skills are an important mechanism by which this advantage is transmitted from parents to children. We also consider the role of cognitive skills, job aspiration and educational attainment in this transmission. We do this by undertaking a formal decomposition analysis that uncovers the proportion of the association between parent and child top job status, which is accounted for by social and emotional skills and cognitive skills (A), job aspirations (B) and educational attainment (C). The decomposition analysis combines two factors: first, whether there are differences in childhood skills between children of professional/managerial parents compared to other parents; and second, how important these

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[41] Cabinet Office (2011), *Opening Doors, Breaking Barriers: A Strategy for Social Mobility.* London: Information Policy Team

Cabinet Office (2013), *Social Mobility Indicators*, (online). Available at: www.gov.uk/government/publications/social-mobility-indicators/social-mobility-indicators. Last accessed 16 January 2016.

childhood skills are on the chances of obtaining a top job in adulthood. If young people from professional backgrounds are more likely to display skills that are very important for the likelihood of obtaining a top job later in life, then this skill will be shown to account for a sizeable proportion of the transmission of top job status between generations. Table B2, below, presents our findings from this decomposition in which the skills and characteristics of interest are added to the models sequentially, to observe possible interrelationships between earlier (age 10) and later (age 16 onwards) characteristics.

Table B3.2: *Proportion of the association between parent and child top job status accounted for by a range of characteristics*

	Model A	Model B	Model C
Social and emotional skills (age 10)	9.3%	8.8%	4.9%
Cognitive skills (age 10)	20.2%	19.2%	11.1%
Job aspirations (age 16)		2.6%	1.7%
Educational attainment (age 16 +)			36.6%
Total explained	**29.5%**	**30.7%**	**54.4%**
Total unexplained	70.5%	69.3%	45.6%

Our main findings are:
- Social and emotional skills at age 10 play a discernible role in transmitting top job status between generations (in particular locus of control and application), accounting for 9.3% of the advantage enjoyed by children from professional backgrounds, when controlling for age 10 cognitive ability (model A). Together, social and emotional skills and cognitive ability at age 10 account for 29.5% of the overall persistence in top job status across generations. Job aspirations at age 16 account for a smaller but significant contribution of 2.6% to the top job advantage (model B). In particular, children of parents in top jobs are found to be more likely to value promotion and challenge in their future career at age 16, characteristics that are sought after in the top job labour market.
- In full model (C) over half (54.4%) of the top job advantage is explained, largely due to the role of educational attainment from age 16 onwards (36.6%), particularly highlighting GCSEs at grade A–C (14.2%) and undergraduate degrees (14.2%) as key transmitters of top job status. In comparison, postgraduate study only accounts for 1.2% of the advantage due to a weak relationship with parental top job status, even though it is valued in the top job labour market.
- Social and emotional skills transmit top job advantage predominantly, but not exclusively, through their influence on educational attainment, particularly at age 16 (i.e. the proportion these skills account for reduces to 4.9% in model C). This suggests that interventions to improve these early skills are likely to generate benefits for an individual's educational attainment and their chances of accessing a competitive top job. If these interventions are particularly targeted in non-professional families, this may contribute to levelling the playing field in terms of access to top jobs.
- The remaining half (45.6%) of the advantage provided by having a parent employed in a top

job remains unexplained. This requires further exploration to identify which other transmission mechanisms may be providing an advantage in the labour market for children with parents employed in top jobs, such as access to professional networks, role models and work experience opportunities.

Now turning to employment in Figure 3.9, it is the social and emotional skills related to self-control and self-regulation that are significantly related to the chances of being employed at age 42. Each of these has an effect on the chances of being employed (between 1.5 and 2 ppts), each of similar order of magnitude to that associated with a one unit increase in cognitive ability. There were no significant differences in the associations by gender or income groups, not shown here.

Figure 3.10 shows that three of the seven social and emotional skills are associated with significantly higher wages, independently of childhood conditions (square marker): locus of control by 4%, self-esteem by 2% and conscientiousness by 4% . Interestingly, the effect of social skills increases and becomes significant between the conditional (square marker) and conditional + education (triangle marker) specifictions. This is consistent with the finding in Figure 3.1 which suggests that social skills are negatively associated with obtaining a degree. Thus, when controlled for, any positive association with wages goes up between the two specifications. Cognitive ability is a particularly strong predictor, and as for top job outcomes, a great deal of this association is mediated through formal educational attainment, represented by the difference in the conditional (square marker) and conditional + education (triangle marker) specifications. Not shown here, the return to cognitive ability and self-esteem is higher for girls than boys, while the reverse is true for conscientiousness. The predictive power of both locus of control and conscientiousness for wages is also found to be stronger for the higher income group.

Looking at the last of the labour market outcomes in Figure 3.11, interestingly, higher cognitive ability is clearly associated with lower job satisfaction among the 42-year-olds. Job satisfaction is mainly neutral with respect to the social and emotional skills, apart from the emotional and sociabiliy skills, which are each associated with just over 0.03 standard deviations on the job-satisfaction scale. Not shown here, although no differences in associations are found cross income groups, boys experience significant returns to academic self-concept, whereas girls do not, while the reverse is true for emotional health (low internalising).

Figures 3.8–3.11: Labour Market Outcomes

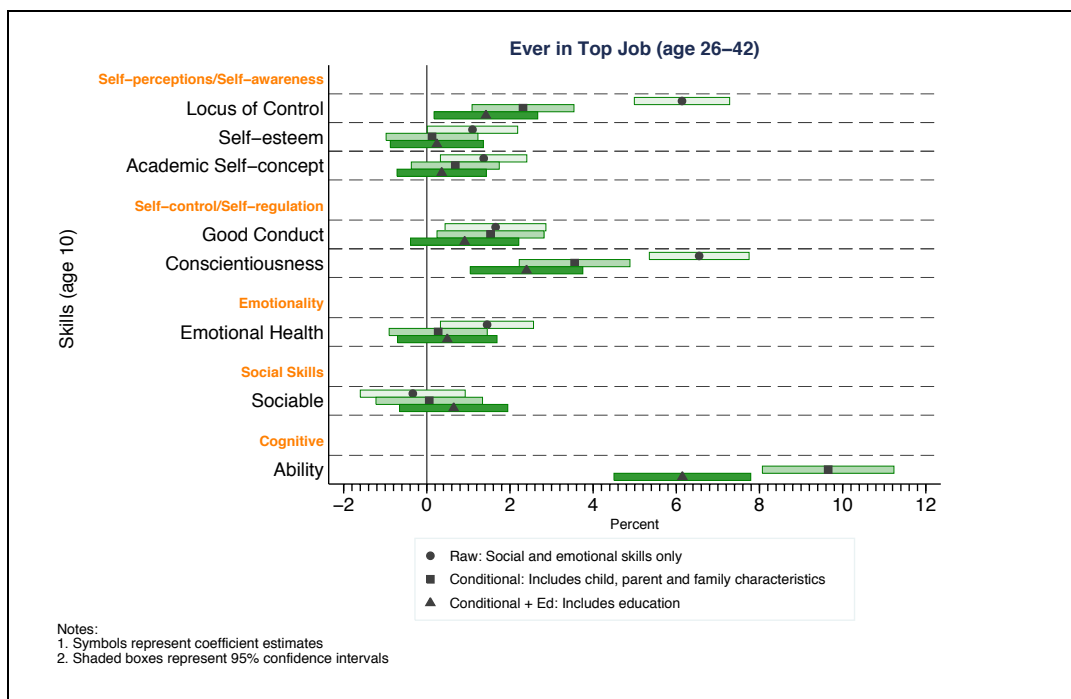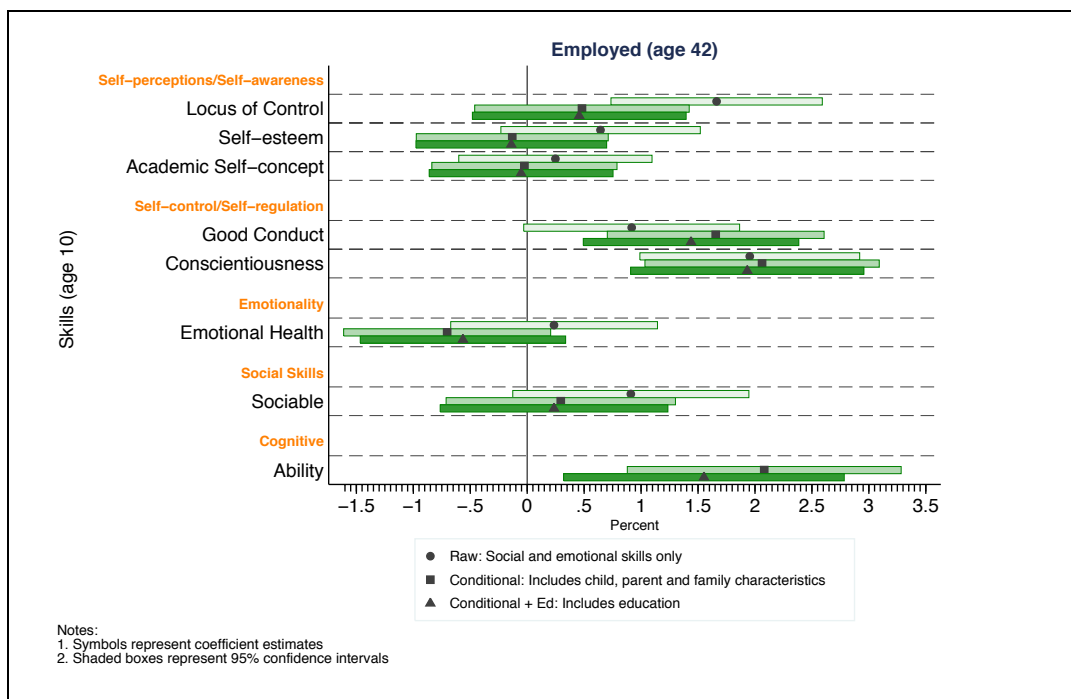### Figure 3.8

Figure 3.9

Figure 3.10

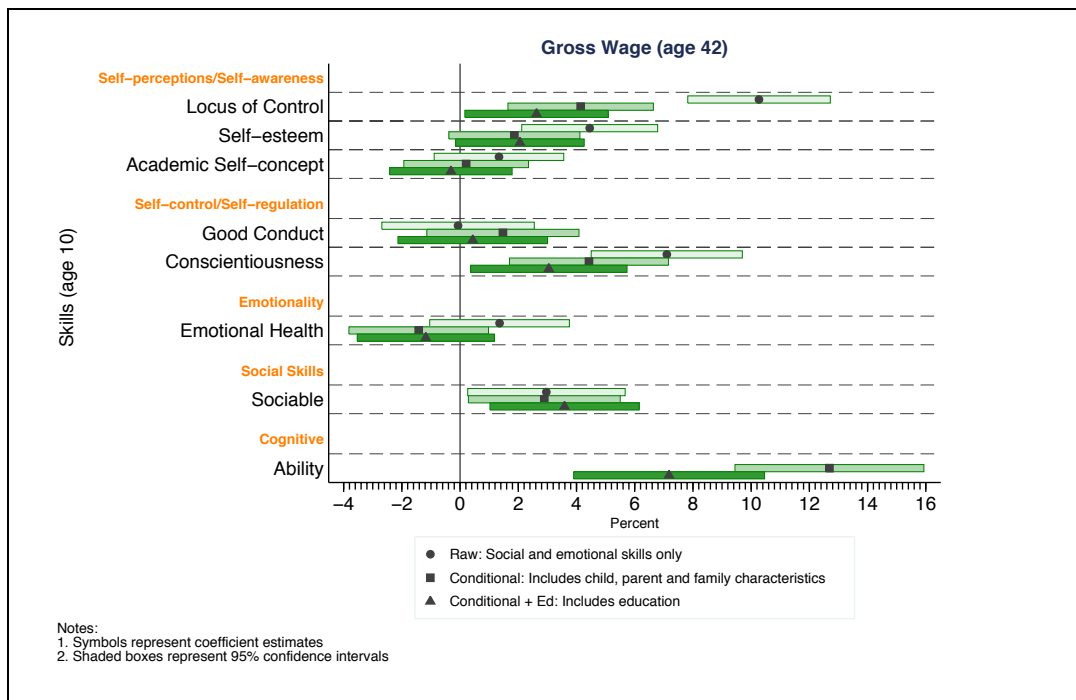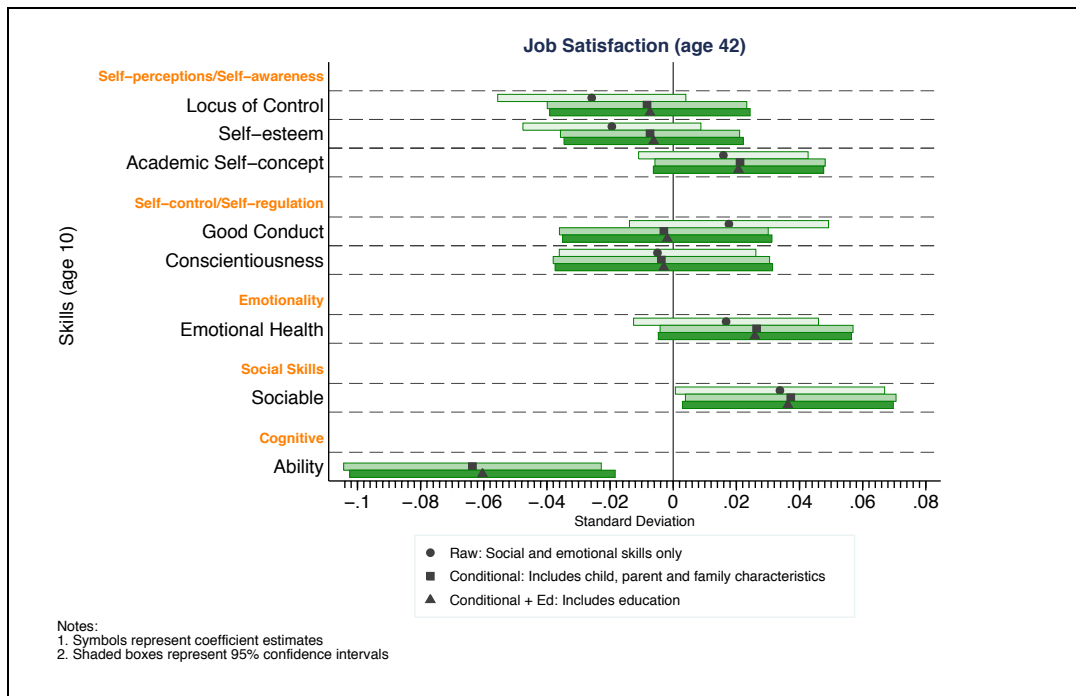Gross Wage (age 42)

Figure 3.11

Job Satisfaction (age 42)

Partnerships and Children: The Importance of Social and Emotional Skills in Childhood

We next consider the associations between social and emotional skills in childhood for several outcomes relating to partnerships and children, namely, having a partner, has own children, and (for those who have children) the number of children they have. Results are presented in Figures 3.12–3.14 and also summarised in Table 3.7, below.

Table 3.7 Findings related to partnerships and children at age 42	
Outcome	**Skills at age 10 that are associated with this outcome**
In a partnership	Internal locus of control Good conduct Good social skills Cognitive ability (esp low income)
Has children	Low conscientiousness (esp boys) Low emotional wellbeing (girls only) Good social skills
Number of children (if any)	Poor conduct Poor conscientious (girls only) Positive emotional wellbeing (low income group only)

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (see Box 3.1)

First looking at Figure 3.12, based on the conditional specification (square marker), three out of seven social and emotional skills are significantly associated with living with a spouse or partner at 42: locus of control (2 ppts), good conduct (2 ppts) and sociability (3 ppts). There are significant differences across subgroups in the associations found. Not shown here, the subgroup analysis shows that the positive effects of locus of control and good conduct are driven by girls, with both associations being insignificant for men. The reverse is true for cognitive ability. Locus of control is also significant only for high-income groups, while the reverse is true for cognitive ability. Overall, the estimates for the significant skills are each roughly on a par with the estimate for cognitive ability in raising the chances of being in a couple.

From Figure 3.13 it can be seen that the likelihood of being a parent by the age of 42 is largely unrelated to the social and emotional skills or cognitive ability, with the exception of conscientiousness and sociability. Conscientiousness was negatively associated with becoming a parent, while in contrast, those with high sociability were much more likely to be a parent. The subgroup analysis, not shown here, presents a further finding of interest. Although emotional health (low internalising) is unrelated to becoming a parent in the full sample, this appears to mask significant differences between genders, with positive emotional health increasing the likelihood of parenthood for boys, but decreasing the likelihood of parenthood for girls.

Related to Figure 3.13, Figure 3.14 measures parenthood in terms of the number of children, for those cohort members who had at least one. The number of children was also mostly unrelated to the majority of skills, including cognitive ability, with two exceptions: good conduct was associated with fewer children at 42, while emotional health was associated with having more children at 42. Although conscientiousness is found to be only borderline negatively significant, the subgroup analysis by gender, not shown here, shows that for girls, conscientiousness predicts significantly fewer children. The association between good conduct and number of children is also found to be particularly strong for the low-income group.

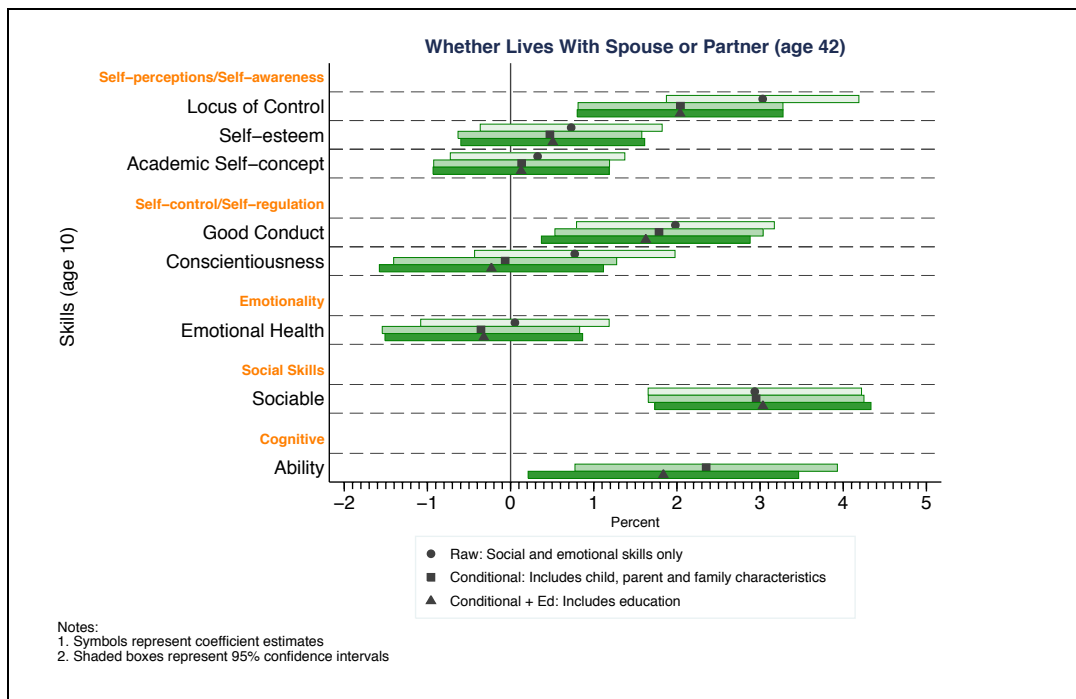## Figures 3.12–3.14: Partnership and Children Outcomes

Figure 3.12

Whether Lives With Spouse or Partner (age 42)

- Raw: Social and emotional skills only
- Conditional: Includes child, parent and family characteristics
- Conditional + Ed: Includes education

Notes:
1. Symbols represent coefficient estimates
2. Shaded boxes represent 95% confidence intervals

Figure 3.13

Whether a Parent (age 42)

- Raw: Social and emotional skills only
- Conditional: Includes child, parent and family characteristics
- Conditional + Ed: Includes education

Notes:
1. Symbols represent coefficient estimates
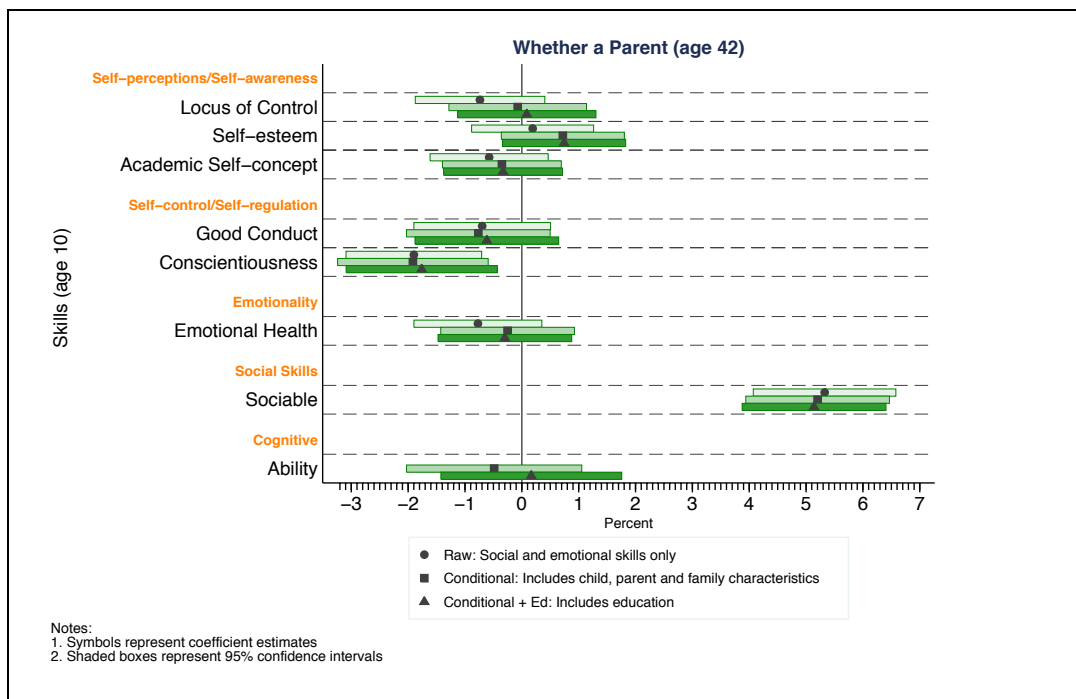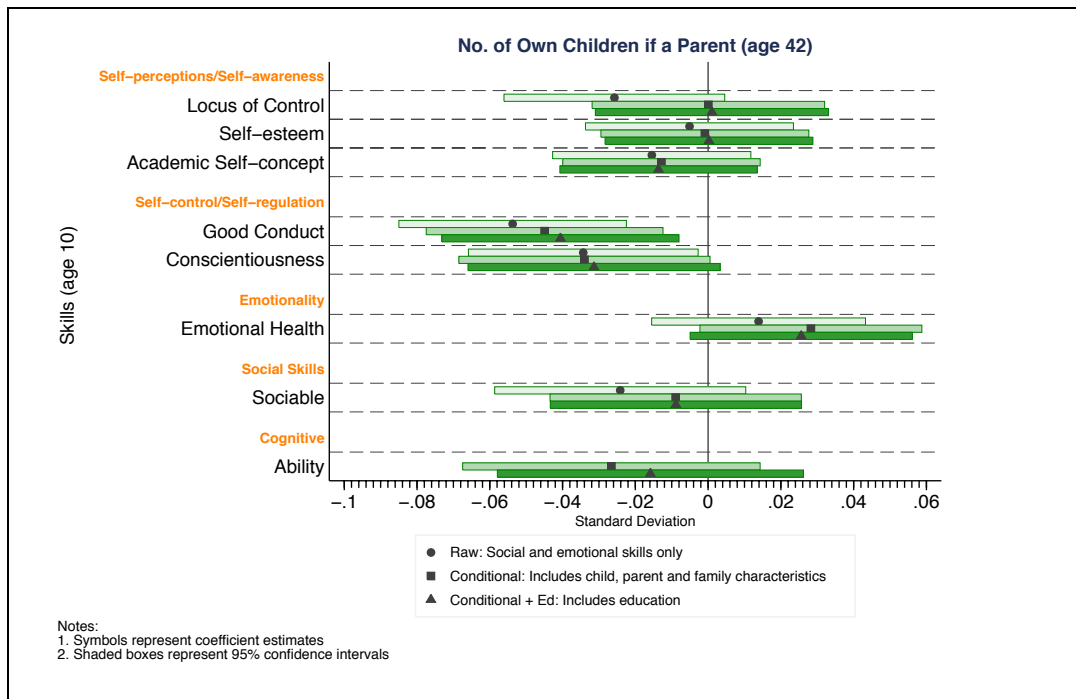2. Shaded boxes represent 95% confidence intervals

Figure 3.14

Health: The Importance of Social and Emotional Skills in Childhood

We next consider the associations between social and emotional skills in childhood for two outcomes related to health, namely self-rated health at age 42, and obesity. Results are presented in Figures 3.15–3.16 and also summarised in Table 3.8, below.

Table 3.8 Findings related to health at age 42	
Outcome	**Skills at age 10 that are associated with this outcome**
Poor or fair self-rated general health	External locus of control Low self-esteem Poor conduct Low conscientiousness (boys only) Low social skills Low cognitive ability (girls only)
Obesity	External locus of control Poor conduct Conscientiousness (low income only) Low self-esteem (low income only) Low social skills (girls only)

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (see Box 3.1)

From Figure 3.16 we can see self-rated poor health is strongly predicted by almost all social and emotional skills. Based on the conditional specification (square marker), having an internal locus of control, self-esteem, good conduct, conscientiousness and social skills are all negatively associated with poor health, with the effect sizes ranging from 1 to 2 ppts.

The subgroup analysis, not shown here, also suggests that the association between good conduct and cognitive ability occurs mainly among girls, with insignificant associations found for boys, while the reverse is true for conscientiousness. No notable differences in the associations are observed across income groups. Further, self-esteem was only found to be a significant predictor of lower likelihood of obesity for the low-income groups, and conscientiousness, which was not found to be significant in the full sample, significantly predicts lower likelihood of obesity if the sample is restricted to low-income groups.

In models with adult obesity as an outcome, shown in Figure 3.17, we also control for childhood obesity measured at age 10 in all specifications. In the conditional specification (square marker) cohort members were significantly less likely to be obese if they had internal locus of control, good conduct and self-esteem at 10, with estimates ranging from 1 to 2 ppts.

These results were unaffected by the inclusion of formal education attainment as a control, suggesting that these associations were independent of education. Cognitive ability was also negatively associated with the likelihood of being obese, but not once controlling for education, suggesting educational attainment is a mediating pathway for the effect of cognitive ability on obesity. The subgroup analysis, not shown here, suggests social skills reduce the chances of being obese for girls only.
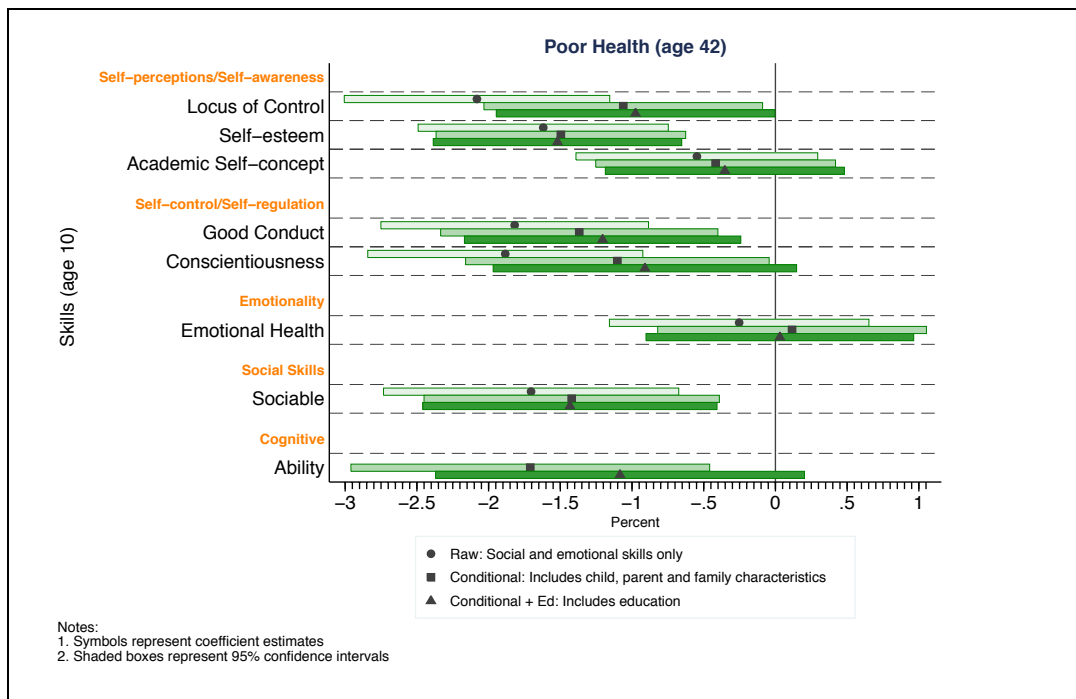
Figures 3.15–3.16: Health Outcomes

Figure 3.16

Poor Health (age 42)

Notes:
1. Symbols represent coefficient estimates
2. Shaded boxes represent 95% confidence intervals

Figure 3.17

Obese (age 42)

Notes:
1. Symbols represent coefficient estimates
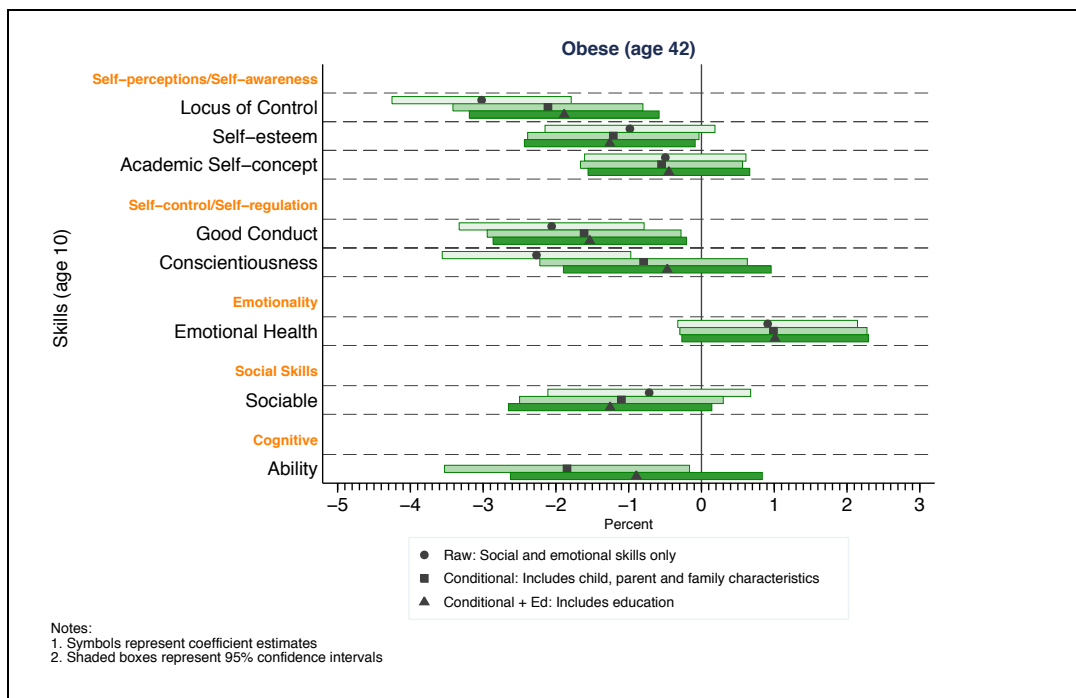2. Shaded boxes represent 95% confidence intervals

Health Behaviours: The Importance of Social and Emotional Skills in Childhood

We next consider the associations between social and emotional skills in childhood for a number of outcomes relating to health behaviours, namely regular exercise, smoking and excessive alcohol drinking at age 42. Results are presented in Figures 3.17–3.19 and also summarised in Table 3.9, below.

Table 3.9 Findings related to health behaviours at age 42	
Outcome	**Skills at age 10 that are associated with this outcome**
Exercise	*Low cognitive ability (boys and low income groups only)*
Smoking	Low self-esteem Poor conduct Poor conscientiousness Low cognitive skills *Positive emotional well-being*
Drinking	Low self-esteem Poor conscientiousness Good social skills Poor conduct (low income group)

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (see Box 3.1). Skills in italics indicate where the direction of the statistically significant association with the outcome is in the opposite direction to that which might be expected

Cognitive ability is significantly associated with less exercise by 0.06 of a standard deviation, with the subgroup analysis, not shown here, suggesting that this association is significant for boys and low income groups only. Overall, childhood social and emotional skills do not appear to promote exercise in mid-life.

In contrast, Figure 3.18 shows that four out of seven social and emotional skills significantly predict being a regular smoker at 42, although one of these – having lower emotional problems – is unexpectedly positively associated with being a smoker. On the other hand, conscientiousness, good conduct and, to a lesser extent, self-esteem are all negatively associated with smoking. The effects of two of these skills, each reducing the chances of being a smoker by about 3 percentage points, are bigger than the association between cognitive ability and smoking, and are less attenuated by considering formal educational attainment (triangle marker). It would appear that smoking behaviour is more firmly rooted in some of the social and emotional skills included here, rather than cognitive ability. Further, the subgroup analysis, not shown here, suggests that the negative association between smoking and cognitive ability applies only in the lower income group.

Figure 3.19 considers hazardous drinking as the outcome. From the conditional specification (square marker), self esteem, good conduct and conscientiousness are significantly associated with a lower likelihood of being an excessive drinker, with effect sizes between 1 to 2 ppts. Sociability, while considered a skill in other contexts, is also positively associated with heavy drinking at 42, increasing one's likelihood by 1.5%. This outcome is unrelated to cognitive ability and is another behavioural outcome with clear social and emotional antecedents in childhood. Differences in the associations

by gender, not shown here, are insubstantial; however, the negative effect of poor conduct is significant only for those in the low income group.

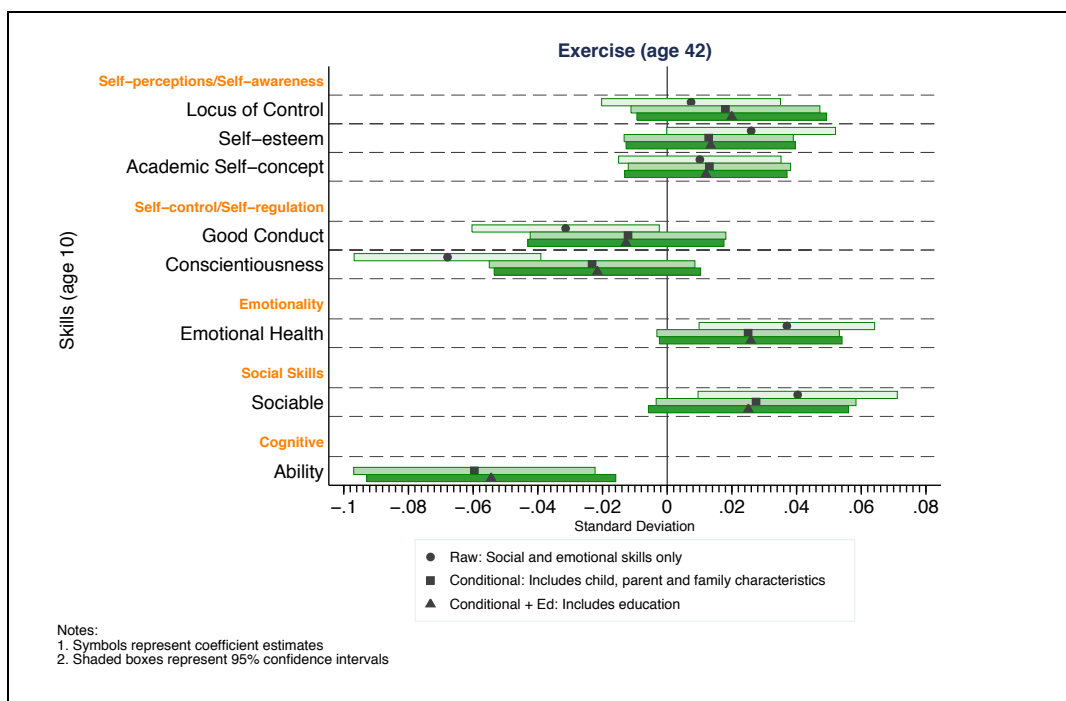**Figures 3.17–3.19: Health Behaviours Outcomes**

Figure 3.17

Figure 3.18

Figure 3.19

Higher Risk Drinking (age 42)

Notes:
1. Symbols represent coefficient estimates
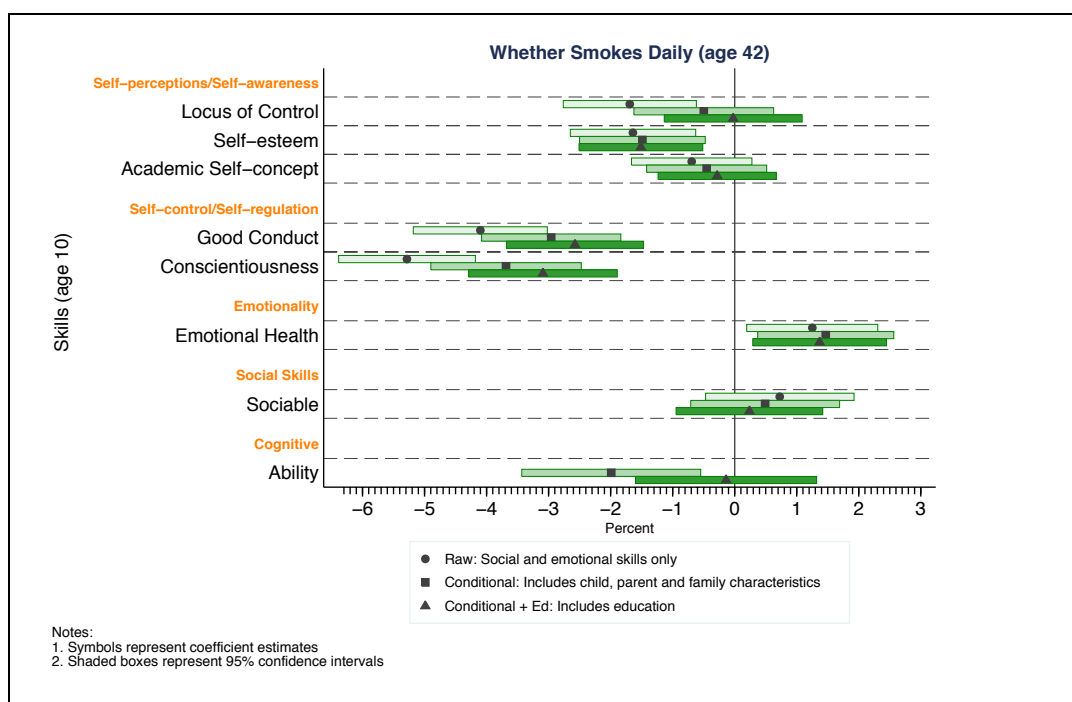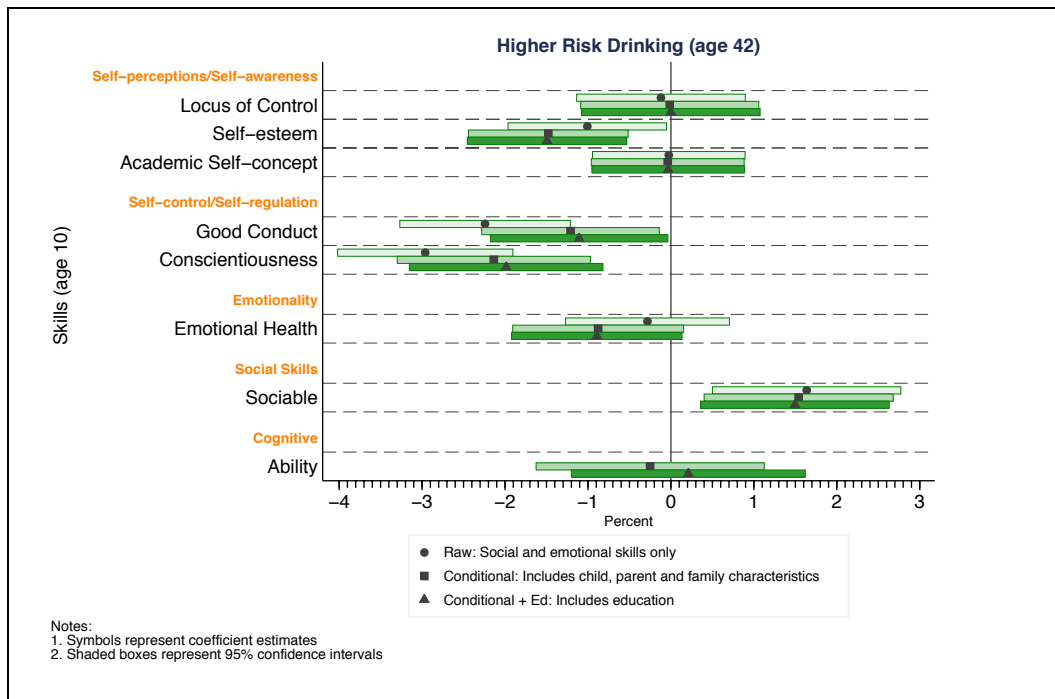2. Shaded boxes represent 95% confidence intervals

Political Interest: The Importance of Social and Emotional Skills in Childhood

We finally consider how social and emotional skills in childhood are associated with political interest at age 42. Results are presented in Figures 3.20 and also summarised in Table 3.10, below.

**Table 3.10 Findings-related political interest at age 42**

Outcome	Skills at age 10 that are associated with this outcome
Political interest	Internal locus of control
	Good conduct (boys only)
	Conscientiousness
	High cognitive ability

Notes: Inclusion in table above indicates statistically significant effect at 5% level in 'conditional' regression specification (see Box 3.1)

Figure 3.20 shows that political engagement is strongly predicted by cognitive ability. A 1 standard deviation increase in cognitive ability is associated with 0.15 of a standard deviation increase in political interest in the conditional specification (square marker), which drops to 0.1 of a standard deviation when further controlling for formal educational attainment (triangle marker). However, several social and emotional skills are also independently predictive of interest in politics in mid-life; internal locus of control, good conduct and conscientiousness, with internal locus of control exhibiting the strongest association, 0.08 standard deviations. These social and emotional skills in childhood thus appear to contribute to adult citizenship and engagement.

Figures 3.20: Political Interest Outcome

Figure 3.20
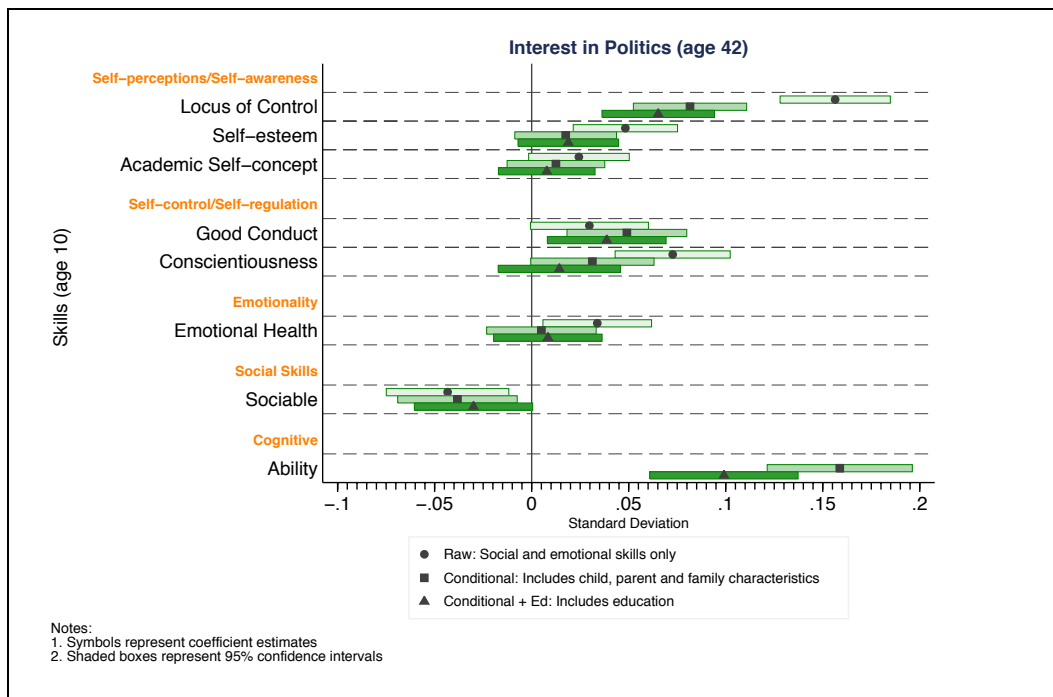
3.3 Summary of findings, and conclusions

Throughout our analysis we have highlighted the importance of social and emotional skills for a very broad range of important adult outcomes. Each of the skills we considered within each of the four broad groups of social and emotional skills that we were able to measure – self-perceptions/self-awareness, self-control/self-regulation, social skills and emotional health – were associated with at least one, and in many cases several outcomes in mid-life. In Box 3.3 we present a summary of findings that we have drawn together on a comparative basis across different outcomes.

In short, measures of self-perceptions/self-awareness, self-control/self-regulation, social skills and emotional health were all associated with malaise, wellbeing or life satisfaction. In contrast, cognitive ability was found only to predict a higher wellbeing score, and was unrelated to both life satisfaction and mental malaise.

All of the broad groups of skills predicted educational attainment in the form a obtaining a degree, with the exception of emotional health, while measures of self-perceptions/self-awareness (internal locus of control in particular) and self-control/self-regulation were consistent in predicting a wide range of labour market and socioeconomic outcomes. That said, these skills were less important individually in predicting labour market and socioeconomic outcomes than cognitive ability. Many of the skills, most notably self-esteem and the two measures of self-control/self-regulation, predicted both health-related and family-related outcomes, as did cognitive ability.

Many of these findings are strongly consistent with those cited in our literature review, but this analysis has augmented the review by providing a clear picture of the relative importance of different skills, across a wide range of outcomes, when these are all measured together on a consistent basis.

In conclusion, our work supports the view that developing a balance of skills in childhood, both cognitive and social and emotional, is important for success in adult life. With this in mind, well-evidenced interventions that support parents, schools and communities to develop children's emotional wellbeing, self-regulation, and young people's sense of their own efficacy in the world, alongside their cognitive development, are likely to be very beneficial in the long-term.

Box 3.3 Summary of findings: The size of the associations

Our charts have shown the change in each outcome associated with a standard deviation change in each childhood skill, with different outcomes expressed in different units, most appropriate to that outcome (see Box 3.1). To allow for a comparison of effect sizes across different outcomes, Appendix Table A3.2 presents a summary of our results where we have computed all of the effect sizes in standard deviations. The significant relationships between skills (including cognitive ability) and outcomes that we find are listed, each one represented in the table as the name of the outcome and the size of the association, given in standard deviations (e.g. Degree (0.188)).[42] This permits the size of the effects to be compared across all outcomes.

From Table A3.2 we can see that the size of many of the associations between each social and emotional skill (and cognitive ability), and all adult outcomes are broadly similar, at around 0.05

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[42] Please refer to Box 3.1 for further explanation of use of standard deviations

standard deviations. This is particularly true for adult outcomes related to wellbeing. There are, however, a number of important exceptions in the other outcome groups.

The associations between social and emotional skills and the likelihood of obtaining a degree represent some of the largest effect sizes: just above and just below 0.2 standard deviations for conscientiousness and internal locus of control, respectively. Social and emotional skills predictive of labour market and socioeconomic outcomes are consistently either side of 0.05 in magnitude. In general, the strength of association between these outcomes and cognitive ability is larger, with estimates as high as 0.17 and 0.21 standard deviations for wages and the likelihood of being in a top job, respectively.

Associations with health and health behaviours again hover around 0.05 in magnitude, for all social and emotional skills, as well as cognitive ability, as do outcomes pertaining to relationships, family, and political interest. Some notable exceptions are sociability, which is associated with an increased likelihood of being a parent of 0.13 standard deviations, and cognitive ability, the size of its association with greater political interest being 0.16 standard deviations.

Chapter 4. Social and emotional skills in childhood in a contemporary cohort of children

Summary of the chapter

In this chapter we focus on the social and emotional skills of today's children. We present preliminary work examining how social and emotional skills of children born around the millennium vary by family background and between boys and girls. We highlight at what age these differences appear and how they evolve throughout early childhood, and describe how these differences have changed over the last 30 years.

We find that higher family income is associated with better conduct and emotional health: by the age of 11, poorer children exhibit more conduct and emotional problems on average. However, this gap actually appears very early in childhood: by age 3, poorer children display worse conduct, on average, than their wealthier peers, and these differences persist throughout pre-adolescence. Based on the evidence in Chapters 2 and 3, these differences in social and emotional skills are likely to have implications for these children's future development, and may contribute to social inequalities in a wide range of adult life domains.

We find that boys display significantly more conduct problems than girls on average but better emotional health, although the latter difference is small.

Our preliminary findings also suggest that the link between family income and both conduct and emotional health is stronger among today's children than among children born in 1970. By contrast, the differences between boys and girls have remained virtually identical over the last 30 years.

4.1   Introduction

The analysis in Chapter 3 shows connections between the social and emotional skills of 10 year-olds born in 1970 and a wide range of outcomes in mid-life. What does this mean for the long-term importance of social and emotional skills in today's children? We do not know the precise mechanisms causing the long-run associations between social and emotional skills and later life outcomes, thus we cannot know with certainty whether the relationships seen in the past will also be true for today's children. What we present here is a preliminary analysis of the socioeconomic and gender differences in some of the social and emotional skills of today's children, that might, on the basis of the findings of chapters 2 and 3, have implications for their outcomes as adults.

The children that this analysis focuses on are part of the Millennium Cohort Study (MCS). This provides a wealth of information about children born in 2000, a generation (three decades) later than the children of the 1970 British Cohort Study (BCS70, examined in Chapter 3). In this chapter we present a very brief and preliminary analysis of the MCS children, using measures that are directly comparable with two of the measures of social and emotional skills used in Chapter 3 relating to conduct or emotional health problems. As with the analysis in Chapter 3, these measures are then inverted so that a higher score means a child has better conduct or emotional health.

We first show the average conduct and emotional health scores by income and gender for this contemporary cohort of children. Comparing the differences by income and gender with those found for the BCS70 children provides evidence on how such inequalities may have changed over the 30-year period in between.

The MCS also has follow-up measures of conduct and emotional health throughout childhood. This allows us to provide evidence on the age by which income and gender differences in conduct and emotional health become apparent, and whether these differences change or remain the same throughout childhood.

4.2   Data and definitions

The MCS is a longitudinal study of approximately 19,000 children born in the UK in 2000/01. (see CLS website for more details). The study has tracked the Millennium generation of children through their early childhood years, with five surveys having been carried out so far, when children were aged 9 months, 3, 5, 7 and 11[43]. Parents provide extensive information about their children, including (from age 3) the mother's reports of their child's social, emotional and behavioural development.

4.2.1   Good Conduct and Emotional Health

Of the seven measures of social and emotional skills examined in Chapter 3 using the BCS70, two can be replicated in the MCS using equivalent and comparable information: good conduct and emotional health[44]. These are taken from responses by a parent, almost always the mother, to the Strength and Difficulties Questionnaire (SDQ)[45]. The SDQ is a measure of problems associated with particular dimensions of childhood mental health, and is directly descended from the Rutter behaviour questionnaire[46], from which measures of good conduct and emotional health were derived for the BCS70 analysis in Chapter 3.

At each age for which SDQ is available – 3, 5, 7, and 11 – we create a measure of conduct by combining 10 questionnaire items describing the child's conduct and hyperactivity, set out in Table 4.1 below[47]. As in the Rutter questionnaire, each item has a 3-point response scale ('Not true'=0, 'Somewhat true'=1, 'Certainly true'=2). By reverse-coding[48] the 'negative' items, e.g. having fights with other children, or a temper, children with better conduct have higher scores on the overall measure. Thus our measure is one of good conduct, and is constructed in a very similar way to that

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[43] By which time the sample successfully surveyed was 13,287.

[44] The MCS did not collect exactly comparable measures of internal locus of control, self-esteem, academic self-concept, conscientiousness or social skills.

[45] Goodman, R. (1997). The Strengths and Difficulties Questionnaire (SDQ). *Journal of Child Psychology and Psychiatry,* 38, 581–586. Goodman, A., Lamping, D. L., & Ploubidis, G. B. (2010). When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the Strengths and Difficulties Questionnaire (SDQ): Data from British parents, teachers and children. *Journal of abnormal child psychology*, *38*(8), 1179-1191.

[46] Goodman (1997) showsthe two have been shown to be highly correlated and indistinguishable in their functional ability in their original purpose as a screening tool.

[47] The SDQ at age 3 is slightly different from the latter three ages in that it contains two different age-appropriate questions comprising the good conduct measure. Questions pertaining to whether the child is 'spiteful' and 'argumentative' at age 3 are replaced with questions pertaining to whether the child 'lies' or 'steals' from age 5 onwards, as displayed in Table 4.1.

[48] 'Not true'=2, 'Somewhat true'=1, 'Certainly true'=0

in Chapter 3 using the BCS[49]. Emotional health is also measured at all four ages, and is defined using the 5 items set out in Table 4.1, all of which are reverse-coded. Thus children with a higher score are said to have better emotional health. Again, the items used for the emotional health measure are very similar to the corresponding measure used in Chapter 3[50]. Both the measure for good conduct and emotional health are standardised, as was the case in Chapter 3.[51]

Table 4.1 Information used to measure conduct and emotional health in the MCS

Social and emotional skill	Items
Good Conduct	Temper (reverse-coded)
	Obedient
	Fights (reverse-coded)
	Lies (reverse-coded)
	Steals (reverse-coded)
	Restless (reverse-coded)
	Fidgety (reverse-coded)
	Distractible (reverse-coded)
	Reflective
	Attentive
Emotional Health	Headaches (reverse-coded)
	Worries (reverse-coded)
	Unhappy (reverse-coded)
	Clingy (reverse-coded)
	Fears (reverse-coded)

4.2.2   Income and gender

The cohort member's gender is taken at birth. In each of the five surveys so far, the responding parent in the MCS (usually the mother) was asked to provide information on the range within which their family income, net of tax, lies. We use this information when the child is aged 11 to create an indicator for whether the family has relatively low income, defined to match the measure of low income in the BCS analysis in Chapter 3: approximately the bottom third of the income distribution. Defining low income equivalently in both the BCS and MCS allows a comparison of how the gap in conduct and emotional health between low-income children and their peers has changed between the two cohorts. It should be noted however, that there is a one year difference in the age at which the skills are measured: age 10 for the BCS and age 11 in the MCS. It is also worth noting that the way in which parental income has been collected in the two studies is similar, but not exactly the same[52]. However it is certainly the case that the absolute income cut-off below which the bottom

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[49] The BCS measure of good conduct in chapter 3 does not include an item pertaining to reflectiveness, as is the case here using the SDQ in the MCS.
[50] The BCS emotional health measure does not include headaches, as is the case here using the SDQ in the MCS.
[51] Please see Box 3.1 in Chapter 3.
[52] The BCS contains measures of gross income rather than net. Although both the original BCS and MCS family income measures, from which the low-income indicator is derived, are banded, the BCS measure contains 7 bands, while the MCS measure contains 20.

third of children fall was considerably higher in real terms in 2012 than it was in 1980, and the degree of inequality in family income has also risen very considerably. [53]

In order to look at the trajectories in the two measures throughout childhood within the MCS, we also construct a long-term measure of family income which is an average across the five survey waves. This long-term income measure is preferable to an income measure based on any one wave, as it represents a more reliable indicator of the family income. The long-term measure of income is then put into five equally sized quintiles: the quintiles represents the poorest 20% of children in the data, while the highest quintile denotes the richest 20% of children. The quintiles are the income groups used in the analysis of how conduct and emotional health vary through childhood.

4.3   Findings

4.3.1   Income and gender differences in the conduct and emotional health of today's children

The right hand side of Table 4.2, below, shows that children who do not belong to low income families tend to exhibit, on average, better conduct at age 11 than children who do, with the difference equal to 0.31 standard deviations. Similarly, these children tend to show better emotional health on average, approximately 0.25 standard deviations higher than for poorer children. Both of these differences can be considered large. They highlight that in today's children, there are significant differences in the average conduct and emotional health of relatively poor and non-poor children.

Also shown in the table are the corresponding differences in these skill measures between non-poor and poor BCS children (when they were aged 10 in 1980). Again we see that non-poor children tended to exhibit better conduct and emotional health. However, the differences seen in the BCS are smaller than those observed in the MCS: The difference in the good conduct between the two income groups is approximately 0.22 standard deviations, while for emotional health it is 0.12 standard deviations. This suggests that the socioeconomic inequality in levels of conduct problems has increased between children born in 1970 and those in 2000 by roughly 40%, and has more than doubled for emotional health. While these findings are preliminary and require further scrutiny, they suggest that the link between family income and good conduct and emotional health is stronger for today's children than it was for children born in 1970.

Table 4.2 Income and gender differences in conduct and emotional health, for the BCS and MCS[54]

	BCS (1970)			MCS (2000)	
	Difference by Family Income	Difference by Gender		Difference by Family Income	Difference by Gender
Good Conduct	0.222	0.313		0.314	0.311
Emotional Health	0.119	-0.095		0.224	-0.051

Note: Units are standard deviations. All differences statistically significant at the 1% level. Family Income columns show differences in skills defined as average skills in non-low-income group, minus average skills in low-income group. Gender columns show differences in skills defined as average skills for girls minus average skills for boys.

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[53]Such changes in the distribution of income have been very well-documented elsewehere (e.g. see http://www.ifs.org.uk/tools_and_resources/incomes_in_uk)

[54] The figures in the cells are not the same as those shown in Table A3.1 for the corresponding skills, part of Chapter 3. Here we present differences in the average scores across the two income groups and genders. Table A3.X instead presents correlation coefficients.

Table 4.2 also shows that there are differences in average conduct and emotional health between boys and girls. Girls in the MCS tend to exhibit better conduct than boys, by 0.31 standard deviations. This is also true in the BCS, with the difference very similar to that in the MCS, suggesting gender differences in conduct have changed little over time. Girls, however, tend to show more emotional problems than boys in both the BCS and the MCS, although in both cohorts the difference is small, under 0.1 standard deviations. Again, the differences are similar in both cohorts.

4.3.2 How income and gender differences in the conduct and emotional health of today's children evolve throughout childhood

We now consider the differences in average conduct and emotional health at each age, across income groups and by gender (Figures 4.1 and 4.2, below). Figure 4.1 shows the average of the standardised (z) scores for good conduct for each of the five income groups, at ages 3, 5, 7 and 11. Focussing first on the left-hand panel of Figure 4.1, there two features which stand out. Firstly, a significant income gradient in the good conduct score is already evident by age 3. Children in the wealthiest fifth of households (grey connected dots) tend to exhibit better conduct than the next wealthiest, who themselves exhibit better conduct than the fifth below them, and so on, with the poorest fifth (blue connected dots) exhibiting the worst conduct on average. Secondly, the size of the income gradient in good conduct is broadly constant between the ages of 3 and 11: the differences between each of the five income groups do not increase or decrease noticeably. Taken together, for today's children, relatively poorer children display worse conduct on average than their wealthier peers by at least as early as age 3, and these differences persist throughout pre-adolescence.

Figure 4.1: Income and gender differences in conduct across childhood
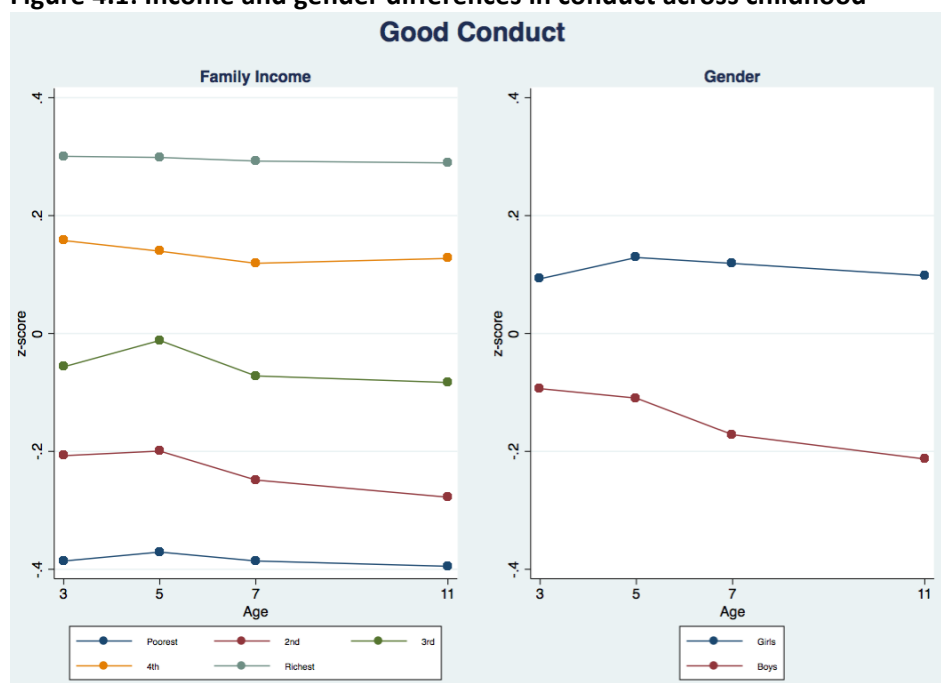
The right-hand side panel of Figure 4.1 shows that boys (red connected dots) tend to display worse conduct than girls (blue connected dots) at all ages between 3 and 11. This difference appears to increase gradually after age 5 through to age 11.

The left-hand side panel of Figure 4.2 shows that, as with good conduct, there exists a strong income gradient in children's emotional health throughout childhood: the wealthiest children (grey connected dots) have the best emotional health on average, and the poorest children (blue connected dots) have the worst on average. This pattern is again evident by age 3, and remains fairly stable throughout childhood until age 11[55]. In contrast to conduct, however, differences in emotional health between boys and girls, shown in the right-hand panel, are negligible, with girls (blue connected dots) displaying only slightly worse emotional health than boys at all ages other than 3.

Figure 4.2: Income and gender differences in emotional health across childhood

4.4   Conclusions

This analysis finds differences in conduct and emotional health between the poorest and richest children that are large in magnitude, at 0.6-0.7 standard deviations. Further, this inequality was apparent as early as age 3 and has persisted until age 11 (the latest year for which data are available). But it may be expected that children experiencing 'multiple' disadvantage (where low income may be compounded by low parental education, lack of parental employment, living in social housing tenure, etc.) are likely to exhibit significant problems on these measures.

It is worth noting the analysis in Chapter 3, which found that better childhood conduct was associated with a number of improved outcomes in later life, while better emotional health was associated with better mental health and well-being in adulthood (among other outcomes found in the literature review). This suggests that the inequalities shown here in the social and emotional skills of today's children are likely have implications for their future development and may contribute to social inequalities in a number of areas of adult life.

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[55] There does appear to be a slight compression in the range of scores across income groups at all 11 compared with the preceding waves, due improvement in the relative conduct of the poorest fifth.

We also find that the association between family income and children's conduct and emotional health has strengthened between the generation born in 1970 and today's children, born around 2000. That is to say, the gap in these skills between relatively poor children and everyone else has widened over the previous 30 years.

Gender differences are apparent for conduct but not emotional health. Today's boys tend to display, on average, worse conduct than girls through childhood, and the gap at age 11 is similar to the gap at age 10 for children who were born in 1970.

4.5 Other related research and potential further work

The potential outcomes in adulthood that today's children will go on to experience are beyond the scope of this report, as is a detailed analysis of the context and environment within which the children are growing up. However, it is worth noting that some other research using the MCS has built up a picture of complex and multiple pathways from disadvantaged circumstances to the establishment of poorer social and emotional skills. The descriptive analysis in this chapter does not explain *why* children from different backgrounds tend to exhibit different degrees of social and emotional skills. Children from different income groups may also differ in other ways which may contribute to the patterns that are observed. What this analysis does show, however, is that whichever personal, parental or family factors cause good conduct and emotional health, their effects are observable by at least as early as age 3. This gives rise to further questions that research in the area must address: What is the relative importance of genetic and 'environmental' factors in explaining the age 3 income gradient in conduct and emotional health? Of the environmental factors, which parent, family and community factors are most important? The stronger the role of such environmental factors (even if they interact with genetic ones) in explaining these differences, the greater the potential role of early intervention to reduce socioeconomic inequalities in conduct and emotional health.

The analysis presented here is only a preliminary glimpse into potentially rewarding territory. For example it does not address the extent to which, or reasons why, these skills improve or worsen across childhood.[56] At each age we measure the *average* scores for each income group and gender. We have not examined the trajectories for individual children to see whether and how individual scores evolve between the age of 3 and 11. If improvements or deteriorations in the conduct and emotional health of individual children are common, it suggests that these skills are relatively malleable and amenable to change[57]. This in turn has implications for the effectiveness of interventions aimed at improving these skills.

Finally, the choice of measures used in this analysis of the MCS was restricted in order to be comparable to the BCS analysis. Going beyond the parental responses to the Strengths and Difficulties Questionnaire, further work could make use of reports from other sources: teachers in

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[56] The dynamics of the development of conduct problems are the subject of a separate ESRC funded research project Trajectories of Conduct Problems from Ages 3 to 11 Leslie Gutman, P!

[57] Cunha, F., Heckman, J.J, Lochner, L., Masterov, D.V. (2006), 'Interpreting the Evidence on Life Cycle Skill Formation' (Chapter 12), in Hanushek, E.A, Welch, F. (eds.), *Handbook of the Economics of Education*, Amsterdam: North-Holland, pp. 697–812; Heckman, J.J. (2000), 'Policies to foster human capital', *Research in Economics* 54 (1), pp. 3–56

the child's school, the children themselves in self-completion questionnaires at ages 7 and 11. The self-reported data contain information on levels of sociability, self-esteem, happiness and academic self-concept, which would supplement the preliminary analysis contained here and provide a much more complete investigation into the social and emotional skills of today's children.

It should also be acknowledged that there is already a growing body of relevant research into the social and emotional skills of the children in the MCS: a limited, illustrative summary appears in Box 4.1 below.

Box 4.1 Current and existing research on Conduct and Emotional Health in MCS

One example of detailed and nuanced research on the mental health of Millennium children is the ESRC-funded programme on Pathways from environmental risk to children's psychological maladjustment and resilience, led by Eirini Flouri at the Institute of Education[58]. This team has been looking for factors which may overcome (or reduce) the effect of social disadvantage on children's psychological difficulties. Potential 'stressors' considered are family poverty, neighbourhood disadvantage and 'adverse life events' such as family break-up. The outcomes investigated are behavioural (labelled 'conduct' here) and emotional difficulties at ages 3-7. Resilience factors, which protect against social disadvantage, have so far been found to include: positive parenting behaviours, higher cognitive ability, better self-regulation, higher child's career aspiration, school characteristics, the availability of urban green space, and social fragmentation of the area.

These multiple contributions to coping with adversity are minor rather than miraculous. They cannot be taken individually as a 'magic bullet'.

There are many other complexities illustrated in existing research on the behavioural and emotional wellbeing of the MCS children. For example, children who experience cognitive delays[59], parental mental health problems[60] or maternal smoking in pregnancy[61] display greater behavioural difficulties. Furthermore, research has demonstrated a reciprocal effect of a child's social and emotional difficulties on his or her parents.[62]

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[58] http://research.ioe.ac.uk/portal/en/projects/pathways-from-environmental-risk-to-childrens-psychological-maladjustment-and-resilience(21d5ef76-86f8-40c9-b674-3e3e869d9ce6).html

[59] vii Emerson, E and Einfeld, S. (2010) Emotional and behavioural difficulties in young children with and without developmental delay: A bi-national perspective. Journal of Child Psychology & Psychiatry and Allied Disciplines, 51(5), 583-593

[60] Mensah, F.K and Kiernan, K.E. (2010) Parents' mental health and children's cognitive and social development. Social Psychiatry and Psychiatric Epidemiology, 45(11), 1023-1035

[61] Hutchinson, J, Pickett, K.E, Green, J and Wakschlag, L.S. (2010) Smoking in pregnancy and disruptive behaviour in 3-year old boys and girls: an analysis of the UK Millennium Cohort Study. Journal of Epidemiology and Community Health, 64(1), 82-88.

[62] PANICO, L, BECARES, L and WEBB, E.A. (2014) Exploring household dynamics: the reciprocal effects of parent and child characteristics. Longitudinal and Life Course Studies, 5(1), 42-55.

Chapter 5 Policy discussion and conclusions

The evidence set out in this report suggests there are likely to be substantial benefits to be gained across people's lives if effective interventions can be found to enhance social and emotional skills in childhood.

Our own empirical work (Chapter 3) shows the importance of skills shown at the age of 10 for a host of outcomes, while our literature review (Chapter 2) also highlights the relevance of social and emotional traits captured at different stages throughout childhood. Our preliminary analysis of conduct and emotional skills among a contemporary cohort of children (Chapter 4) suggests there are substantial gaps by socioeconomic status in these skills which are apparent at the age of 3 and persist at least up to age 11.

From both the literature review and our own analyses, a number of dimensions of social and emotional skills have stood out, including self-control and self-regulation, and self-perceptions (particularly locus of control), as well as social skills, and emotional well-being. As is highlighted in Table ES.1, a striking feature of the evidence, including our own, is that social and emotional skills are associated with outcomes across the full spectrum of adult well-being, prosperity and health. This spread is most evident for self regulation/self-control (conscientiousness and good conduct) and self-perceptions (internal locus of control), which are found to predict multiple outcomes within the domains of mental health and well-being, labour market and socioeconomic, health and health behaviours and others including partnerships, family and political interest.

Our own analysis (Chapter 3) has highlighted the important inter-relationships between social and emotional and cognitive skills. Children with strong cognitive skills typically show stronger social and emotional development, and vice-versa. However, social and emotional measures provide important signals about likely outcomes above and beyond what is picked up by measures of literacy and numeracy. Compared with cognitive ability assessed at the same age (10 years) these skills taken together matter more for general mental well-being (such as greater life satisfaction, mental health and well-being); and matter similarly for many health and health related outcomes (such as lower likelihood of obesity, smoking and drinking, and better self-rated health), and some labour market outcomes.

Evidence is currently lacking on whether resilience demonstrated in childhood results in longer term benefits, but given how it is generally defined – as 'beating the odds' from adversity within the timeframe of childhood – it would seem likely to be the case that the effects of this could be long-lasting. We have also not found much evidence, to date, linking childhood motivation (defined in terms of intrinsic and extrinsic motivations) to later life outcomes other than educational attainment.

While the subject of our own work has not been directly on children's mental health of children, it is clear that their mental health problems (whether conduct or emotional) are closely related to the social skills we have reviewed for this report.

A few notes of caution are important. Firstly, as pointed out in Box 1.1, all of the evidence that we cite – from the existing literature, and our own new work for this report – is observational in nature. While care is generally taken to control for potential confounders, none of the studies employ strictly causal methods in examining the role of social and emotional skills in determining adult outcomes. Thus, although the associations found are independent of an array of child, parent and

family characteristics, confounding cannot be ruled out, and this should be kept in mind when interpreting the findings.

Secondly, although children who lack social and emotional skills, including those with mental health problems, may face risks of difficulties in various aspects of their adult lives, these difficulties are risks, not certainties, and are by no means inevitable destinies, especially if adequate support is available.

Finally, our report does not assess the effectiveness of policies designed to improve children's social and emotional well-being, or the cost-effectiveness of such policies. The extent to which these skills can be shaped by interventions in the home, school, community, or through mainstream health services is a very important question, which has been left outside the scope of this report, and entrusted to the two reports which have been commissioned alongside this one. They address directly how children's social and emotional skills can be improved. The implications of our own work is that improvements in children's social and emotional skills and children's mental health - if of sufficient magnitude - may bring benefits in the here-and-now, and are likely to lead to a myriad of benefits to the population later in life.

Appendix 1 Citations for Literature Review

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Appendix 2 Search Terms for Literature Review

Self-awareness/Self-perceptions:

- self-awareness
- self-perception
- self-esteem
- self-efficacy
- self-concept
- locus of control
- confidence

Motivation:

- motivation
- goal orientation
- task value
- expectancy-value

Self-control/Self-regulation:

- self-regulation
- self-control
- perseverance
- self-direction
- metacognition
- neuroticism
- emotional stability
- self-discipline
- impulsivity
- engagement
- effort
- managing feelings
- conscientiousness
- determination
- introversion

Social Skills:

- empathy
- social skills
- social competencies
- leadership
- forging relationships / relationship skills
- communication
- openness
- agreeableness
- extraversion

Resilience/Coping:

- resilience
- coping
- grit

Others:

- planning
- problem solving
- decision making
- executive functioning
- critical thinking
- identity

Appendix 3 Glossary of Longitudinal Datasets

UK

MRC National Survey of Health and Development (NSHD), 1946 Cohort

National Child Development Study (NCDS), 1958 Cohort

British Cohort Study (BCS), 1970 Cohort

US and CANADA

National Longitudinal Survey of Youth (NLSY)

Hawaii Personality and Health Cohort

Project Competence Longitudinal Study (PCLS)

Fullerton Longitudinal Study

Terman Study

Concordia Longitudinal Risk Project

National Longitudinal Survey of Children and Youth (NLSCY)

NEW ZEALAND and AUSTRALIA

Dunedin

Christchurch Health and Development Study

Mater-University of Queensland Study of Pregnancy (MUSP)

EUROPE

Cardiovascular Risk in Young Finns

Copenhagen Perinatal Cohort

Appendix 4 Data – British Cohort Study

Social and Emotional Skills (Age 10)

(i)   Self-perceptions/Self-awareness:
Self-esteem

Self-esteem is captured by the widely used[63] Lawrence Self-Esteem Questionnaire (LAWSEQ), which has been devised to assist in the identification of children who may suffer from poor self-esteem.[64] We aggregate over 12 items[65] to which the child can respond 'yes', 'don't know' or 'no', whereby a higher total score represents higher levels of self-esteem, before standardising. See here for complete list of questions for LAWSEQ.

Academic Self-concept

Present academic self-concept is captured using an aggregate of six binary-response ('yes' or 'no') items asking the child whether he or she is good at or does well in the following topics at school: maths, reading, spelling, creative writing, arts/crafts and other topics/projects. The total score is standardised.

Locus of Control

Locus of control is captured by the widely used[66] CARALOC questionnaire designed to measure children's perceived control over their own achievement.[67] We aggregate over 16 items[68] to which the child can respond, as in LAWSEQ, 'yes', 'don't know' or 'no', before standardising, whereby a higher total score represents more internal locus of control. See here for complete list of questions for CARALOC.

(ii)   Self-control/Self-regulation:
Rutter Externalising

We combine two subscales of the mother-reported Rutter Behaviour Questionnaire, 'conduct' and 'hyperactivity', to create the Rutter externalising scale for each child. The Rutter questionnaire is a measure for childhood social, emotional and behavioural health and is a long-established behavioural and emotional screening tool that has proven reliability and validity.[69] The conduct subscale addresses whether the child exhibits antisocial and uncooperative behaviour, and includes questions pertaining to stealing, fighting and disobedience, among others. The hyperactivity subscale addresses impulsivity and a lack of self-control, with questions relating to restlessness, fidgeting and being unsettled.[70] The conduct and hyperactivity subscales combine to form 10 items, each on a scale of 0 to 100, with a greater score representing greater externalising behaviour. We create an aggregate score, before standardising.

Conscientiousness

We use selected variables from the teacher-reported Child Development Behaviour Questionnaire to form a measure that we term 'conscientiousness'. We aggregate over nine items relating to whether

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[63] Prevoo and ter Weel (2013); Macmillan (2013); Blanden et al (2007); Feinstein (2000)
[64] Lawrence (1981)
[65] There are 16 questions in total in LAWSEQ, 4 of which are distractors and thus not included in the measure
[66] Prevoo and ter Weel (2013); Macmillan (2013); Heckman et al (2010); Feinstein (2000)
[67] Gammage (1975)
[68] There are 20 questions in total in CARALOC, 4 of which are distractors and thus not included in the measure
[69] Elander and Rutter (1996)
[70] For the full list of Rutter questions see Elander and Rutter (1996)

the child daydreams, becomes bored in class, shows perseverance, becomes confused, is forgetful, shows lethargic behaviour, works independently and accepts the goals of the curriculum, before standardising. Each item is on a scale of 1 to 47 and is reverse coded where appropriate such that a higher score represents greater application.

(iii)   Social Skills:
Peer Relationships

Social skills are captured by teacher-reported peer-relationship questions relating to the child. The teacher is asked to what extent the child is popular with peers, has many friends, shows bold rather than shy behaviour and is cooperative with peers. We aggregate over these four items, which are each on a 1 to 47 scale before standardising.

(iv)   Emotional Health:
Emotional well-being

The child's emotional health is measured using the emotion subscale of the mother-reported Rutter Behaviour Questionnaire, which contains five items relating to what extent the child is often worried, miserable, fearful, fussy, sullen or tearful and is a measure of how the child feels, capturing emotional (or internalising) development. Each item is on a scale of 0 to 100 and the six items are aggregated, before standardising.

Adult Outcomes (Age 42)

(i)   Mental Health:
Malaise

Levels of psychological distress or depression of the cohort member are measured using the nine item self-reported Rutter malaise inventory, a shortened version of the 24 item malaise inventory provided in earlier sweeps of the BCS. Questions include "Do you feel tired most of the time?" and "Do you often feel miserable or depressed?" See here for complete list of questions in the nine-item malaise inventory. The total malaise score is an aggregate of the scores given for the individual binary-response items and is increasing in malaise, and is standardised for the analysis.

Wellbeing

Wellbeing is captured using the Warwick-Edinburgh Mental Wellbeing scale (WEMWBS), which covers a wide range of aspects of positive thoughts and feelings including both hedonic and eudaimonic perspectives.[71] WEMWBS contains 14 positively worded statements, and cohort members are asked to describe how well each statement describes their experience over the previous two weeks. Statements include "I've been feeling optimistic about the future" and "I've been feeling useful". See here for complete list of questions in the WEMWBS statements. Responses are in the form of a five-point rating scale, ranging from "None of the time" to "All of the time", with total scores ranging from 14 to 70, and higher scores indicating higher levels of wellbeing, and are standardised for the analysis.

Satisfaction

Life-satisfaction of the cohort member is measured using a single variable capturing the level of "satisfaction with the way life has turned out so far", on a scale of 0 to 10 where 0 is "completely dissatisfied" and 10 is " completely satisfied", and is standardised for the analysis.

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[71] Tenner et al (2007)

(ii)   Socioeconomic Status and Labour Market
Net Wealth (Savings – Debt)

The BCS contains separate variables capturing the total amount of savings and debt held by the cohort member. A net wealth measure is constructed equal to total savings less total debt, and is logged.

Social Housing

We combine information on housing ownership or rental, with information on from whom the home is rented, where applicable, to construct a binary indicator for social housing tenure, equal to '1' if the cohort member rents from either a housing association or local authority. In our estimation sample, approximately 12% are in social housing.

Net Family Income and Hourly Pay

We combine information on earnings, other sources of income, benefits received and tax credits to construct a measure of log net family income. To create the earnings measure we combine both the cohort member's net pay from their main job, and their partner's, should they have one, as well as subsidiary net pay of the cohort member from other jobs. The net amount from other sources of income is provided in a single variable in the data, while the total amount received from benefits is aggregated over the 30 different types of benefits defined in the data, where the amount 0 is recorded if the benefit is not received. Similarly, to calculate the total tax credit amount granted we aggregate over the two types, working tax credits and child tax credits, where the amount 0 is recorded if the tax credit is not applicable. All components of the net family income measure are converted to weekly amounts, before being added together and then logged, meaning the final measure captures the log of weekly net family income. We create a cohort member hourly pay measure (net and gross) and retain partner pay (net and gross) for use as standalone dependent variables.

Top Jobs

Our top job variable captures the ability of cohort members to access top managerial and professional jobs during adulthood. We create this measure using the National Statistics Socioeconomic Classification (NS-SEC), which contains seven analytic classes and 14 operational categories, defining a high-status job as one which is classified in the top NS-SEC class. This definition of high-status occupation contains higher managerial, administrative and professional occupations.[72] In our estimation sample, approximately 29% are in a top job.

Employment

We create an employment and unemployment indicator for the cohort member and partner, where applicable, derived from their respective economic activity status variable. In our estimation sample, approximately 85% are employed.

Job Satisfaction

Job satisfaction of the cohort member is measured using a single variable capturing the level satisfaction with their current job, based on a scale of 1 to 5, ranging from "very dissatisfied" to "very satisfied", and is restricted to those cohort members in employment, and is standardised for the analysis.

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[72] Based on Claire Tyler's work for her PhD, we may define this using all adult sweeps from age 26–42 (note our other adult outcomes will be measured at age 42 only)

(iii)   Partnerships and Children

We construct binary indicators for whether the cohort member lives with either a spouse or partner and whether the cohort member has any children (by the age of 42). For those with any children, a further measure is constructed indicating the number of own children. In our estimation sample, approximately 76% have a cohabiting partner and 78% are parents.

(iv)   Physical Health:
General Health

General health is captured using a single measure asking the cohort member their opinion of their general state of health. Cohort members respond on a five-point rating scale ranging from "excellent" to "poor". We create a binary indicator for both 'positive' general health, equal to '1' if the cohort member responds with "excellent" or "very good", and another binary indicator for 'negative' general health, equal to '1' if the cohort member responds "poor" or "fair". In our estimation sample, approximately 15% have fair/poor self-rated health.

Body Mass Index (BMI)

We utilise a derived BMI measure and based on the World Health Organisation (WHO) Classification[73] of adult weight, create separate binary indicators for obese, equal to '1' if BMI exceeds 30.00 and underweight (mild, moderate or severe thinness), equal to '1' if BMI is less than 18.50. In our estimation sample, approximately 22% are obese.

(v)   Health Behaviours:
Smoking

We construct a binary indicatory for smoking, equal to '1' if the cohort member is a daily smoker. In our estimation sample, approximately 20% smoke daily.

Alcohol

We utilise the Alcohol Use Disorders Identification Test (AUDIT) containing 10 questions designed to identify persons with detrimental patterns of alcohol consumption, originally developed by the WHO. The questions are intended to capture hazardous alcohol use, dependence symptoms and harmful alcohol use. We create a binary indicator for strong likelihood of hazardous or harmful alcohol consumption, equal to '1' if the total score is greater than 8 for men and 7 for women.[74] In our estimation sample, approximately 17% drink to a harmful/hazardous level (21% of men and 14% of women).

Exercise

We utilise a measure of exercise capturing the number of days in a typical week that the cohort member does 30 minutes or more of exercise, which is standardised for the analysis.

(vi)   Other:
Political Engagement

We capture political engagement by utilising a measure of the level of interest in politics, to which the cohort member responds on a four-point scale ranging from "very interested" to "not at all interested", which is standardised for the analysis.

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[73] WHO, 1995, 2000 and 2004
[74] Babor et al (2006)

Controls (age at which measured)

(i)   Child
Birth weight: A measure of the cohort member's birth weight, in grams (at birth).

Gender: A binary indicator, equal to '1' if the cohort member is male (at birth).

Ethnicity: An eight-category ethnicity measure, which includes separate indicators for English, Irish, Other European, West Indian, Indian, Pakistani, Bangladeshi and Other. Each ethnic group is included separately as a binary indicator in the analysis (at 10).

Older siblings: A binary indicator, equal to '1' if the cohort member has any older siblings (at 5).

Cognitive ability: A combination of the cohort member's British Ability Scale scores (a proxy for IQ), and scores from a maths and reading test. We take the mean of the three standardised components (at 10).

Education: A categorical variable indicating the highest academic level achieved by the cohort member. The categories are included as factor dummies in the analysis, and indicate 8 levels, ranging from no formal academic level, to higher degree (at 30).

(ii)   Parent
Education: Separate binary indicators for whether the cohort member's mother and father stayed on in school post-16 (at birth).

Employment: Separate binary indicators for whether the cohort member's mother and father are unemployed (at 10).

Age: A binary indicator for whether the cohort member's mother is young, defined as being 23 or younger when the cohort member was born (at birth).

Mental health: The total score based on the 24-item Malaise Inventory of the cohort member's mother (at 5).

(iii)   Family
Income: A banded measure of weekly gross family income, containing eight categories ranging from the lowest band, under £35 per week, to the highest band, above £250 per week. The bands are included as factor dummies in the analysis (at 10).

Social housing: A binary indicator, equal to '1' if the family is in social housing (at 10).

Appendix 5 Methodology – British Cohort Study

We first consider the raw association between the full set of social and emotional skills of cohort member i, at age 10 (S_i^{10}) and adult outcomes at age 42 (Y_i^{42}), by estimating equation (1) by OLS where the outcome is continuous and using a Probit model where the outcome is binary.[75] Equation (1) will be estimated separately for each outcome, with β_S capturing the overall relationship between the social and emotional skills, S, and outcome, Y, regardless of the mechanisms mediating this association.

$$Y_i^{42} = g\left(\alpha + \beta_S S_i^{10} + \varepsilon_i\right) \ (1)$$

We will then condition on a vector of child and parental covariates of cohort member i, measured at age 10 (X_i^{10}), and the cohort member's cognitive ability at age 10 (C_i^{10}), as described in the data section. β_S in equation (2) thus captures the association between the skills and the outcome, which is independent of observable differences across cohort members in childhood and their families. This is our preferred specification for understanding the effect of each skill at age on a later outcome. It is important to note, however, that cohort members and their families are still likely to differ in ways that we do not observe and which might affect adult outcomes. Thus, estimates of β_S cannot be considered causal.

$$Y_i^{42} = g(\alpha + \beta_S S_i^{10} + \varphi C_i^{10} + \gamma_X X_i^{10} + \varepsilon_i) \ (2)$$

A further specification, given by equation (3), also conditions on the formal educational outcomes of the cohort member, exploring the extent to which any association between the childhood skills and the outcome is mediated through formal educational attainment. E^{30} captures the highest formal educational qualification obtained, and is recorded when the cohort member was 30 years of age.

$$Y_i^{42} = g(\alpha + \beta_S S_i^{10} + \varphi C_i^{10} + \gamma_X X_i^{10} + \tau E^{30} + \varepsilon_i) \ (3)$$

We explore heterogeneity in the association between childhood skills and the adult outcome in question by estimating model (2) separately for boys and girls, and for children belonging to low-income and not-low-income households at the age of 10.

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[75] The OLS model assumes an identity link function, g, while the Probit model assumes g is the cumulative normal distribution. Both models assume the errors, ε, are normally distributed

Table A3.1: Correlations between skills and child, parent and family characteristics

	Locus of Control	Self-esteem	Academic Self-concept	Low Externalising Good Conduct	Conscient-iousness	Low Internalising Emotional Health	Sociable
Male	0.01	0.10***	0.02	-0.15***	-0.16***	0.05***	-0.01
Birth Weight	0.09***	0.06***	0.03**	0.04***	0.05***	0.03***	0.07***
Non-white	-0.07***	-0.01	0	-0.03***	-0.01	0	-0.06***
Older Siblings	-0.06***	-0.06***	-0.09***	-0.04***	-0.07***	0.08***	0.01
Low Family Income	-0.16***	-0.11***	-0.08***	-0.11***	-0.14***	-0.06***	-0.13***
Mother Unemployed	-0.05***	-0.03**	-0.01	-0.03**	-0.05***	-0.04***	-0.07***
Father Unemployed	-0.08***	-0.07***	-0.05***	-0.07***	-0.09***	-0.05***	-0.07***
Mother Education 16+	0.20***	0.12***	0.08***	0.11***	0.17***	0.06***	0.08***
Father Education 16+	0.22***	0.11***	0.10***	0.12***	0.19***	0.06***	0.08***
Social Housing	-0.19***	-0.12***	-0.08***	-0.15***	-0.18***	-0.09***	-0.11***
Mother Malaise	-0.14***	-0.12***	-0.05***	-0.25***	-0.14***	-0.26***	-0.14***
Mother Young at Birth	-0.10***	-0.08***	-0.03**	-0.09***	-0.07***	-0.09***	-0.04***

Sample restricted to those with non-missing social and emotional skills
Stars relate to significance of correlation
coefficient p<0.05, ** p<0.01, ***p<0.001

Table A3.2 Evidence of predictive power of social and emotional skills on adult outcomes from our analysis using BCS70

Child Skill	Adult Outcome			
	Mental Health & Wellbeing	**Labour Market/ Socioeconomic**	**Physical Health & Health Behaviours**	**Other**
Self-perceptions and self-awareness				
Internal locus of control	Malaise (-0.050) Wellbeing (0.045)	Degree (0.188) Wages (0.055) Top Job (0.050) Wealth (0.043) Income (0.039) Social Housing (-0.025)	Obesity (-0.051)	Partnership (0.082) Political Interest (0.048)
Academic self-concept	Life Satisfaction [boys] (0.053) *Malaise [girls] (0.056)* Wellbeing [boys] (0.032)	Degree (0.046)		
Self-esteem	Life Satisfaction (0.055) Malaise (-0.053)	Wealth (0.044)	Poor Health (-0.043) Drinking (-0.040) Smoking (-0.037) Obesity (-0.029)	
Self-control and self-regulation				
Good conduct	Wellbeing (0.056) Life Satisfaction (0.030)	Degree (0.085) Employment (0.048) Income (0.040) Top Job (0.033)	Smoking (-0.074) Poor Health (-0.039) Drinking [low-income] (-0.032)	Political Interest (0.049) Partnership (0.042) No. of Children (-0.046)
Conscientiousness	Life Satisfaction (0.051)	Degree (0.214) Top Job (0.077) Employment (0.060) Wages (0.059) Income (0.051) Social Housing (-0.049)	Smoking (-0.093) Drinking (-0.057) Poor Health (-0.031)	No. of Children [girls] (-0.088) Parent (-0.046)
Social skills	Life Satisfaction (0.041) Wellbeing (0.038)	Wage (0.039) Job Satisfaction (0.037) Social Housing (-0.028) *Degree (-0.015)*	Obese [girls] (-0.082) *Drinking (0.041)* Poor Health (-0.040)	Parent (0.126) Partnership (0.070) *Political Interest [boys] (-0.038)*

Emotional Health	Wellbeing (0.047) Malaise (-0.033)	*Social Housing (0.060)*	*Smoking (0.037)*	No. of Children [low-income] (0.066) Parent [girls] (-0.051)
Cognitive Ability	Wellbeing (0.054)	Degree (0.269) Top Job (0.210) Wages (0.169) Social Housing (-0.090) *Job Satisfaction (-0.064)* Wealth (0.061) Employment (0.060) Income (0.040)	*Exercise (-0.060)* Smoking (-0.050) Poor Health (-0.049) Obesity (-0.045)	Political Interest (0.159) Partnership (0.055)

Notes: Model controlling for child, parent and family characteristics. Standardised coefficients significant at 5% level in round brackets. Sub-sample for which coefficient is significant in square brackets, where appropriate. Coefficients with unexpected but significant signs in italics