Department for Education

Factors influencing secondary school pupils' educational outcomes

A literature review supporting the Growing Up in the 2020s study

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Authors: Jennie Harland, Caroline Sharp, Lillian Flemons, Eleanor Bradley (National Foundation for Educational Research (NFER), Tina Haux, Eliza Garwood, Stanford Mahati (NatCen Social Research), Ciara Keenan, Richard Nugent, Rebecca Watson, Lily Strange (National Children's Bureau (NCB)

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This research report was written before the new UK Government took office on 5 July 2024. As a result, the content may not reflect current Government policy.

Glossary of terms

Research terms

Independent variable – a variable/factor manipulated in a study that is believed to have an effect on the dependent variable.

Dependent variable – a variable/factor for which the value is dependent on/affected by another variable and is believed to change as a result of the independent variable.

Confounding variable – a variable that influences both an independent variable and dependent variable.

Effect size – An effect size is a value measuring the strength of the relationship between two variables or the size of difference between group means. There are different ways to calculate effect sizes, including from the standardised mean difference (for instance, Hedges g, Cohen's d), odds ratios or correlation coefficients (for instance, Pearson's r). Adjusted odds ratio (AOR) have controlled for other variables. This report includes relevant effect size statistics and interpretations where these are available in the original sources.

Mediating variable – a variable through which the independent variable has an effect on the dependent variable.

Moderating variable – a variable that affects the strength and/or direction of relationship between the independent and dependent variables.

Protective factor – a factor that is regarded as having the effect of improving an outcome.

Risk factor – a factor that is regarded as having the effect of worsening an outcome.

Statistical significance – indicates the probability that a finding has occurred by chance. It is usually assumed that if this probability is less than or equal to 5%, the result is statistically significant.

Demographic terms

Attainment gap – the gap in the attainment outcomes of disadvantaged pupils compared to their peers.

Disadvantaged pupils – pupils identified by DfE as being eligible for free school meals (FSM) or have been in the past six years, pupils who have been adopted from care or have left care and young people who are looked after by a local authority.

Special Educational Needs and Disability (SEND) – a child or young person has SEND if he or she has a learning difficulty or disability which calls for special educational provision (Children and Families Act, 2014). A disability is defined as a 'physical or mental impairment that has a 'substantial' and 'long-term' negative effect on your ability to do normal daily activities' (Equality Act, 2010).

Education, health and care plan (EHCP) – identifies educational, health and social needs and the additional support required to meet the needs of children and young people identified with SEND and who need more support than is available through SEN support. It is applicable for children and young people aged up to 25.

Free school meals (FSM) – economically disadvantaged pupils are eligible for FSM. Since April 2018, all pupils whose families are in receipt of Universal Credit (UC) and have a household income of £7,400 or less are eligible to claim FSM. This is alongside pupils who met the eligibility requirements for FSM as part of a number of legacy schemes (DfE, 2023).

Not in education, employment or training (NEET) – young people who are not in any form of education, training or employment between the ages of 16 and 24 years.

Socio-economic status (SES) – a measure of an individual's or family's economic situation and social position in relation to others. The studies included in this review measure different dimensions of SES, including eligibility for FSM, parental education, social class (based on parental occupation), household income and neighbourhood deprivation.

Educational institutions

Teaching schools – a previous government initiative in which schools rated as 'outstanding' by Ofsted provided staff training, development and support to other schools (DfE, 2019).

Longitudinal cohort studies and national data sets referred to in this report

Avon Longitudinal Study of Parents and Children (ALSPAC) – a birth cohort study run by the University of Bristol. It tracks 14,000 women who were pregnant between April 1991 and December 1992, their children and their partners over two decades. The study provides data on the environmental and genetic factors that affect a person's health and development.

Children in Need and Children Looked After data sets – compiled by the Department for Education based on annual children in need and looked-after children censuses completed by local authorities. The data sets provide data on episodes when a child is

identified as in need or subject to a Child Protection Plan, referrals and assessments of need, and social work interventions, such as care and placements.

Covid Social Mobility and Opportunities Study (COSMO) – a cohort study tracking young people from year 11 in 2021 through to post-16 and workplace destinations to examine the impacts of the COVID-19 pandemic on socio-economic inequalities in life chances.

The Effective Pre-School, Primary and Secondary Education project (EPPSE) – a cohort study which began in 1997 tracking more than 3,000 children from the start of pre-school (3 years old), through primary school (ages 6, 7, 10 and 11) and secondary school (ages 14 and 16). It focuses on the effectiveness of early years education by comparing outcomes to children with no pre-school experience.

Growing Up in Scotland (GUS) – a longitudinal study tracking children from early years through childhood and beyond. It collects information on cognitive, social, emotional and behavioural development; physical and mental health; childcare, education and employment; home, parenting, family, community and social networks; and involvement in offending and risky behaviour.

The Longitudinal Study of Young People in England (LSYPE) – a cohort study following the lives of around 16,000 young people in England born in 1989/90. It has collected information on education and employment, economic circumstances, family life, physical and emotional health and wellbeing, social participation and attitudes. LSYPE2 builds upon the first study and follows young people annually who were aged 13/14 in 2013. It explores various aspects of young people's lives, including educational experiences, health, risky behaviours, relationships, future plans, employment and use of leisure time.

Millennium Cohort Study (MCS) – a cohort study following the lives of around 19,000 young people born in England, Scotland, Wales and Northern Ireland in 2000-02. It collects information on young people's physical, socio-emotional, cognitive and behavioural development, daily life, behaviour and experiences, economic circumstances, parenting, relationships and family life.

National pupil database (NPD) – a data set compiled by the Department for Education covering education, skills and children's services data for individual learners in England. It provides data on children's attainment, demographics, absence and exclusion from school, and whether they are identified as children in need or looked-after children.

Programme for International Student Assessment (PISA) - an international assessment of mathematics, reading and science performance of 15-year-old pupils. It is organised by the Organisation for Economic Co-operation and Development (OECD) and enables international and over time trend analysis. It is run every three years and was first administered in 2000.

The Teaching and Learning International Survey (TALIS) – a survey of around 260,000 teachers and school leaders which asks about their working lives, conditions and learning

environments at school. The survey was run in 2008, 2013, and 2018, and will take place again in 2024.

Executive summary

The Department for Education (DfE) has commissioned a new programme of longitudinal research called the Education and Outcomes Panel Study (EOPS). EOPS will track children and young people through critical phases of learning, from early years to higher education, through a series of staggered, longitudinal studies. EOPS will provide high quality longitudinal evidence on the factors that help to explain educational disadvantage and inequalities, and examine how these influence outcomes at various life stages. The third cohort in the EOPS programme (EOPS-C - also known as 'Growing up in the 2020s') focuses on the experiences and educational outcomes of young people during secondary school. It is anticipated that the study will begin tracking a cohort of young people in year 8 in academic year 2024/25.

This report presents the findings of a rapid literature review aimed at supporting EOPS-C. It focuses on academic attainment, primarily measured by standardised assessments, in English and maths GCSEs (or national equivalents), as well as academic progress measured by the difference between assessments at different points in time. This information will be used to inform the focus and development of EOPS-C data collection.

The literature review aimed to identify the full range of factors known to affect the attainment and outcomes of secondary school pupils, how risk factors can be mitigated, which protective factors can be successfully implemented, and whether there are any gaps in understanding of the interplay between these factors and outcomes for secondary school pupils.

Key findings on the factors influencing secondary pupils' attainment outcomes

The review provides evidence on the factors influencing secondary-age young people's attainment in relation to 4 themes: young people's capabilities and health (theme 1), the experiences of young people with special educational needs and disabilities (SEND) and those who use social services (theme 2), and young people's experiences of the home (theme 3) and school environments (theme 4).

Theme 1: Young people's cognitive and non-cognitive capabilities and wellbeing

The review provides evidence of a strong positive association between attainment and pupil's cognitive capabilities, including Intelligence Quotient (IQ) (understanding of language and reasoning ability), executive functioning (particularly working memory and attention) and use of metacognitive strategies (including both self-regulation and cognitive strategies, which support deep information processing). There is also growing evidence of a strong positive association between attainment and pupils' non-cognitive capabilities, especially conscientiousness, motivation, self-perception of abilities and

social-emotional skills. As these capabilities are likely to affect all pupils and many may be open to improvement with appropriate support, they should be a priority for measurement within EOPS-C.

Certain aspects of a pupil's physical health are positively associated with attainment outcomes, including engaging in regular physical activity and maintaining a healthy diet. On the other hand, engagement in risky behaviours, such as smoking and alcohol use, is a risk factor for poorer attainment. The review provides a wealth of evidence for the negative association between pupils' attainment and presence of mental health problems, including depression and hyperactivity disorder[1]. Poor physical and mental health and wellbeing affect a large minority of pupils (Newlove-Delgado et al., 2022) and the potential for adverse impact on attainment is substantial. These factors are therefore a priority to investigate in EOPS-C.

Theme 2: Special Educational Needs and Disability (SEND) and experience of social services

The review provides evidence of a strong negative association between attainment outcomes and indicators of vulnerability, such as having a special educational need, being looked after, or identified as children in need (CiN). Adverse childhood experiences (ACEs), particularly abuse, neglect, violence, bullying and parental mental and physical ill-health are all risk factors for secondary pupils' attainment. Taken together, these factors affect a relatively substantial number of secondary pupils in different ways that are often negatively associated with attainment, which supports their inclusion in EOPS-C. This review also provides some insights into the protective factors for young people with SEND and those who have experienced particular adversity, including high teacher expectations, inclusive school cultures, parental and care-giver support, and access to specialist support and provision.

Theme 3: Home environment

This review provides consistent evidence of a strong negative association between attainment outcomes and low socio-economic status (SES), including poverty and low income, low parental education, parental unemployment and low occupational status, and neighbourhood deprivation. There is also evidence that SES has an effect on attainment that is independent of IQ and prior attainment. However, aspects of the home environment can promote better attainment outcomes for young people from low SES families. Protective factors include parental support and high educational expectations for their child's learning and progress, talking about school and learning, as well as young people having access to books and enriching activities. Parenting styles characterised as 'positive', 'involved' and 'harmonious' are associated with higher academic attainment

[1] Smith et al. (2021) refer to 'hyperactivity disorder' in their study, which draws on data from the longitudinal study Growing up in Scotland. We assume this is similar to attention deficit hyperactivity disorder (ADHD) which is the term used in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

among pupils from low SES backgrounds. Use of digital technology can be either a risk or a protective factor for young people's attainment, depending on how it is used. It will be important for EOPS-C to capture a range of socio-economic indicators as well as key aspects of parenting behaviour, the home learning environment and use of digital technology.

Theme 4: Experiences of school

There is evidence that young people's attainment can be positively influenced by their experiences of school and the attainment gap appears to be influenced by both between-school and within-school factors. Some factors relate to school characteristics, such as school type (for instance, schools where admission is based on selection) and cohort composition (for instance, the proportion of disadvantaged pupils in the school cohort). Other factors commonly cited as influential on attainment are less easily measured, such as the culture of the school, relationships between teachers and pupils, parents and between peers, the quality of teaching and interventions to address pupils' different needs.

School attendance is clearly an essential and well-evidenced ingredient for high attainment. There is also evidence that high teacher expectations and pupil aspirations are important and can be facilitated by positive leadership, teaching and enriching activities. Evidence is emerging in terms of effective teaching and pedagogy which incorporates use of additional learning time through homework, positive classroom organisation and behaviour management, and socio-emotional support, encouragement and feedback from teachers. Although each of these factors individually may only have a modest impact on attainment, their cumulative effect can be substantial. The implication for EOPS-C would be to measure as many of these factors as possible to inform educational policy and practices that tackle inequalities.

Review methods and limitations

The rapid review is based on systematic searches conducted in Autumn 2022. It prioritised literature published between 2012 and October 2022 and research-based literature reviews, meta-analyses and longitudinal studies conducted in the UK. However, it also included international evidence from meta-analyses and systematic reviews where topically relevant. The review team identified 362 potentially relevant records which were coded for relevance based on the abstract/summary, resulting in a shortlist of 96 items. The shortlist was checked with DfE, collaborators and experts and recommendations were added. A total of 106 items of literature were fully appraised against a common template and form the evidence of this review. A diagram summarising the items of literature processed at each stage of the review can be found in Appendix C.

Given its rapid nature, the review has several limitations in terms of scope and depth. It should therefore be considered as indicative of the available evidence-base, rather than

providing a definitive account of what is known about the key factors influencing secondary pupils' attainment. It should also be noted that much of the evidence consists of associations and correlations, rather than providing proof of causal relationships. Also, while the review seeks to identify factors which may be malleable (that is, open to positive influence through support and intervention), this is not always possible, due to limitations in the evidence-base drawn on in the review. Attempting to cover a broad range of topic areas in a short time means that findings are based on the most robust and relevant evidence that may come from a small number of sources. The review also deliberately included studies using a variety of designs, which means that evidence from more exploratory, qualitative research is included alongside large-scale quantitative studies.

1. About the literature review

This chapter sets out the purpose and aims of the literature review upon which this report is based and briefly describes the methods employed to undertake the review.

1.1 Purpose and aims of the literature review

The Department for Education (DfE) has commissioned a new programme of longitudinal research called the Education and Outcomes Panel Study (EOPS). EOPS will track children and young people through critical phases of learning, from early years to higher education, through a series of staggered longitudinal studies. EOPS will provide high quality longitudinal evidence on the factors that help to explain educational disadvantage and inequalities, and examine how these influence outcomes at various life stages. The third cohort in the EOPS programme (EOPS-C - also known as 'Growing up in the 2020s') focuses on the experiences and educational outcomes of young people during secondary school. A pilot study ran over the summer of 2023 to test the main processes and procedures for wave 1 data collection, and it is anticipated that mainstage fieldwork will start in academic year 2024/5 when young people are in year 8.

This report presents the findings of a rapid literature review aimed at supporting EOPS-C. It focuses on academic attainment, primarily measured by standardised assessments, in English and maths GCSEs (or national equivalents), as well as academic progress measured by the difference between assessments at different points in time. This information will be used to inform the focus and development of EOPS-C data collection. The literature review aimed to identify the full range of factors known to affect the attainment and outcomes of secondary school pupils, how risk factors can be mitigated, which protective factors can be successfully implemented, and whether there are any gaps in understanding of the interplay between these factors and outcomes for secondary school pupils.

The theoretical framework underpinning the review's focus on risk and protective factors for attainment is outlined in Appendix A.

1.1.1 Research context on the main factors related to attainment

This section provides an overview of what is known to date about the key demographic factors related to attainment. These factors are explored further in this review, along with evidence on a broader range of factors relating to young people's characteristics and experiences.

Two of the major factors understood to influence attainment outcomes are prior attainment and young people's SES. For example, Sutherland, Ilie and Vignoles (2015) concluded that prior attainment at key stage 2 (KS2) was the strongest predictor of attainment at key stage 4 (KS4) explaining 44% or more of the variance in attainment

outcomes. Sammons et al., (2014b) found that prior attainment in year 6 accounted for 62% and 52% of the total variance in GCSE mathematics and English grades, respectively, at Year 11. Higher prior attainment may provide the foundational skills and confidence to engage in future learning. A young person's SES is an indication of their family's social and economic position. Evidence consistently shows that low SES tends to be negatively related to young people's attainment outcomes. Researchers use different measures to identify the relationship between SES and attainment in England, the most common and readily available of which is based on a child's eligibility for free school meals (FSM). Some studies use parental occupation and parental education level as measures of SES which are more finely differentiated measures, along with household income and neighbourhood deprivation indicators. It has been estimated that pupils' SES accounts for around 20-26% of variability in attainment outcomes (depending on the measures of SES) (Sutherland et al., 2015). In 2022, 30% of disadvantaged pupils achieved grade 5 or above in English and mathematics GCSE compared with 57% of all other pupils (DfE, 2022b).

It is estimated that school-level factors may account for between 10 and 30% of variability in attainment outcomes (EEF, 2015; Wilkinson et al., 2018). Therefore, school-level factors can represent a risk or protective influence on educational outcomes. Both SES and school-level factors appear to play a more significant role in explaining outcomes in secondary, compared to primary education (Sammons et al., 2014b; Wilkinson, Bryson and Stokes, 2018).

There is evidence that attainment outcomes vary depending on a young person's characteristics. For example, secondary-age pupils with SEND are, on average, over 2 years behind the attainment levels of their peers without SEND at age 16 (Hutchinson et al., 2019a). In 2022, 18% of pupils with SEND achieved grade 5 or above in English and mathematics GCSE compared with 56% of all pupils (DfE, 2022a).

There is also evidence that attainment varies between ethnic groups. In 2022, a higher proportion of pupils from Chinese, Asian, black, mixed and other ethnic backgrounds achieved grades 5 or above in English and mathematics GCSE than pupils from white ethnic backgrounds (DfE, 2022a). Attainment varies for pupils with different first languages. In 2022, a higher proportion of pupils with a first language other than English achieved grade 5 or above in English and mathematics GCSE (53% compared to 49% of pupils whose first language was English) (DfE, 2022a). However, the reverse was the case for primary pupils in 2022 as slightly fewer primary pupils with a first language other than English met the expected standard at KS2 (58%) compared to pupils whose first language was English (61%) (DfE, 2022d).

Gender is also associated with attainment and, typically, female pupils achieve higher grades than male pupils (Sammons et al., 2014b; Sylva et al., 2014). In 2022, 53% of female pupils achieved grade 5 or above in English and mathematics GCSE, compared to 47% of male pupils (DfE, 2022a). There is also a consistent trend of a higher

prevalence of SEND in male pupils compared with females[2] (GOV.UK, 2022c; GOV.UK, 2023).

Evidence also indicates that attainment outcomes vary across the regions of England, with London typically scoring above the national average and having a smaller attainment gap compared to the North East (APPG, 2019; Cardim-Dias & Sibieta, 2022; EEF, 2015).

There is a longstanding gap between the attainment outcomes of disadvantaged pupils and the typically higher attainment of their non-disadvantaged peers – this is commonly referred to as the 'attainment gap'. Disadvantaged pupils are considered by DfE to be pupils who are eligible for FSM or have been in the past six years, pupils who have been adopted from care or have left care and young people who are looked after by a local authority. The attainment gap between disadvantaged pupils and their peers is already evident in primary school, widens by the time pupils start secondary school, and then increases further throughout their secondary education (Andrews et al., 2017; Hutchinson et al., 2019b). In secondary education, pupils' attainment trajectories tend to diverge as those from more advantaged backgrounds make more progress and pupils from disadvantaged backgrounds tend to make less (Crawford et al., 2017). The widening trajectory of the attainment gap throughout education indicates the need to intervene as early as possible, although intervention to narrow the gap is still possible during secondary education.

Some progress has been made in narrowing the attainment gap since 2012, however evidence suggests it increased following the COVID-19 pandemic, which resulted in partial school closures[3] and substantial disruption to learning. Attainment outcomes declined more steeply for disadvantaged pupils. (Andrews et al., 2017; Hutchinson et al., 2019a; Tuckett et al., 2022; Twist et al., 2022). Evidence suggests the particularly adverse impact of the pandemic on disadvantaged pupils was a result of their lack of access to a suitable device for remote learning and to the internet for remote lessons as well as the lack of quiet space to work at home (Easterbrook et al., 2022; Cullinane et al., 2022). This is in line with evidence from earlier studies that disadvantaged pupils are more likely to report that their schools lack resources (see Sammons et al., 2014b). It seems likely that poorer availability of IT resources at school and at home were compounded during the school closures caused by COVID-19, since many schools were unable to provide pupils with remote learning devices. Pupils from disadvantaged backgrounds were also less likely to receive support and supervision from their parents[4] for home learning, meaning they found home learning more challenging and spent fewer hours studying during lockdowns (Cullinane et al., 2022; Easterbrook et al., 2023). Easterbrook et al. (2023) found that pupils from disadvantaged backgrounds with less well-educated parents (non-graduates) were less likely to have someone in the home

[2] However, this may reflect the prevalence of diagnosed needs and there is evidence that some needs, such as autism, are more likely to be identified in males due to gender variability in how the needs present (Bölte et al., 2023; Hull et al., 2020; Lai et al., 2015).
[3] Schools were partially closed in March to July 2020 and January to March 2021.
[4] Throughout the report the term parents includes carers.

with the confidence, motivation and knowledge to support their learning. There is also evidence from the Covid Social Mobility and Opportunities Study (COSMO) of higher rates of absence among pupils from disadvantaged backgrounds once schools fully re-opened (Montacute et al., 2022).

In 2022, the key stage 4 disadvantage gap index widened further from the previous year and reached the highest level since 2012 (DfE, 2022a). This gap sets pupils up for further inequality post-16: 1 in 3 disadvantaged young people are not in sustained work or education five years after they finish GCSEs, compared with 1 in 7 of their peers (Teach First, 2022). The COVID-19 pandemic exacerbated this inequality with disadvantaged pupils reporting less confidence about applying to university (Yarde et al., 2022). Young people from less wealthy households are less likely to have high educational and occupational aspirations (Baker et al., 2014), and more likely to be concerned about the financial costs of university, which is negatively associated with plans to apply (Pollard et al., 2019). However, overall university application rates from disadvantaged pupils actually increased since 2020 (UCAS, 2023).

It is paramount to understand how these and other factors influence the attainment gap in order to inform strategies to reduce educational inequalities. The current literature review provides further evidence on these factors among others and aims to understand how and why they may interact to influence inequality in attainment outcomes. As such, the report will inform the Department's understanding about what evidence should be collected in EOPS-C.

1.1.2 About the organisations conducting the review

This review represents a collaboration between researchers and experts from the National Foundation for Educational Research (NFER), NatCen Social Research and the National Children's Bureau (NCB). NFER led the review, conducted the searches and appraised, analysed and reported the evidence – along with researchers from NatCen and NCB – in relation to areas of particular expertise. The review was also guided by DfE and the EOPS-C technical advisory board, as well as additional academic experts in fields relevant to the review (see Appendix D for details).

NFER is the leading provider of independent educational evidence and assessments in the UK. As a registered charity, NFER's mission is to improve outcomes for future generations everywhere and to support positive change across education systems.

NatCen Social Research is the largest independent social research organisation in Britain and is a not-for-profit organisation that works on behalf of government and charities to find out what people really think about important social issues and how Britain is run.

NCB is a registered charity which brings people and organisations together to drive change in society and deliver a better childhood across the UK. They work in every local authority in England and across government in Northern Ireland.

1.2 Review methods

This report is based on a rapid review using systematic searches of relevant databases and websites to identify evidence. The searches were conducted in accordance with a literature review plan agreed with DfE, NatCen, NCB and expert advisors (see Appendix B for the Rapid Literature Review Plan). The review plan was devised in an iterative process to define the scope in terms of participants, reported outcomes, content and settings of interest to address the broad research question: to understand the range of factors affecting the attainment outcomes of secondary school pupils. In summary, the search strategy set out:

search parameters:

- literature published between 2012 and October 2022 (the searches were conducted in November 2022). The rationale for this date range is that literature published in the last 10 years is most likely to reflect the context and environment experienced by the EOPS-C population.
- prioritisation of research-based literature reviews, meta-analysis and longitudinal studies conducted in the UK; large-scale quantitative and qualitative studies conducted in England/UK; international literature reviews/meta-analysis in English-speaking and/or comparator jurisdictions.

sources of evidence:

- education databases; mental health and social care databases; international systematic review libraries; NFER's in-house database; selected UK websites; websites of selected key UK educational research and psychology journals; recommendations from NFER, NatCen, NCB, DfE and academic experts; and reference harvesting.

inclusion and exclusion criteria

- given the broad nature of the review, it was necessary to limit the volume of evidence returned in the searches by including only evidence reporting on the risk and protective factors related to the academic attainment and progress of young people of secondary school age, while excluding literature reporting outcomes on non-academic attainment or progress[5].

Initial sifting of the search results (for example, to remove duplicate items and manually apply the selection criteria) produced a 'longlist' of 362 items of literature that were

[5] Although it was decided to include some evidence on outcomes closely related to attainment (such as attendance) in cases where the evidence-base was less well developed.

assessed by a team of researchers based on the abstract/summary. Four items were blindly triple coded by three researchers to check for inter-coder reliability. Quality assurance (QA) checks were also conducted by an NFER research director on 10% of coded items (N=38) to ensure a consistent and robust approach. This screening process resulted in a shortlist of 96 items which was checked with DfE, NatCen, NCB and other expert advisors who made several recommendations for additional items to be considered.

Subsequent to the initial searches, some further items of literature were included. This was largely as a result of additional recommendations from experts. The review also includes several additional relevant sources that were published after the searches or were identified through reference harvesting of shortlisted items. Finally, several studies which were identified through the EOPS-B study focusing on primary education (Years 1 to 6) were deemed relevant for the measurement of factors during the secondary age-range. A few items were removed at this stage, due to low relevance of the evidence presented in the full text.

A total of 106 items of literature were fully appraised and form the evidence of this review. Appraisals of literature were conducted by researchers from across the three partner organisations (NFER, NatCen and NCB). This involved reading the full text and completing a structured template to summarise: the main findings, methods and implications for further investigation. Appraisals also involved evaluating the quality and relevance of each item, using a 'weight of evidence' approach (Gough, 2007). Appraisers gave a rating for the methodological quality, methodological relevance/precision and topic relevance of each item.

A diagram summarising the items of literature processed at each stage of the review can be found in Appendix C.

Researchers further synthesised the evidence in relation to four themes[6] (set out below) to draw out the findings in terms of the risk and protective factors identified within each theme, the direction and magnitude of any relationship of each factor with attainment outcomes, the interaction between factors, the extent of variability of evidence within each theme and an assessment of the quality of evidence. The collaborators met with DfE to discuss the emerging findings from the initial analysis and their feedback informed subsequent analysis and the production of this report. The appraised evidence in this review is supplemented by a small amount of 'wider evidence' that did not meet the initial

[6] The literature review originally set out to review evidence in relation to a fifth theme focusing specifically on socio-economic factors. However, in practice this evidence was considered to be most relevant to the home environment theme as it relates to the young person's parents' socio-economic circumstances. In addition, most studies provided some evidence relating to socio-economic factors by controlling for these in analysis. Hence, the influence of socio-economic factors on attainment outcomes is primarily covered in relation to Theme 3 on the home environment (Chapter 4).

search criteria but was recommended by expert advisors to address a gap in the evidence.

1.3 Review limitations

This rapid review has several limitations, in terms of its breadth, depth and assessment of the existing evidence base. Focusing on more recent studies means that many older studies which may have been relevant to EOPS-C were excluded. Attempting to cover a broad range of topic areas in a short time means that findings are based on the most robust and relevant evidence that may come from a small number of sources. The review also deliberately included studies using a variety of designs, which means that evidence from large-scale quantitative studies is included alongside more exploratory, qualitative research. Some evidence also focuses on exploring the impact of factors on young people's attainment in core academic subjects, such as English and mathematics, and gives less attention to attainment in creative, humanity, technical and sports subjects, although studies often use more overarching measures (such as the number of GCSEs achieved at grade 5 or above). Furthermore, there are likely some topics and factors that are important in the context of attainment outcomes but are not yet well studied and are therefore less likely to be captured in this review.

The review team attempted to mitigate some of these limitations by adopting the methods described above. However, this review is probably best regarded as indicative of the evidence-base and does not claim to provide a definitive account of the risk and protective factors affecting the academic attainment of young people of secondary school age. It should also be noted that much of the evidence highlights associations and correlations and evidence of causal influences is limited. The review highlights where some studies have gone further towards exploring causal relationships by using meta-analysis or longitudinal studies that explore the sequencing of factors and effects, and studies that seek to isolate the effect of variables using more sophisticated analysis to control for bias.

Although the review seeks to identify associations between attainment and other factors which are malleable (that is, open to positive influence through support and intervention), this is not always possible, due to limitations in the scope or design of studies included in the review. This report provides indications of the magnitude of the effects of different influences on pupils' attainment where these are available in the appraised studies, although caution should be exercised as these are not available in all cases and are based on different statistical measures.

1.4 Structure of this report

There are numerous factors that influence young people's attainment outcomes throughout secondary school and much interaction and overlap between them. This report attempts to group and present the evidence on the influence of these factors on young people's attainment within the following broad overarching themes which form the subsequent chapters of the report. It is worth reiterating that the relationship between SES and attainment is explored primarily in relation to the home environment. However, disadvantage is associated with each of the other themes. As such, SES is acknowledged in most studies as an important mediating factor and controlled for in the analyses.

The themes reflected in this literature review cover:

1: Young people's cognitive and non-cognitive capabilities, wellbeing and mental health.

2: Special Educational Needs and Disabilities (SEND), experience of social services and adverse childhood experiences.

3: Home environment.

4: Experiences of school.

The report concludes with an overall discussion of the evidence and offers implications for the EOPS-C study.

2. Theme 1: Young people's cognitive and non-cognitive capabilities and wellbeing

Key findings:

- this review provides consistent evidence of a strong positive association between attainment and pupils' cognitive capabilities, including IQ, executive functioning (particularly working memory and attention) and use of metacognitive strategies (such as self-regulation and cognitive strategies which support deep information processing)
- there is also consistent evidence of a strong positive association between attainment and pupils' non-cognitive capabilities, especially conscientiousness, motivation, self-perception of abilities and social-emotional skills
- attainment outcomes are positively associated with certain aspects of pupils' physical health, including engaging in regular physical activity and maintaining a healthy diet. Engagement in risky behaviour, such as smoking, alcohol and drug use, is a risk factor for attainment
- the review provides a wealth of evidence for the negative association between pupils' attainment and presence of mental health problems, including depression and hyperactivity disorder
- the implications for EOPS-C are that it will be important to track pupils' cognitive and non-cognitive capabilities and their physical and mental health as they progress through secondary schooling

This chapter explores the relationship between pupils' academic attainment and progress at secondary school in relation to their cognitive and non-cognitive capabilities and wellbeing. Cognitive skills underpin the acquisition and application of knowledge and include capabilities such as memory, attention, reasoning and language skills. Non-cognitive skills relate more to feelings, behaviour and emotional, social and mental wellbeing and include aspects such as motivation, self-perception of ability and persistence. There is a mutually reinforcing interaction between non-cognitive and cognitive skills such that they work together to facilitate wellbeing and success in later life[7].

This chapter also explores evidence on the relationship between pupils' mental and physical health and their attainment outcomes. There is growing interest in young people's mental health and wellbeing, particularly due to consistent evidence that these

[7] Note that Jones, Greenberg and Crowley (2015) argue that designating cognitive versus non-cognitive skills oversimplifies their complexity and the role of cognition in so-called non-cognitive skills.

were adversely impacted by the COVID-19 pandemic (Anders et al., 2021; Newlove-Delgado et al., 2021; Kuhn et al., 2022; Department for Education, 2023).

The incidence of probable mental disorders was already increasing in young people before the pandemic. Rates of poor mental health among 11- to 16-year-olds in England increased between 2017 and 2020, remained stable in 2021 but increased again in 2022, although the increases between 2020 and 2022 are not statistically significant (Newlove-Delgado et al., 2022). There is evidence to suggest that mental health issues may be slightly more prevalent among females in the secondary school age group (Newlove-Delgado et al., 2022) and the mental health of female pupils in secondary schools appears to have been more adversely impacted by the pandemic (Kuhn et al., 2022).

The current review identified 28 items of literature providing evidence on the link between attainment outcomes and pupils' cognitive and non-cognitive capabilities, as well as their mental and physical health. The selected studies involved a range of methodological designs, with half reviewing existing evidence through meta-analysis, systematic reviews and other types of review. Two-fifths used longitudinal designs, drawing on data sets such as Millennium Cohort Study (MCS), Longitudinal Study of Young People in England (LYPSE), Avon Longitudinal Study of Parents and Children (ALSPAC). Studies provided a mix of UK and international evidence. Just less than two-thirds of the studies were rated as high value to the review in terms of quality of the study design, relevance of the methodology and topic. Just less than a third were rated as medium value. Only one study (Prangthip et al., 2019) provided lower value to the review due to its limited relevance to the UK context, however the study was still included for its valuable insights about the ways nutrition can impact upon attainment.

Studies tended to measure secondary pupils' attainment in English, mathematics and science using national assessments conducted in key stage 3 and 4, such as GCSEs or other national equivalents (including Scholastic Assessment Tests (SATs) and Grade Point Averages (GPA)). Some studies also used standardised assessments to measure pupils' cognitive and non-cognitive capabilities. This included (but is not limited to) measures of verbal and non-verbal IQ and executive functioning to capture cognitive capabilities. To capture non-cognitive capabilities, studies used measures of social-emotional skills and behaviours and attitudes towards self and school. Pupils' physical and mental health was usually measured by scales based on questions completed by the young person themselves, their parents and/or teachers, such as the Strengths and Difficulties Questionnaire (SDQ) and the General Health Questionnaire (GHQ-12).

Common limitations associated with studies in this theme included:

- reliance on correlational data
- limited exploration of and/or control of confounding variables
- some bias within samples

- approximately two-fifths of the studies lacked relevance to the secondary school UK context specifically - these studies either focused solely on international evidence or were meta-analyses that focused primarily on non-UK evidence. Many of these studies also included evidence from other education phases
- variation in how concepts and constructs, such as emotional intelligence, executive functioning and self-regulation, were defined and measured in the studies, which can lead to inconsistencies in the findings. For example, studies varied in the extent to which they measured multiple dimensions of constructs, a single dimension, or overarching capabilities

A number of sub-themes emerged in the analysis of evidence on this theme, which are discussed below.

2.1 Cognitive capabilities and prior attainment

Nine studies identified a positive relationship between attainment outcomes in secondary school and both stronger cognitive capabilities and prior attainment. These studies provided evidence that cognitive capabilities (measured in primary and secondary school) and prior attainment are two of the strongest predictors of academic performance at age 16, over and above non-cognitive capabilities and SES (Mammadov, 2022; O'Connell & Marks, 2022).

There is a well-established evidence base documenting the relationship between IQ and academic performance[8]. A study assessing intelligence and attainment in pupils from primary through to secondary school by von Stumm (2017) showed that IQ explained around 40% of the variance in the development of academic performance between age 7 and 16. The study also showed that SES had an independent effect: pupils from higher SES backgrounds were higher attaining (by half a grade) than their lower SES peers, even when their lower SES peers had equal or higher IQ, demonstrating the persistent effect of family and home economic circumstances on academic achievement.

Verbal IQ – focused on vocabulary – measures pupils' ability to use and understand language. Non-verbal IQ – focused on reasoning – measures pupils' problem solving and spatial reasoning abilities. O'Connell and Marks (2022) conducted longitudinal analysis using data from the MCS. Their study showed that cognitive ability, measured through a composite score for both verbal and non-verbal IQ, was the strongest correlate with GCSE exam score[9], even when controlling for various SES-related variables. They also found that this composite score had the strongest effect on key stage 4 attainment compared to SES variables, which were weaker predictors of attainment. Donati, Meaburn and Dumontheil (2019) measured verbal and non-verbal IQ as distinct and science at age 16. Working memory and attention are particularly strongly correlated with academic achievement. Working memory is the ability to hold and manipulate information

[8] Although some authors (such as Nash, 2010) question the validity of such tests.
[9] r = 0.47

and requires sustained attention. Donati, Meaburn and Dumontheil (2019) reported large correlations[10] between working memory capabilities and English, science and mathematics performance. They also found that working memory predicted variance in subject exam performance at age 16, over and above previous attainment and SES[11]. Jacob and Parkinson (2015) reported a significant and large correlation between attention shifting[12] and performance in reading and mathematics[13]. Despite the strong evidence for a correlational relationship between executive functioning and academic attainment, neither of these studies were able to confirm a causal relationship. Moreover, it is not clear from the evidence whether executive functioning skills can be effectively taught to secondary-age pupils.

There is an evidence-base focusing on the relationship between cognitive processes and attainment. Cognitive processes have some similarity with executive functioning, but relate to how pupils understand, process and retain information (such as using study aids, elaborating on and organising ideas). Dent and Koenka (2016) report a smaller correlation[14] between broad cognitive processes and attainment, compared to those reported above in relation to executive functioning and IQ. Of all the cognitive processes reviewed, Dent and Koenka (2016) found that pupils' ability to select the main ideas in learning material correlated most strongly with academic performance[15]. Being able to attend to the main ideas is a cognitive process that facilitates deep processing and includes elaboration and organisation of ideas, which enables pupils to better understand the material on a conceptual level, rather than simply memorising information.

Pupils' use of metacognitive processes during learning has also been shown to be positively related to academic performance, although with differences across specific subject domains (Dent & Koenka, 2016; Gutman & Schoon, 2013). Metacognitive processes (such as self-monitoring, control and evaluation), ensure that the cognitive processes outlined above have taken place. Pupils employing such metacognitive strategies can identify areas where their understanding is weaker and adopt learning strategies that best support them to improve their knowledge. Dent and Koenka (2016) found that metacognitive processes overall[16], as well as the specific skills of planning[17] and self-regulated learning[18], were all positively correlated with academic performance. There is also evidence that metacognitive strategies can be taught. A review by Gutman and Schoon (2013) reported evidence that teaching metacognitive strategies to pupils can have large positive effects on pupils' performance in science and mathematics, and medium positive effects on performance in reading[19].

[10] Correlation coefficients ranging from 0.56 to 0.60.
[11] Although note that this study did not explore the relationship between previous attainment and SES.
[12] Attention shifting is also known as mental flexibility or attention switching.
[13] Attention shifting and reading r = 0.42; attention shifting and mathematics r = 0.34
[14] r = 0.11
[15] r = 0.31
[16] r = 0.20
[17] r = 0.30
[18] r = 0.26
[19] The report did not provide details of individual effect sizes from the studies it reviewed.

There is clear support from several longitudinal studies that prior attainment during primary and lower secondary school has a strong, positive relationship with academic attainment at age 16[20] (Donati et al., 2019; Easterbrook et al., 2022; Susperreguy et al., 2018; von Stumm, 2017). However, family SES also influences pupils' academic trajectories, explaining between 8% and 13% of the variance in progress between age 7 and 16, even after controlling for IQ and prior attainment (Donati et al., 2019; von Stumm, 2017). These authors drew upon previous research using a range of SES measures, including books in the home, parental numeracy skills and access to private tutoring.

Taken together, these findings highlight the importance of measuring pupils' cognitive capabilities and prior academic achievement as they demonstrate the significant positive influence of these factors on secondary attainment outcomes, even after controlling for other pupil characteristics and SES. However, the reviewed studies highlight the different approaches taken to measuring cognitive capabilities and the interrelated nature of these skills.

2.2 Non-cognitive capabilities

Nine studies provided evidence on the relationship between non-cognitive capabilities, such as social-emotional skills, self-concept and persistence, with academic attainment at age 16. All studies found a positive association between these capabilities and academic performance, such that stronger non-cognitive capabilities were related to stronger academic performance.

Four studies explored the relationship between pupils' self-concept (that is, belief in their own abilities) and their academic attainment, finding stronger self-concept to be a protective factor for attainment (Easterbrook et al., 2022; Gutman & Schoon, 2013; Siraj-Blatchford et al., 2013; Susperreguy et al., 2018). Susperreguy et al. (2018) found medium positive effects for subject-specific self-concept in both mathematics[21] and reading[22]. These findings held stable across the achievement spectrum, and after accounting for early attainment, pupil characteristics and demographic variables. However, self-concept is influenced by a range of factors, including parent, teacher and peer perceptions of a pupil's abilities (Siraj-Blatchford et al., 2013). Both Susperreguy et al. (2018) and Gutman and Schoon (2013) reported that determining a causal relationship between self-concept and academic attainment is difficult because the direction of this relationship could work both ways (i.e. that attainment could affect self-concept as well as self-concept affecting attainment). The authors of these studies agree that positive self-concept acts as a precursor for motivation to study, which in turn can increase academic attainment.

[20] With significant correlation coefficients ranging between 0.62 and 0.67.
[21] Significant effect size of 0.19 found in both NICHD and PSID data sets.
[22] Significant effect size of 0.12 in NICHD data set and non-significant effect size of 0.17 in PSID data set.

Intrinsic motivation – that is, pupils' motivation to engage in a learning activity because they find it interesting and have the autonomy to do so – has been found to be a protective factor for academic attainment. In their literature review, Gutman and Schoon (2013) found evidence that when pupils are intrinsically motivated, they engage in high-quality and creative learning and are determined to achieve. Similarly, Siraj-Blatchford et al. (2013) reported an increase in pupils' intrinsic motivation when they chose their GCSE subjects, because this provides them with the opportunity to take control of their learning, alongside the knowledge that their grades in these subjects are important factors in determining their future. On the other hand, extrinsic motivation – that is, pupils' engaging in a learning activity because they are compelled to do so in order to receive approval/reward from others or avoid punishment – can reduce pupils' interest and engagement in an activity, and is therefore related to less optimal functioning (that is, pupils not working to their full potential) and learning outcomes (Gutman & Schoon, 2013).

A meta-analysis by Toste et al. (2020) explored the impact of motivation on pupils' reading achievement. Overall, a significant moderate correlation was found[23]. Of the 4 motivation constructs included in the review (goal orientation, beliefs, disposition and intrinsic motivation), intrinsic motivation was most strongly associated with reading achievement[24]. The authors drew on longitudinal analysis to assess the direction of the relationship between motivation and reading, finding that early reading is a stronger predictor of later motivation[25], than motivation is of reading[26]. However, the authors advise interpreting this finding with caution because of a lack of control for pupils' cognitive abilities which are also likely to have influenced reading achievement.

Evidence shows that conscientiousness - a 'tendency to show self-discipline, planning and organisation' (Mammadov, 2021, p. 2) – is positively associated with academic achievement at age 16 (Mammadov, 2022; O'Connell & Marks, 2022). Mammadov (2021) reported a large correlation between conscientiousness and academic achievement[27], while O'Connell and Marks (2022) reported a moderate correlation for this relationship[28]. Mammadov (2021) suggests that conscientiousness is essential for all pupils to succeed across subjects and phases of education because neither gender nor education phase moderated this relationship. The trait of openness, defined by Mammadov (2021) as 'a degree of intellectual curiosity, creativity, and preference for novelty and variety', was also found to be positively associated with academic attainment[29] at age 16 (Mammadov, 2022; O'Connell & Marks, 2022).

[23] r = 0.22
[24] r = 0.32
[25] Average partial correlation of early reading to later motivation: r = 0.15
[26] Average partial correlation of early motivation on later reading: r = 0.08
[27] Overall correlation coefficient of 0.27 and effect size in secondary-aged pupils of 0.56.
[28] Correlation coefficient of 0.19.
[29] Mammadov reported an overall correlation coefficient of 0.16 and an effect size in secondary-aged pupils of 0.45. O'Connell and Marks reported a correlation coefficient of 0.11 but found a stronger effect in younger children.

There is a growing evidence base linking academic achievement with persistence (which has similarities with conscientiousness). Persistence may be defined as a pupils' commitment to achieve a goal, despite setbacks (Gutman & Schoon, 2013). In their meta-analysis, Lam and Zhou (2019) reported medium to large correlation coefficients[30] between facets of persistence and academic attainment. They found that pupils' effort in learning was more strongly associated with achievement than their interest in learning, demonstrating the importance of persistence and the need for this to be nurtured as pupils' progress through school.

In their review of non-cognitive skills and outcomes for young people, Gutman and Schoon (2013) reported on the positive relationship between attainment and characteristics of resilience and coping (which are conceptually similar to persistence). They reported that while resilience – being able to 'bounce back' or achieve in the face of adversity – is a developmental process, coping is malleable and is a set of skills pupils can develop and then employ in response to adverse situations. Pupils' use of positive coping strategies (including metacognitive strategies and positive emotions such as confidence and optimism) were found to be positively correlated with academic achievement (Gutman & Schoon, 2013). However, rather than coping strategies having a direct positive influence on attainment, the authors suggest that this relationship is mediated through improved psychological functioning.

Emotional intelligence and social-emotional skills show a large positive association with academic achievement (Gutman and Schoon, 2013; Sánchez-Álvarez, Berrios Martos and Extremera, 2020[31]). It seems likely that these skills have an indirect effect on attainment. For example, Sánchez-Álvarez, Berrios Martos and Extremera (2020) suggest that emotional intelligence could influence other non-cognitive capabilities such as motivation and self-regulation which, in turn, impact attainment[32]. Alternatively, they suggest that stronger social-emotional skills support pupils to build friendships and succeed in teamwork-based learning tasks, which in turn support learning and attainment. The protective nature of peer relationships for attainment are discussed in more detail in Chapters 3 and 5 of this review.

Taken together, the findings presented in this section highlight the importance of measuring pupils' non-cognitive capabilities because they demonstrate significant positive influence on attainment outcomes for the secondary school age group. Evidence from Gutman and Schoon's (2013) review also suggests that several non-cognitive skills have a medium to high degree of malleability[33]. However, this is not to suggest the

[30] Ranging from 0.09 – 0.21.
[31] Effect size = 0.26
[32] While this review did not identify any further evidence of the role of self-regulation specifically, substantial evidence suggests self-regulation is positively associated with attainment in younger children (see literature review report for EOPS-B), as well as older pupils (see, for example, Duckworth et al., 2019). Self-regulation is also closely related to a number of the other factors discussed in this report, including persistence, time spent on homework and cognitive capabilities.
[33] Gutman and Schoon (2013) point out that self-perception, motivation, metacognition, social skills and resilience show a medium to high degree of malleability.

development of young people's non-cognitive skills is an entire solution for improving the equality of educational outcomes as clearly there are many other factors that influence attainment and that require intervention. Measuring these non-cognitive capabilities is challenging because of the need to rely on self-report data which can be open to social-desirability bias. Non-cognitive skills such as motivation and self-concept can also be influenced by the actions and opinions of pupils' peers, teachers and parents. The nature of non-cognitive skills means their effects on attainment are difficult to isolate. However, if these challenges can be overcome or mitigated, there is a strong case to investigate them further through EOPS-C.

2.3 Physical health and risky behaviours

Eight studies provided evidence on the relationship between physical health and risky behaviours, and academic attainment at age 16. All studies reported a negative association between poor physical health, engagement in risky behaviours and academic performance. In others words, poorer physical health and greater engagement in risky behaviours were both related to weaker academic performance.

2.3.1 Physical health and exercise

Two longitudinal studies of pupils in the UK (Hale & Viner, 2018; Lessof et al., 2018) provide evidence that experience of a long-term health condition[34] is negatively associated with academic attainment at age 16. These studies found that pupils who experienced a long-term illness achieved lower grades across their set of GCSEs[35] and their chances of achieving grades A* - C in English and mathematics were lower, particularly where parents reported that the illness affected the pupils' schoolwork[36]. Hale and Viner (2018) found that social exclusion (peer-related exclusion) significantly mediated the relationship between long-term health conditions and attainment, whereby pupils with a long-term condition who also faced social exclusion were more likely to achieve lower than their peers who did not experience social exclusion. However, the impact this had on pupils' attainment was small. Long-term absence, which was considerably more common among female pupils with long-term illnesses, was another mechanism through which poor health significantly and negatively impacted attainment. Wider evidence from Sammons et al., (2014a) also found that where young people rated their physical health more negatively, this was associated with lower wellbeing, self-concept and enjoyment of school.

[34] Hale and Viner (2018) refer to long-term health conditions as 'a physical or mental illness, disability, learning difficulty, abnormality of behaviour or infirmity'.
[35] Lessof et al. (2018) report that pupils with a long-term illness achieved an average of 115.2 points lower in their best 8 GCSEs than their peers without a long-term illness, equivalent to 19 grades. Hale and Viner (2018) report significant odds ratios of 1.72 in females and 1.53 in males.
[36] Lessof et al. (2018) report that 65.8% of pupils without a long-term health condition achieved a grade A* - C in English and mathematics, compared to 59.6% of pupils with a long-term health condition that did not affect their schoolwork and 30.3% of pupils with a long-term health condition that did affect their schoolwork.

Two studies provide mixed evidence on the relationship between sleep duration and attainment in secondary-age pupils (Lessof et al., 2018; Musshafen et al., 2021). Lessof et al. (2018) reported that receiving more than 9.5 hours of sleep a night is a risk factor for academic performance[37]. However, it is possible that poor mental health may be driving the trends observed. Moreover, a meta-analysis by Musshafen et al. (2021) did not find a significant relationship between sleep duration and overall academic performance[38].

The review included two studies with findings on the relationship between nutrition and attainment (Booth et al., 2014b; Prangthip et al., 2019). These studies highlight the importance of nutrition for physical health in supporting the rapid physical and mental development that pupils go through during adolescence. Both studies found that malnutrition (being either under- or over-weight) were risk factors for academic attainment. Analysis of pupils in the UK by (Booth et al., 2014b) found that female pupils who were obese or overweight at age 11 had lower academic attainment at age 16 compared to their female peers classed as being of healthy weight[39]. A similar association was found in male pupils, but this association was weaker and became insignificant when confounding variables (including depressive symptoms and IQ) were included in the analysis. Wider evidence also finds that experiencing food insecurity during adolescence predicts lower educational attainment by reducing school attendance (Heflin et al., 2020). Prangthip, Soe and Signar (2019) acknowledge the factors in a pupils' environment that influence their diet. These include:

- SES, which determines the amount of money families can spend on nutritional food
- pupils' knowledge of and attitudes towards nutrition, which can influence the independent decisions they make regarding meals
- the school food environment, which can either positively or negatively impact upon pupils depending on the availability of nutritional food[40]

In their review, Busch et al. (2014) report evidence that eating habits, such as skipping breakfast and irregular dietary patterns, are significantly correlated with lower attainment across school subjects. However, the authors advise that this finding should be interpreted with caution due to a lack of control for potential confounding variables (such as gender, SES or prior attainment, which some other studies included in the review had controlled for). Despite these caveats, it would seem important to explore the relationship

[37] Pupils receiving more than the optimal amount of sleep scored an average of 11.4 points lower in a single GCSE, and the odds of these pupils receiving grades A* - C in English and mathematics were 1.4 times lower than pupils who slept the recommended hours.
[38] Note that this study focused on evidence from a relatively small number of international studies, so the relevance to England is not guaranteed.
[39] These findings held stable even when weight at age 16 was controlled for. IQ, depressive symptoms and age of menarche were not found to mediate the relationship between weight and academic attainment. However, the analysis did not control for SES.
[40] Note that this study focused on evidence from a relatively small number of international studies, so the relevance to England is not guaranteed.

between nutrition and attainment through EOPS-C, particularly given the current increase in the cost of living and rising food prices which are likely to have a disproportionate effect on disadvantaged pupils.

Turning to physical activity, a systematic review by Busch et al. (2014) reported that engagement in physical activity is associated with academic attainment at age 16, but this relationship appears to be moderated by SES, gender and type of physical activity. Wider evidence beyond the studies initially included in this review provides further evidence of this relationship and some insights into the moderating and mediating factors. A longitudinal study of adolescents found higher amounts of moderate-vigorous intensity physical activity at age 11 predicted higher attainment at ages 13 and 16, even when controlling for a range of confounders (Booth et al., 2014a). Wider evidence beyond the reviewed studies suggests that there is sufficient evidence of a causal relationship between physical activity and higher cognitive functioning (Biddle et al., 2019). Similarly, a study by Blomstrand and Engvall (2021) suggested that aerobic physical exercise may improve learning and memory functions in young adults. Alternatively, Busch et al. (2014) suggest that it is the 'team' element of sports, rather than the physical activity itself which influences academic achievement. Participation in sports allows pupils to grow their social circle and through this, receive access to new information, resources and opportunities, which, in turn, positively impact pupils' performance in academic lessons. They also suggest that participation in team sports can lead pupils to be more 'aligned' with their school and spend more time on their academic studies, which in turn positively influences attainment. It is also possible that physical activity may support attainment indirectly by improving mental health (see Booth et al., 2023) which, in turn, can influence attainment.

Finally, in relation to the effects of physiological changes during adolescence, Torvik et al. (2021) studied the impact of puberty on attainment, finding that overall, earlier puberty[41] acts as a protective factor for higher academic achievement in both male and female pupils. One possible explanation for these findings is that some aspects of earlier puberty signify earlier maturity and development of psychological and social skills that may benefit attainment. Torvik et al. (2021) found that, although females outperformed males in GCSE attainment overall, puberty indicators (including a growth spurt, skin changes and growth of body hair, measured using the Puberty Development Scale (PDS)) played a significant mediating role in these trends. Height (measured at age 12) and PDS score (at age 16) were the strongest mediators of the relationship between sex and attainment. Additional analysis led the authors to conclude that these genetic factors may better explain the relationship between puberty and attainment. However, given the associations that have been found in wider evidence between obesity and early menarche (Huang & Roth, 2021; Itriyeva, 2022), which is in turn associated with

[41] The authors do not give detail on what ages are classed as early or late puberty. Pupils completed the questionnaire at age 12, 14 and 16 and recorded whether indicators of puberty had started at these ages, but age brackets for early/late puberty were not given. According to the UK National Health Service (NHS, 2022), the average age for girls to start puberty is 11, while for boys the average age is 12.

depressive symptoms (Sequeira et al., 2017), the complexity of factors that moderate and mediate the relationship between puberty and attainment outcomes requires further investigation.

2.3.2 Risky behaviour

Engagement in risky behaviours such as smoking, alcohol and drug use has been shown to be negatively associated with attainment outcomes (Busch et al., 2014; Wright et al., 2018). Wright et al. (2018) found that for each additional risky behaviour a young person engaged in, their GCSE grade reduced by the equivalent of just over one grade in one GCSE examination, while the odds of achieving five or more GCSEs at grades A* - C decreased by 23%, even when controlling for a range of pupil characteristics[42]. SES-related confounding variables, including lower maternal education and lower income, were positively associated with a pupils' engagement in risky behaviours at age 16. Busch et al. (2014) found that the association between risky behaviours and attainment differs depending on gender, frequency of engagement in the activity, and in the case of alcohol use, the amount consumed and age at which alcohol use began[43]. Of the individual risky behaviours, smoking was most strongly related to poorer GCSE attainment[44] (Wright et al., 2018)[45]. However, rather than this being a direct influence, Busch et al., (2014) argued that SES and pre-existing psychosocial problems interact with the relationship between attainment and risky behaviours. In their view, substance use can act as a proxy for these underlying issues, which themselves negatively impact pupils' attainment. This suggests that mitigating the impact that psychosocial issues and SES have upon attainment is key. (The interaction between mental health and engagement in risky behaviours is discussed further below.) None of the studies in this review examined vaping behaviour, although there is evidence that this has become more common than smoking among young people: a recent study found that 9% of 11 to 15 year olds use e-cigarettes compared to 3% who smoke cigarettes (NHS Digital, 2022).

Taken together, these findings demonstrate that poorer physical health and engagement in risky behaviours are negatively associated with academic attainment. For the most part, pupils can be supported to overcome these health risks and behaviours through appropriate support and intervention. They are therefore important factors to include in EOPS-C.

[42] The study controlled for gender, season of birth, SES factors, IQ and KS2 attainment.
[43] The study is a systematic review and explores the effects of risky behaviours on the academic performance of adolescents, including: alcohol and marijuana use, smoking, nutrition, physical activity, sexual intercourse, bullying and screen time use (television, Internet, video games).
[44] Pupils who smoked were 70% less likely to achieve 5 or more A* - C grades compared to their peers who did not smoke.
[45] The study measured 13 risk behaviours: physical inactivity, TV viewing, car passenger risk, cycle helmet use, scooter risk, criminal/antisocial behaviour, hazardous alcohol consumption, regular tobacco smoking, cannabis use, illicit drug/solvent use, self-harm, penetrative sex before 16, unprotected sex.

2.4 Wellbeing and mental health issues

Nine studies provided evidence on the relationship between pupils' wellbeing and mental health and attainment outcomes. There is a wealth of evidence showing that poor wellbeing and mental health negatively impacts on academic attainment at age 16 (Cornaglia et al., 2012; Hale & Viner, 2018; Leigh et al., 2022; Lessof et al., 2018; Smith et al., 2021; Wickersham et al., 2021). This association has been found in male and female pupils and when controlling for pupil background factors and individual characteristics, including SES, IQ and ethnicity. For example, Wickersham et al. (2021) found that pupils who received a diagnosis of depression before age 15 were less likely to achieve five GCSE grades A* – C, compared to their peers without this diagnosis. Wider evidence corroborates these findings and suggests that depressive symptoms, measured at ages 10-11 and 13-14, are negatively associated with attainment at age 16[46] (Cadman et al., 2021). Leigh et al. (2022) also reported that experiencing symptoms of negative affect (such as anhedonia[47] and psychological distress) throughout childhood and adolescence was significantly and negatively associated with GCSE outcomes.

Wider evidence from Sammons et al. (2014a) indicates anxiety and lower wellbeing may be more prevalent in girls (43% of girls reported feeling good about themselves 'often' or 'all the time' compared to 67% of boys). Wider evidence also suggests that pupils' ratings of their life satisfaction are lower for disadvantaged pupils than their more advantaged peers (Kuhn et al., 2021). Risky behaviours (discussed in section 2.3), including displaying challenging behaviour, truancy, smoking[48] and alcohol use, were found to be important mechanisms through which mental health negatively impacted attainment (Hale & Viner, 2018). It is suggested by Cornaglia, Crivellaro and McNally (2012) that young people may turn to engaging in these risky behaviours in response to the mental health difficulties they experience. This is in line with the findings from Busch et al. (2014), discussed above.

Burnout was explored in a meta-analysis by Madigan and Curran (2020). Burnout, both as an overall construct[49] and across all dimensions – exhaustion[50], cynicism[51] and reduced efficacy[52] – has been found to negatively predict academic achievement in male and female secondary-aged pupils, showing small to medium effects. The authors suggest that burnout may be caused by the volume and nature of school work and activities associated with achievement goals. They identify the negative impact exhaustion can have upon the level of effort pupils are able to put into their studying, and suggest this can lead to cynical attitudes and pupils withdrawing their interest and effort in studying. They also propose a potential causal link between reduced efficacy and

[46] Correlation coefficients of -0.14 and -0.04 respectively.
[47] Anhedonia is a symptom of depression, characterised by an inability to experience pleasure and a loss of interest in activities an individual previously enjoyed engaging in.
[48] Note that the review did not include studies on the more recent phenomenon of vaping.
[49] Effect size = -0.24
[50] Effect size = -0.15
[51] Effect size = -0.24
[52] Effect size = -0.39

negative self-perceptions (the impacts of which are discussed in the non-cognitive capabilities section of this chapter).

Gutman and Vorhaus (2012) found a positive association between higher wellbeing (in the areas of emotions, behaviour, social and sense of school), and academic achievement[53]. The largest correlations between the different wellbeing dimensions and academic achievement in KS4 were found for: low-level awkward behaviour[54], low activity problems, high school engagement, low troublesome behaviour and low attention problems[55]. The finding that fewer attention problems showed the strongest association with KS4 achievement is in line with the findings previously reported in the non-cognitive capabilities section of this chapter, and also links with the finding that hyperactivity[56] is a risk factor for achievement[57] (Smith et al., 2021). The associations between dimensions of wellbeing and later educational outcomes held stable across gender, SEND and SES, suggesting that wellbeing factors relate to attainment outcomes for each of these groups of pupils (Gutman & Vorhaus, 2012).

Gutman and Vorhaus (2012) also found that dimensions of wellbeing are related to pupils' school engagement (positively impacted by emotional and social wellbeing) and progress (positively impacted by behavioural and sense of school wellbeing). These dimensions of wellbeing may impact upon academic attainment through several mechanisms including motivation and the relationships pupils have in school (previously discussed in the non-cognitive capabilities section of this chapter). Similarly, wider evidence from Sammons et al. (2014a) found that wellbeing is positively associated with pupils' perceptions of being valued at school and a positive behaviour climate. Wider evidence also suggests this relationship may continue beyond school, as young people not in education, employment or training (NEET) post-16 report feeling less happy than their peers (Taggart et al., 2014). In contrast to these findings, an analysis of the Programme for International Student Assessment (PISA) results in England found that life-satisfaction (a measure of wellbeing) showed no significant relationship with academic attainment (Kuhn et al., 2022).

Taken together, these findings demonstrate the predominantly negative impact that poor mental health and wellbeing has on pupils' academic attainment at age 16. Adolescent mental health continues to be an area of concern due to the growing scale of adolescent mental health needs (Newlove-Delgado et al., 2022), but with early support and intervention, pupils may be supported to develop strategies to help them to overcome the

[53] Correlation coefficients ranging from 0.10 to 0.33 across the wellbeing dimensions.
[54] Examples of 'awkward behaviour' include blaming others for mistakes and becoming easily annoyed (Gutman and Vorhaus, 2012).
[55] The correlation coefficients for low awkward behaviour, low activity problems and high school engagement were 0.22. The correlation coefficient for low troublesome behaviour was 0.28 and the correlation coefficient for low attention problems was 0.33.
[56] Smith et al. (2021) refer to 'hyperactivity disorder' in their study, which draws on data from the longitudinal study, GUS. We assume this is similar to attention deficit hyperactivity disorder (ADHD) which is the term used in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).
[57] Odds ratio of 2.17 in male pupils and 2.85 in female pupils, meaning that pupils with hyperactivity disorder are more than twice as likely to have lower attainment in KS4 than pupils without.

difficulties they face. For these reasons, mental health and wellbeing will be important factors to explore through EOPS-C.

2.5 Gaps and implications

This review so far has identified several implications for EOPS-C.

There is consistent evidence that pupils' attainment in secondary school is associated with cognitive capabilities, non-cognitive capabilities, as well as physical and mental health. It will therefore be important for EOPS-C to measure these factors and monitor their association with academic attainment over the course of pupils' secondary education. Measures of parental education, occupation and income, as well as home learning environment, will also be important to collect in order to understand their probable role as mediators and/or moderators in these relationships (the influence of these characteristics is explored further in Chapter 4).

The majority of the studies included in this review highlighted the need for further research to understand the causal associations between cognitive capabilities, non-cognitive capabilities, physical health, mental health and academic performance, as well as the direction of these relationships. Further research should also aim to increase understanding of the other factors in the lives of secondary school pupils which influence these associations. While several studies did control for pupils' background factors such as SES or IQ, they acknowledged that there are likely to be other variables that mediate and moderate the relationship that they did not account for, such as pupils' interest in a subject or parental ability to support their child's education. These factors would therefore be useful for EOPS-C to include.

Given the similarity and overlap between many of the cognitive and non-cognitive capabilities (for example the relationship between prior attainment and self-concept of ability), future research should aim to understand how the capabilities themselves interact with one another. It will also be important to understand which specific dimension(s) of multi-faceted constructs, such as executive functions, persistence, motivation, self-regulation or social-emotional skills, are the strongest predictors of academic performance. In addition, much of the research presented in this review was undertaken with typically developing children so there is a need to understand the effect of these factors for pupils with SEND (although it is likely to be beyond the scope of EOPS-C to prioritise this focus).

Further evidence on the influence of these factors will help inform teaching approaches and interventions which target the development of pupils' cognitive and non-cognitive capabilities and promote positive physical and mental health to ensure pupils have the tools they need to succeed in secondary school.

3. Theme 2: Special Educational Needs and Disabilities, experience of social services and adverse childhood experiences

Key findings:

- the research evidence shows that pupils with SEND are much less likely to achieve the same grades as their peers or to register for advanced qualifications. Both the level of provision to support pupils with SEND and type of SEND contribute to explaining these variations in attainment
- school staff can under-estimate the capabilities of young people with SEND. Young people with SEND can achieve more highly in schools with a higher proportion of young people with SEND
- parental engagement and involvement in their child's education is important for young people with SEND, looked-after children and those who experience adverse childhood experiences (ACEs)
- looked-after children have poorer educational outcomes compared to their peers, including lower attainment, increased absenteeism and exclusion. Significant additional risk factors include both pre-care experiences and age at entry into care (with those entering care in key stage 1 or 2 having a better educational trajectory in secondary school compared to those who enter in key stages 3 or 4). Protective factors include high levels of caregiver involvement in their education, high aspirations, use of specialist provision and stability of placements
- young people who have experienced ACEs, such as violence, abuse and neglect are more likely to have poorer educational attainment. Strong parent-child relationships and high parental aspirations help protect against the incidence of low attainment among young people who have experienced ACEs. Schools also have a role to play in supporting pupils by providing appropriate flexibility and support
- overall, the findings point to a wide array of potential interventions and support that could help young people within these groups achieve their potential, including interventions aimed at boosting parental confidence and additional training and support for teachers so that they set high expectations for all pupils. It also points to the need for earlier intervention and services for families experiencing particular challenges (such as parental substance misuse)

This chapter focuses on 3 groups of young people, namely those who have SEND, those who have experience of social services (either as being looked after through the care system or as children in need) and those who have experienced one or more adverse childhood experiences (ACEs). Children in need (CiN) are defined under the Children Act 1989 as *'a child who is unlikely to achieve or maintain a reasonable level of health or development... without the provision of services; or a child who is disabled* (Child Law Advice, 2022). In practice, a young person may fall into more than one of these groups.

The group of pupils with SEND in secondary education comprises those who receive SEN support in school and those who have an education, health and care plan (EHCP) in place. The proportion of pupils who receive SEN support has been increasing gradually from 350,693 (11% of all pupils) in 2015/16 to 425,070 (12%) in 2021/22. The trend in the proportion of children with an EHCP has followed a similar trajectory, increasing from 55,738 (1.7%) of secondary school-aged pupils in 2015/16 to 76,838 (or 2.2%) in 2021/22 (GOV.UK, 2022a). The number of CiN has fluctuated somewhat but overall has increased from 390,130 in 2015 (a rate of 336.6 per 10,000 children) to 404,310 in 2022 (a rate of 334.3 per 10,000) (GOV.UK, 2022b). Similarly, the number of looked-after children has been steadily increasing over time from 75,360 in 2018 to 82,170 in 2022 (GOV.UK, 2022c)[58]. Whilst the statistics are not reported for secondary school specifically, the number of children aged 10-15[59] who are looked after increased from 29,740 to 31,700 and the number of pupils aged 16+ increased from 17,290 in 2018 to 20,260 in 2022.

There are good reasons for examining risk and protective factors affecting the attainment of these particular groups of pupils, given their unequal educational outcomes.

Pupils with SEND have much lower attainment in comparison to their peers, with 18% of pupils with any type of SEND achieving a grade 5 or higher in English and mathematics in 2021/2, in comparison to 56% of pupils with no identified need (DfE, 2022a). Furthermore, only 23% of pupils with SEN support went on to higher education in 2022 compared to 49% of pupils with no identified need.

CiN have a higher prevalence of SEND than in the general population of secondary school-aged pupils. For example, in 2020/21, 24% of all CiN[27] were identified as requiring SEN support and a further 25% had an EHCP in place (DfE, 2022c). This means that the challenges faced by this group of children are similar to those who have SEND but are not CiN, therefore it is important to understand these in greater depth.

A total of 15 studies in this review provide evidence on the link between pupils with SEND, ACEs or those who have experience of social services, and their attainment outcomes. The studies use a range of methodological approaches, predominantly longitudinal design with several systematic reviews. Most of the studies (13 of the 15)

[58] Note that data reported for 2022 is not comparable with previous years as it needs to be revised following the 2021 census.
[59] This age group will include both primary and secondary school-aged pupils.

were based on UK data only. The majority were considered of medium value to the review in terms of the relevance and quality of design. Many of the studies extracted data from well-known data sets, such as ALSPAC, The Effective Pre-School, Primary and Secondary Education project (EPPSE) and the Children in Need and Children Looked After data sets. The studies had a range of limitations including:

- small sample sizes, underrepresentation of particular groups of pupils (such as minority ethnic groups)
- inability to disaggregate findings by school phase
- lack of information on administrative data sets
- among the studies that focused on looked-after children, there are several reported limitations due to a lack of data availability for some potentially important aspects of young people's journeys through the care system and high levels of participant attrition, thus limiting generalisability of findings
- almost all of the studies reviewed presented correlational data examining the relationships between attainment and a range of other factors. It is therefore difficult to draw conclusions as to whether specific factors play a causal role in variations in attainment for the groups of young people examined in this chapter

3.1 Young people with SEND

Four studies focused on exploring the attainment outcomes of young people with SEND. A significant theme in these studies is the importance of parental engagement, confidence in schools and expectation setting, which influence the attainment of young people with SEND.

A study by Barlow and Humphrey (2012) indicated that parental engagement and confidence in schools are crucial factors in contributing to improved educational outcomes for learners with SEND. The study found that individual factors, such as a young person's wider participation in extra-curricular activities and services, had the most significant impact on parental engagement and confidence. Ethnicity also appeared to influence parental confidence, with parents from black and minority ethnic groups, reporting significantly lower levels of engagement and confidence in the school. School-level factors also played a role: parental engagement and confidence was higher in schools which had higher levels of attainment and where there was a higher concentration of pupils at School Action (SA) stage. The study also suggests that increased parental confidence is associated with children attending smaller schools with better support systems, improved pupil behaviour and engagement.

Using data from the LSYPE study, Chatzitheochari and Platt (2019) investigated the impact of biological, socio-cultural and educational influences on the educational

trajectories of young people with SEND[60] in comparison to those who did not have SEND. The study found that parents' expectations about their child attending university significantly influenced young people's own university expectations but not their outcomes directly.

A longitudinal study by Cox and Marshall (2020) explored the educational engagement, expectation and attainment of young people with SEND in Scotland. Overall, the probability of achieving 3 good Scottish Highers (equivalent to A-levels) was similar for both SEND and non-SEND pupils registered to sit these exams, although early childhood SEND and the presence of learning or developmental disabilities lowered the probability of high attainment. However, pupils with SEND, especially those with learning or developmental disabilities, were less likely to register for advanced qualifications such as Scottish Highers, suggesting there was a relationship between SEND status and pupil expectations and aspirations. The findings suggest that pupils with SEND might be at risk of underachievement due to underestimated abilities on the part of teachers. The study also found that school exclusion was a risk factor that helped to explain the relationship between SEND and attainment.

Humphrey et al. (2013) investigated the influence of school and individual-level factors on the academic outcomes of pupils with SEND using a cross-sectional study. The findings indicated that a young person's eligibility for FSM within the school was negatively associated with attainment, with a medium effect[61]. On the other hand, linguistic diversity in the school cohort was found to be positively related to attainment among pupils with SEND[62]. In addition, schools which had higher levels of inclusivity (in terms of higher proportions of pupils with SEND), were associated with higher attainment among pupils with SEND.

Several factors relating to the type of SEND have also been found to affect attainment. Humphrey et al. (2013) found that more complex and/or significant challenges in cognition and learning were associated with lower attainment compared to moderate learning difficulties, while those with difficulties in other aspects of development, such as communication and interaction, demonstrated higher attainment. Behavioural issues were likewise negatively associated with attainment. On the other hand, strong attendance and positive relationships with teachers and peers were positively associated with attainment. The authors also found that, as might be anticipated, the level of SEN support required is also associated with attainment: pupils identified as requiring 'School Action Plus' (SA+) or having a statement of SEND (SSEN) had poorer attainment compared to pupils identified as requiring 'School Action' only (Humphrey et al., 2013).

[60] The study developed an overarching measure of disability which included young people with a wide range of conditions and impairments which are disabling in the school context. This single measure was generated from LSYPE questions on long-term illness and special educational needs.
[61] Effect Size: -0.17 in mathematics and -0.14 in English.
[62] Effect Size 0.10 in both mathematics and English.

3.2 Children in care

Seven studies in this review focused on investigating the attainment outcomes of looked-after children. According to a longitudinal study by Fleming et al. (2021), looked-after children in the UK have poorer educational outcomes compared to their peers, including lower attainment[63], increased absenteeism and exclusion[64] and higher post-school unemployment[65]. These impacts were also found to be independent of neurodevelopmental conditions and SEND, which tend to be more prevalent among looked-after children. However, further research is needed to determine whether these poorer outcomes are linked to care system attributes or pre-care factors, such as neurodevelopmental vulnerabilities, maltreatment, ACEs, and parental neurodevelopmental or psychiatric disorders. Fleming et al. (2021) suggests that placing children in care away from a home environment in which they experience adversity may improve some negative outcomes for this group, but more research is needed to explore additional factors influencing outcomes, such as time spent in care and age of first contact with social care.

A systematic review of 39 international and UK studies by O'Higgins, Sebba and Gardner (2017) aimed to identify factors associated with educational outcomes for school-age children in foster or kinship care. Age at entry into care may be a factor as several studies found that entering care as a teenager was associated with poorer educational outcomes and progress compared to children who entered care when they were younger. This may be related to the nature of the pre-care experience, which was found to have significant effects for later attainment. Caregiver involvement (such as parents/carers helping with homework), carers' and children's aspirations, and children's attitude to school were protective factors. Use of specialist provision (multidimensional treatment foster care) and stable placements also acted as strong protective factors. On the other hand, belonging to a minority ethnic group was related to lower attainment among children in care. Some of these findings are consistent with other evidence and have relevance to understanding the influences on looked-after children's outcomes in England. Nevertheless, the evidence from this study is limited in its application to England as the evidence was predominantly US-based and studies adopted various definitions of 'being in care'.

A qualitative study undertaken by Mannay et al. (2017) examined the educational experiences, perceived attainment, and aspirations of looked-after children in Wales, aiming to understand the impact of this label on their attainment. The study provides qualitative insights that participants' aspirations were similar to their peers. This led the authors to conclude that the 'looked-after' label did not appear to substantially affect pupils' self-concept and aspirations. However, pupils noted that they experienced disruption due to multiple placement moves, meeting with social workers and attending

[63] Looked-after children were more likely to achieve the lowest level of academic attainment with an Adjusted Odds Ratio (AOR) of 5.92.
[64] Incidence Rate Ratio (IRR) 1.27 and 4.09, respectively.
[65] AOR 1.45.

local authority care reviews at school. Protective factors included off-site meetings to limit disruption and stigma from peers.

A longitudinal study by Sutcliffe, Gardiner and Melhuish (2017) tracked the academic outcomes of looked-after children in England. The study identified 5 groups based on their academic trajectories including low achievement, late improvement, late decline, predominant[66] and high achievement. Overall, looked-after children had poorer educational outcomes compared to the general population. Risk factors included entering care later (in either key stage 3 or 4 but particularly in the latter key stage), being male, having multiple care periods, SEN status and type of care placement (independent living or residential presented a greater risk in comparison to foster care). Protective factors involved the length of time in care (with longer placements showing better outcomes) and the educational stage at which the child entered the care system (with those entering care in key stage 1 having the best educational trajectory).

A longitudinal study for DfE (2019) investigated the characteristics and interactions of children receiving social care services and their educational outcomes from early years through to higher education. The study found that young people in need of social care services in the year of their GCSE exams were about 50% less likely to achieve a strong pass in their English and mathematics GCSEs compared to other pupils not requiring social care services[67]. Furthermore, pupils who were identified as being CiN at some point in the 4 years leading up to GCSE exams were between 25% and 50% less likely to achieve a strong pass. Pupils who were identified CiN were around 3 times less likely to study A-levels or equivalent qualifications at age 16. The study found that including school exclusion and absence in the analysis slightly decreased the strength of associations between social care status and attainment. This suggests that school attendance may play a role in mediating the relationship between experience of social services and attainment outcomes, and may thus be an important focus for intervention. Wider evidence from beyond the reviewed studies also echoes this, finding that young people who have experienced care are more likely to have been persistently absent, excluded or moved schools (Harrison et al., 2023).

Berridge et al. (2020) conducted a mixed-methods study exploring the educational pathways, attainment and progress of CiN and looked-after children in England, compared to other pupils. They identified that such children had lower attainment and progress at each key stage. Moreover, children who experienced social care intervention on multiple occasions and/or in multiple forms achieved lower academic attainment, compared to those who had experienced a single intervention, including in the form of entering long-term care. This reflects the important role of relative stability in affecting outcomes. Four main themes emerged: the importance of consistency and stability; social emotional and mental health difficulties; school strategies and teacher

[66] The Predominant group had the largest group of young people and is used as the reference group for the other trajectory groups.
[67] A strong pass at GCSE is defined as grades 5 to 9.

relationships; and peer relations. The study recommends increased equality in support, extending financial aid to CiN (for school uniforms, computers and internet access) and tackling poverty, improving teacher training and awareness, and making both CiN and looked-after children more visible in schools.

3.3 Adverse Childhood Experiences (ACEs) and multiple risk factors

Four studies provided evidence on the impact of adverse childhood experiences (ACEs) on young people's attainment outcomes. ACEs are traumatic events or stressors that occur during a person's formative years, typically before the age of 18. These experiences can have a significant impact on a child's development and wellbeing, potentially leading to long-term physical, emotional and social consequences. ACEs can include: physical, emotional and sexual abuse; physical and emotional neglect; and household challenges such as parental mental illness, incarceration, substance abuse, domestic violence and parental separation or divorce (Lacey & Gondek, 2021).

Houtepen et al. (2020) used longitudinal data from ALSPAC to explore the association between ACEs (experienced between 0 and 16 years old) and educational attainment (at 16 years old)[68]. Of the almost 10,000 pupils included in the study, 84% were reported to have experienced at least one ACE and 24% had experienced 4 or more ACEs. Parental mental health problems was the most prevalent ACE identified, with 49% of children exposed to this ACE[69]. The study found that experiencing just one ACE was associated with lower educational attainment[70], with emotional neglect being the most strongly associated with poor GCSE outcomes[71]. Even after adjusting for socioeconomic and family factors, the number of ACEs a young person experienced was important, with those experiencing 4 or more ACEs doubling the odds of obtaining fewer than 5 GCSEs at grade C or above. The authors suggested that policy initiatives should encourage interventions that consider a broad range of factors that impact on educational outcomes, rather than focusing specifically on young people in low SES households.

In contrast, a study by Jones, Gutman and Platt (2013) concluded that, overall, young people's attainment is remarkably resilient to stressful life events[72]. The study drew on ALSPAC and MSC data to explore the association between a range of stressful childhood events and attainment at KS3 and 4, as well as wellbeing outcomes. The

[68] This study considered ACEs as the experience of sexual, physical and/or emotional abuse, emotional neglect, parental substance abuse, parental mental health problems or suicide attempt, violence between parents, parental separation, parental criminal conviction and/or bullying between birth and age 16.
[69] Parental mental illness was defined in the study as the parent ever being 'diagnosed with schizophrenia or hospitalised for a psychiatric problem' or, during the first 18 years of the child's life, '[having] an eating disorder, [using] medication for depression or anxiety, [attempting] suicide, or [scoring] above previously established cut-offs for depression' (p. 5, Houtepen et al., 2020).
[70] Odds Ratio for fewer than 5 GCSEs at grade C or above 1.37.
[71] Odds Ratio for fewer than 5 GCSEs at grade C or above 1.90.
[72] Note that this study used different variables from the study by Houtepen et al. (2020), which may explain the contrasting findings.

stressful life events investigated in this study included serious illness (experienced by either a parent or the child themselves), domestic violence/abuse, parental substance abuse and parental divorce. The study found that most stressful events were not significantly associated with attainment after controlling for prior attainment, SEND and FSM eligibility[73]. However, the study did find that attainment at KS3 was negatively associated with being a victim of abuse, violence or bullying, and moving schools between the ages of 7 and 10 years[74]. Pupils' KS4 attainment was negatively associated with the experience of a family member being arrested when the child was aged 7 years and under, and domestic violence/abuse experienced between the ages of 7 and 10 years[75]. Furthermore, the study found that numerous stressful life events were negatively associated with a range of wellbeing indicators at age 13 years. The authors conclude that the negative consequences of stressful life events may be difficult to detect, and that while they present a risk to outcomes, they are not deterministic.

Fry et al. (2018) conducted an international systematic review and meta-analysis on the impact of childhood violence on educational outcomes. They found that young people who had experienced violence were more likely to drop out of secondary school and less likely to graduate. All forms of violence had a negative relationship with academic achievement, but sexual violence had the most significant negative relationship with attainment. The strength of association between types of violence and some educational outcomes differed by gender. Experiencing bullying, physical or sexual violence in childhood had the strongest association with school absences among male pupils. Experiencing sexual violence had the strongest association with absenteeism among female pupils. Females who experienced emotional violence were at increased risk of experiencing other negative educational outcomes, such as repeating a year or requiring additional learning support and intervention. The study identified 7 evidence-based approaches to reduce violence and the effects of violence in childhood, including enforcing laws; fostering positive social norms and values; ensuring safe environments in the home or at school; offering support to parents and caregivers; financially empowering families; enhancing access to assistance and support services; and helping children acquire life skills and remain in education.

Finally, a systematic review (Chen, 2016) examined the impact of parental chronic ill-health on children's educational attainment. The review showed that children of parents with chronic illness have poorer educational outcomes, associated with a range of risk factors including poor school attendance and disrupted and compromised parenting due to their ill-health (such as functional impairment, management of medical needs and treatments). Protective factors helping to mitigate against the impact of parental ill-health included higher parental educational levels, strong parent/child relationships and better parental supervision.

[73] Even though the analysis controlled for confounders, it is possible that stressful events experienced earlier in childhood may have contributed to or co-existed with low prior attainment, SEND or FSM status.
[74] Statistically significant at the 0.10 level or below.
[75] Statistically significant at the 0.10 level or below.

Wider evidence also offers insights on the association between ACEs and poorer academic outcomes, including with lower school engagement, greater absence from school, behavioural difficulties, lower grades and higher rates of school drop-out (Bellis et al., 2023).

3.4 Gaps and implications

This chapter focused on research that examined factors impacting the educational outcomes of young people with SEND, those who have experience of social services (either as being looked after through the care system or as children in need) and those who have experienced one or more ACEs.

The research on young people with SEND highlights that factors of parental engagement, confidence in schools and parents' expectations play a significant role in shaping pupils' academic trajectories. Additionally, school-level factors such as inclusivity and support systems, teacher expectations and individual factors such as pupils' prior attainment and needs, also impact pupils' educational experiences. Overall, the findings suggest the need for early intervention, raising educational expectations of these young people and providing better support systems to improve the educational outcomes of pupils with SEND. Future research is needed to address limitations in the existing studies, such as unexplained SEND effects (that is the amount of variation in attainment between those with SEND and those with no SEND that is not explained) and the lack of focus on special schools, to further enhance understanding and inform policy and practice.

The educational outcomes of looked-after children were explored in several studies. Looked-after children have poorer educational and health outcomes compared to their peers, including lower attainment, increased absenteeism and exclusion. Research into the effects of factors such as age, gender, ethnicity and SEND in this group have mixed findings. Pre-care experiences, birth parents' characteristics and age at entry into care were identified as significant risk factors. In the case of the latter, entry into care in KS3 or 4 was more closely associated with poorer educational attainment than entry at an earlier age (in KS1 or 2). Caregiver involvement, aspirations, attitude to school, use of specialist provision and stability of placements were protective factors. More research is needed to explore additional factors influencing the educational outcomes of looked-after children, such as time spent in care and age of first contact with social care.

Finally, ACEs are associated with lower educational attainment, even after adjusting for socioeconomic and family factors. Risk factors include parental chronic illness, domestic abuse, victimisation or abuse outside of the family and homelessness/being placed in care. There is some evidence that the negative impact of ACEs can be mitigated, at least in part, by higher parental education, strong parent-child relationships, high parental aspirations and expectations for the young person and positive peer relationships[76].

[76] The role of parents is set out in Chapter 4 and the role of positive relationships with teachers and peers is explored more fully in Chapter 5.

These studies highlight the importance of understanding young people's exposure to ACEs and their social environment to enable further exploration of the impact on educational outcomes and interventions that target these factors.

In conclusion, this chapter suggests there are complex interplays of factors that affect the educational experiences and outcomes of secondary pupils with particular needs and experiences, and these are therefore important for EOPS-C to measure.

4. Theme 3: Home environment

Key findings:

- this review provides consistent evidence of a strong association between young people's attainment and the socio-economic circumstances of their home environment. Young people living in a family with a low income, low parental education and those living in disadvantaged neighbourhoods are more likely to be at risk of lower attainment
- there is evidence that aspects of the home environment can be protective and promote better attainment outcomes for young people. These include high levels of engagement and academic socialisation from parents, such as parental support for their child's learning, high expectations, and talking about school and learning. Furthermore, parenting styles characterised as positive, involved and harmonious were shown to improve academic attainment
- physical resources, such as books and artwork, and enrichment activities, such as educational visits and private tutoring, were found to predict higher academic achievement. Most young people have access to digital resources and the findings show mixed evidence of the impact of digital technology on educational outcomes suggesting that life online can be either a risk or protective factor for young people's attainment, depending on how it is used
- it will be important for EOPS-C to measure a range of socio-economic indicators as well as key aspects of parenting behaviour, the home learning environment and use of digital technology

This chapter explores the relationship between the home environment and young people's academic attainment in secondary school. In this review, we consider the home environment in terms of socio-economic circumstances (including poverty, parental income, education and employment status, housing and neighbourhood area), parenting behaviours and attitudes (including formal and informal parental support and parenting style), family structure (including impact of siblings and having a parent living in a separate household) and materials and resources (including use of digital technology such as social networking sites and video games). This chapter goes some way to exploring the mechanisms underpinning the relationship between the home environment and young people's attainment, showing how and why these factors are influential. For example, suggesting the ways parents with higher income can provide additional private tuition and resources, or that parents with greater educational attainment may be more likely to engage and support young people with their learning (Korous et al., 2022). However, these pathways are not always clear within the literature. This will therefore be an important consideration for EOPS-C.

Households are considered to be in poverty in the UK if their income is 60% below the median household income after housing costs are accounted for that year (Joseph Rowntree Foundation, 2022b). More than 1 in 5 of the UK population are living in poverty and 4.3 million of them are children and young people (Joseph Rowntree Foundation, 2022a). However, this may be worsened further by slow real-wage growth and lower value median income, which suggests other indicators of poverty, such as material deprivation, are warranted. There has also been a notable increase in the number of young people who have experienced persistent poverty throughout their childhood, with a considerable rise in 2021 in the proportion of pupils who have always been eligible for FSM (Tuckett et al., 2022). The prevalence and effects of poverty on young people's attainment means it is imperative for EOPS-C to measure it, alongside other socio-economic factors related to poverty, not least because of concerns about the impact of the current rising cost of living on educational attainment (Montacute, 2022; ONS, 2024). The potential for other home environment factors (such as parental attitudes and behaviours) to exacerbate these inequalities, or protect against them, also means they are important aspects for EOPS-C to measure. There has also been a resurgence of focus on these factors due to the COVID-19 pandemic which led to a greater emphasis on parents' influence on young people's education while they were learning at home (Outhwaite, 2020).

The review identified 23 papers providing evidence on the link between young people's home environment and their attainment outcomes. The selected studies used a range of methodological designs, including longitudinal analysis, meta-analysis and systematic reviews, single quantitative studies and mixed-methods studies. The majority of studies were conducted in the UK, with the exception of eight meta-analyses and one systematic review, which were based on United States (US) or other international evidence. This is reflective of the choice to prioritise UK research within this review. However, this also indicates that there is currently a limited number of meta-analyses within this topic area which are focused on the UK context. These 23 items are the main focus of this chapter, although almost all studies in the review provided some insights on the association between socio-economic status (SES) and children's attainment outcomes by controlling for this factor in analysis.

The studies were rated as of medium to high value in terms of both relevance to the focus of the review and quality of the design. Studies tended to measure attainment outcomes in mathematics and English, cognitive development and emotional skills. Studies generally used KS3 and KS4 national assessments, including GCSEs, or other standardised tests to measure outcomes.

Limitations of the studies within this theme include:

- the possibility of various forms of bias, including publication bias, sample and response bias created by non-response and attrition (generally favouring respondents from higher socio-economic backgrounds) and social desirability biases for studies using self-reported data.

- results from studies included also often present associations, rather than causal relationships between factors and educational attainment.
- there did not seem to be an agreed definition of 'home learning' or 'parental engagement' in the literature. While some studies offered detailed definitions, others were vague on details and measurements used. This makes it more difficult to determine which aspects are being measured and tested, and what should be of importance for EOPS-C.

4.1 Family socio-economic circumstances

Nine of the reviewed studies focused on the influence of family SES on attainment outcomes, including exploring the effects of household income (and poverty), parental education, parental employment and neighbourhood.

Selvitopu and Kaya (2021) found a significant relationship between SES (indicated by family income, parental education, home resources, or a combined measure of these indicators) and pupils' academic performance across all subjects, with large effects for science[77] and languages[78], and larger still for mathematics[79]. In a systematic overview of meta-analyses exploring all components of SES (including household income, parental education and composite measures), Korous et al. (2022) found a small to medium positive association[80] between higher SES and the development of higher cognitive ability and achievement[81].

Bukodi, Goldthorpe and Zhao (2021) examined the effects of SES (parental class, income, status and education) on pupils' educational choices, for example, whether young people stayed on to take A-Levels and applied to university, and if so, which one. They concluded that SES factors do affect later educational choices independently from prior academic performance. However, this independent effect was only shown for two specific SES factors, namely parental education and status[82]. SES explained up to a third of the probability of pupils making the transition to A-Levels, though the effect became smaller for subsequent educational transitions.

Lessof, Ross and Brind (2019) suggest that disadvantages accumulate and that the more disadvantages a young person faces, the greater the impact on their KS4 attainment. The authors examined 7 types of disadvantage to explore this hypothesis further, 5 of which relate to the home environment: young people receiving FSM, mothers having no

[77] Effect size 0.26.
[78] Effect size 0.25.
[79] Effect size 0.37.
[80] The majority of effect sizes were between 0.10 and 0.30.
[81] Measures of cognitive ability were based on performance on tasks that measure cognitive skills and included executive function tasks. Measures of achievement were based on standardised tests of achievement. The studies included various age groups, most commonly aged 5-18 years.
[82] Parental status is measured in the study using the 'status scale' based on the occupational structure of close friendships, developed by Chan and Goldthorpe (2004).

qualifications, lack of parental engagement in education, parents arguing with the young person most days and not having an internet-connected laptop. The number of disadvantages a young person experienced had a near linear negative relationship with their KS4 attainment. For example, the likelihood of lower attainment significantly increased among young people experiencing 2 rather than just one of the disadvantages, and approximately trebled among those experiencing 3. The authors found that, together, the 7 types of disadvantage explained 35% of the total variation in attainment.

Evidence from wider literature has distinguished different indicators of SES and reported that these are associated with different learning experiences. Easterbrook et al. (2023) considered several indicators of SES (self-reported financial situation[83], eligibility for FSM and parental education) and found that financial situation was more clearly associated with the home environment, with those financially struggling reporting environments that were difficult to work in (noisy, lack of internet and lack of space to work). They also found that young people who had at least one parent with a bachelor's degree were more likely to have someone in the home who was confident supporting their home-learning during the pandemic.

In their systematic overview of meta-analyses, Korous et al. (2022) found mixed evidence on whether the influence of SES on academic achievement varies by age group. One of the included meta-analyses suggested that the effect is larger for older children, with others finding little evidence of difference by age. Similarly, 4 meta-analyses examined moderation by year group (grade level), with one study reporting a larger effect for lower school year groups, one suggesting larger effects in higher year groups, while others found no evidence of moderation across year groups.

4.1.1 Household income

Reflecting the influence of household income more specifically, Shaw et al. (2017) found that pupils from low-income backgrounds who were eligible for FSM made less progress at secondary school than their peers who were not eligible, regardless of prior attainment. Another study (Sylva et al., 2014) reported differences in GCSE grades for pupils receiving FSM compared to non-FSM pupils, equivalent to a full GCSE grade in English or mathematics. Classick et al. (2021) also identified that socio-economically advantaged pupils performed better in reading, mathematics and science than their peers. They found that the gap in reading, mathematics and science achievement between the most and least socio-economically disadvantaged pupils was the largest, compared to those pupils who were marginally more affluent.

Shaw and Morris (2020) provided insights and potential explanations as to why poverty is detrimental, discussing factors mediating the relationship between poverty and

[83] Based on an adapted item from the European Social Survey (2021) asking parents whether or not their household had enough income to get by on. Responses were grouped into categories: struggling, average and comfortable.

attainment. For instance, they found that pupils in the poorest households were more likely to never read books outside of school, and less likely to do homework and get help from their parents with homework. Furthermore, wider evidence from Easterbrook et al. (2022) suggests that FSM eligibility is associated with lower attainment 8 scores[84]. They found the relationship between FSM eligibility and attainment was mediated by identity compatibility[85] (that is, the extent to which pupils felt their own identity was compatible with that of a high-achieving pupil) and that the gap in attainment could be partially explained by pupils with low SES having lower levels of identity compatibility.

4.1.2 Parental education

Four studies identified higher parental education as the most protective SES factor of young people's educational attainment. One study (Bukodi et al., 2021) which looked at several SES factors concluded that parental education was the most influential aspect of SES, above parental class, income or status. Nieuwenhuis, Kleinepier and van Ham (2021) found that parental education positively predicted educational attainment for young people. Similarly, Sylva et al. (2014) suggest that parents' education success was the strongest influence of exam success at KS4, when looking at a number of individual, family, home learning environment and neighbourhood measures. They found that pupils whose parents held degrees achieved 141 more GCSE points than pupils with parents who held no qualifications. A study by Evans and Field (2020) also reported that higher parental qualifications were associated with higher attainment for young people. They found having a parent with an O level, an A level and a degree positively predicted high attainment in mathematics for young people, even when controlling for IQ.

Wider evidence supports these findings. For example, ONS analysis (2014) looked at the impact of a father's education compared to a mother's education for educational outcomes. They found that father's educational level had the largest impact on the educational attainment of their child[86]. Furthermore, Siraj et al. (2014), as part of the EPPSE study, explored the influence of different phases of education on academic outcomes and looked at young people who were NEET. They reported that parents of NEET young people generally had lower levels of qualifications, compared to the rest of the EPPSE cohort.

4.1.3 Parental employment status

Parental employment status, that is, whether parents are in paid work or not and the type of work they do, is inherently related to their income and is therefore associated with young people's attainment outcomes. The review looked at 3 studies that explored the

[84] Attainment 8 scores are the average grade across eight GCSE assessments young people take at the end of year 11.
[85] Identity compatibility is described as the 'perceived compatibility between one's social identities and the stereotype of a high-achieving student' (Easterbook et al., 2022).
[86] 7.5 times more likely to achieve low educational outcome if their father has a low level of education, compared to having a highly educated father.

impact of parental employment. Selvitopu and Kaya (2021) conducted a meta-analysis of 48 independent studies and found that there was a large positive correlation between SES and academic performance[87], with parental occupation playing the most important role in pupils' performance. Rokicka (2016) similarly found a statistically significant and positive association between parental engagement in the labour market and the number of final secondary school exams taken by young people. Sylva et al. (2014) measured 'family SES' using parental employment status, looking at pupils with parents in professional non-manual employment and unskilled employment. They suggest that family SES was associated with young people's grades in GCSE English and mathematics.

Rokicka (2016) also found that young people whose parents worked very long hours performed worse at GCSE level. The study suggests that an increase of 10 working hours a week in overtime and commuting for both parents, compared with peers whose parents work fewer hours, leads to a small decrease in the number of GCSEs passed at grades A*–C, when controlling for other characteristics. However, they suggest that the negative effect of parents working very long hours is much lower than the positive effect of parental employment.

Rokicka (2016) also explored the relevance of mothers' and fathers' employment and number of hours worked on their children's academic attainment. They found that while there was a trend for fathers working long hours to be associated with fewer GCSEs passed by their children, this was not always statistically significant. However, the effect of mothers' working hours on young people's GCSE performance was larger and more robust. The evidence suggests that mothers' employment has a positive impact on their children's performance at school, unless mothers' work and commuting time amounts to more than 38 hours per week. It may be interesting to consider working hours that account for any time spent commuting, in the light of increased frequency of home-based working following the COVID-19 pandemic.

4.1.4 Neighbourhood area

Three studies included in this review provided evidence on the impact of neighbourhoods on young people's attainment. Karyda (2020) draws on longitudinal data and suggests that living in a disadvantaged neighbourhood increases the chance of a young person being NEET by the age of 16 to 19. The study found that living in the highest crime neighbourhoods was associated with an 80% higher probability of being NEET, in comparison to living in a lower crime area. This finding held after controlling for a number of characteristics, including gender, ethnicity, parental education, social class background, KS2 attainment and a young person's risky behaviour, which suggests there is an independent effect of neighbourhood deprivation.

[87] Moderation effect that ranged from 0.20 to 0.31.

Sylva et al. (2014) summarised findings about the influences on young people's GCSE outcomes from the EPPSE study. This included measurement of neighbourhood disadvantage using the Income Deprivation Affecting Children Index (IDACI) and Index of Multiple Deprivation (IMD) measures. The authors found that, using both these measures, pupils with greater levels of deprivation were predicted to achieve poorer GCSE scores. Sylva et al. (2014) argue that this confirms that neighbourhood poverty influences the educational outcomes of young people. A subsequent study using the same measures also demonstrated a significant negative relationship between attainment and neighbourhood disadvantage (Sammons, Toth and Sylva, 2015). These findings suggest that young people living in areas with greater levels of deprivation are less likely to attend advanced level courses such as AS or A-levels, compared to pupils living in more affluent areas (Sammons, Toth and Sylva, 2015).

Nieuwenhuis, Kleinepier and van Ham (2021) examined the role of neighbourhood poverty and school poverty in educational attainment. They found that neighbourhood poverty leads to lower educational attainment for young people, regardless of the school they attend. Furthermore, the longer a young person experiences neighbourhood poverty was found to be important, with prolonged exposure between the ages of 10 and 16 years being related to lower educational attainment. This evidence highlights the role of enduring poverty in relation to lower academic achievement.

4.2 Parental attitudes and behaviours

There is a significant amount of research on and policy interest in parental attitudes and behaviours, both as risk and protective factors for young people's attainment. One reason for this is that these are factors which are seen as potentially 'malleable' to intervention. These include formal and informal home learning support, such as parental engagement in education and parenting styles. The studies included within this review suggest that parental attitudes and behaviours do have an influence over young people's attainment outcomes. However, it's important to highlight that SES factors are pervasive and can limit the impact parental behaviours have overall.

4.2.1 Formal and informal home learning support

Nine studies provided evidence on the relationship between home learning support and young people's educational achievement. These studies provide strong evidence that parental engagement in young people's education and school work is positively associated with higher attainment outcomes. Six of the meta-analyses provided information to enable sub-group comparisons. Evidence suggests the strongest effect of parental involvement is found in the oldest pupils in secondary school, followed by primary school-aged children. This is particularly interesting and perhaps contrary to expectations, given the increasing independence of older pupils.

4.2.2 Parental encouragement of their children's academic engagement and aspirations

There is considerable evidence to support the positive relationship between parents valuing education and the attainment of their children. For example, a paper by Kim (2022), based on 23 international meta-analyses over the past 50 years, concluded that there is a positive association between parental involvement and achievement. Parental involvement was defined here as 'specific strategies that parents used which were intended to enhance their children's achievement-related outcomes' (Kim, 2022, p.6). Overall, the largest effect was found for academic socialisation (this was defined as parents communicating the value of education, expectations of school and talking about school and learning)[88].

Similarly, an international meta-analysis of 52 empirical studies by Kim and Hill (2015) found that parental involvement in education was positively associated with pupil achievement. Parental involvement was defined as a combination of academic socialisation (discussed above), school involvement (including attending parent-teacher meetings or volunteering at school) and home involvement (including helping with homework or reading with their child). The strength of the relationship varied by type of involvement, with the correlations for academic socialisation being the highest, followed by school involvement and home involvement. The authors suggest that the relationship between parental involvement in education and the young person's academic outcomes was equally strong for both fathers' and mothers' involvement, indicating that both parents have a positive role to play in this sense - although mothers tended to be more involved in their child's education, on average, than fathers. However, when looking at differences by year group for all three predictors, the authors found that mothers' involvement was more strongly associated with achievement for pupils in secondary school compared to primary school pupils, which echoes the findings from Kim (2022). Kim and Hill (2015) suggest that this is because there is less expectation for parental involvement at secondary level and this therefore leads to more variability in terms of whether parents get involved or not.

Another meta-analysis (Camarero-Figuerola et al., 2020) showed a positive relationship between parental involvement and attainment, in terms of average grades. They reported that pupils who had parents with high levels of involvement in their education tended to have greater achievement and future academic success.

Stokes et al. (2015) identified parental expectations and aspirations as a key protective factor for explaining the higher attainment of pupils from ethnic minority backgrounds. Their review reported that parents from ethnic minority backgrounds on average had more positive attitudes towards education and higher aspirations, which were significantly related to young people's increased educational attainment. Parental aspirations were also found to influence post-16 pathways in more disadvantaged pupils, with Schoon,

[88] Effect size 0.29.

Burger and Cook (2021) finding a small positive association between both parental aspirations[89] and expectations[90] and university enrolment among first generation university pupils, even when accounting for prior attainment.

A paper by Mayo and Siraj (2015) reports on 35 case studies, including interviews with children and parents, investigating parental involvement with school for primary and secondary pupils from working-class families. They found that, in families with young people who were succeeding above prediction (SAP), their parents were talking about school and learning on a daily basis. This involved parents asking their children about school and communicating their high aspirations and expectations for their children regarding homework, classroom behaviour and future education. Where parents were involved in their child's education, the young people reported feeling happy, encouraged and supported. As they got older, young people were given more autonomy within their school life, but parents maintained emotional support. In contrast, for young people who were progressing as predicted (PAP), parents and young people both perceived academic learning as a requirement rather than something to be enjoyed or valued.

Siraj-Blatchford et al. (2013) found that parents of children from low SES backgrounds helped their children succeed by setting high standards and having high academic aspirations for their children. This type of parenting was called 'active cultivation' and characterised as parenting that provided supportive emotional, practical and relational support for learning.

Sammons et al. (2015) found that the home learning environment is a positive predictor of pupils' academic attainment at age 14 and 16, even when controlling for the influence of various individual, family and neighbourhood characteristics. Parental interest was shown to predict a significantly higher probability of a pupil going on to achieve five or more GCSEs at age 16, including English and mathematics with grades A*-C, than pupils whose parents had shown low levels of reported interest at age 14. Parental interest was shown through talking to their children about schoolwork, school experiences and subject choices for GCSE. Tan's (2017a) international meta-analysis of 41 studies involving children and young people (ages 5 to 18) suggested a positive and significant relationship between attainment and parental-child discussion, parent and child cultural participation and parental educational expectations for their children. The findings showed that the effects for older children were larger than those for younger children. Although it is not clear whether this is a developmental effect (older children being able to engage in more or better communication) or an accumulation effect (from being exposed to parental discussion/input over time), this corroborates findings discussed previously, suggesting that older children continue to be influenced by positive informal home learning environments.

[89] Effect size 0.08.
[90] Effect size 0.05.

In line with these findings, Lessof, Ross and Brind (2019) estimated that parental disengagement and poor parent-child relationships meant young people had attainment of around 9 grades lower than those with more supportive parents, while controlling for other disadvantages. The authors identified a lack of parental engagement as including low engagement with parents' evenings and school reports as well as an absence of discussion about the young person's progress and future plans.

A systematic review by Huat See and Gorard (2015) provided further evidence on the link between parental involvement and attainment, and suggested that this relationship was causal to some degree. For young people of school-age, two kinds of parental behaviour were shown to have positive associations with school outcomes. This included home-school partnerships as well as parents' interest in their child's academic activities. Such attitudes and behaviours are manifested by: parents discussing academic activities with their child during early adolescence; supportive family relationships that encourage development of knowledge, skills and personal characteristics; and regular (weekly) home-school learning and communication activities.

4.2.3 Parental involvement with school and homework

A few studies considered parental involvement with school and homework separately from parental encouragement.

Rothon, Goodwin and Stansfeld (2012) found greater parent involvement at school to be positively associated with educational attainment, with pupils whose parents engaged in at least one activity at their school being more than one and a half times more likely to achieve five A*-C GCSE grades (including English and mathematics), compared to cases where parents were not involved at all[91]. Hampden-Thompson and Galindo (2017) investigated the effects of a positive parent-school relationship, measured as a combination of the clarity of information provided by the school on how the pupil is progressing, how easy the school made it for the parent to be involved and how easy the parent found it to deal with staff at the school. Together, these factors were found to be a predictor of GCSE achievement, albeit mediated by the degree to which parents were satisfied with the school in terms of the pupil's progress, the subjects offered, the interest teachers showed in the pupil, discipline and how well the pupil got on with their peers (Hampden-Thompson & Galindo, 2017).

Kim (2022) found evidence of a relationship between parental involvement with school and their children's attainment at secondary school, although the size of this relationship was smaller than for academic socialisation[92]. Similarly, wider evidence (Jeynes, 2007) examined specific components of parental involvement and found that 'parental style' (explored further in the next section) and 'parental expectations' had a larger impact on

[91] OR 1.60 when adjusting for gender, parental social class and ethnicity.
[92] Effect size of 0.12

young people's educational outcomes, compared with other aspects such as household rules, and parental attendance and participation in school events.

Studies included in this review found little evidence of a link between formal home learning activities, such as homework help, and young people's outcomes. Kim and Hill (2015) and Kim (2022) looked at homework help from parents as a sub-type of home based involvement and found that there was either null effects or non-significant effects for young people's academic outcomes. This is an interesting contrast to primary-age children, where formal home-learning support is more influential (Harland et al., forthcoming). Authors suggest that this null association between homework help and academic attainment may be because parents often help with homework when their children are struggling academically. It may also be because pupils of secondary age increasingly work more independently.

4.2.4 Parenting styles

Other evidence in this review suggests a link between parenting style and educational outcomes. For example, Rothon, Goodwin and Stansfeld (2012) found that having a good parent-child relationship[93] and regularly eating an evening meal as a family, were associated with higher odds of reaching the educational benchmark of 5 or more A*-C GCSEs. The odds of achieving the GCSE benchmark was more than twice as likely for pupils who ate an evening meal with their family 6 or 7 times a week, compared to those who did not have any family evening meals, even when accounting for parental social class[94].

Furthermore, Rothon, Goodwin and Stansfeld (2012) found that a high level of parental surveillance (monitoring their child's activities) was associated with high achievement. They reported that young people exposed to higher parental monitoring had nearly one and a half times the odds of high achievement compared to those with low parental surveillance. Other evidence (Camarero-Figuerola et al., 2020) suggests that excessive parental involvement has less influence on academic success compared to involvement which is focused on clear objectives. The authors argue that this is because unnecessary over involvement can be perceived as intrusive. Therefore, they suggest that there needs to be a balance between providing support and allowing autonomy for young people. Similarly, a longitudinal study by Evans and Field (2020) found that a harmonious parent-child relationship at age 11 is a substantial predictor of mathematics attainment trajectories across the transition from primary to secondary education. In this case, 'harmony' was measured by observers assessing the amount of conflict within the parent-child interaction on a 5-point scale.

[93] Measuring the relationship with both mother and father.
[94] Based on parental occupation used in the National Statistics Socio-economic Classification (NS-SEC).

4.3 Family structure

Three of the reviewed studies provide evidence on the relationship between family structure and young people's attainment. Nicoletti and Rabe (2019) explored the impact of sibling spillover effects[95] on school achievement. They found a statistically significant positive effect[96], such that an increase in an older sibling's test scores corresponded with an increase in the younger sibling's attainment score. The authors highlighted further effects with spillover from top-achieving older siblings being more than twice as high as those from bottom-achieving ones. Young people from low-income backgrounds are more likely to have an older sibling who is not performing well in school.

Karyda (2020) found that having a parent living in a separate household[97] doubled the odds of entry into the NEET group (see ACE section in Chapter 3 for discussion around parental separation and divorce). However, wider evidence (Hampden-Thompson and Galindo, 2015) indicates that when controlling for background characteristics and income measures, there is no significant difference in academic outcomes between young people with stable lone parents or cohabiting biological families, compared with young people in stable married biological families. Therefore, they suggest that it is the change or instability of family structure that affects young people's attainment.

4.4 Resources and enrichment activities

Six studies highlighted how physical materials and resources young people have available in their homes may contribute to educational outcomes. For example, Tan (2017a) found that access to home educational resources was a significant predictor of pupils' achievement. This included reading materials, learning facilities, literature and artwork.

According to Sammons et al. (2015), young people who spent time reading, went on educational visits or to the library with their families at age 14 gained higher total GSCE scores than their peers who engaged in these activities less often. Furthermore, they suggest that young people engaging in academic enrichment activities at medium or high levels significantly increased their chance of gaining five or more GCSEs with A*-C by almost 3 times. Stopforth and Gayle (2022) similarly found that reading-related activities and parental reading behaviours were influential, potentially operating through 'passive role modelling'. However, engagement in highbrow cultural activities (that is, visiting the theatre, museums or historical places) was not found to be significantly related to attainment.

Korous et al. (2022) found that materials in the home environment significantly predict cognitive abilities and academic achievement. They suggested that materials and

[95] The process by which the achievement of a child is transmitted to their younger sibling.
[96] Effect size 0.11.
[97] The paper did not include a definition of what this means in practice, so it is not clear whether this includes or excludes own household parents who do not live with their children but see them regularly.

resources available through the home are a mechanism of SES. For example, parents with higher income are more likely to spend money on private lessons which increases a young person's knowledge. These resources could help to explain some of the relationship between SES and performance measures of cognitive ability and achievement (Korous et al., 2022).

Shaw and Morris (2020) identified that pupils from low-income backgrounds are less likely to experience a high-quality home learning environment. These pupils often lack material resources for home learning, such as books and laptops, as well as academically enriching cultural and sporting activities. They also reported that these pupils are much less likely to have access to private tuition. They suggest this could be because parents lack financial resources, are time-poor or lack the cultural capital making some activities inaccessible. Lessof, Ross and Brind (2019) used internet connection as a measure of disadvantage in their study and also found that not having an internet-connected computer was associated with lower KS4 attainment.

4.4.1 Life online

Physical materials and resources also include digital technology, such as mobile phones, televisions and computers. Five studies highlighted how young people's digital life online may contribute to educational outcomes. Evidence in this area is mixed and, to some degree contradictory, regarding the extent to which life online is a risk factor, and within what context it becomes positive for young people's attainment. According to one contextual source, 91% of 13-18 year olds use a social media platform and hence this is an important aspect of their lives to consider (Children's Commissioner, 2022).

Marker, Gnambs and Appel (2018) explored the association between patterns of use of social networking sites (SNS) and academic grades. They found that, overall, greater SNS use was significantly, but weakly, associated with lower academic achievement. Evidence from a systematic review and meta-analysis by Gardella, Fisher and Teurbe-Tolon (2017) offers insights as to one possible explanation for this negative association as greater use of SNS may increase the risk of cyber-victimisation. Gardella, Fisher and Teurbe-Tolon (2017) found that there were associations between cyber-victimisation, lower school attendance and lower academic achievement. Wider evidence also suggests potentially negative impacts as 45% of young people aged 8 to 17 report having seen content on social media platforms that was inappropriate or made them worried or upset (Children's Commissioner, 2022).

However, Ferguson (2015) found that use of video games had only a minimal negative influence on academic performance, although they identified other adverse consequences, such as increased aggression, reduced pro-social behaviour, depressive symptoms and attention deficit symptoms. Evidence from Arora et al. (2018) suggests that the negative impact of using technology near bedtime, overall, has only a small negative effect on academic performance. This three-year prospective cohort study looked at the use of five types of technology (television viewing, video gaming, mobile

telephone use, listening to music and social networking) before bedtime. However, they did find that female pupils' attainment in English was negatively associated with higher engagement in SNS, TV viewing and mobile telephone use. For male pupils', English attainment was negatively associated with greater engagement in video gaming before bed.

In contrast, some of the reviewed studies examining the use of digital technology provided some evidence that technology could be used to positively impact academic outcomes. Marker, Gnambs and Appel (2018) reported that academic achievement was shown to be positively related to SNS use when SNS are used for academic purposes, with a small correlation[98]. Similarly, Sammons et al. (2015) found that young people who used computers moderately with their parents or on their own for educational purposes during primary school, went on to gain better grades in English and mathematics at age 14 and 16 compared to young people who rarely used computers.

4.5 Gaps and implications

This rapid review has identified several gaps in evidence which have implications for EOPS-C. Firstly, there was a limited number of meta-analyses which included UK studies, with most focusing on the US and international contexts (Camarero-Figuerola et al., 2020; Gardella et al., 2017; Kim & Hill, 2015; Tan, 2017). Using research from international contexts means the focus is on another national context and uses categories which are not as meaningful to the UK context. Furthermore, some meta-analyses based their analysis on older studies (pre-2013) that fall outside the parameters of this review (Huat See & Gorard, 2015; Kim, 2022; Tan, 2017), which may weaken their relevance.

Secondly, there is limited evidence on the mechanisms that link SES, or the specific components of SES, to educational outcomes. While the review indicates that SES negatively impacts academic achievement, there is less evidence to show how or why this is the case for secondary school age young people. It will be important for EOPS-C to collect data on a range of SES indicators to measure young people's episodic and persistent poverty over time. Furthermore, there is little consideration of the interaction between SES and other factors within the home learning environment. For instance, this could include evidence on the effect that protective factors, such as parental inputs, have on narrowing or widening the attainment gap for young people from low-income families.

Thirdly, some studies included in the literature review discuss 'parenting', including parenting styles or parent-child relationships. However, there is little evidence on mother-specific or father-specific involvement. For example, although Evans and Field (2020) discuss the 'parent-child relationship', this variable measures the mother-child relationship only, without controlling for the father-child relationship.

[98] Correlation coefficient 0.08.

Finally, there is a need for more detailed research into how resources and materials in the home, such as digital technology, affect attainment. Many existing studies focus on the impact of technology, such as video games, on violence and aggression, and less so on educational outcomes. Additionally, the studies that have been included in this review are at least 5 years old and provide contradictory evidence with weak associations. This is a rapidly changing area - as new technology is introduced - so would benefit from more up-to-date research. It will therefore be important for EOPS-C to collect data about young people's lives online, to facilitate a more nuanced understanding of how this relates to attainment.

5. Theme 4: Experiences of school

Key findings:

- the review has provided evidence that young people's attainment is positively related to the following experiences at secondary school:
    - positive relationships with teachers and peers, as well as between parents and the school
    - school support for transitions both into secondary and onto post-16 pathways
    - attending a high-quality school, with a positive behavioural and learning environment and limited teacher turnover for pupils in their final year of KS4
    - young people spending greater amounts of time on homework, engaging with learning and school, and having high aspirations
    - access to career guidance and support, participation in higher education outreach activities and engagement with extra-curricular activities
    - high rates of school attendance both as an individual and a cohort
- the implications for EOPS-C are to consider collecting data on these factors, including various aspects of school culture and relationships, high quality curricular and extra-curricular activities, school absences and periods of transition. Enabling linkages between teacher and pupil data would also support analysis of how these factors may affect pupils with particular characteristics differently

This chapter explores the relationship between young people's experiences of school, and their academic attainment and progress at secondary school. There have been many developments in educational policy and practice that aim to narrow inequalities in attainment in the drive to deliver positive outcomes for all young people. These include longstanding school-wide policies such as the pupil premium (introduced in 2011), evidence-based practices such as those identified in the Education Endowment Foundation's (EEF) Teaching and Learning Toolkit[99], and targeted interventions such as the recent National Tutoring Programme, which was designed to support learning recovery following the COVID-19 pandemic. Other significant policy issues dominating the education landscape include the increasingly academised sector, school funding and teacher recruitment and retention.

[99] https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit.

This chapter collates the evidence from this review on the range of school-level factors that are associated with academic attainment. The review identified 39 items providing evidence on the association between attainment outcomes and various aspects of the school experience. Two-thirds of the studies employed longitudinal analysis. The other third consisted of meta-analyses, mixed methods studies, single quantitative studies and systematic or other reviews. All studies were conducted in the UK, with the exception of the 7 meta-analyses and 4 reviews, which were based on international evidence – primarily from the US. This reflects the decision to prioritise UK evidence in the review, which was considered particularly important for this theme given the specificity of educational systems. However, it also highlights a lack of recent UK-focused meta-analyses on the influence of school factors on young people's attainment.

The studies were rated as medium to high value to the review in terms of both relevance to the focus of the review and quality of the design. They used a range of well-known longitudinal data sets. Most studies measured attainment outcomes in mathematics and English, and used statutory assessments, such as KS3 and KS4 national assessments (GCSEs) or other standardised tests. Several studies considered post-16 destinations alongside attainment outcomes. Additional outcomes such as non-cognitive skills and behaviour were measured in some instances, but these fell outside the scope of this review.

Limitations of the studies within this theme include:

- a reliance on data aggregated at school-level, making it difficult to understand variation in individual pupils' experiences
- poor proxies and/or simplistic measures for complex and multi-faceted concepts
- issues with sample and response bias leading to an under-representation of more disadvantaged populations
- control factors measured at only a single time point over the course of a longitudinal study
- a lack of consistency in the definitions of the factors being measured
- the prevalence of studies based on longitudinal data collected pre-2012 also raises some questions in terms of the relevance of the findings given the fast-changing nature of the education system and related policies
- meta-analyses relied on older studies and tended to focus (sometimes exclusively) on the US - given the significant differences between the US and the UK educational contexts, the transferability of findings from these studies cannot be assumed

A number of sub-themes emerged in the analysis of evidence on this theme and are discussed below.

5.1 Transition periods

5.1.1 Transition from primary school to secondary school

Three of the studies appraised for this review focused on evidence relating to the transition from primary to secondary school.

There is evidence to suggest that various factors associated with the transition from primary to secondary school are negatively associated with educational outcomes for many young people. For example, one systematic review found that the majority of studies reported a reduction in grades in at least one subject over this transitional period (Jindal-Snape et al., 2020). The factors underpinning these associations are somewhat unclear, although some authors have suggested it is due to the change in cohort, school size and environment (Jindal-Snape et al., 2020, Gilbert et al., 2021). Some groups of pupils are more likely to experience difficult transitions than others, including socio-economically disadvantaged pupils, pupils from ethnic minority backgrounds and pupils with SEND (Gilbert et al., 2021; Evangelou et al., 2008; Evans and Field, 2020; Shaw and Morris, 2020). Shaw and Morris (2020) suggest that part of the reason for this could be a lack of tailored support for more vulnerable pupils entering secondary school. For example, they observed that pupils with SEND may find it particularly challenging to make the transition to an environment that requires daily interactions with a larger number of pupils and different adults. Pupils with SEND have themselves reported lower levels of social support and higher levels of peer victimisation following this transition period compared to their peers (L. A. Hughes et al., 2013). Young people who experience pre-transition concerns and social anxiety have generally been found to be more likely to experience difficulties during and after the transition, including in terms of social adaptation (Jindal-Snape *et al.*, 2020, Nowland and Qualter, 2019).

On the other hand, Gilbert et al. (2021) have suggested that positive transitions may be associated with pupils' higher levels of cognitive development, and the reviewed evidence sheds light on how more positive transitions may be achieved. For example, positive peer relationships appear to be a protective factor against negative transition experiences and their associated outcomes. Exploratory analysis by Ng-Knight et al. (2019) found that retaining the same best friend between primary and secondary school was positively associated with higher teacher-rated attainment in English and mathematics at the end of the first year of secondary school[100]. A systematic review by Jindal-Snape et al. (2020) likewise found positive peer relationships and being socially integrated with peers to be protective factors for this transition period. The authors noted the similar effects for good relationships with teachers. Participation in extra-curricular activities may also act as a protective factor, although it is possible that pupils who experience a more successful transition may simply be more likely to participate in these activities (Jindal-Snape et al., 2020, Gilbert et al., 2021).

[100] Effect size 0.13.

Parent-child and parent-school relationships also appear to play an important moderating role in the effects of this transition. Evans and Field (2020) suggested that 'parental support' across the transition – in the form of school involvement and a harmonious parent-child relationship – can buffer negative effects by enabling the parent to be both more aware of, and responsive to, the pupil's changing needs. Conversely, a poor parent-child relationship has been found to be associated with a higher likelihood of a negative transition experience (Gilbert et al., 2021). The school also has a role to play here, with Gilbert et al. (2021) finding less frequent contact between the secondary school and a pupil's parents to be associated with a higher likelihood of having a negative transition experience.

Clearly, there is considerable potential for schools to influence pupils' experience of the primary to secondary school transition through support and provision, including through tailored support for pupils from disadvantaged backgrounds and/or with additional needs, and effective primary-secondary and school-parent communication. For example, in evidence from beyond the reviewed studies, a mixed-methods study found that children who felt they had received a large amount of support from their secondary school to settle in were more likely to have experienced a positive transition (Evangelou et al., 2008). Wider evidence also indicates the value of sustaining support beyond the initial transition and throughout the course of the first year to support pupil wellbeing (McLellan & Galton, 2015). The COVID-19 pandemic is likely to have made this transition even harder, as both parent-school and pupil-teacher relationships were more difficult to develop and maintain under social distancing measures, and some of the transitional support that pupils would normally receive may have been withdrawn (Bagnall et al., 2022). Young people entering secondary school following the lockdowns have also been observed to be less confident and mature and to have lower levels of motivation and engagement compared to pre-pandemic cohorts (Bagnall et al., 2022), so they may require enhanced transition support.

5.1.2 Transition from secondary school into post-16 pathways

Seven of the studies appraised for this review contained evidence relating to the transition from secondary school into post-16 pathways.

This review has identified substantial evidence indicating that a pupil's post-16 trajectories are influenced by subject and course choices, prior achievement, experiences of school, and school and pupil characteristics. Most of these are the same factors that influence attainment outcomes throughout secondary and are discussed later in this chapter, so particular attention is given here to exploring the evidence on subject choices.

Evidence indicates that the decision a pupil makes in relation to their post-16 pathway is influenced at least in part by their subject choices at age 14. One study found that pupils

completing an EBacc-eligible curriculum[101] in KS4 were more likely to progress to full-time education post-16[102], including A-levels specifically[103], regardless of social class (Moulton et al., 2018). This was particularly the case for female pupils and pupils of white ethnicity (Moulton et al., 2018). Pursuing an applied GCSE subject was associated with lower probability of progression to A-levels[104] for female pupils especially (Moulton et al., 2018). These findings held even when accounting for prior attainment. Pupils from more disadvantaged backgrounds have a lower probability of taking an EBacc-eligible curriculum and of progressing to full-time post-16 education as compared to their more advantaged peers (Moulton et al., 2018). This is all the more concerning given that Archer et al. (2021) found A-levels to be the post-16 route that leads to the highest earnings, while technical qualifications were largely associated with lower earnings, particularly for women. Nearly twice as many advantaged as disadvantaged pupils, who were identified as 'high-achieving' at age 11, chose A level subjects that facilitate access to top universities (Sammons, Toth and Sylva, 2015)[105]. In wider evidence beyond the reviewed studies, similar results were found for pupils living in poor neighbourhoods, as compared to those in more affluent ones (Sammons et al., 2015). Meanwhile, Karyda (2020) has suggested that young people from families in receipt of state benefits were 45% more likely to be NEET in comparison to those who did not receive income support.

Wider evidence indicates an association between pupil attainment and their post-16 trajectories. For example, pupils of the same ability have been found to take very different trajectories depending on whether they achieved a marginal pass or marginal fail in their GCSE examinations (Machin et al., 2020)[106]. Those pupils with a marginal fail were found to be less likely to enter an upper-secondary high-level academic or vocational track and to start tertiary education, and more likely to drop out of education by age 18 without any form of employment (Machin et al., 2020).

Teacher encouragement for a pupil to continue to A-levels was found to be positively associated with pupils not only enrolling in A-levels but also in university (Alcott, 2017). This effect was particularly salient among the middle third of achievers and pupils with lower levels of parental education. The author attributes this effect to the importance of pupils receiving 'social cues' to 'legitimise' their decisions around education, noting that the impact of these cues may differ for pupils from different socio-economic backgrounds.

Certain pupil-level factors have been found to predict university enrolment and attendance. McCulloch's (2017) longitudinal analysis found that pupils with high aspirations were more likely to attend university compared to pupils with low aspirations.

[101] 'An *EBacc-eligible curriculum* consists of studying core GCSE subjects in English, mathematics, history or geography, 2 sciences and a modern or ancient language' (Moulton et al., 2018, p. 97-8).
[102] Increase of 7 percentage points.
[103] Increase of 10 percentage points.
[104] Decrease of 6 percentage points.
[105] The authors defined 'high achieving' as having 'obtained Level 5 or more on any of the 3 'core' subjects – English, mathematics or science, in national assessments conducted at the end of year 6' (Sammons, Toth and Sylva, 2015, p. 12).
[106] A 'marginal' pupil is defined in this study as one whose chance of achieving a C grade appears to be quasi-random, based on regressions against observable characteristics.

Schoon, Burger and Cook (2021) found a small positive effect of school engagement on university enrolment among first generation university pupils specifically, even when controlling for prior attainment[107]. Pupils having autonomy to choose subjects may also encourage their motivation and subsequent attainment. Participation in higher education (HE) outreach activities was also found to be positively associated with a greater likelihood of progressing into HE (TASO, 2021).

5.2 School characteristics, systems and structures

Twelve of the studies appraised for this review contained evidence relating to school characteristics, systems and structures.

There is a well-established evidence base for the influence that certain secondary school characteristics can have on a pupil's academic attainment. While differences between schools typically account for less of the variation in pupils' outcomes than individual differences (particularly SES indicators), the influence of school is clearly still critical to pupils' outcomes and successful post-16 transition (Moulton et al., 2018; Sylva et al., 2014; Wilkinson et al., 2018). Moreover, school-related factors may be more feasibly affected by policy decisions, as compared to individual pupil characteristics. Further research is required, however, to understand the relative significance of the school attended for disadvantaged pupils specifically, given the mixed results of recent studies (Crawford et al., 2017; Shaw et al., 2017). Crawford, Macmillan and Vignoles (2017) found greater consistency of outcomes for pupils from different socio-economic groups where they attend the same schools, suggesting schools (or the sorting of pupils into schools) contributes to variance in attainment outcomes.

5.2.1 Cohort composition

Cohort composition in terms of SEND, English as an Additional Language (EAL) and FSM eligibility has been found to play a particularly influential role in between-school differences in attainment (Macleod et al., 2015; Nieuwenhuis et al., 2021), accounting for up to nearly two-thirds (63%) of school-level variance in KS4 outcomes, according to Wilkinson, Bryson and Stokes (2018). School level deprivation is also identified in wider literature as an influential factor on pupil outcomes (Benson et al., 2022). However, these effects appear to differ depending on the characteristics of the individual pupils concerned. For example, disadvantaged pupils have been found to make greater academic progress when there is a larger proportion of similarly disadvantaged pupils in their cohort (Macleod et al., 2015)[108], whereas this has been found to be associated with a negative effect for the cohort as a whole (Nieuwenhuis et al., 2021; Sylva et al., 2014)[109]. Macleod et al. (2015) suggest that this may be the consequence of the additional pupil premium funding available to schools with high proportions of

[107] Effect size 0.07.
[108] Effect size 0.13.
[109] Effect size for GCSE English -0.18.

disadvantaged pupils, and/or may reflect a greater ability to identify and focus on disadvantaged pupils' needs where these are more prevalent in the cohort. One study also found a high proportion of SEND pupils to be a risk factor for the attainment of the cohort as a whole (Sylva et al., 2014).

5.2.2 School type

School type has been found to be associated with pupil attainment outcomes. Selective schools, faith schools and schools with an admissions policy based on feeder schools' recommendations are associated with better attainment, although this may be a result of the selective process (Classick et al., 2021; Macleod et al., 2015). A small effect has been found for converter academies[110], although the findings for sponsored academies were more mixed likely due to variation in the progress achieved since being identified as an underperforming school (Macleod et al., 2015). Attending a school that was part of a Multi-Academy Trust (MAT), a Teaching School or a Teaching School Alliance (TSA) partner (although *not* a TSA member) was likewise found to have medium to large positive relationships with attainment for disadvantaged pupils (Macleod et al., 2015)[111]. There also appears to be regional variation in outcomes for disadvantaged pupils. For example, Macleod et al. (2015) found that disadvantaged pupils in London schools achieved an average of 5 points higher in their GCSE capped average points score (CAPS) compared to most of the rest of England. However, wider evidence suggests that factors such as school type (academies, free schools, and local authority maintained), geographic context (urban, rural) and school size are not significant predictors of attainment outcomes (Benson et al., 2022).

In terms of post-16 destinations, pupils in grammar schools were found to be more likely to continue into full-time post-16 education than those in comprehensive schools, even when accounting for prior attainment (Moulton et al., 2018). Meanwhile, pupils at independent schools are much more likely to follow pathways associated with higher earnings compared to those in state schools, likely due to the greater emphasis placed on A-levels and other academic qualifications in these contexts (Archer et al., 2021).

5.2.3 Size of year group and class size

There are mixed findings on year group and class size. Macleod et al. (2015) identified that larger year group size may be a risk factor for disadvantaged pupils specifically, with a negative effect size identified for GCSE CAPS results[112]. The authors suggested that this may be because their needs are more likely to go unnoticed. Moulton et al. (2018) reported that pupils attending a school with smaller class sizes were found to be more likely to take A-levels, even when accounting for prior attainment. On the other hand, Wilkinson, Bryson and Stokes (2018) found that teacher-pupil ratio played a negligeable

[110] Effect size 0.08.
[111] Effect size 0.14-0.15, 0.41 and 0.14, respectively.
[112] Effect size -0.06.

role in between-school variance in attainment, and evidence from the EEF suggests that impact of reduced class sizes is likely to only be seen when the difference is large enough to enable teachers to change their teaching approach (EEF, 2021b).

5.2.4 School quality

School quality, as assessed by Ofsted ratings, has been found to be related to attainment, particularly when comparing schools rated 'outstanding' with those rated 'inadequate' (Sylva et al., 2014, DfE, 2016), and for 'bright'[113] but disadvantaged pupils (Sammons, Toth, & Sylva, 2015). Pupils at 'outstanding' schools were also found to be more likely to pursue a higher academic post-16 route (Sylva et al., 2014). In addition, school quality may act as a protective factor against the negative effects of teacher turnover (Gibbons et al., 2018). Finally, Sylva et al. (2014) found moderately large positive effect sizes on pupil outcomes where they attended a 'highly academically effective' school, based on the school's contextual value added (CVA) score.

5.2.5 Staffing

The review found relatively small effects of some aspects of secondary school staffing and aspects of the school structure on pupils' academic attainment.

Gibbons, Scrutinio and Telhaj (2018) reported that higher teacher turnover had a small negative effect on pupils' GCSE performance, but only when they received a new teacher during their final year. Somewhat unexpectedly, this study also found that the entry of teachers with more experience resulted in more disruption to GCSE outcomes, and conversely, that teachers new to the profession were associated with less disruption to GCSE results compared to experienced teachers when moving schools. The authors suggest that this may be the result of teacher allocation, as more experienced teachers are more likely to be assigned to GCSE year groups. However, Gibbons, Scrutinio and Telhaj (2018) concluded that teacher turnover may still be a small contributing factor to the socio-economic attainment gap as more advantaged pupils are better able to compensate for any disruption from staff turnover through additional family resources and typically higher individual effort.

An inquiry by the All-Party Parliamentary Group (APPG) on Social Mobility in 2018 found disadvantaged young people to be more likely to be taught by teachers with lower qualifications, particularly in mathematics and physics (APPG, 2019). Analysis by DfE (DfE, 2016) indicates, however, that 'teacher academic credentials [may] have little relationship with teacher effectiveness' (p. 36). The study reported only a small positive relationship between pupil outcomes in maths, humanities and English subjects and being taught by a teacher with a relevant post-A-level qualification (DfE, 2016). These findings are, however, limited by the study's reliance on school-level analysis due to a

[113] Achieved Level 5+ in English, mathematics and/or science in KS2 standardised examinations (Sammons, Toth, & Sylva, 2015).

lack of data connecting pupils and teachers directly. Wider evidence indicates that both teacher skills (in numeracy, literacy and instruction) and subject specialism are positive factors for pupil learning outcomes (Mejía-Rodríguez & Kyriakides, 2022).

5.2.6 Instruction time

The review considered evidence on the effect of differing amounts of instruction time. Connolly (2021) found positive effects of additional instruction time in mathematics, English, science and the humanities[114]. Effect sizes differed according to the recipient year group, with additional time in year 11 found to have a stronger effect on GCSE results compared to additional time in year 9 or year 10. The relationship was also seen to vary according to pupil characteristics, with smaller effect sizes found for pupils with stronger prior attainment[115], but also for pupils eligible for FSM (with the exception of the humanities) (Connolly, 2021)[116]. The author reflected that these unexpected 'diminishing returns' may be the consequence of pedagogical approaches associated with different instruction times. Alternatively, Connolly (2021) suggests that additional contact time may simply lead to a less effective use of non-contact time and excessive burden on the pupils, resulting in relative underperformance.

5.2.7 Ability grouping

Ability grouping has been found to widen the attainment gap between the top and bottom sets, particularly for English, even when accounting for prior attainment (Hodgen et al., 2022). While this appears to be the result of relative benefit to pupils in the top set rather than to the detriment of those in the bottom, the authors are careful to emphasise that setting does not necessarily benefit high-attaining pupils, but those pupils 'placed in higher sets' (Hodgen et al., 2022). This is concerning given evidence indicating high levels of misallocation in setting practices, which results in an over-representation of pupils from disadvantaged and/or ethnic minority backgrounds in lower sets (Hodgen et al., 2022). Moreover, these findings suggest that efforts to combat disadvantage through ability grouping are counterproductive, and may actually undermine the impact of genuinely beneficial interventions targeting pupils in the lower sets (Hodgen et al., 2022). Hodgen et al. (2022) suggest that the relative benefits for the top set may be attributable to more teacher encouragement and higher expectations, a richer curriculum with greater opportunity to learn and/or better qualified and more experienced teachers. In addition, Shaw et al. (2017) highlights that limiting expectations and grade capping for pupils in lower sets can play a role in this relationship, particularly via reduced motivation.

[114] Effect size 0.09, 0.08, 0.07 and 0.07, respectively.
[115] Effect size 0.07 (mathematics), 0.07 (English), 0.06 (science) and 0.04 (humanities).
[116] Effect size 0.07 (mathematics), 0.06 (English), 0.06 (science) and 0.08 (humanities).

5.3 Culture and leadership

Nine of the studies appraised as part of this review included evidence relating to school culture and leadership.

Evidence relating to the influence of school culture remains quite limited, likely due to the difficulty of measuring what is an inherently intangible concept. Demirtas-Zorbaz, Akin-Arikan and Terzi (2021) found a positive relationship between school climate and pupil attainment[117], with the highest correlation found for the 'academic' dimension of the school climate (including pupils' high academic motivation and positive attitudes to lessons), followed by 'safety' (feeling safe within the school), sense of 'community' (including positive pupil and teacher relationships) and the 'institutional' environment (a feeling of belonging in the school and having shared values). This study was a meta-analysis drawing on research that employed a wide range of concepts and terminology, so it is unclear how consistently these aspects were measured.

However, 2 studies using data from the EPPSE longitudinal study (Sylva et al, 2014; Sammons, Toth and Sylva, 2015) also found associations between aspects of school culture and academic attainment. Sylva et al. (2014) found a positive association between a pupil-reported positive behavioural climate and attainment, as well as a greater probability of following a higher academic post-16 route, as compared to a vocational one. In addition, pupil-reported positive relationships (between both teachers and pupils) in KS4 were positively associated with non-cognitive outcomes, including self-regulation and pro-social behaviour, and negatively associated with hyperactivity and anti-social behaviour[118]. A culture emphasising learning, as reported by pupils in KS3, was likewise negatively associated with hyperactivity at age 16, while a culture of formative feedback in KS4 was positively associated with pro-social behaviour[119]. Sammons, Toth and Sylva (2015) found a relationship between attending a school with a high emphasis on learning, headteacher involvement in school activities, and the perception that pupils are valued and that teachers are competent and focused on learning, to be associated with higher attainment among disadvantaged pupils specifically, even when accounting for prior attainment. Positive associations between both staff-reported and pupil-reported school climate and academic achievement have also been identified in international studies (see, for example, Maxwell et al., 2017).

Associations with small to medium positive effects for attainment have been found for school-related wellbeing (Putwain et al., 2020) and school enjoyment, although in this latter case the association was only significant for female pupils (Cadman et al., 2021)[120].

[117] Effect size 0.08.
[118] Effect size 0.42, 0.42, -0.49 and -0.43, respectively.
[119] Effect size -0.30 and 0.29, respectively.
[120] Effect size 0.15.

Korpershoek et al. (2020) reported a small positive correlation between school-related belonging and attainment outcomes[121], while larger correlations were observed for motivational, socio-emotional and behavioural outcomes[122]. The same study also found that school-related belonging may be a protective factor against school drop-out[123]. However, the large majority of the studies included in the meta-analysis focused on the US context, and no significant association was found for the studies that focused on the European context. A longitudinal study focused on the UK likewise found no association between attainment and pupils' sense of belonging to the school and how positively they are viewed by others (Cadman et al., 2021). Analysis of the PISA 2018 results likewise found no significant association between UK pupils' self-reported levels of school belonging and their reading skills (OECD, 2019), including for disadvantaged pupils specifically (Classick et al., 2021). In this study, pupils were asked about their experiences of loneliness at school, feeling left out or like an outsider, making friends at school and feeling they belong at school. These findings for the UK are contrary to global trends, with the majority of countries demonstrating a significant positive association between school belonging and reading skills (OECD, 2019). The authors note that variation in these trends may be attributed to variation in the extent to which academic achievement is considered socially desirable in different cultures (OECD, 2019). Moreover, many of the countries that could be considered culturally comparable to the UK, including Australia, New Zealand and Ireland, likewise demonstrated no significant association between school belonging and reading ability, and a significant negative association was found in the US. Other studies in these countries have, however, found an association between related factors such as pupils' perceptions of school climate and academic achievement (see, for example, Maxwell et al., 2017). Given the mixed evidence currently available on this topic and the interest in factors associated with pupil wellbeing, further investigation of school belonging is merited.

Finally, there is some limited evidence that factors associated with school leadership approaches to the cultural development and ethos of the school may be associated, albeit indirectly, with pupil outcomes. For example, an exploratory mixed methods study (Day et al., 2016) found that highly academically effective secondary schools were more likely to report setting high standards for academic performance and using performance data and monitoring. The same study noted that 'more successful' principals were associated with particular practices. These included measuring broader educational progress, building the leadership capacity of colleagues, establishing respect and trust among staff and parents and being responsive to the contexts in which they worked[124]. Wider evidence from a qualitative analysis of the cultures and practices in primary and secondary schools effectively supporting the attainment of disadvantaged pupils provides similar messages (Baars et al., 2018). The authors suggest that strong and visionary

[121] Effect size 0.18.
[122] Effect size ranging from 0.30 to 0.39.
[123] Effect size -0.16.
[124] The authors identified 'successful leaders' as those who have consistently overseen a primary or secondary school that demonstrated effective value-added results and significant improvement in raw results or stable high attainment over at least the previous 3 consecutive years.

leadership is important, and this was characterised by high expectations, positive relationships and high morale across staff, parents and pupils, and early intervention and support.

5.4 Teaching and pedagogy

Six of the studies appraised for this review contained evidence relating to teaching and pedagogy.

Sylva et al. (2014) and Ozyildirim (2021) both found small positive effects for greater amounts of time spent on homework[125], particularly for mathematics[126]. These effects appear to hold for disadvantaged pupils as well (Sammons, Toth, & Sylva, 2015). Sylva et al. (2014) concluded that 'any time on homework showed a positive effect, with a clear gradient indicating that the extra effort paid dividends' (p. 185). This is supported by findings indicating that young people who did all their homework achieved more highly than those who did some or none of it (Lessof et al., 2019). Wider evidence such as that from the EEF Teaching and Learning Toolkit also shows positive impacts of homework for secondary pupils in particular (EEF, 2021a) and an OECD study found a positive relationship between the amount of time spent on homework and secondary pupils' performance in PISA. As socio-economically advantaged pupils tend to spend more time doing homework, this reinforces the attainment gap (OECD, 2014). The Sylva et al. (2014) longitudinal study found that a pupil who spends 2 to 3 hours on homework on a typical school night in year 9 was almost 10 times more likely to achieve 5 A*-C GCSEs compared to someone who spent no time on homework. Moreover, Ozyildirim (2021) suggested that the magnitude of these results may be confounded by, for example, weaker pupils spending more time on homework because they were struggling with a task and/or not fully focused. Both studies suggested that the increased time spent on homework may positively impact attainment by providing increased opportunities to learn, practise and receive feedback, and by strengthening independent study skills and responsibility. Sylva et al. (2014) also noted, however, that time spent on homework may simply be an indicator for other home- and school-related factors, such as parental encouragement and support, and 'differences between schools in their practices of setting, marking and valuing homework' (p. 23-4), as well as the pupil's own levels of self-regulation. Schools may be able to facilitate greater equality in homework participation by encouraging parents to provide support and offering quiet places to complete homework (OECD, 2014). However, there may also be trade-offs between pupils spending a large proportion of their time on homework and the potential impact on their wellbeing and time spent on other valuable activities. EOPS-C may provide an opportunity to explore this further.

[125] Effect size 0.19. The authors defined 'homework' as 'Tasks pupils are given by their teachers to be completed outside the lesson' (p. 214).
[126] Effect size 0.36.

Sylva et al. (2014) found that day-to-day teaching responsibilities, such as of learning and behaviour, were positively associated with attainment. Teachers' perceived emphasis on learning, formative feedback and high levels of monitoring of pupil progress were likewise found to be associated with higher attainment. Similarly, Wang et al. (2020) found a small positive effect of classroom climate on attainment[127], identifying positive associations between pupil attainment and instructional support, socio-emotional support and classroom organisation. In wider evidence, the Teaching and Learning International Survey (TALIS) video study likewise found that classroom management may positively influence attainment for certain pupils, with a positive association found particularly for pupils with lower prior attainment (pupils who ranked in the second-lowest quartile of the class based on their pre-test scores) (Ingram et al., 2024). An analysis of disadvantaged pupils in the EPPSE study who succeeded 'against the odds' found they perceived good quality teaching to be a protective factor for their attainment, as well as teachers being approachable, clearly communicating expectations and boundaries, and encouraging pupils to work beyond their predicted attainment (Siraj-Blatchford et al., 2013). On the other hand, disorganised lessons and a high number of supply teachers were perceived to be risk factors. Siraj-Blatchford et al. (2013) also noted the important role schools can play in supporting the attainment of disadvantaged pupils by reinforcing their positive self-image and belief in their intelligence.

Positive relationships between teachers and pupils (as reported by the pupil) have been found to have a medium to large positive effect on attainment (Roorda et al., 2017; Sylva et al., 2014)[128], including for disadvantaged pupils specifically (Sammons, Toth, & Sylva, 2015)[129], while negative relationships are a risk factor (Roorda et al., 2017)[130]. There are also indications that this effect may be stronger in secondary school, as compared to primary (Roorda et al., 2017). As Roorda et al. (2017) found the effects of these relationships to be partially mediated by pupil engagement, they suggest that the larger effects seen in secondary school may be the result of a greater tendency for pupils to disengage at this age. Positive teacher-pupil relationships have also been found to be associated with a greater likelihood of pupils following a higher academic post-16 route, as compared to a vocational one (Sylva et al., 2014).

Evidence in this area is not fully consistent, however. Classick et al. (2021) reported that perceived support from teachers in English lessons was found to play no significant protective role for the attainment of disadvantaged pupils, according to analysis of cross-sectional data from the PISA 2018 study. Moreover, teacher influence may actually reinforce attainment gaps when founded on prejudicial beliefs (Doyle et al., 2023), including lower expectations for more disadvantaged pupils (Shaw et al., 2017).

[127] Effect size 0.12.
[128] Effect size 0.29 (Roorda et al., 2017).
[129] Effect size 0.21 for total GCSE score, 0.26 for English and 0.3 for mathematics.
[130] Effect size -0.19.

Finally, a meta-analysis found that academic boredom, particularly in the classroom, has been found to have a negative effect on academic achievement[131] – although the majority of the studies included in the meta-analysis focused on higher education, rather than secondary school (Tze et al., 2016).

5.5 Pupil attitudes and relationships

Three of the studies appraised as part of this review provided evidence on the relationship between pupils' engagement with school and academic aspirations, with their attainment outcomes.

Roorda et al. (2017) found pupil engagement with their school to have a large positive effect on their attainment[132]. Similarly, McCulloch's (2017) longitudinal analysis found that pupils with high aspirations made greater academic progress compared to pupils with low aspirations. In addition, an analysis of PISA 2018 data found that high aspirations for future qualifications were associated with disadvantaged pupils achieving beyond expectations (Classick et al., 2021). This finding is supported by wider evidence from research in other fields where children's perceptions of themselves were seen to influence their behaviour and experiences (Piera Pi-Sunyer et al., 2022). Easterbrook et al. (2022) have likewise suggested that self-perception may be a key mediator for the association between socio-economic status and attainment (see section 4.1.1). Classick et al. (2021) did not, however, find any such association for aspirations relating to further education or future careers.

It is possible that aspiration levels may contribute to the socio-economic, gender and ethnicity-related attainment gaps that are consistently observed, as McCulloch (2017) found advantaged pupils, female pupils and pupils from ethnic minority backgrounds to be over-represented in the group of pupils with higher aspirations. In the case of disadvantaged pupils, McCulloch (2017) suggests that lower aspirations may simply reflect pupils' estimates of what they consider themselves likely to achieve based on their day-to-day experiences of adversity, rather than there being any particularly causal relationship. In reflecting on the mechanisms behind the association between aspirations and attainment, Classick et al. (2021) likewise suggested that aspirations may act as a 'self-fulfilling' prophecy, such that achieving more highly may encourage pupils to have higher aspirations. However, wider evidence from Taggart et al. (2014) indicates the need to question this binary relationship as they found that some young people with high SES and low attainment still had high career aspirations.

Peer relationships may also influence attainment. A meta-analysis by Wentzel, Jablansky and Scalise (2021) found peer social acceptance to be significantly and positively related to academic achievement. They suggested that peer acceptance has 'a greater impact

[131] Effect size -0.16.
[132] Effect size 0.24.

on day-to-day performance of academic tasks than on the more general aspects of learning and academic knowledge that are tapped by standardised tests' (p. 172).

Another meta-analysis found experiences of bullying in early adolescence to be a risk factor for academic performance (Halliday et al., 2021). This finding is supported by a meta-analysis by Gardella, Fisher and Teurbe-Tolon (2017), which found a significant association between experiences of peer cyber-victimisation during adolescence and problems with academic attainment[133]. Halliday et al. (2021) suggested that the association between bullying and attainment may be mediated by the stress and/or school avoidance that tends to be associated with these experiences, while Gardella, Fisher and Teurbe-Tolon (2017) considered that the effect may be a consequence of a diminished self-concept. However, analysis of PISA 2018 data by Classick et al. (2021) found no significant association between experiences of bullying and the attainment of disadvantaged pupils. Halliday et al. (2021) found gendered effects of bullying, with the attainment of female pupils being exclusively affected by relational (social) bullying[134], while overt (physical and verbal) bullying was the only type of bullying to be related to male pupils' attainment. There are also indications that female pupils' attainment is generally more adversely affected by experiences of bullying than male pupils' attainment (Halliday et al., 2021).

5.6 Curricular and extra-curricular activities

Three of the studies appraised as part of this review contained evidence relating to curricular and extra-curricular activities.

The reviewed evidence suggests that the provision of curricular and extra-curricular support relating to post-16 pathways may positively influence attainment at KS4. Longitudinal analysis by Hanson et al. (2021) found the number of Gatsby Benchmarks[135] for Good Career Guidance held by a school to be a significant positive predictor of the number of A*-C GCSEs obtained by each pupil. The study identified no significant association for A-level pupils, leading the authors to speculate that career guidance may be most beneficial for pupils earlier in their school experience, as well as for broadening the horizons of those who are less likely to follow a post-16 academic route (Hanson et al., 2021). An international systematic review by (Hughes et al., 2016) likewise identified a largely positive association between careers education and GCSE attainment, with a high strength of evidence found for the positive impact of careers provision and work-related learning, and a medium strength of evidence for mentoring. The authors suggested that this impact may be the result of pupils being better able to

[133] Effect size 0.09.
[134] Relational (social) bullying refers to 'exclusion from groups and/or starting/spreading rumours' (p. 351, Halliday et al., 2021).
[135] See the following for further information about Gatsby Benchmarks: https://www.gatsby.org.uk/education/focus-areas/good-career-guidance. Gatsby Benchmarks are primarily aimed at supporting social mobility through developing young people's career readiness and essential skills for transition to careers.

understand the relationship between educational and occupational outcomes, leading to increased motivation and engagement with school. Yet, wider evidence suggests that young people are most likely to take guidance on post-16 plans from parents, friends and teachers (Taggart et al., 2014).

Participation in HE outreach activities has been found to be positively associated with higher KS4 attainment (TASO, 2021). The authors suggested that these experiences may be motivating for pupils and raise their aspirations (TASO, 2021). Such experiences have the potential to benefit disadvantaged pupils in particular as FSM eligibility is negatively associated with attending summer schools, where the largest positive effects were seen (TASO, 2021). Mentoring participation, on the other hand, showed inconclusive results regarding its potential for a positive impact on attainment – likely due to the large variation in what such activities involve and in the profiles of the pupils who are consequently likely to participate in them (TASO, 2021). This is not dissimilar to evidence exploring the effects of COVID-19 catch-up tutoring, which found no evidence of a relationship with attainment outcomes for secondary pupils, highlighting variable quality of tutoring and targeting of disadvantaged pupils (Poet et al., 2022).

Finally, engaging in extra-curricular activities more generally has been found to significantly increase a pupil's likelihood of achieving the benchmark of five A*-C GCSE grades including English and mathematics (Rothon et al., 2012). Conversely, time spent 'just hanging around' emerged as a risk factor, even when controlling for SES (Rothon et al., 2012), as did working part-time (Hughes et al., 2016).

5.7 Attendance and absence

Six of the studies appraised as part of this review contained evidence relating to attendance and absence.

Small negative associations between absenteeism and attainment have consistently been found (Klein, Sosu and Dare, 2022; Hodgen et al., 2022)[136]. For example, a review by Shaw and Morris (2020) found absence rates in the first three years of secondary school to be predictive of GCSE achievement. Unexpectedly, however, this negative impact does not appear to be moderated by the reason for absence, and the adverse effects hold regardless of whether the absence was authorised or not (Klein et al., 2022). A range of socio-economic disadvantage factors are, however, uniquely and significantly linked with higher rates of all types of absenteeism, with the most notable and pervasive of these factors being socially rented housing and parents with no qualifications (Klein, Sosu and Dare, 2020; Shaw and Morris, 2020). Shaw and Morris (2020) found that this gap increased over the course of KS3, even when controlling for a range of school and pupil characteristics. There are also gender differences in rates of absenteeism, with factors relating to the family's economic conditions driving greater sickness-related absence among female pupils, while factors indicative of neighbourhood and peer

[136] Effect size -0.03.

influence were more likely to provoke behaviour-related absenteeism among male pupils (Klein et al., 2020). Moreover, it is not only a pupil's own absenteeism rates that are associated with their attainment as Macleod et al. (2015) found higher levels of pupil absence across the school were related to a large negative effect on an individual's attainment[137]. High rates of school-wide attendance has been found to be positively related to individual attainment (Sylva et al., 2014), including for disadvantaged pupils specifically (Classick et al., 2021). These findings are particularly important given rising school absence during and following the COVID-19 pandemic and the fact that this trend is more apparent among disadvantaged pupils (Sosu & Klein, 2021).

The reviewed evidence for the impact of exclusions on attainment outcomes is more varied. One study found one additional day of exclusion to be associated with a reduction in one grade in GCSE mathematics, even when controlling for prior attainment (Hodgen et al., 2022). Another study found no significant association between temporary exclusion and KS5 attainment once controlling for prior KS4 attainment (Klein et al., 2022). It will be particularly important for EOPS-C to investigate the significance of this factor given that disadvantaged pupils are far more likely to be excluded (Shaw & Morris, 2020).

5.8 Gaps and implications

The review has identified the following gaps in evidence that may have implications for the EOPS-C data collection.

As a result of the reliance on school-level data, there is limited evidence to indicate whether certain groups of pupils experience school in different ways. By enabling linkages between teacher and pupil data, EOPS-C could allow this kind of analysis to be carried out, perhaps for the first time.

There is emerging evidence that school culture and relationships may play an important role in influencing pupil outcomes, but findings appear to be obfuscated by a lack of conceptual clarity and agreement on what factors such as 'a positive pupil-teacher relationship' look like in practice. If it is possible to construct valid and reliable measures, EOPS-C could collect data on a range of 'softer' pupil and teacher experiences of aspects of the school environment, the classroom culture and their relationships within the school to provide more nuance to these discussions. Further exploration of the significance of school belonging is also important given the contrasting evidence in the UK and other countries.

There is currently limited evidence on high quality curricular and extra-curricular activities and the components that can make an activity more or less effective. This is particularly important considering the mixed results that have been found for specific activities such as mentoring. EOPS-C could collect data on the types of extra-curricular activities pupils are involved in, who delivers them, the size of the groups, typical activities involved in a

[137] Effect size -0.43.

session and other relevant characteristics. Similarly, information captured about the school could include the kinds of career guidance and outreach provided to pupils and whether any barriers to accessing them exist for either specific pupils or the pupil body as a whole.

School absence and exclusions are considerably more prevalent among the most vulnerable populations, including disadvantaged young people, young people with SEND and mental health difficulties, and young people from ethnic minority backgrounds. Further evidence is required to understand their impact and how this differs according to particular pupil characteristics, as well as the mechanisms behind the negative impacts observed.

6. Discussion and implications for EOPS-C

This review has demonstrated that the attainment of secondary-aged pupils is influenced by a wide range of factors relating to their cognitive and non-cognitive capabilities and mental and physical health; SEND and experiences of social services; home environment; and experiences of school. There is consistent evidence of the adverse impact of poverty and low parental education. Young people who have SEND, experience ACEs, are looked-after children or are otherwise in need of support from social services are at risk of poorer outcomes and the risks increase over time in the absence of support.

Compared with the risk and protective factors for primary-age children (Harland et al., forthcoming), the factors that influence attainment are notably similar in secondary education, with just a few exceptions. As young people pass through adolescence, they are more likely to engage in risky behaviours (such as smoking, alcohol and drug use) and experience mental health issues. They are more affected by wider influences, such as peers and social media, and more independent of adults in terms of behaviour and school attendance. They are also less likely to receive direct help with learning from their parents although, interestingly, parental support for education is still strongly related to attainment among secondary pupils.

There is considerable scope to support young people's attainment outcomes by helping them to develop their cognitive and non-cognitive capabilities (including working memory, attention, conscientiousness, self-regulation, self-esteem). Mental and physical health have an important and perhaps under-recognised relationship with attainment: this review finds evidence that secondary pupils' physical activity, nutrition and mental wellbeing are all protective of academic attainment. The school has a key role to play through supportive learning environments, personalised teaching, encouraging healthy lifestyles, providing extra-curricular activities, targeted support for wellbeing and mental health, alongside a culture of high expectations for all pupils.

The review has provided insights that have implications for the EOPS-C study. This includes identifying areas where the evidence on factors influencing the attainment of the secondary age group is limited and would benefit from robust longitudinal measurement. There appear to be particular evidence gaps for this age group in terms of cognitive and non-cognitive capabilities. Hence, the review provides strong endorsement for the measurement of these attributes through cognitive assessments of pupils when they are in years 8 and 12, as is planned at the time of writing, for the design of EOPS-C data collection. This will enable assessments to be conducted face-to-face with pupils and tracking of these attributes from the start of secondary education to the start of post-16 education. Equally, while there are existing insights on the risk and protective factors associated with mental health, the consequences of poor mental health and wellbeing are extremely damaging to pupils' attainment and future success. For this reason, the review supports the measurement of pupils' mental health and wellbeing and suggests

that, wherever possible, pupils' own views on this are sought and supplemented by the views of relevant adults, such as parents and teachers.

The review has demonstrated that there is more to be understood about school-based and wider forms of support for all pupils, particularly those who face additional challenges due to SEND, being looked after or a Child in Need, so it is important to capture this information and whether their school is supportive of their needs. Finally, there is a need to understand more about pupils' experiences of social relationships at school as the review has indicated the influence of positive teacher and peer relationships, and has found some evidence on the influence of school culture and sense of school belonging (although the findings for the latter are complex and appear to vary depending on how sense of school belonging is measured as well as cultural influences, such as the value placed on academic achievement and schooling).

The review also reaffirms the need to measure key variables that are widely understood as being influential on pupils' attainment outcomes in order to provide a rich data source for evaluating the impact of developments in policy and practices that seek to address these factors to enable more equitable attainment outcomes.

Given the limitations identified in other studies, EOPS-C should prioritise quality of measures and avoidance of bias and attrition, as far as possible. There will inevitably be more variables of interest identified than can be accommodated in the study. While some issues must be addressed through primary data collection, others may be accessible through linkage to other data sets, such as the national pupil database (NPD). However, there may be a case for collecting primary data on key variables even when secondary data is available, given the inevitable data loss incurred by withheld permission and difficulty in matching data from EOPS-C with that held in other databases.

The implications for EOPS-C data collection and instruments are set out below in a series of tables.

Table 1: Implications for EOPS-C – Sampling

Variable/factor/perspective	Details
Disadvantaged pupils	Endorsement of the strategy to over sample disadvantaged pupils to ensure sufficient representation and allow for attrition.
SEND	Consideration of a sufficient sample to represent young people with SEND and attending different types of school (mainstream or special).
Parents	Importance of data collection from fathers as well as mothers, including parents (often fathers) living in a separate household.

Table 2: Implications for EOPS-C – Demographics

Variable/factor/perspective	Details
Disadvantage	Include multiple measures, such as: FSM/pupil premium eligibility, household income, parental education, parental employment/worklessness and hours worked (including commuting time), social class indicators such as the family affluence scale, area-level deprivation, housing tenure, episodes of poverty (between year 8 and 12) and persistence of poverty over time.
Gender	Female/male/nonbinary.
Family structure	Presence/involvement of father, mother and own-household parent, presence/involvement of step-parents, number and academic performance of older siblings[138].
Ethnicity	White/Asian/Chinese/Black Caribbean/Black African/Irish Traveller/Gypsy Roma Heritage/mixed/other.
English as an Additional Language	EAL, language(s) spoken at home.
Special Educational Needs	Parental perceptions of whether their child has a SEND (which may not yet be officially recognised). Whether the young person has an EHCP.
Children in need/looked-after children	Children in receipt of social services care.
School-level characteristics	Demographic characteristics of the young person's school (including proportion of pupils eligible for FSM) and area-level deprivation indicators such as Income Deprivation Affecting Children Index (IDACI)). (It may not be necessary to gather these characteristics directly because they are available in administrative data sets and could be added through data linkage.)

[138] Including siblings in the study could be considered as a strategy to enable disaggregation of family-level and individual-level effects in analysis.

Table 3: Implications for EOPS-C – Home environment[139]

Variable/factor/perspective	Details
Parental support for education and involvement in schooling	Parental support for education and aspirations for their child's attainment at school (including talking about school, valuing learning).
Young person's participation in extra-curricular activities	Whether the young person takes part in extra-curricular activities (at school/out of school) and which type of activities (including careers and higher/further education related).
Screen time and use	Access to screens at home, amount of time spent on screen and type of content (data on device usage is more reliable but difficult to obtain, so this is likely to be estimated based on retrospective self-reports).
Parent-child relationship	Parent-child attachment, time spent together, communication, support for child's persistence and self-regulation, academic socialisation, expectations and aspirations for the young person.
Young person/family nutrition	Basic nutrition and indicators of food insecurity.
Young person's physical health	General health and amount of physical activity and exercise. Long-term health conditions requiring medical treatment (such as diabetes, epilepsy).
Young person's exposure to ACEs	Abuse, neglect or violence. Other adversities including parental (especially maternal) mental or chronic illness.
Young person's mental health and behaviour	Internalising behaviours (such as depression, loneliness and anxiety) and externalising behaviours (such as dysregulated behaviour, conduct disorder, oppositional defiant disorder and anti-social behaviour). This review provides endorsement for measurement of young people's mental health and wellbeing using a standardised instrument such as the Strengths and Difficulties Questionnaire (SDQ) which can be completed by young people, parents or teachers and measures a wide range of behaviours and emotions.

[139] Many of these items could be asked of the parent and the young person themselves, or just the young person directly.

Table 4: Implications for EOPS-C – Young person survey

Variable/factor/perspective	Details
Cognitive skills	Especially executive functioning, attention, working memory and meta-cognitive strategies (particularly planning and self-regulated learning).
Non-cognitive skills	Especially self-concept, self-regulation, conscientiousness, motivation, persistence and social-emotional skills.
Expectations and aspirations	Perceptions of own capability to succeed, strengths and limitations, own expectations and aspirations for post-16 (education, training and career).
Views on parenting style	Young person's experience of their relationship with their parent/s (for example, extent of communication, support for learning), perceptions of parent's aspirations for them.
Experience of teachers/staff	Perceptions of classroom climate, teacher feedback, warmth and support.
Views of school and schoolwork	Engagement with and perceived value in attending school (including whether the young person has ever been absent from school without permission) and doing schoolwork. Engagement with the curriculum. Sense of belonging. Engagement with homework.
Young person's participation in extra-curricular activities	Whether the young person takes part in extra-curricular activities (at school/out of school) and which type of activities (including careers and higher/further education related).
Screen time and use	Access to screens at home, amount of time spent on screen and type of content (including social media).
Peer relationships	Friendships, extent of positive/negative influence of peers, experience of bullying (including cyber bullying), perceived academic values and behaviour of peers.
Views on transition	Positive and negative reflections on transition from primary to secondary school (year 8 survey only). Secondary to post-16 transition (sense of preparedness in year 11, reflecting on the transition in year 12).

ACEs	Young person's exposure to ACEs. Being the victim of abuse (emotional, physical, sexual), neglect, exposure to domestic violence. Other adversities include parental mental or chronic illness. Note that due to the evidence that experiencing multiple adversities has an even greater negative impact on attainment, it will be important to capture as many of these factors as possible. Other adversities that could be explored include: incarceration of a family member, parental substance abuse, death of a household member, homelessness, parental separation or divorce.
Young person's involvement with risk behaviours	Whether the young person smokes (cigarettes or e-cigarettes) vapes, or uses alcohol or drugs.
Young person's mental health and behaviour	Pupil's strengths and difficulties, indicators of good/poor mental health.
Young person's nutrition	Basic nutrition and indicators of food insecurity.
Young person's physical health	General health and amount of physical activity and exercise. Long-term health conditions requiring medical treatment (such as diabetes, epilepsy).
Young person's wellbeing	Extent of life satisfaction and happiness with different aspects of life.

Table 5: Implications for EOPS-C – School survey

Variable/factor/perspective	Details
School leadership style	Strong, clear vision for every pupil to succeed, effective use of data and collaboration/partnerships with other schools.
Parental involvement	Attitudes towards parental involvement, strategies to engage parents with the school and communicate to parents.
Transition	Transition management and support for at-risk pupils (primary to secondary (year 8 survey) and secondary to post-16 (year 10 and 12 surveys))
Extra-curricular activities	Breadth of extra-curricular activities provided by the school, accessibility for disadvantaged groups (including careers and higher/further education related).
Support for pupils with particular needs	Support provided for pupils (for example, disadvantaged pupils, SEN support/EHCP, CiN, looked-after children, mental health needs). SEND inclusivity.
Ability groups and placement	Use of setting and streaming by ability, pupil's placement in high or low ability groups/sets/streams (particularly for mathematics and English).
Attendance	School-level attendance rate.
Classroom climate	Indications of the quality of instructional support, socio-emotional support, and classroom organisation and management.
School culture/climate	Indications of school culture, extent the school seeks to nurture sense of belonging, anti-bullying policy and practice, behaviour management.
Teaching style	Expectations, boundaries and aspirations for pupils. Use of peer/collaborative learning. Teachers being approachable.

Table 6: Implications for EOPS-C – Pupil-level questions for teacher survey

Variable/factor/perspective	Details
Attendance	Attendance records of the individual pupil (including authorised and unauthorised)
Individualised and differentiated support	Extent of individualisation and differentiation of support (both emotional and academic).
Additional support	Whether the pupil has received additional support (academic or behavioural). Including tutoring, SEN support, mental health support.
Assessment of the pupil	Assessment of the pupil's capability, persistence and attention. Assessment of the pupil's relationships with school, teachers and peers. Pupil's level of effort, engagement with homework.
Parental support	Extent of pupil's parents' interest in the young person's education and their engagement with school.
Teacher turnover	Whether the pupil has experienced any teachers in their GCSE courses who are new to the school (year 11 survey).
Young person's mental health and behaviour	Pupil's strengths and difficulties, indicators of good/poor mental health. Strengths and difficulties questionnaire.

References

Alcott, B. (2017). Does teacher encouragement influence students' educational progress? A propensity-score matching analysis. *Research in Higher Education*, *58*(7), 773–804. https://doi.org/10.1007/s11162-017-9446-2

Anders, J., Macmillan, L., Sturgis, P., & Wyness, G. (2021). *Inequalities in young peoples' educational experiences and wellbeing during the Covid-19 pandemic*. https://repec-cepeo.ucl.ac.uk/cepeow/cepeowp21-08.pdf

Andrews, J., Robinson, D., & Hutchinson, J. (2017). *Closing the gap? Trends in educational attainment and disadvanatage*. https://epi.org.uk/wp-content/uploads/2017/08/Closing-the-Gap_EPI-.pdf

APPG. (2019). *Closing the regional attainment gap*. https://www.suttontrust.com/wp-content/uploads/2019/12/APPG-2019.pdf

Archer, R., Higton, J., Sibieta, L., & Tahir, I. (2021). *The road not taken: The drivers of course selection. The determinants and consequences of post-16 education choices*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/973596/The_road_not_taken_-_drivers_of_course_selection.pdf

Arora, T., Albahri, A., Omar, O. M., Sharara, A., & Taheri, S. (2018). The prospective association between electronic device use before bedtime and academic attainment in adolescents. *Journal of Adolescent Health*, *63*(4), 451–458. https://doi.org/10.1016/j.jadohealth.2018.04.007

Baars, S., Shaw, B., Mulcahy, E., & Menzies, L. (2018). *School cultures and practices: Supporting the attainment of disadvantaged pupils*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/730628/London_Effect_Qual_Research_-_Research_Report_FINAL_v2.pdf

Bagnall, C. L., Skipper, Y., & Fox, C. L. (2022). Primary-secondary school transition under Covid-19: Exploring the perceptions and experiences of children, parents/guardians, and teachers. *British Journal of Educational Psychology*, *92*(3), 1011–1033. https://doi.org/10.1111/bjep.12485

Baker, W., Sammons, P., Siraj-Blatchford, I., Sylva, K., Melhuish, E. C., & Taggart, B. (2014). Aspirations, education and inequality in England: Insights from the Effective Provision of Pre-school, Primary and Secondary Education Project. *Oxford Review of Education*, *40*(5), 525–542. https://doi.org/10.1080/03054985.2014.953921

Barlow, A., & Humphrey, N. (2012). A natural variation study of engagement and confidence among parents of learners with special educational needs and disabilities (SEND). *European Journal of Special Needs Education*, *27*(4), 447–467. https://doi.org/10.1080/08856257.2012.711959

Bellis, M., Wood, S., Hughes, K., Quigg, Z., & Butler, N. (2023). *Tackling Adverse Childhood Experiences (ACEs). State of the art and options for action*. https://www.ljmu.ac.uk/-/media/phi-reports/pdf/2023-01-state-of-the-art-report-eng.pdf

Benson, L., Burge, B., Liht, J., & Mughogho, K. (2022). *National Reference Test 2021: Factors affecting attainment*. https://www.nfer.ac.uk/publications/national-reference-test-2021-factors-affecting-attainment/

Berridge, D., Luke, N., Sebba, J., Strand, S., Cartwright, M., Staples, E., McGrath-Lone, L., Ward, J., & O'Higgins, A. (2020). *Children in need and children in care: Educational attainment and progress*. http://www.bristol.ac.uk/media-library/sites/policybristol/briefings-and-reports-pdfs/Final%20Report%20Nuffield.pdf

Biddle, S. J. H., Ciaccioni, S., Thomas, G., & Vergeer, I. (2019). Physical activity and mental health in children and adolescents: An updated review of reviews and an analysis of causality. *Psychology of Sport and Exercise*, *42*, 146-155. https://doi.org/10.1016/j.psychsport.2018.08.011

Blomstrand, P., & Engvall, J. (2021). Effects of a single exercise workout on memory and learning functions in young adults—A systematic review. *Translational Sports Medicine*, *4*(1), 115–127. https://doi.org/10.1002/tsm2.190

Bölte, S., Neufeld, J., Marschik, P. B., Williams, Z. J., Gallagher, L., & Lai, M.C. (2023). Sex and gender in neurodevelopmental conditions. *Nature Reviews Neurology*, *19*(3), Article 3. https://doi.org/10.1038/s41582-023-00774-6

Booth, J. N., Leary, S. D., Joinson, C., Ness, A. R., Tomporowski, P. D., Boyle, J. M., & Reilly, J. J. (2014a). *Associations between objectively measured physical activity and academic attainment in adolescents from a uk cohort*. *48*, 265–270. https://doi.org/doi:10.1136/bjsports-2013-092334

Booth, J. N., Ness, A. R., Joinson, C., Tomporowski, P. D., Boyle, J. M. E., Leary, S. D., & Reilly, J. J. (2023). Associations between physical activity and mental health and behaviour in early adolescence. *Mental Health and Physical Activity*, *24*. https://doi.org/10.1016/j.mhpa.2022.100497

Booth, J. N., Tomporowski, P. D., Boyle, J. M. E., Ness, A. R., Joinson, C., Leary, S. D., & Reilly, J. J. (2014b). Obesity impairs academic attainment in adolescence:

Findings from ALSPAC, a UK cohort. *International Journal of Obesity*, *38*(10), 1335–1342. https://doi.org/10.1038/ijo.2014.40

Bronfenbrenner, U. (1981). *The Ecology of Human Development*. Harvard University Press. https://www.hup.harvard.edu/books/9780674224575

Bukodi, E., Goldthorpe, J. H., & Zhao, Y. (2021). Primary and secondary effects of social origins on educational attainment: New findings for England. *The British Journal of Sociology*, *72*(3), 627–650. https://doi.org/10.1111/1468-4446.12845

Busch, V., Loyen, A., Lodder, M., Schrijvers, A. J. P., van Yperen, T. A., & de Leeuw, J. R. J. (2014). The effects of adolescent health-related behavior on academic performance: A systematic review of the longitudinal evidence. *Review of Educational Research*, *84*(2), 245–274. https://doi.org/10.3102/0034654313518441

Cadman, T., Hughes, A., Wright, C., López-López, J. A., Morris, T., Rice, F., Smith, G. D., & Howe, L. D. (2021). The role of school enjoyment and connectedness in the association between depressive and externalising symptoms and academic attainment: Findings from a UK prospective cohort study. *Journal of Affective Disorders*, *295*, 974–980. https://doi.org/10.1016/j.jad.2021.08.043

Camarero-Figuerola, M., Dueñas, J.M., & Renta-Davids, A.I. (2020). The relationship between family involvement and academic variables: A systematic review. *Research in Social Sciences and Technology*, *5*(2), 57–71. https://eric.ed.gov/?id=EJ1265258

Cambron, C., Catalano, R. F., & Hawkins, J. D. (2018). The social development model. In D. P. Farrington, L. Kazemian, & A. R. Piquero (Eds.), *The Oxford handbook of Developmental and Life-course Criminology*. https://doi.org/10.1093/oxfordhb/9780190201371.013.13

Cambron, C., Catalano, R. F., & Hawkins, J. D. (2019). The social development model. In D. P. Farrington, L. Kazemian, & A. R. Piquero (Eds.), *The Oxford Handbook of Developmental and Life-Course Criminology*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190201371.013.13

Cardim-Dias, J., & Sibieta, L. (2022). *Inequalities in GCSE results across England and Wales*. https://epi.org.uk/wp-content/uploads/2022/07/Inequalities-in-Wales-and-England.pdf

Chatzitheochari, S., & Platt, L. (2019). Disability differentials in educational attainment in England: Primary and secondary effects. *The British Journal of Sociology*, *70*(3), 1099–1100. https://doi.org/doi/10.1111/1468-4446.12372

Chen, C. Y.C. (2016). Educational functioning of children of parents with chronic physical illness: A systematic review. *School Psychology International*, *37*(6), 606–626. https://doi.org/10.1177/0143034316672705

Child Law Advice. (2022). *Child in need*. Child Law Advice. https://childlawadvice.org.uk/information-pages/child-in-need-services/

Children and Families Act 2014 (2014). https://www.legislation.gov.uk/ukpga/2014/6/contents/enacted

Children's Commissioner. (2022). *Digital childhoods: A survey of children and parents*. https://www.childrenscommissioner.gov.uk/resource/digital-childhoods-a-survey-of-children-and-parents/

Classick, R., Gambhir, G., Liht, J., Sharp, C., & Wheater, R. (2021). *PISA 2018 additional analyses: What differentiates disadvantaged pupils who do well in PISA from those who do not?* https://www.nfer.ac.uk/publications/pisa-2018-additional-analyses-what-differentiates-disadvantaged-pupils-who-do-well-in-pisa-from-those-who-do-not/

Connolly, V. (2021). Can less be more? Instruction time and attainment in English secondary schools: Evidence from panel data. *London Review of Education*, *19*(1). https://doi.org/10.14324/LRE.19.1.17

Cornaglia, F., Crivellaro, E., & McNally, S. (2012). *Mental health and education decisions* (CEEDP0136). Centre for Economic Performance, LSE. https://cep.lse.ac.uk/_new/publications/abstract.asp?index=4014

Cox, F. M., & Marshall, A. D. (2020). Educational engagement, expectation and attainment of children with disabilities: Evidence from the Scottish Longitudinal Study. *British Educational Research Journal*, *46*(1), 222–246. https://doi.org/10.1002/berj.3576

Crawford, C., Macmillan, L., & Vignoles, A. (2017). When and why do initially high-achieving poor children fall behind? *Oxford Review of Education*, *43*(1), 88–108. https://doi.org/10.1080/03054985.2016.1240672

Cullinane, C., Anders, J., De Gennaro, A., Early, E., Holt-White, E., Montacute, R., Shao, X., & Yarde, J. (2022). *Wave 1 initial findings. Briefing no. 1 lockdown learning*. https://cosmostudy.uk/publication_pdfs/cosmo-briefing-lockdown-learning-(1).pdf

Day, C., Gu, Q., & Sammons, P. (2016). The impact of leadership on student outcomes: How successful school leaders use transformational and instructional strategies to make a difference. *Educational Administration Quarterly*, *52*(2), 221–258. https://doi.org/10.1177/0013161X15616863

Demirtas-Zorbaz, S., Akin-Arikan, C., & Terzi, R. (2021). Does school climate that includes students' views deliver academic achievement? A multilevel meta-analysis. *School Effectiveness and School Improvement*, *32*(4), 543–563. https://doi.org/10.1080/09243453.2021.1920432

Dent, A. L., & Koenka, A. C. (2016). The relation between self-regulated learning and academic achievement across childhood and adolescence: A meta-analysis. *Educational Psychology Review*, *28*(3), 425–474. https://doi.org/10.1007/s10648-015-9320-8

Department for Education. (2016). *'Specialist and nonspecialist' teaching in England: Extent and impact on pupil outcomes*. https://dera.ioe.ac.uk/28015/1/SubjectSpecialism_Report.pdf

Department for Education. (2019). *Children in need of help and protection: CIN review: Final data and analysis*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/809108/CIN_review_final_analysis_publication.pdf

Department for Education. (2022a). *Key stage 4 performance, academic year 2021/22*. https://explore-education-statistics.service.gov.uk/find-statistics/key-stage-4-performance-revised/2021-22

Department for Education. (2022b). *GCSE results (attainment 8)*. https://www.ethnicity-facts-figures.service.gov.uk/education-skills-and-training/11-to-16-years-old/gcse-results-attainment-8-for-children-aged-14-to-16-key-stage-4/latest

Department for Education. (2022c). *Outcomes for children in need, including children looked after by local authorities in England*. https://explore-education-statistics.service.gov.uk/find-statistics/outcomes-for-children-in-need-including-children-looked-after-by-local-authorities-in-england#dataBlock-a1c028dd-0dbe-4bc5-b877-2f9d9f3fa69d-tables

Department for Education. (2022d). *Key stage 2 attainment, academic year 2021/22*. https://explore-education-statistics.service.gov.uk/find-statistics/key-stage-2-attainment/2021-22

Department for Education. (2023). *State of the nation 2022: Children and young people's wellbeing*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1134596/State_of_the_nation_2022_-_children_and_young_people_s_wellbeing.pdf

Donati, G., Meaburn, E. L., & Dumontheil, I. (2019). The specificity of associations between cognition and attainment in English, maths and science during

adolescence. *Learning and Individual Differences*, *69*, 84–93. https://doi.org/10.1016/j.lindif.2018.11.012

Doyle, L., Easterbrook, M. J., & Harris, P. R. (2023). Roles of socioeconomic status, ethnicity and teacher beliefs in academic grading. *British Journal of Educational Psychology*, *93*(1), 91–112. https://doi.org/10.1111/bjep.12541

Duckworth, A. L., Taxer, J. L., Eskreis-Winkler, L., Galla, B. M., & Gross, J. (2019). Self-control and academic achievement: Annual review of psychology. *Annual Review of Psychology*, *70*, 373–399. https://doi.org/10.1146/annurev-psych-010418-103230

Easterbrook, M. J., Doyle, L., Grozev, V. H., Kosakowska-Berezecka, N., Harris, P. R., & Phalet, K. (2023). Socioeconomic and gender inequalities in home learning during the COVID-19 pandemic: Examining the roles of the home environment, parent supervision, and educational provisions. *Educational and Developmental Psychologist*, *40*(3), 1–13. https://doi.org/10.1080/20590776.2021.2014281

Easterbrook, M. J., Nieuwenhuis, M., Fox, K. J., Harris, P. R., & Banerjee, R. (2022). 'People like me don't do well at school': The roles of identity compatibility and school context in explaining the socioeconomic attainment gap. *British Journal of Educational Psychology*, *92*(3), 1178–1195. https://doi.org/10.1111/bjep.12494

Education Endowment Foundation. (2015). *Intra-cluster correlation coefficients*. Education Endowment Foundation.

Education Endowment Foundation. (2021a). *Homework*. EEF. https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit/homework

Education Endowment Foundation. (2021b). *Reducing class size*. https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit/reducing-class-size

Equality Act 2010 (2010). https://www.legislation.gov.uk/ukpga/2010/15/contents

Evans, D., & Field, A. P. (2020). Predictors of mathematical attainment trajectories across the primary-to-secondary education transition: Parental factors and the home environment. *Royal Society Open Science*, *7*(7), 1–20. https://doi.org/10.1098/rsos.200422

Ferguson, C. J. (2015). Do angry birds make for angry children? A meta-analysis of video game influences on children's and adolescents' aggression, mental health, prosocial behavior, and academic performance. *Perspectives on Psychological Science*, *10*(5), 646–666. https://doi.org/10.1177/1745691615592234

Fleming, M., McLay, J. S., Clark, D., King, A., Mackay, D. F., Minnis, H., & Pell, J. P. (2021). Educational and health outcomes of schoolchildren in local authority care in Scotland: A retrospective record linkage study. *PLOS Medicine*, *18*(11), e1003832. https://doi.org/10.1371/journal.pmed.1003832

Fry, D., Fang, X., Elliott, S., Casey, T., Zheng, X., Li, J., Florian, L., & McCluskey, G. (2018). The relationships between violence in childhood and educational outcomes: A global systematic review and meta-analysis. *Child Abuse & Neglect*, *75*, 6–28. https://doi.org/10.1016/j.chiabu.2017.06.021

Gardella, J. H., Fisher, B. W., & Teurbe-Tolon, A. R. (2017). A systematic review and meta-analysis of cyber-victimization and educational outcomes for adolescents. *Review of Educational Research*, *87*(2), 283–308. https://doi.org/10.3102/0034654316689136

Gibbons, S., Scrutinio, V., & Telhaj, S. (2018). *Teacher turnover: Does it matter for pupil achievement?* (CEP Discussion Paper No. 153). https://files.eric.ed.gov/fulltext/ED583870.pdf

Gilbert, A., Smith, N., Knudsen, L., Jindal-Snape, D., & Bradshaw, P. (2021). *Transition from primary to secondary school*. https://discovery.dundee.ac.uk/ws/portalfiles/portal/57320684/transition_primary_secondary_school_findings_growing_up_scotland_study.pdf

Gough, D. (2007). Weight of Evidence: A framework for the appraisal of the quality and relevance of evidence. *Research Papers in Education*, *22*(2), 213–228. https://doi.org/10.1080/02671520701296189

GOV.UK. (2022a). *Special educational needs in England, academic year 2021/22*. https://explore-education-statistics.service.gov.uk/find-statistics/special-educational-needs-in-england

GOV.UK. (2022b). *Characteristics of children in need, reporting year 2022*. https://explore-education-statistics.service.gov.uk/find-statistics/characteristics-of-children-in-need/2022

GOV.UK. (2022c). *Children looked after in England including adoptions, reporting year 2022*. https://explore-education-statistics.service.gov.uk/find-statistics/children-looked-after-in-england-including-adoptions/2022

Greenhalgh, T., & Taylor, R. (1997). How to read a paper: Papers that go beyond numbers (qualitative research). *BMJ*, *315*(7110), 740–743. https://doi.org/10.1136/bmj.315.7110.740

Gutman, L. M., & Schoon, I. (2013). *The impact of non-cognitive skills on outcomes for young people. A literature review.* Education Endowment Foundation.

https://discovery.ucl.ac.uk/id/eprint/10125763/1/Gutman_Schoon_%202013%20Non-cognitive_skills_literature_review_.pdf

Gutman, L. M., & Vorhaus, J. (2012). *The impact of pupil behaviour and wellbeing on educational outcomes*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/219638/DFE-RR253.pdf

Hale, D. R., & Viner, R. M. (2018). How adolescent health influences education and employment: Investigating longitudinal associations and mechanisms. *Journal of Epidemiology and Community Health*, *72*(6), 465–470. APA PsycInfo. https://doi.org/10.1136/jech-2017-209605

Halliday, S., Gregory, T., Taylor, A., Digenis, C., & Turnbull, D. (2021). The impact of bullying victimization in early adolescence on subsequent psychosocial and academic outcomes across the adolescent period: A systematic review. *Journal of School Violence*, *20*(3), 351–373. https://doi.org/10.1080/15388220.2021.1913598

Hampden-Thompson, G., & Galindo, C. (2017). School–family relationships, school satisfaction and the academic achievement of young people. *Educational Review*, *69*(2), 248–265. https://doi.org/10.1080/00131911.2016.1207613

Hanson, J., Moore, N., Clark, L., & Neary, S. (2021). *An evaluation of the North East of England pilot of the Gatsby Benchmarks of Good Career Guidance*. https://www.gatsby.org.uk/uploads/education/ne-pilot-evaluation-full-report.pdf

Harland, J., Sharp, C., Judkins, M., Flemons, L., Dey, M., Kennan, C., & Nugent, R. (forthcoming). *Factors influencing educational outcomes of primary school pupils: literature review*.

Harrison, D. N., Dixon, J., Sanders-Ellis, D., Ward, J., & Asker, P. (2023). *Care leavers' transition into the labour market in England*. https://www.education.ox.ac.uk/wp-content/uploads/2023/01/CareLeaversLabourMarket.pdf

Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, *112*, 64–105. https://doi.org/10.1037/0033-2909.112.1.64

Heflin, C., Darolia, R., & Kukla-Acevedo, S. (2020). Exposure to food insecurity during adolescence and educational attainment. *Social Problems*, *69*(2), 453–469. https://doi.org/10.1093/socpro/spaa036

Hodgen, J., Taylor, B., Francis, B., Craig, N., Bretscher, N., Tereshchenko, A., Connolly, P., & Mazenod, A. (2022). The achievement gap: The impact of between-class

attainment grouping on pupil attainment and educational equity over time. *British Educational Research Journal*, *49*(2), 209–230. https://doi.org/10.1002/berj.3838

Houtepen, L. C., Heron, J., Suderman, M. J., Fraser, A., Chittleborough, C. R., & Howe, L. D. (2020). Associations of adverse childhood experiences with educational attainment and adolescent health and the role of family and socioeconomic factors: A prospective cohort study in the UK. *PLoS Medicine*, *17*(3), e1003031. https://doi.org/10.1371/journal.pmed.1003031

Huang, A., & Roth, C. L. (2021). The link between obesity and puberty: What is new? *Current Opinion in Pediatrics*, *33*(4), 449–457. https://doi.org/10.1097/MOP.0000000000001035

Huat See, B., & Gorard, S. (2015). The role of parents in young people's education. A critical review of the causal evidence. *Oxford Review of Education*, *41*(3), 346–366. https://doi.org/10.1080/03054985.2015.1031648

Hughes, D., Mann, A., Barnes, S.-A., Baldauf, B., & McKeown, R. (2016). *Careers education: International literature review*. https://www.educationandemployers.org/research/careers-education-international-literature-review/

Hughes, L. A., Banks, P., & Terras, M. M. (2013). Secondary school transition for children with special educational needs: A literature review. *Support for Learning*, *28*(1), 24–34. https://doi.org/10.1111/1467-9604.12012

Hull, L., Lai, M.C., Baron-Cohen, S., Allison, C., Smith, P., Petrides, K., & Mandy, W. (2020). Gender differences in self-reported camouflaging in autistic and non-autistic adults. *Autism*, *24*(2), 352–363. https://doi.org/10.1177/1362361319864804

Humphrey, N., Wigelsworth, M., Barlow, A., & Squires, G. (2013). The role of school and individual differences in the academic attainment of learners with special educational needs and disabilities: A multi-level analysis. *International Journal of Inclusive Education*, *17*(9), 909–931. https://doi.org/10.1080/13603116.2012.718373

Hutchinson, J., Bonetti, S., Crenna-Jennings, W., & Akhal, A. (2019a). *Education in England: Annual report 2019*. https://epi.org.uk/wp-content/uploads/2019/07/EPI-Annual-Report-2019.pdf

Hutchinson, J., Bonetti, S., Crenna-Jennings, W., & Akhal, A. (2019b). *Education in England: Annual report 2019*. https://epi.org.uk/wp-content/uploads/2019/07/EPI-Annual-Report-2019.pdf

Ingram, J., Lindorff, A., McCann, E., Riggall, A., & Sani, N. (2024). *TALIS video study national report*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1027789/TALIS_video_study_country_report.pdf

Itriyeva, K. (2022). The effects of obesity on the menstrual cycle. *Current Problems in Pediatric and Adolescent Health Care*, *52*(8), 101–241. https://doi.org/10.1016/j.cppeds.2022.101241

Jacob, R., & Parkinson, J. (2015). The potential for school-based interventions that target executive function to improve academic achievement: A review. *Review of Educational Research*, *85*(4), 512–552. https://doi.org/10.3102/0034654314561338

Jindal-Snape, D., Hannah, E. F. S., Cantali, D., Barlow, W., & MacGillivray, S. (2020). Systematic literature review of primary–secondary transitions: International research. *Review of Education*, *8*(2), 526–566. https://doi.org/10.1002/rev3.3197

Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *American Journal of Public Health*, *105*(11), 2283–2290. https://doi.org/10.2105/AJPH.2015.302630

Jones, E., Gutman, L., & Platt, L. (2013). *Family stressors and children's outcomes*. https://www.gov.uk/government/publications/family-stressors-and-childrens-outcomes

Joseph Rowntree Foundation. (2022a). *UK poverty 2022: The essential guide to understanding poverty in the UK*. https://www.jrf.org.uk/report/uk-poverty-2022

Joseph Rowntree Foundation. (2022b). *What is poverty?* Joseph Rowntree Foundation (JRF). https://www.jrf.org.uk/deep-poverty-and-destitution/what-is-poverty

Karyda, M. (2020). The influence of neighbourhood crime on young people becoming not in education, employment or training. *British Journal of Sociology of Education*, *41*(3), 393–409. https://doi.org/10.1080/01425692.2019.1707064

Kim, S. (2022). Fifty years of parental involvement and achievement research: A second-order meta-analysis. *Educational Research Review*, *37*, 100463. https://doi.org/10.1016/j.edurev.2022.100463

Kim, S. won, & Hill, N. E. (2015). Including fathers in the picture: A meta-analysis of parental involvement and students' academic achievement. *Journal of Educational Psychology*, *107*(4), 919–934. https://doi.org/10.1037/edu0000023

Klein, M., Sosu, E. M., & Dare, S. (2020). Mapping inequalities in school attendance: The relationship between dimensions of socioeconomic status and forms of school

absence. *Children and Youth Services Review*, *118*, 105432. https://doi.org/10.1016/j.childyouth.2020.105432

Klein, M., Sosu, E. M., & Dare, S. (2022). School absenteeism and academic achievement: Does the reason for absence matter? *AERA Open*, *8*(1), 1–14. https://doi.org/10.1177/2332858421107111

Korous, K. M., Causadias, J. M., Bradley, R. H., Luthar, S. S., & Levy, R. (2022). A systematic overview of meta-analyses on socioeconomic status, cognitive ability, and achievement: The need to focus on specific pathways. *Psychological Reports*, *125*(1), 55–97. https://doi.org/10.1177/0033294120984127

Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M., & de Boer, H. (2020). The relationships between school belonging and students' motivational, social-emotional, behavioural, and academic outcomes in secondary education: A meta-analytic review. *Research Papers in Education*, *35*(6), 641–680. https://doi.org/10.1080/02671522.2019.1615116

Kuhn, L., Bradshaw, S., Donkin, A., Fletcher, L., Liht, J., & Wheater, R. (2021). *PISA 2018 additional analyses: What does PISA tell us about the wellbeing of 15 year olds?* http://www.nfer.ac.uk/publications/pisa-2018-additional-analyses-what-does-pisa-tell-us-about-the-wellbeing-of-15-year-olds/

Kuhn, L., Norris, I., Sawyer, G., Schwendel, G., & Twist, L. (2022). *Children and young people's wellbeing and mental health during the Covid-19 pandemic*. National Foundation for Educational Research. https://www.nfer.ac.uk/media/vmfno3no/children_and_young_peoples_wellbeing_and_mental_health_during_the_covid19_pandemic.pdf

Lacey, R. E., & Gondek, D. (2021). *Adverse childhood experiences and mental health*. https://www.ucl.ac.uk/epidemiology-health-care/sites/epidemiology_health_care/files/aces_mentalhealth_policybrief_0.pdf

Lai, M.-C., Lombardo, M. V., Auyeung, B., Chakrabarti, B., & Baron-Cohen, S. (2015). Sex/Gender differences and autism: Setting the scene for future research. *Journal of the American Academy of Child & Adolescent Psychiatry*, *54*(1), 11–24. https://doi.org/10.1016/j.jaac.2014.10.003

Lam, K. K. L., & Zhou, M. (2019). Examining the relationship between grit and academic achievement within K-12 and higher education: A systematic review. *Psychology in the Schools*, *56*(10), 1654–1686. https://doi.org/10.1002/pits.22302

Leigh, E., Rimfeld, K., Bowes, L., Clark, D. M., Eley, T. C., & Krebs, G. (2022). Prospective associations between internalising symptoms and educational achievement in youth: A monozygotic twin differences study. *Journal of Affective Disorders*, *307*, 199–205. https://doi.org/10.1016/j.jad.2022.03.073

Lessof, C., Ross, A., & Brind, R. (2019). *Multiple disadvantage and KS4 attainment: Evidence from LSYPE2*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908927/LSYPE2_multiple_disadvantage_and_KS4_attainment.pdf

Lessof, C., Ross, A., Brind, R., Harding, C., Bell, E., & Kyriakopoulos, G. (2018). *Understanding KS4 attainment and progress: Evidence from LSYPE2*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/748514/Understanding_KS4_LSYPE2_research-report.pdf

Machin, S., McNally, S., & Ruiz-Valenzuela, J. (2020). Entry through the narrow door: The costs of just failing high stakes exams. *Journal of Public Economics*, *190*, 104224. https://doi.org/10.1016/j.jpubeco.2020.104224

Macleod, S., Sharp, C., Bernardinelli, D., Skipp, A., & Higgins, S. (2015). *Supporting the attainment of disadvantaged pupils: Articulating success and good practice*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/473974/DFE-RR411_Supporting_the_attainment_of_disadvantaged_pupils.pdf

Madigan, D. J., & Curran, T. (2020). Does burnout affect academic achievement? A meta-analysis of over 100,000 students. *Educational Psychology Review*, *33*(2), 387–405. APA PsycInfo. https://doi.org/10.1007/s10648-020-09533-1

Mammadov, S. (2022). Big five personality traits and academic performance: A meta-analysis. *Journal of Personality*, *90*(2), 222–255. https://doi.org/10.1111/jopy.12663

Mannay, D., Evans, R., Staples, E., Hallett, S., Roberts, L., Rees, A., & Andrews, D. (2017). The consequences of being labelled 'looked-after': Exploring the educational experiences of looked-after children and young people in Wales. *British Educational Research Journal*, *43*(4), 683–699. https://doi.org/10.1002/berj.3283

Marker, C., Gnambs, T., & Appel, M. (2018). Active on Facebook and failing at school? Meta-analytic findings on the relationship between online social networking activities and academic achievement. *Educational Psychology Review*, *30*(3), 651–677. https://doi.org/10.1007/s10648-017-9430-6

Maxwell, S., Reynolds, K. J., Lee, E., Subasic, E., & Bromhead, D. (2017). The impact of school climate and school identification on academic achievement: Multilevel modeling with student and teacher data. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.02069

Mayo, A., & Siraj, I. (2015). Parenting practices and children's academic success in low-SES families. *Oxford Review of Education*, *41*(1), 47–63. https://doi.org/10.1080/03054985.2014.995160

McCulloch, A. (2017). Educational aspirations trajectories in England. *British Journal of Educational Studies*, *65*(1), 69–85. https://doi.org/10.1080/00071005.2016.1197883

McLellan, R., & Galton, M. (2015). *The impact of primary-secondary transition on students' wellbeing*. https://www.educ.cam.ac.uk/people/staff/mclellan/Final-Report-June-2015.pdf

Mejía-Rodríguez, A. M., & Kyriakides, L. (2022). What matters for student learning outcomes? A systematic review of studies exploring system-level factors of educational effectiveness. *Review of Education*, *10*(3), 2–35. https://doi.org/10.1002/rev3.3374

Montacute, R. (2022). *The cost of living crisis and its impact on education*. Sutton Trust. https://www.suttontrust.com/news-opinion/all-news-opinion/the-cost-of-living-crisis-and-its-impact-on-education/

Montacute, R., Holt-White, E., Anders, J., Cullinane, C., De Gennaro, A., Early, E., Shao, X., & Yarde, J. (2022). *Wave 1 initial findings. Briefing no. 2 education recovery and catch up*. https://cosmostudy.uk/publications/education-recovery-and-catch-up

Moulton, V., Sullivan, A., Henderson, M., & Anders, J. (2018). Does what you study at age 14–16 matter for educational transitions post-16? *Oxford Review of Education*, *44*(1), 94–117. https://doi.org/10.1080/03054985.2018.1409975

Musshafen, L. A., Tyrone, R. S., Abdelaziz, A., Sims-Gomillia, C. E., Pongetti, L. S., Teng, F., Fletcher, L. M., & Reneker, J. C. (2021). Associations between sleep and academic performance in US adolescents: A systematic review and meta-analysis. *Sleep Medicine*, *83*, 71–82. https://doi.org/10.1016/j.sleep.2021.04.015

Nelson, J., Lynch, S., & Sharp, C. (2021). *Recovery during a pandemic: The ongoing impacts of Covid-19 on schools serving deprived communities*. https://www.nfer.ac.uk/publications/recovery-during-a-pandemic-the-ongoing-impacts-of-covid-19-on-schools-serving-deprived-communities/

Newlove-Delgado, T., Marcheselli, F., Williams, T., Mandalia, D., Davis, J., McManus, S., Savic, M., Treloar, W., & Ford, T. (2022). *Mental health of children and young people in England 2022, wave 3 follow up to the 2017 survey*. https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2022-follow-up-to-the-2017-survey

Newlove-Delgado, T., McManus, S., Sadler, K., Thandi, S., Vizard, T., Cartwright, C., & Ford, T. (2021). Child mental health in England before and during the Covid-19 lockdown. *The Lancet Psychiatry*, *8*(5), 353–354. https://doi.org/10.1016/S2215-0366(20)30570-8

Ng-Knight, T., Shelton, K. H., Riglin, L., Frederickson, N., McManus, I. C., & Rice, F. (2019). 'Best friends forever'? Friendship stability across school transition and associations with mental health and educational attainment. *British Journal of Educational Psychology*, *89*(4), 585–599. https://doi.org/10.1111/bjep.12246

NHS. (2022). *Early or delayed puberty*. https://www.nhs.uk/conditions/early-or-delayed-puberty/

NHS Digital. (2022). *Decrease in smoking and drug use among school children but increase in vaping, new report shows*. https://digital.nhs.uk/news/2022/decrease-in-smoking-and-drug-use-among-school-children-but-increase-in-vaping-new-report-shows

Nicoletti, C., & Rabe, B. (2019). Sibling spillover effects in school achievement. *Journal of Applied Econometrics*, *34*(4), 482–501. https://doi.org/10.1002/jae.2674

Nieuwenhuis, J., Kleinepier, T., & van Ham, M. (2021). The role of exposure to neighborhood and school poverty in understanding educational attainment. *Journal of Youth and Adolescence*, *50*(5), 872–892. https://doi.org/10.1007/s10964-021-01427-x

Nowland, R., & Qualter, P. (2019). Influence of social anxiety and emotional self-efficacy on pre-transition concerns, social threat sensitivity, and social adaptation to secondary school. *The British Journal of Educational Psychology*, *90*(1), 227–244. https://doi.org/10.1111/bjep.12276

O'Connell, M., & Marks, G. N. (2022). Cognitive ability and conscientiousness are more important than SES for educational attainment: An analysis of the UK Millennium Cohort Study. *Personality and Individual Differences*, *188*, 111471. https://doi.org/10.1016/j.paid.2021.111471

OECD. (2014). *Does homework perpetuate inequities in education?* (46; PISA in Focus). https://www.oecd-ilibrary.org/education/does-homework-perpetuate-inequities-in-education_5jxrhqhtx2xt-en

OECD. (2019). *PISA 2018 results (volume iii): What school life means for students' lives* (1–Paris). OECD Publishing. https://doi.org/10.1787/acd78851-en

O'Higgins, A., Sebba, J., & Gardner, F. (2017). What are the factors associated with educational achievement for children in kinship or foster care: A systematic

review. *Children and Youth Services Review*, *79*, 198–220. https://doi.org/10.1016/j.childyouth.2017.06.004

Outhwaite, L. (2020). *Inequalities in resources in the home learning environment* [Briefing note]. https://repec-cepeo.ucl.ac.uk/cepeob/cepeobn2.pdf

Ozyildirim, G. (2021). Time spent on homework and academic achievement: A meta-analysis study related to results of TIMSS. *Psicología Educativa*, *28*(1), 13–21. https://doi.org/10.5093/psed2021a30

Piera Pi-Sunyer, B., Andrews, J. L., Orben, A., Speyer, L. G., & Blakemore, S.J. (2022). The relationship between perceived income inequality, adverse mental health and interpersonal difficulties in UK adolescents. *Journal of Child Psychology and Psychiatry*, *64*(3), 417–425. https://doi.org/10.1111/jcpp.13719

Poet, H., Lord, P., Styles, B., Oppedisano, V., Zhang, M., & Dorsett, R. (2022). *Evaluation of Year 1 of the tuition partners programme: Impact evaluation for Year 11*. https://d2tic4wvo1iusb.cloudfront.net/documents/projects/Evaluation-Report-Y11-impact-evaluation-TP.pdf?v=1666084377

Pollard, E., Huxley, C., Martin, A., Takala, H., & Byford, M. (2019). *Impact on the student finance system on participation, experience and outcomes of disadvantaged young people*. https://www.gov.uk/government/publications/the-student-finance-system-impact-on-disadvantaged-young-people

Prangthip, P., Soe, Y. M., & Signar, J. F. (2019). Literature review: Nutritional factors influencing academic achievement in school age children. *International Journal of Adolescent Medicine and Health*, *33*(2). https://doi.org/10.1515/ijamh-2018-0142

Putwain, D. W., Loderer, K., Gallard, D., & Beaumont, J. (2020). School-related subjective well-being promotes subsequent adaptability, achievement, and positive behavioural conduct. *British Journal of Educational Psychology*, *90*(1), 92–108. https://doi.org/10.1111/bjep.12266

Rokicka, M. (2016). Do mothers' and fathers' work involvement matter for teenagers' school outcomes? *British Educational Research Journal*, *42*(1), 117–134. https://doi.org/10.1002/berj.3191

Roorda, D. L., Jak, S., Zee, M., Oort, F. J., & Koomen, H. M. Y. (2017). Affective teacher–student relationships and students' engagement and achievement: A meta-analytic update and test of the mediating role of engagement. *School Psychology Review*, *46*(3), 239–261. https://doi.org/10.17105/SPR-2017-0035.V46-3

Rothon, C., Goodwin, L., & Stansfeld, S. (2012). Family social support, community 'social capital' and adolescents' mental health and educational outcomes: A longitudinal

study in England. *Social Psychiatry and Psychiatric Epidemiology*, *47*(5), 697–709. https://doi.org/10.1007/s00127-011-0391-7

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Smees, R., Toth, K., & Welcomme, W. (2014). *Effective Pre-school, Primary and Secondary Education (EPPSE 3 – 16+) Project influences on students' dispositions and well-being in key stage 4 at age 16*. https://www.researchgate.net/publication/266373009_Effective_Pre-school_Primary_and_Secondary_Education_EPPSE_3_-_16_Project_Influences_on_students%27_dispositions_and_well-being_in_Key_Stage_4_at_age_16

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Toth, K., & Smees, R. (2014). *Influences on students' GCSE attainment and progress at age 16*. https://dera.ioe.ac.uk/20875/1/RR352_-_Influences_on_Students_GCSE_Attainment_and_Progress_at_Age_16.pdf

Sammons, P., Toth, K., & Sylva, K. (2015). *Subject to background: What promotes better achievement for bright but disadvantaged students?* (Sutton Trust. 9th Floor Millbank Tower, 21-24 Millbank, London SW1P 4QP. Tel: +44-20-7802-1660; E-mail: info@suttontrust.com; Web site: http://www.suttontrust.com/). Sutton Trust; ERIC. https://www.suttontrust.com/wp-content/uploads/2019/12/Subject-to-background1-1.pdf

Sammons, P., Toth, K., Sylva, K., Melhuish, E., Siraj, I., & Taggart, B. (2015). The long-term role of the home learning environment in shaping students' academic attainment in secondary school. *Journal of Children's Services*, *10*(3), 189–201.

Sánchez-Álvarez, N., Berrios Martos, M. P., & Extremera, N. (2020). A meta-analysis of the relationship between emotional intelligence and academic performance in secondary education: A multi-stream comparison. *Frontiers in Psychology*, *11*(1517). https://doi.org/10.3389/fpsyg.2020.01517

Schoon, I., Burger, K., & Cook, R. (2021). Making it against the odds: How individual and parental co-agency predict educational mobility. *Journal of Adolescence*, *89*(1), 74–83. https://doi.org/10.1016/j.adolescence.2021.04.004

Selvitopu, A., & Kaya, M. (2021). A meta-analytic review of the effect of socioeconomic status on academic performance. *Journal of Education*. https://doi.org/10.1177/00220574211031978

Sequeira, M.E., Lewis, S. J., Bonilla, C., Smith, G. D., & Joinson, C. (2017). Association of timing of menarche with depressive symptoms and depression in adolescence: Mendelian randomisation study. *The British Journal of Psychiatry*, *210*(1), 39–46. https://doi.org/10.1192/bjp.bp.115.168617

Shaw, B., Baars, S., Menzies, L., Parameshwaran, M., & Allen, R. (2017). *Low income pupils' progress at secondary school*. https://cfey.org/wp-content/uploads/2017/02/SMC-Progress-at-Secondary-School-Shaw-et-al.-LKMco-Datalab.pdf

Shaw, B., & Morris, S. (2020). *Disadvantage in early secondary school*. https://www.mmu.ac.uk/media/mmuacuk/content/documents/business-school/future-economies/Disadvantage-in-early-secondary-Report.pdf

Siraj-Blatchford, I., Mayo, A., Melhuish, E., Taggart, B., Sammons, P., & Sylva, K. (2013). The learning life course of at 'risk' children aged 3-16: Perceptions of students and parents about 'succeeding against the odds'. *Scottish Educational Review*, *45*(2), 5–17. https://doi.org/10.1163/27730840-04502002

Smith, N. R., Marshall, L., Albakri, M., Smuk, M., Hagell, A., & Stansfeld, S. (2021). Adolescent mental health difficulties and educational attainment: Findings from the UK household longitudinal study. *BMJ Open*, *11*(7), e046792. https://doi.org/10.1136/bmjopen-2020-046792

Sosu, E., & Klein, M. (2021). *Socioeconomic disparities in school absenteeism after the first wave of Covid-19 school closures in Scotland*. https://strathprints.strath.ac.uk/75286/1/Sosu_Klein_2021_Socioeconomic_disparities_in_school_absenteeism_after.pdf

Stokes, L., Rolfe, H., Hudson-Sharp, N., & Stevens, S. (2015). *A compendium of evidence on ethnic minority resilience to the effects of deprivation on attainment*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/439861/RR439A-Ethnic_minorities_and_attainment_the_effects_of_poverty.pdf

Stopforth, S., & Gayle, V. (2022). Parental social class and GCSE attainment: Re-reading the role of 'cultural capital'. *British Journal of Sociology of Education*, *43*(5), 680–699. https://doi.org/10.1080/01425692.2022.2045185

Susperreguy, M. I., Davis-Kean, P. E., Duckworth, K., & Chen, M. (2018). Self-concept predicts academic achievement across levels of the achievement distribution: Domain specificity for math and reading. *Child Development*, *89*(6), 2196–2214. https://doi.org/10.1111/cdev.12924

Sutcliffe, A. G., Gardiner, J., & Melhuish, E. (2017). Educational progress of looked-after children in England: A study using group trajectory analysis. *Pediatrics*, *140*(3), e20170503. https://doi.org/10.1542/peds.2017-0503

Sutherland, A., Ilie, S., & Vignoles, A. (2015). *Factors associated with achievement: Key stage 4*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attac

hment_data/file/473673/RR407_-_Factors_associated_with_achievement_-_key_stage_4.pdf

Sylva, K., Melhuish, E., Sammons, P., Siraj, I., Taggart, B., Smees, R., Welcomme, W., & Hollingworth, K. (2014). *Students' educational and developmental outcomes at age 16: Effective pre-school, primary and secondary education (EPPSE 3-16) project*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/351496/RR354_-_Students__educational_and_developmental_outcomes_at_age_16.pdf

Taggart, B., Sammons, P., Siraj, I., Sylva, K., Melhuish, E., Toth, K., Smees, R., Hollingworth, K., & Welcomme, W. (2014). *Effective Pre-school, Primary and Secondar Education (EPPSE 3 – 16+) project post age 16 destinations*. https://www.researchgate.net/publication/266373012_Effective_Pre-school_Primary_and_Secondary_Education_EPPSE_3_-_16_Project_Post_age_16_destinations

Tan, C. Y. (2017). Examining cultural capital and student achievement: Results of a meta-analytic review. *Alberta Journal of Educational Research*, *63*(2), 139–159. https://doi.org/10.11575/ajer.v63i2.56285

TASO. (2021). *An investigation into the relationship between outreach participation and KS4 attainment/HE progression*. https://s33320.pcdn.co/wp-content/uploads/relationship-outreach-attainment-progression.pdf

Teach First. (2022). Stark destination gap: Disadvantaged pupils twice as likely to be out of work or education as their wealthier peers. *Teach First*. https://www.teachfirst.org.uk/press-release/destination-gap

Torvik, F. A., Flatø, M., McAdams, T. A., Colman, I., Silventoinen, K., & Stoltenberg, C. (2021). Early puberty is associated with higher academic achievement in boys and girls and partially explains academic sex differences. *Journal of Adolescent Health*, *69*(3), 503–510. https://doi.org/10.1016/j.jadohealth.2021.02.001

Toste, J. R., Didion, L., Peng, P., Filderman, M. J., & McClelland, A. M. (2020). A meta-analytic review of the relations between motivation and reading achievement for K–12 students. *Review of Educational Research*, *90*(3), 420–456. https://journals.sagepub.com/doi/full/10.3102/0034654320919352

Tuckett, S., Hunt, E., Robinson, D., & Cruikshanks, R. (2022). *Covid19 and disadvantage gaps in England*. https://www.nuffieldfoundation.org/project/covid-19-disadvantage-gaps-in-england

Twist, L., Jones, E., & Treleaven, O. (2022). *The Impact of Covid-19 on pupil attainment. A summary of research evidence*. National Foundation for Educational Research.

https://www.nfer.ac.uk/publications/the-impact-of-covid-19-on-pupil-attainment-a-summary-of-research-evidence/

Tze, V. M. C., Daniels, L. M., & Klassen, R. M. (2016). Evaluating the relationship between boredom and academic outcomes: A meta-analysis. *Educational Psychology Review*, *28*(1), 119–144. https://doi.org/10.1007/s10648-015-9301-y

UCAS. (2023). Second-highest ever number of UK 18-year-olds apply to university or college by January deadline. *UCAS Corporate on Twitter*. https://www.ucas.com/corporate/news-and-key-documents/news/second-highest-ever-number-uk-18-year-olds-apply-university-or-college-january-deadline

von Stumm, S. (2017). Socioeconomic status amplifies the achievement gap throughout compulsory education independent of intelligence. *Intelligence*, *60*, 57–62. APA PsycInfo. https://doi.org/10.1016/j.intell.2016.11.006

Wang, M.-T., Degol, J. L., Amemiya, J., Parr, A., & Guo, J. (2020). Classroom climate and children's academic and psychological wellbeing: A systematic review and meta-analysis. *Developmental Review*, *57*, 100912. https://doi.org/10.1016/j.dr.2020.100912

Wentzel, K. R., Jablansky, S., & Scalise, N. R. (2021). Peer social acceptance and academic achievement: A meta-analytic study. *Journal of Educational Psychology*, *113*(1), 157–180. https://doi.org/10.1037/edu0000468

Wickersham, A., Ford, T., Stewart, R., & Downs, J. (2021). Estimating the impact of child and early adolescent depression on subsequent educational attainment: Secondary analysis of an existing data linkage. *Epidemiology and Psychiatric Sciences*, *30*, e76. https://doi.org/10.1017/S2045796021000603

Wilkinson, D., Bryson, A., & Stokes, L. (2018). Assessing the variance in pupil attainment: How important is the school attended? *National Institute Economic Review*, *243*(1), R4–R16. https://doi.org/10.1177/002795011824300110

Wright, C., Kipping, R., Hickman, M., Campbell, R., & Heron, J. (2018). Effect of multiple risk behaviours in adolescence on educational attainment at age 16 years: A UK birth cohort study. *BMJ Open*, *8*(7), e020182. https://doi.org/10.1136/bmjopen-2017-020182

Yarde, J., Shao, X., Anders, J., Cullinane, C., De Gennaro, A., Early, E., Holt-White, E., & Montacute, R. (2022). *Wave 1 initial findings. Briefing No. 3 future plans and aspirations*. https://cosmostudy.uk/publications/future-plans-and-aspirations

Yoshikawa, H., & Hsueh, J. (2001). Child development and public policy: Toward a dynamic systems perspective. *Child Development*, *72*(6), 1887–1903. https://doi.org/10.1111/1467-8624.00384

Appendix A: Theoretical underpinning for the study

This review is underpinned by a theoretical framework of human behaviour and development and how this is influenced by risk and protective factors. The identification of risk and protective factors for antisocial behaviour (Hawkins et al., 1992) has contributed to the evidence base in a range of areas, including criminology and health. The underlying theoretical frame for this work is the social development model (Cambron et al., 2018), which seeks to understand how differing experiences of social relationships can result in behaviours that are conducive or antithetical to an individual's wellbeing and their impact on wider society. The dynamic systems approach (Yoshikawa & Hsueh, 2001) builds on this, seeking to identify a general theory of human behaviour that integrates research on risk and protective factors into a coherent model that proposes general mechanisms for how public policies may influence child development.

Appendix B: Education and outcomes panel studies Panel C: Rapid literature review plan

This appendix presents the EOPS-C rapid literature review plan which formed the basis for the searches and was agreed with the collaborators, DfE and expert advisors. In practice, some of the intentions set out here were subsequently amended in discussion with the collaborators, DfE and expert advisors.

Purpose of the review

The aim of the rapid literature review for EOPS-C is to further inform the DfE and research team's understanding of the full range of potential key factors affecting the attainment outcomes of secondary school pupils. The review will capture evidence on pupils' attainment and progress throughout the secondary school years, including their transition from primary, the widening of the attainment gap throughout secondary school, their attainment outcomes at age 16 years and initial transition to post-16 programmes. The review will also provide contextual data on the impact of COVID-19 on the attainment gap.

The over-arching research question will be:

- to further inform the DfE and research team's understanding of the full range of key factors affecting the attainment outcomes of secondary school pupils, how risk factors can be mitigated and protective factors supported, and whether there are any gaps in understanding of the interplay between these factors and outcomes for secondary school pupils

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Review design

This is a rapid review of research and evidence using systematic searching. It will adopt an initial open approach to searching for relevant literature on the influences on secondary pupils' attainment outcomes, progressing to explore in greater depth the factors at the pupil, home, neighbourhood and school level that are widely evidenced as

being influential, as well as gaps in the evidence and new areas for exploration. This will provide a basis from which influential factors can be measured longitudinally and help to inform policy development to address inequalities in educational attainment.

The review will seek to identify the best evidence (in terms of robust findings) for each theme.

1. Pupils' mental health and wellbeing, cognitive and non-cognitive capabilities

2. Special Educational Needs and Disabilities (SEND) and experience of social services

3. Home environment – including home learning, parenting and family support

4. Socio-economic attributes[140]

5. Experiences of school.

The review will also aim to capture the extent to which there is evidence of any additional or alternative factors of influence on the attainment of secondary school pupils, which may be related to, but distinctive to the factors outlined above. These are likely to have been identified as potentially important risk or protective factors (for example, in qualitative research or in meta-analyses and reviews) but have been less thoroughly evidenced to date.

The team recognises that the above themes are inter-related and will seek to explore these connections within the literature review report (for example, by including literature using complex statistical modelling to identify moderators and mediators of attainment).

Out of scope

The review will focus on young people's attainment and progress during the secondary school years. For this reason, it will not treat the themes above as outcomes in their own right. For example, it will focus on how pupils' mental health and wellbeing is associated with their progress and attainment during secondary schooling, but it will not seek to identify the risk and protective factors affecting young people's mental health and wellbeing. Specific areas to be excluded from the review are detailed below in section 'Inclusion and exclusion criteria'.

[140] Most of the studies included in the review reported the influence of socio-economic attributes on attainment (for example, as control variables). For this reason, studies originally identified in relation to this theme were analysed and reported in relation to the other 4 themes. As socio-economic factors relate primarily to household income and parental education, studies that focus on this are mainly considered in the report chapter focusing on the home environment.

Defining the main themes of the review

The tables below provide further details of each theme grouped into three domains within the young person's ecological microsystem: individual-level; home and neighbourhood-level; and school-level (Bronfenbrenner, 1981). Note, however, that the themes, rather than the domains, will form the main focus of the review to ensure coverage of all themes prioritised by the DfE.

The literature in the shortlist will be reviewed in two tranches to enable an initial focus on priority themes, particularly in areas where the identification of measures and development of new question items may be required. This will allow us to draw on the literature with sufficient time to influence questions for the main stage. Following discussion with the DfE, we intend to prioritise the themes as set out below:

- priority themes: pupils' cognitive and non-cognitive capabilities (part of Theme 1); home environment (including life online at home); peer and social media influences, and experiences of school; plus any key emerging new evidence
- secondary themes: socio-economic attributes; SEND and experience of social services; and mental health, wellbeing and physical development (the remainder of Theme 1)

Table 7: Main themes of the review – Individual-level

Domain	Theme	Working definition/scope	Examples of risk and protective factors that may be related to attainment and progress
Individual-level	Wellbeing, cognitive and non-cognitive capabilities	Mental health, wellbeing, physical and emotional development – indicators of a young person's emotional, psychological, social and physical wellbeing	Mental health/wellbeing, including positive mental health, referral to mental health support, diagnosed and undiagnosed mental health issues. Physical health (including being physically active/inactive, un/healthy lifestyles, puberty) risky behaviour (including alcohol and substance misuse, sexual behaviour, gambling) and cognitive development.
Individual-level	Wellbeing, cognitive and non-cognitive capabilities	Character and behaviour - indicators of a young person's non-cognitive skills, character and behaviour	Non-cognitive and social-emotional skills, such as self-concept, self-control/behaviour, empathy, confidence and motivation. Behavioural attributes/actions (not including specific behavioural special educational needs and disabilities such as ADHD).
Individual-level	SEND and experience of social services	Young people with special educational needs and disabilities (SEND), children in need (CIN), looked-after children (LAC), excluded from school, attending alternative provision	Special educational needs and disabilities – whether or not officially identified (such as with an education, health and care plan (EHCP), school action/school action plus or SEND statement). Looked-after children/care experienced, young people identified through child protection as at risk, young people who have been supported by social services as part of a Child Protection plan, designation as a Child in Need, persistent absence/school exclusion and alternative provision, young carers.

Table 8: Main themes of the review – Home and neighbourhood-level

Domain	Theme	Working definition/scope	Examples of risk and protective factors that may be related to attainment and progress
Home and neighbourhood-level	Home environment	The nature of the family and resources in the home.	Family relationships; home learning environment (including the physical characteristics of the home and the quality of the implicit and explicit learning support they receive from the caregivers); parental engagement with school; parent-child interaction; parental aspirations for their children; homework support. Safety and quality of the home physical environment and resources (including access to books and technology in the home, screen time at home/outside school hours).
Home and neighbourhood-level	Socio-economic attributes	Indicators of access to economic resources and social position (including mediators of the influence of poverty on academic progress and attainment)	Eligibility for free school meals (FSM)/pupil premium (PP), disadvantaged. Household income, parental education, parental employment status. Level of deprivation in the local area/region (for example, Income Deprivation Affecting Children Index (IDACI)). The nature of the neighbourhood and resources in the local area. Influence of place types and amenities, including access to green space, sport and cultural experiences. Socio-economic characteristics of school intake. (Note overlap with home factors and experiences of school).

Table 9: Main themes of the review – School-level

Domain	Theme	Working definition/scope	Examples of risk and protective factors that may be related to attainment and progress
School-level	Experiences of school	Pupils' experiences of and attitudes towards learning and school.	Pupils' experiences of and attitudes towards learning and school and their attendance. (Note that persistent absence is covered as part of the SEND and experience of social services theme.) Transition from primary school and support for post-16 decisions/transitions. Experience of additional support for learning. Influence of friends and peer group. Bullying and life online (including influence of social media, peer relationships online). Relationships with school staff (including teacher attitudes and expectations). Pupils' views on the curriculum, extra-curricular activities, assessment, teachers and school (including, school ethos/climate, sense of belonging). School type (for example academy/local authority/selective/independent) and quality (for example Ofsted rating).

Review process

The search and selection process will be systematic in the sense that it will involve specifying, recording and reporting criteria and decisions as well as applying consistent procedures at each stage of the review. The review is rapid in the sense that it is constrained by time, to enable it to contribute to the development of the longitudinal data-collection.

The review aims to identify, in a timely and efficient way, the best evidence in terms of relevance to the Panel C study and the most robust study designs. It will also aim to identify literature on emerging factors that may indicate gaps in the evidence base about the influences on secondary-aged pupils' attainment, thus helping to inform the development of the Panel C instruments. This will be achieved by:

- identifying gaps and unexpected themes in the search results, including gaps in terms of the themes covered (for example, only a small number of items of literature[141] are identified in relation to a theme)
- a paucity of robust evidence relating to a particular theme (for example, a number of items are identified in relation to a theme but they are not robust studies)
- a potential new/unanticipated risk/protective factor is identified (for example, from qualitative studies) based on the initial open searching on the factors influencing secondary pupils' attainment outcomes

The review will involve the following steps.

Searching and initial sifting:

- **initial search strategy** drawn up by NFER information specialists with input from research team
- **agree search strategy and parameters with collaborators and DfE.** The team will provide a document outlining the search parameters (such as date range and type of literature); sources (key databases and websites); selection process during the searches (including prioritisation of reviews and longitudinal studies, and specifying certain types/content of literature that will be excluded from the review, such as single studies unless they offer the best evidence available on a relevant theme); and lists of 'key words' and phrases that will be used to search databases. (The proposed search strategy is set out below.)
- NFER's information specialists will conduct the searches according to the strategy and parameters and will initially sift the anticipated high volume (1000s) of potentially relevant research to achieve a high level of precision. The keyword combination searches of databases (see Table 11) are crucial to identifying

[141] An item of literature means a single written source, such as a journal article or report.

relevant literature but also yield a high proportion of results (for example, up to 90% for some searches) that are not relevant to the specific review criteria, for example because they do not include attainment measures. Therefore, manual assessment of the relevance of the item based on the title/abstract is required. This aspect of identifying literature is undertaken by experienced researchers and items of borderline relevance are put forward for further systematic examination. This process excludes items that clearly do not meet the inclusion criteria set out in this specification

- the sifting process will **result in a 'long-list' of approximately 400 items of literature**[142]**.** NFER will record key information on each of the selected items in an Excel document. This will include a full reference and link (where available), date, country, search source and abstract/summary. This will be shared with the collaborating organisations and DfE for information. Collaborators, experts and the DfE will also be invited to contribute suggestions for items of literature to be included on this list that meet the selection criteria once this literature review plan and search strategy has been agreed

Screening:

- **a team of experienced NFER researchers will code the titles and abstracts/summaries of the 'long list' of 400 items.**
- for each item, the researchers will identify the primary theme of interest to the review (i.e. themes 1 to 5 and an appropriate sub-theme, such as those identified in Tables 7, 8 and 9) and rate the extent of relevance to the study aims in terms of measurement of risk/protective factors associated with the academic attainment of pupils and to the inclusion criteria for the review (on a scale of 1 to 10, with 1 being very low relevance and 10 being very high relevance). They will also rate the type of study. Meta-analysis, systematic reviews, literature reviews and longitudinal/cohort studies will receive a higher rating than individual empirical studies in relation to the main themes. Within each 'theme', items with the highest combined rating will be short-listed for full review (the exact number of items selected will depend on the number of items per theme and the proportion of relevant items, but is likely to include the highest scoring 10-30% of items within each theme). However, qualitative studies with high relevance in a new thematic area, UK-focused and addressing a key gap in the evidence will be considered within scope and will receive a specific code to enable a small number of such studies (for example, around 5 per cent) to be selected
- the team will be briefed to ensure consistency. Initially, NFER will conduct an inter-coder reliability check whereby individuals independently review a small selection of the same items (approximately 4) to ensure robustness and consistency in the

[142] This number was estimated based on trial searches and to ensure manageability and coverage across all themes.

coding approach. Further QA checks will be conducted during the process to ensure a consistent approach to coding and item selection

- **the screening process will result in identifying a 'shortlist' of approximately 90 items**[143] which will be reviewed by the collaboration and DfE
- the shortlist will identify the selected items in relation to each of the main themes of the review, plus other factors considered relevant to secondary pupils' attainment but where the evidence is less well established. This means that there will be approximately 18 items in the short-list relating to each of the main themes

Additional material:

- the review team will invite the DfE and experts (such as members of the Technical Advisory Group) to recommend key evidence to consider for inclusion in the shortlist. This could include seminal evidence which was published before 2012 or single empirical studies which address a gap in the evidence
- the review team will undertake reference harvesting (also known as 'snowballing') to identify additional references from shortlisted literature (if required to address particular evidence gaps or if insufficient relevant material is identified in the searches). In cases where this finds a similar but better (more relevant, comprehensive, up to date, better quality) example than an original shortlisted item, we will substitute the new item for another on the shortlist. We are also willing to expand the list (by up to 10 per cent), to accommodate key literature of particular value to the study

Reviewing:

- a team of experienced researchers from across the collaborating organisations – NFER, NatCen and NCB – will review the shortlisted items relating to their area of expertise
- reviewing items will involve completing a structured template to summarise: the main findings in relation to each of the themes and any additional emerging themes; methods (including overall design, sample size and characteristics, and measurement of dependent, independent and control variables); gaps and implications for further investigation. The review template will also record the names of relevant measures used in the studies, which will be passed to NatCen to inform instrument development
- in addition, the review will adopt a 'Weight of Evidence' approach (Gough, 2007) to evaluate the quality and relevance of the evidence. This will involve assigning a rating for each of the following:

[143] This number was estimated to ensure manageability and coverage of the most robust and relevant sources across all themes.

a) methodological quality: a non-review specific rating about the coherence and integrity of the evidence (based on assessment of aspects such as clear purpose, representativeness, validity of measures, sample size, interpretation of the findings, and sources of limitation and bias, such as attrition)[144]
b) methodological relevance/precision: a review-specific rating of the appropriateness of the form of evidence for addressing the review question
c) topic relevance: a review-specific rating about the relevance of the evidence to the review question

These ratings will be combined to form an overall assessment of the weight of evidence to address the review question.

In order to promote consistency, NFER will provide at least two examples of appraised items, researchers will attend an initial briefing, and at least one item per theme will be co-reviewed. NFER will check the approach and information extracted is consistent and clear. They will also QA up to 10% of reviews during the reviewing process and once all reviews are completed.

Analysis and reporting:

- the team of researchers will synthesise the evidence in relation to each of the key themes and any additional topics of interest. (Items offering insights of potential influences on secondary pupils' attainment that are not covered by the main themes of the review will also be identified.) The process will entail assessing the quality of evidence, analysing the extent of variation in findings relating to each theme, the direction and magnitude of the relationship of each factor with attainment, and the relationship/s between factors
- collaborators will meet to discuss the emerging findings from their analysis, explore interpretations and identify key messages for the report. This will include consideration of how factors become more or less important as young people become older and the implications for data collection. Key emerging findings will also be presented to the DfE and the team will draft a structure for reporting findings for agreement
- the team will draft a written report of the literature review findings which will present the evidence in relation to each of the key themes, as well as relevant contextual evidence and emerging evidence on factors of influence. The report will be refined and finalised for publication based on review by collaborators, DfE and the steering group and technical advisory group

[144] Note that the quality of qualitative studies will be assessed using different criteria – see Greenhalgh and Taylor (1997).

Roles in the review

The three organisations of the collaboration will have the following roles in relation to the literature review.

NFER:

- lead and manage the literature review, with input from collaborators and the DfE and experts at specific points (such as nominating key items and reviewing the list of shortlisted items)
- design search parameters, conduct searches and identify the most relevant items (screening)
- design templates, brief reviewers and lead QA
- allocate items of literature to these and coordinate contributions from the collaboration, experts and DfE
- review literature, analyse and write report, incorporating sections from NatCen and NCB
- review, analyse and report on the following themes: pupils' cognitive and non-cognitive capabilities (part of Theme 1); socio-economic attributes; experiences at school; and new and emerging factors

NatCen and NCB:

- review search parameters and shortlisted items – recommend changes/additions
- review literature, analyse and write report sections related to specific themes
- NatCen will review, analyse and report on literature on the following themes: home environment; mental health, wellbeing and physical development (remaining part of Theme 1)
- NCB will review, analyse and report on the theme of SEND and experience of social services

Department for Education:

- comment on the search parameters
- review the list of 90 shortlisted items (in relation to long list of 400). Suggest changes and recommend additional items for consideration that are seminal or fill important gaps in the evidence-base
- attend an emerging findings meeting and provide a steer on findings of particular interest and importance to the study

- collate responses from colleagues across DfE to an initial report outline and the draft literature review report. In cases where opinions differ, provide guidance to the review team on which comment(s) takes precedence

EOPS-C Technical Advisory Group and Steering Group:

- the members of the EOPS-C Technical Advisory Group and Steering Group will be invited to review the draft shortlist and suggest further items to include and comment on the draft literature review report

Inclusion and exclusion criteria

Inclusion and exclusion criteria are set out in Table 10 below.

Table 10: Summary of inclusion and exclusion criteria

Criteria	Include	Exclude	Rationale
Date range	Literature published 2012 – 2022[145]	Literature published before 2012 (except older literature synthesised in reviews, or identified as seminal and highly relevant, for example, via expert recommendation or widely cited)	Literature published in the last ten years is most likely to reflect the context and environment experienced by the population intended to take part in EOPS-C.
Geographic location	England, UK and international literature reviews/meta-analysis[146] (English-speaking and/or comparator jurisdictions)	Primary studies conducted outside the UK.	Studies conducted in England/UK are likely to be most relevant to the EOPS-C study population. International literature is less likely to be directly relevant to the English context but could identify other key risk/protective factors.
Language	Published in English	Published in languages other than English	Most likely to be relevant (see geographic coverage) and including literature published in other languages is not cost-effective within the time and resources available for this rapid review.

[145] Searches were conducted between 25 October and 11 November 2022.

[146] Longitudinal studies conducted outside the UK may also be considered for inclusion in cases where UK evidence is thin.

Criteria	Include	Exclude	Rationale
Type of publication	Research-based literature reviews, meta-analyses and longitudinal studies conducted in England and the UK. Large-scale cross-sectional quantitative studies (1,000 or more participants) and qualitative studies conducted in England/UK. International literature reviews/meta-analysis in English-speaking and/or comparator jurisdictions. Peer reviewed and grey literature.	Individual, small-scale primary studies (except in the case of evidence gaps). Policy documents (except if reporting data not available from other sources); opinion pieces.	These types of literature are likely to provide the best evidence for the purposes of this rapid review.
Participants	Pupils in key stage 3, key stage 4 and key stage 5 (excluding year 13) in England (age 12-17) and international equivalents	Items focused on pupils younger than 11 (school year 6 or below) or older than 17 (school year 13). Studies focused on specific interventions	To reflect the focus of EOPS-C on the secondary phase of education. Other EOPS studies are exploring early years and primary education.

Criteria	Include	Exclude	Rationale
Reported outcomes	Risk and protective factors for academic attainment and progress including transition from primary school and initial transition to post-16 programmes	Non-academic attainment or progress	To reflect the focus of the EOPS-C study on pupils' transition from primary school, attainment outcomes and initial post-16 transition. The review will explore the factors influencing these outcomes rather than the factors as distinctive outcomes themselves, given the time and resources available for the review and the breadth of influential factors.
Content of interest	Evidence on the influence of the following factors on secondary pupils' attainment: demographic characteristics; pupils' wellbeing (including health), cognitive and non-cognitive capabilities; SEND and experience of social services; home environment; socio-economic attributes; experiences of school.	Highly specific aspects within these factors, such as works focused on specific medical/health conditions; and wider societal factors (such as crime, changes to benefits system).	To ensure the review covers the breadth of influences on secondary school attainment and with sufficient depth in relation to each main theme and emerging areas within the time and resources available for the review.

Criteria	Include	Exclude	Rationale
Setting	Secondary schools of all types (including middle deemed secondary), FE colleges, apprenticeship providers, special schools and alternative provision; secondary pupils' home and locality; secondary pupils' peer group networks (friendship groups)	Primary schools of all types; young people educated exclusively at home; higher education (HE)	To ensure the review findings are relevant to secondary school/first year of post-16 population

Search parameters

Sources of evidence:

- **education databases:** British Education Index (BEI) and Educational Resources Information Center (ERIC)
- **mental health and social care databases:** Child and Adolescent Development Studies, PsycInfo, Pubmed (Medline) and Social Care Online
- **international systematic review libraries:** Campbell Collaboration and Cochrane Library
- **NFER's in-house database** which extensively covers UK government-commissioned research, outputs of leading UK research organisations and peer-reviewed literature published since 2018
- **selected UK websites** (for deeper searches of grey literature since 2012):
    - government education departments & oversight: Department for Education, Welsh Government, Scottish Government; Education Select Committee, National Audit Office
    - research organisations/studies: Centre for Education and Youth, Education Endowment Foundation, Edge Foundation, Education and Employers, Education Policy Institute, Gatsby Foundation, Institute of Employment Studies, Institute of Fiscal Studies, Institute for Social and Economic Research, LSE Department of Social Policy, Millennium Cohort Study, National Foundation for Educational Research, Nuffield Foundation, Sutton Trust, UCL Institute of Education (Centre for Longitudinal Studies [CLS] – LYSPE2, Centre for Education Policy and Equalising Opportunities [CEPEO], Centre for Learning and Life Chances in Knowledge Economies and Societies [LLAKES], UCL Centre for Inclusive Education and Thomas Coram Research Unit and the Effective Pre-school, Primary and Secondary Education Project [EPPSE – out of date range but seminal]), Young Minds
- **websites of selected key UK educational research and psychology journals** for new research not yet indexed in the databases where specific journals are identified to be particularly valuable sources in the database searching
- **relevant materials identified during EOPS-B literature searching**
- **recommendations** from NFER, NCB and NatCen thematic experts, academic partners and from experts at the DfE
- **reference harvesting** (as necessary)

Selection process

NFER information specialists will screen the high volume (1000s[147]) of search results against the search parameters prioritising works that can give the most robust and precise insights into pupil experiences during secondary education across the themes of the review to arrive at 400 items for systematic coding. The inclusion and exclusion criteria outlined above in Table 10 will be applied.

The risk of missing key literature (lack of sensitivity) will be mitigated by inviting expert recommendations from DfE, NatCen, NCB, NFER and academic partners as well as consulting the reference lists of shortlisted items.

The search process, initial sifting and selection of 400 items for systematic coding will be quality assured by Amanda Taylor, Head of Knowledge Team, with 20+ years of experience in conducting and managing literature reviews in educational research.

Keywords for database searches

Building on our experience of the literature searches for the EOPS-B study[148] we will focus this search on a broad sweep of the literature which explores factors influencing educational attainment and initial transition to post-16 programmes. In practical terms this means prioritising running searches which combine ‘educational attainment’ keywords with ‘age/phase’ keywords across a wide range of sources. This ‘open’ search approach ensures that we will identify robust literature on any lesser anticipated factors as well as those we know influence educational outcomes during secondary education. We will then run theme specific searches as required where there appear to be gaps.

As for EOPS-B, we have included theme related keyword sets below as a starting point for discussion to ensure that we again have a thorough shared understanding of the sub-topics or issues that are in scope.

The search strategy is designed such that all UK primary research and reviews will be screened. Given the extremely large volume of search results, the ‘methods set’ is included to limit international works to be screened to synthesised works such as reviews.

[147] Searches for EOPS-B identified over 6000 pieces meeting basic inclusion criteria and we anticipate this will be higher for EOPS-C

[148] In running the EOPS-B literature review searches we found that we had already identified the most relevant to attainment outcomes literature in the initial open search and could therefore focus ‘theme’ specific searches where there appeared to be gaps.

Table 11: Keyword set combinations for database searches (based on ERIC)

Results targeted	Themes (see tables below for full keywords) + Educational outcomes	Limited to secondary[149] phase (years 7-12 in England)	Limited by
UK primary research (including qualitative studies) & reviews/meta-analysis	Educational outcomes Demographic Pupils' wellbeing, cognitive and non-cognitive capabilities (including mental health, character, behaviour and physical development) SEND and experience of social services Socio-economic attributes Home environment Experiences of school	Adolescents Compulsory education Key stage 3/three Key stage 4/four Key stage 5 Secondary education General Certificate of Secondary Education/ GCSE Junior high schools Junior high school students High schools High school students Pre-vocational education Secondary School Curriculum Secondary School Students Secondary School(s) (FT) Teenagers (FT) Vocational High Schools	United Kingdom

[149] Searches will also identify literature which covers other phases in addition to secondary.

Results targeted	Themes (see tables below for full keywords) + Educational outcomes	Limited to secondary[150] phase (years 7-12 in England)	Limited by
International reviews & meta-analysis	Educational outcomes Demographic Pupils' wellbeing, cognitive and non-cognitive capabilities (including mental health, character, behaviour and physical development) SEND and experience of social services Socio-economic attributes Home environment Experiences of school	Adolescents Compulsory education Key stage 3/three Key stage 4/four Key stage 5 Secondary education General Certificate of Secondary Education/ GCSE Junior high schools Junior high school students High schools High school students Pre-vocational education Secondary School Curriculum Secondary School Students Secondary School(s) (FT) Teenagers (FT) Vocational High Schools	Methods: Literature reviews Longitudinal studies Meta-analysis Rapid review(s) (FT) Systematic review(s) (FT)

[150] Searches will also identify literature which covers other phases in addition to secondary.

Table 12: Keyword lists for each theme (listed alphabetically)

The keyword sets which follow are based on the ERIC thesaurus terms supplemented by free text key words (denoted FT) as an illustration.

Educational outcomes	Demographics	Mental Health, wellbeing and physical development	Character, capabilities and behaviour
Academic achievement Academic outcomes (FT) Achievement Achievement gains Achievement gap Alienation Attainment gap Closing /close the gap (FT) Disaffection (FT) Disengag* (FT) Drop outs Education outcome(s) (FT) Educational attainment Educational outcome(s)(FT) Exit examinations	English as an Additional Language (EAL) (FT) Ethnic Groups Gender differences Minority Groups Month of birth (FT) Season of birth (FT) Sex Summer born (FT)	Anxiety CAMHS (FT) Child and adolescent mental health services (FT) Children and young people mental health services Depression (Psychology) Emotional disturbances (used for emotional disorder Emotional problems Healthy lifestyle (FT) Mental health Mental health service(s) (FT) Onset of sexual activity Physical development Physical health Puberty	Academic aspiration Achievement need Aspiration Behavior Behaviour (FT) Character (FT) Coping Emotional intelligence Emotional response (used for emotional regulation) Interpersonal competence (used for social skills) Learning disposition (FT) Learning motivation Life skills Locus of control Metacognition

Educational outcomes	Demographics	Mental Health, wellbeing and physical development	Character, capabilities and behaviour
General Certificate of Secondary Education/GCSE (FT) GCSE attainment (FT) Grades (scholastic) High achievement Learner engagement Levelling / level up (FT) Long tail (FT) Low achievement Mathematics achievement Narrowing/narrow the gap (FT) Outcomes of education Post-16 destinations (FT) Post-16 transition(s) (FT) Prior attainment (FT) Pupil attainment (FT) Pupil outcome(s) (FT) Reading achievement Transition(s) Underachievement		Resilience (Psychology) Risky behaviour/behavior (FT) Sexuality Smoking Substance abuse Well being Well being services (s) (FT)	Non-cognitive (FT) Persistence Personality Personality traits Problem solving Resilience (Psychology) Self control Self efficacy Self esteem (self confidence) Self motivation Self regulation Social behaviour Social skills (FT) Student behavior Student motivation

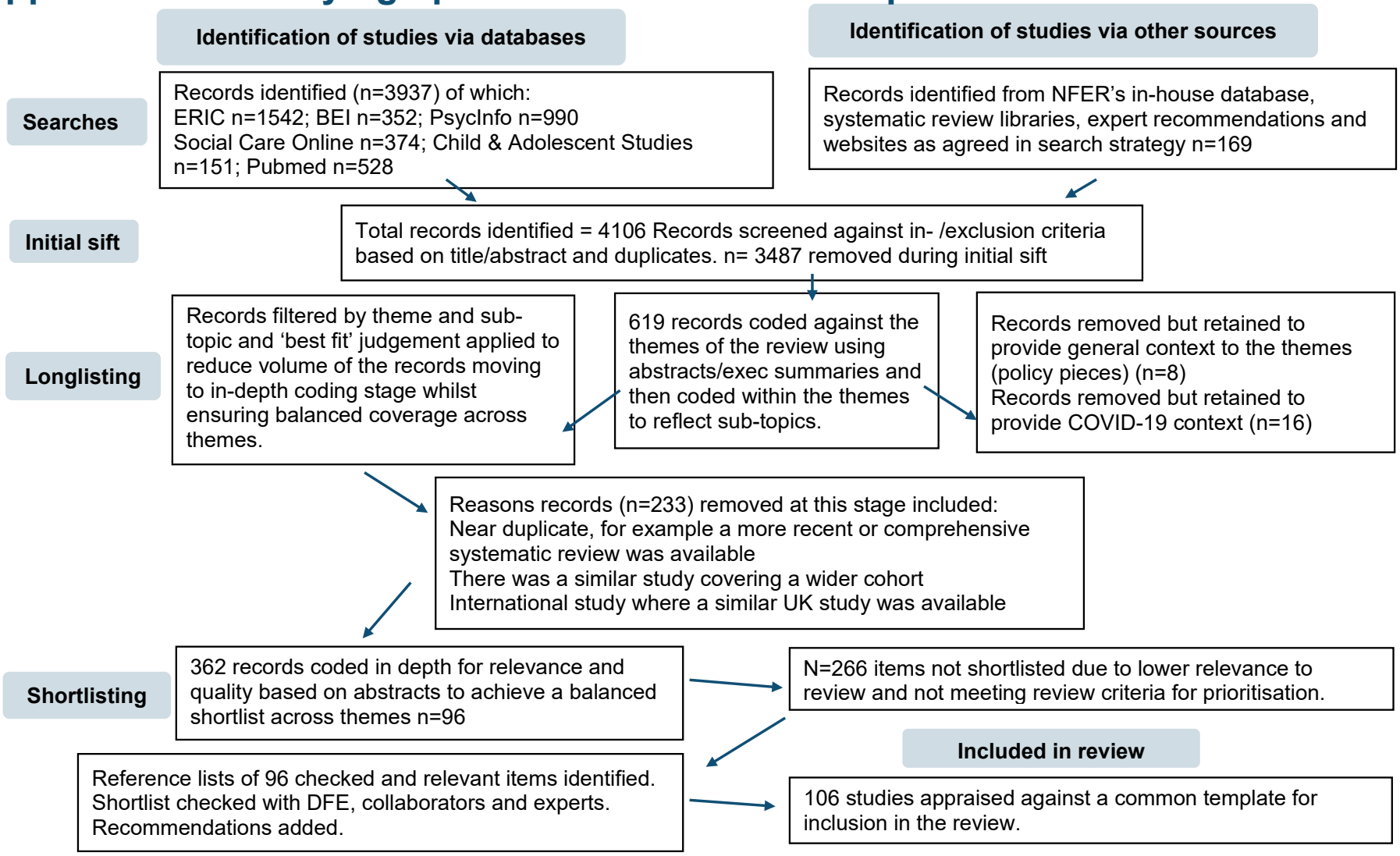
SEND and experience of social services	Home environment	Socio-economic attributes	Experiences at school
Adoption	Access to computers	Disadvantaged	Ability grouping
Additional learning needs (FT)	Digital access (FT)	Disadvantaged schools	Alienation
Additional support needs (FT)	Digital divide (FT)	Disadvantaged youth	Attendance
Adverse childhood experience(s) (FT)	Family characteristics	Economically disadvantaged	Attendance patterns
Alternative provision (FT)	Family environment	Educationally disadvantaged	Behaviour management (FT)
At risk students	Family involvement	Educational mobility	Career choice
Care experienced (FT)	Family life	Free school meals (FT)	Career counselling
Children in need (FT)	Family literacy	Homeless people	Career guidance
Child protection (FT)	Family problems	Housing needs	Classroom environment
Child safety (used for child protection)	Family relationship	Index of Multiple Deprivation (FT)	Collaborative learning (FT)
Child welfare	Family school relationship	Low income	Cooperative learning
Children in care (FT)	Home learning environment (FT)	Low income groups	Disaffection (FT)
Delinquency	Home school partnerships	Low income students	Disengag* (FT)
Disabilities	Home school relations/ships (FT)	Poverty	Discipline
Dropouts	Homework	Pupil premium (FT)	Educational environment
EHCP or EHC plan (FT)	Life online (FT)	Parent education	Educational quality
Expulsion	Parent aspiration	Parent background	Extra-curricular activities
Foster care	Parent attitudes	Parent income	Friendship
Hard to reach (FT)	Parent child relationship	Parental employment (FT)	Learner engagement
	Parent participation	Deprivation	Peer acceptance
		Deprived areas	Peer groups
			Peer influence

SEND and experience of social services	Home environment	Socio-economic attributes	Experiences at school
Individual learning plan (FT) Intellectual disab* (FT) Internal exclusion Juvenile justice Learning disabilities Learning difficulties (FT) Looked after child(ren) (FT) Mental retardation[151] NEET (FT) Out of school youth Persistent absence (FT) Pupil referral unit (FT) Safeguarding (FT) School Action (FT) School action plus (FT) School exclusion (FT) SEN support (FT) Social care (FT) Social services Special education Special needs students	Parent school relationship Parent student relationship Parent teacher cooperation Parental engagement (FT) Social media	Disadvantaged areas (FT) Disadvantaged environment Education investment areas (FT) Neighborhoods Neighbourhood (FT) Opportunity areas (FT) Postcode lottery (FT) Social capital Socioeconomic Status Rural areas Urban areas	Peer relationship School attitudes School attachment School belonging (FT) School bonding (FT) School climate (FT) School connectedness (FT) School connection School culture School environment (FT) School ethos (FT) Student attitudes Student school relationship Teacher attitudes Teacher expectations of students Teacher student relationship Teaching methods Teaching styles Tutoring

[151] This outdated terminology still forms part of the ERIC database hence its inclusion

SEND and experience of social services	Home environment	Socio-economic attributes	Experiences at school
Special education needs (FT) Special educational needs (FT) Statement of special educational needs (FT) Suspension Truancy Vulnerable child(ren) (FT) Vulnerable pupil(s) (FT) Young carer(s) (FT) Young offender(s) (FT)			

Appendix C: Identifying optimal evidence for the rapid review[152]



[152] Page, M.J. et al. (2021) 'The PRISMA 2020 statement: an updated guideline for reporting systematic reviews', *BMJ*, 372, p. n71. Available at: https://doi.org/10.1136/bmj.n71.

Appendix D: EOPS-C Technical Advisory Group members who provided expert advice on the report

Pamela Sammons

Sarah-Jayne Blakemore

Liz Washbrook

Robin Banerjee

Janet Goodall

Emily Tanner

Steve Strand

Matthew Easterbrook

Jenni Ingram

Louise Moore

Department for Education

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