Department for Education

Study of Early Education and Development (SEED): Findings from the Coronavirus (COVID-19) follow-up

Research report

October 2021

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Government Social Research

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Executive summary

This report examines findings from Wave 5 of the SEED longitudinal study. It focuses on experiences of children and parents during the COVID-19 pandemic, including both at the time of data collection in September-October 2020 and retrospectively, during the period of restricted attendance in schools in April-May 2020 (between the Easter holidays and May half-term break) and in June-July 2020 (between the May half-term break and end of the school year). Children in the SEED study were aged 8-10 at the time of the survey.

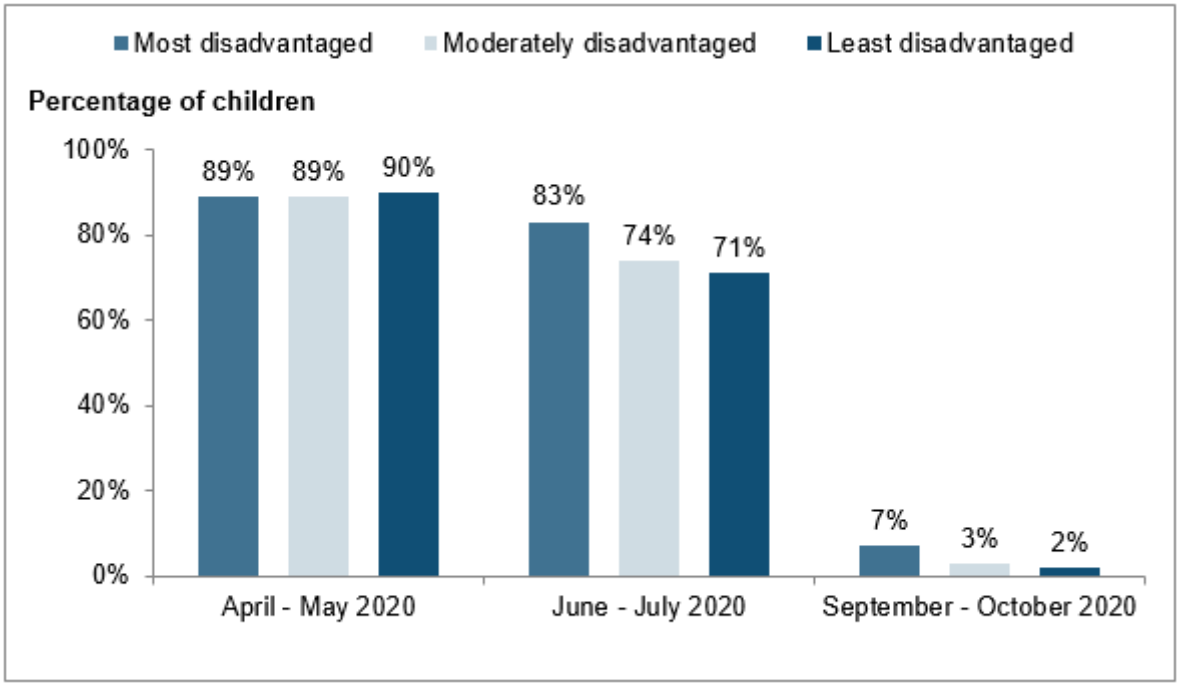
The report presents data on children's schooling at three points during the COVID-19 pandemic (April-May 2020, June-July 2020 and September-October 2020), including on children's school attendance, remote education and additional tuition (chapter 2). It also discusses children's health and health behaviours (chapter 3). It examines changes in children's socio-emotional development since the age of 4 years old and explores how these relate to their educational experiences, early years home environment, parenting styles and specific experiences during the COVID-19 pandemic (chapter 4). Finally, the report investigates child-parent relationships during the pandemic and factors associated with greater closeness between children in the SEED study and their parents (chapter 5).

However, it is important to note that it is not possible to attribute the findings in this report directly to the effects of the COVID-19 pandemic on children and their families. This is because there is no equivalent population who did not experience this event who we can use as a comparison group in these analyses. Therefore, while this report documents the experiences of children in the SEED study and their parents during the time period covered by the COVID-19 pandemic, we cannot conclude from these analyses that their experiences were as a direct consequence of the pandemic. The findings from this report cannot be used to evaluate specific government policies including those in response to the COVID-19 pandemic.

School attendance, remote education and additional tuition

- In the period of the initial national lockdown (April-May 2020), almost 9 out of 10 (89%) children in the study did not attend school in person. After schools' phased re-opening (June-July 2020), this proportion went down to 74%, and differences emerged by disadvantage, with those more disadvantaged being less likely to attend school after the May half-term. By the start of the new academic year (September-October 2020), most children (95%) were back attending school in person every weekday, although those more disadvantaged and those with special educational needs (SEN; as reported by parents in the survey) were less likely to attend.

Figure 1: Percentage of children not attending school in person at all, by time period and disadvantage

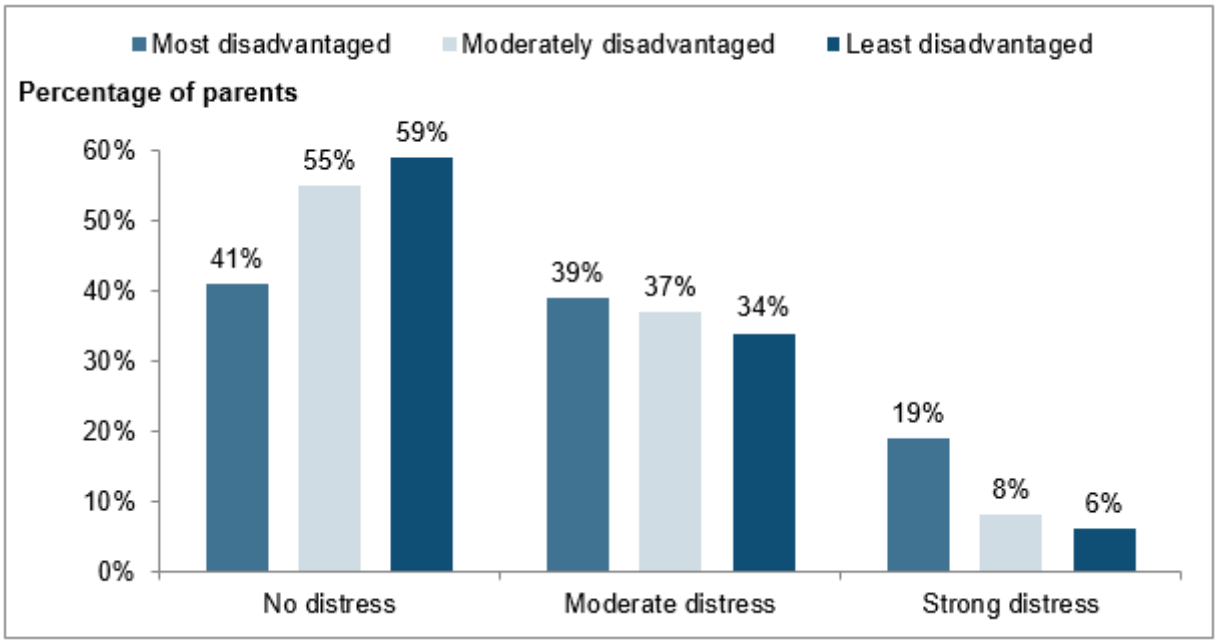


- Almost all children in the study (96%) were given work by their school during the national lockdown in April-May 2020. Of those given work, 3% completed none of it, 22% completed less than half, 41% completed half or more and 35% completed all of it. Children with SEN were less likely to be given work and less likely to complete all of it. Independent schools were more likely to offer online lessons than state-funded schools.
- One in five (22%) children in the most disadvantaged group had no access to a computer during the national lockdown period in April-May 2020, compared to only 1 in 20 (5%) of the least disadvantaged group. This was similar for children with SEN. One in five children with SEN (21%) had no access to a computer compared to 1 in 10 (11%) without SEN.
- In September-October 2020, 22% of children in the study were receiving tuition in maths, English or other academic subjects. For more than half of these children, the tutoring was organised by their school. Although there were no significant differences in the proportion of children receiving tutoring by disadvantage group, there were significant differences in who organised the tutoring. Children in the most disadvantaged group were more likely to have their tutoring organised by the school, whereas children in the least disadvantaged group were more likely to have their tutoring organised by their parents. Two out of five parents whose children received tutoring reported that the additional tutoring was linked to the previous lockdown.

Health, mental health and health behaviours

- Parents of 34% of children in the study reported that their children exercised every day, 29% exercised on 4-6 days per week, 34% exercised 1-3 days per week and 3% never exercised. There was no evidence of a link between exercise and disadvantage but children with SEN were significantly more likely to “never” exercise (10%, compared with 2% of children without SEN).
- Most children had a regular bedtime (50% of parents said “usually” and 40% said “always”). This behaviour did not vary by disadvantage or SEN status.
- One in four (24%) households included someone who had experienced COVID-19 symptoms since the beginning of the pandemic. Less than half of those (44%) sought medical attention for their symptoms. The prevalence of COVID-19 symptoms did not vary significantly by disadvantage or SEN status. However, households where the SEED child had SEN were more likely to seek medical attention than those where the child did not have SEN. One in ten households (11%) contained an individual who was considered to be clinically vulnerable and had been advised to shield by the NHS. Two per cent of children participating in the SEED study were asked to shield. Being asked to shield was strongly associated with disadvantage and having special educational needs.
- Most children (72%) saw family members who did not live with them, or spoke with them on video, at least once a week. Most children (63%) also spent time with their friends at least once a week in September-October 2020. Children with SEN were less likely to see their family or friends than children without SEN.
- One in ten parents (10%) could be categorised as experiencing “strong distress”, and one in three (36%) were experiencing “moderate distress”, using the Kessler 6 distress scale. Parents from the most disadvantaged families and those whose children had SEN were more likely to have been experiencing mental distress.

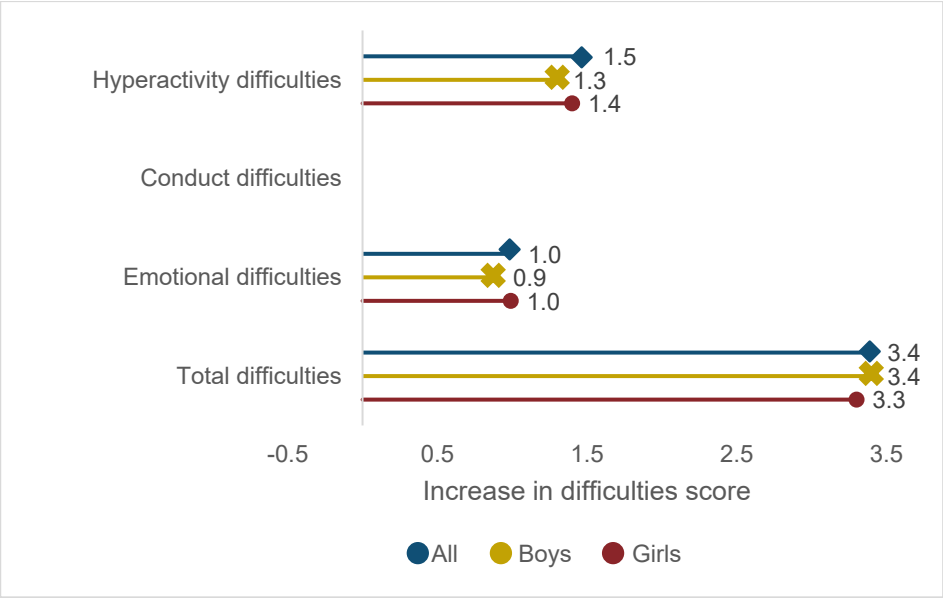
Figure 2: Parental distress in September-October 2020, by disadvantage



Changes in children's socio-emotional development

- The socio-emotional wellbeing of children in the SEED study, as measured through parents' responses to the Strengths and Difficulties Questionnaire (SDQ), deteriorated between the ages of 4 and 8-10 years old. This is in line with previous research that has found that socio-emotional difficulties increase as children grow up.
- The relationship between socio-emotional difficulties and parenting styles and parents' warmth towards their children had weakened between the ages of 4 and 8-10 years old.
- Gender differences in socio-emotional difficulties present at age 4 had widened by ages 8-10 years. Boys continued to report higher levels of total socio-emotional and hyperactivity difficulties than girls and were more likely to report conduct difficulties by ages 8-10.
- Increases in socio-emotional difficulties were significantly higher between the ages of 4 and 8-10 for children with special educational needs. The growth of the SEN gap was most acute for hyperactivity and emotional difficulties; children with SEN experienced, on average, a 3.4 point greater increase in total difficulties, a 1 point greater increase in emotional difficulties and a 1.5 point greater increase in hyperactivity difficulties than those with no SEN over this time period.

Figure 3: Estimated increases in socio-emotional difficulties scores associated with having special educational needs (significant coefficients from fixed effects models only)

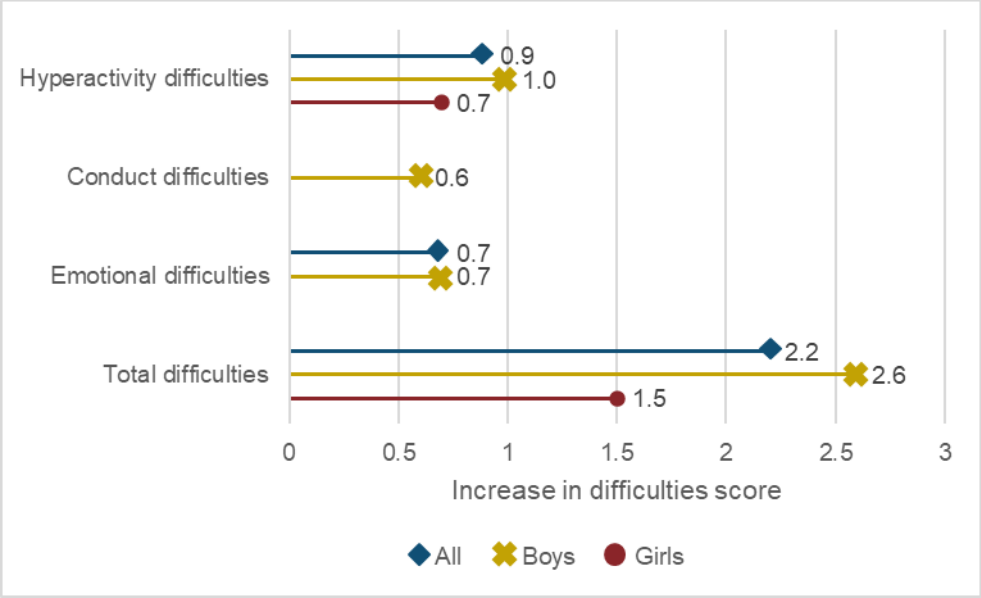


- Recent experience of household disruption[1] and parental mental distress[2] at age 8-10 were both associated with increases from age 4 in emotional, hyperactivity and conduct difficulties as well as total difficulties.
- Having a regular bedtime and seeing friends more often during the pandemic were generally associated with lower increases in socio-emotional difficulties, particularly so for girls. For boys, not attending school in person while having no quiet place to study at home was a significant predictor of an increase in total socio-emotional difficulties and emotional difficulties scores.
- Children's educational attainment was significantly associated with their socio-emotional development between the ages of 4 and 8-10 years old. In particular, children who were classified as having recent low attainment – those who had met the expected level when they were 5 years old (in the Early Years Foundation Stage Profile) but not the expected levels in English and maths when they were 7 years old (in Key Stage 1 testing) – experienced a significantly greater deterioration in their socio-emotional development than those who met both levels; children with recent low attainment experienced, on average, a 2.2 point greater increase in total difficulties, a 0.7 point greater increase in emotional difficulties and a 0.9 point

[1] As measured using the Confusion, Hubbub and Order Scale which is made up of four items asking about levels of order and disruption in a child's home.
[2] As measured using the Kessler screening instrument.

- greater increase in hyperactivity difficulties than those who met expected levels at both EYFSP and KS1.

Figure 4: Estimated increases in socio-emotional difficulties scores associated with recent low attainment compared to consistently achieving expected level of attainment (significant coefficients from fixed effects models only)



Closeness in relationships between parents and children

- Levels of parent-child closeness were very high across the SEED sample at ages 8-10 years old. Parents of girls in the SEED sample reported higher levels of closeness than parents of boys.
- Multiple measures of a child's home environment in their early years (between the ages of 3 and 4 years old) were significantly associated with parent-child closeness when children were 8-10 years old, even when controlling for child and family level characteristics. A more authoritative parenting style and parental feelings of warmth towards their child were consistently associated with greater parent-child closeness.
- Household disruption – particularly during the COVID-19 pandemic – also appeared to have a significant relationship with parent-child closeness. Parents living in households with high levels of chaos during the COVID-19 pandemic reported lower levels of closeness with their child.
- COVID-19-related factors were more clearly associated with parent-child closeness in models estimated for boys than in models for girls. For boys, regularly seeing their family outside of the household and living in a household that was experiencing financial difficulties during the COVID-19 pandemic were both associated with lower levels of closeness.

Methodology

The Study of Early Education and Development (SEED) is a major longitudinal study following nearly 6,000 children from across England from age 2. SEED so far has included six waves of data collection. This report presents findings from Wave 5 of SEED, with data collection in September-October 2020.

The issued sample size at Wave 5 was 3,647 families. The number of completed interviews was 1,825, which represents a response rate of 50%. Participants were able to complete the survey online or on the phone, depending on their preference. The report also uses data linked from the National Pupil Database.

Full details on the survey methodology can be found in Appendix A.

1. Introduction

1.1. Background

This report examines findings from Wave 5 of the SEED longitudinal study. It focuses on experiences of children and parents during the COVID-19 pandemic, including both at the time of data collection in September-October 2020 and retrospectively, during the period of restricted attendance in schools during the initial national lockdown (April-May 2020) and after schools' phased opening (June-July 2020). Children in the SEED study were aged 8-10 at the time of the survey.

It is important to note that it is not possible to attribute the findings in this report directly to the effects of the COVID-19 pandemic on children and their families. This is because there is no equivalent population who did not experience this event who we can use as a comparison group in these analyses. Therefore, while this report documents the experiences of children in the SEED study and their parents during the time period covered by the COVID-19 pandemic, we cannot conclude from these analyses that their experiences were as a direct consequence of the pandemic. The findings from this report cannot be used to evaluate specific government policies including those in response to the COVID-19 pandemic.

On March 20th 2020, schools across England restricted attendance to all children except those classified as vulnerable or those with critical worker parents or carers. They remained closed to most year groups for the rest of the 2019/2020 academic year. This included the year 4 and 5 year groups that contained children in the SEED study. The period of restricted attendance in schools, combined with closures of many businesses, furloughing of staff and restrictions on face-to-face interactions with those outside of the household and on spending time outside the home, put everyone in the country in a situation they had not experienced before. There is a growing body of research trying to understand what impact those closures and restrictions had on the individuals living through the pandemic.

When schools closed to most pupils because of the COVID-19 restrictions, their schooling switched from in-person to remote. During this time, parents had to find ways of supporting their children to complete schoolwork at home. In April 2020, 45% of parents of primary-school aged children spent 2 or more hours every day helping their child with schoolwork, 34% spent 1-2 hours and only 21% spent less than one hour (Benzeval et al., 2020a). Both mothers and fathers typically got involved with the remote education (Andrew et al., 2020; Benzeval et al., 2020a), with many fathers reporting a closer relationship with their children as a result of spending more time with them (Burgess and Goldman, 2021). Both mothers and fathers also had to substantially increase the amount of time spent on general childcare and housework, whereas the

average amount of time spent on paid work fell across the population (Zhou et al., 2020). The amount of time parents spent actively helping their children with schoolwork did not vary much by parents' educational qualifications (Benzeval et al., 2020a; Villadsen et al., 2020); however, there were pronounced differences between mothers and fathers (with mothers spending substantially more time; Andrew et al., 2020; Villadsen et al., 2020; Zhou et al., 2020) and by employment status (with those not employed or on furlough spending more time on remote education and childcare than those working during the pandemic; Benzeval et al., 2020a; Villadsen et al., 2020).

Spending more time at home with their children appears to have had a positive impact on the relationships between some parents and their children. Among participants in the Understanding Society COVID-19 May 2020 survey, 26% reported that their relationship had improved, 70% reported that it had not changed, and only 4% reported that it had deteriorated (Benzeval et al., 2020b). However, there was a link with how comfortable or precarious family financial circumstances were, with those "finding it difficult" being three times as likely (10.2%) to say their relationship had got worse than those "living comfortably" (3.6%; Benzeval et al., 2020b). Among fathers who were not co-residing with their children during the first national lockdown in 2020 but who were normally involved in their upbringing, there was a strong link between disadvantage and the relationship they were able to maintain: 73% of fathers in this group who were in the lowest two socio-economic grades reported less "in-person" time with their children, compared with only 25% of fathers in the highest two grades (Burgess and Goldman, 2021).

Research on socio-emotional outcomes for children and parents during the pandemic suggests that overall, well-being outcomes deteriorated for both groups (NHS Digital, 2020; Zhou et al., 2020). The Mental Health of Children and Young People in England's COVID-19 follow-up survey found that the rate of probable mental disorder went up from 10.8% in 2017 to 16.0% in 2020 among children aged 5 to 16 years old. It also found that children with a probable mental disorder were more than twice as likely as those without such a disorder to live in a household that had fallen behind with bills, rent or mortgage payments (NHS Digital, 2020). Children with a parent with psychological distress were more likely to have a probable mental health problem themselves (Newlove-Delgado et al., 2021), which is particularly concerning given the dramatic decline in maternal well-being during the pandemic (Zhou et al., 2020).

There is some evidence that being able to attend school during the pandemic was a protective factor for socio-emotional outcomes. Blanden et al. (2021) found that children

in year groups that were not prioritised to return to school after the 2020 May half-term[3] had a greater increase in socio-emotional difficulties than those who were prioritised to return to school. However, they also found that returning to school after May half-term was not in itself sufficient for the children to 'bounce back', suggesting that it will take some time for the children to recover from the shocks of the pandemic.

Research on learning loss indicates substantial impacts of the pandemic on children's development in this area as well. Available estimates include a learning loss in reading in primary schools of around 1.8 months, and a learning loss in maths of around 3.7 months (Renaissance Learning and EPI, 2021). There is also evidence that children eligible for free school meals experienced a greater learning loss than those from less disadvantaged backgrounds. Weidmann et al. (2021) found that the attainment gap in maths for years 2-6 increased by between 10% and 24% from the pre-pandemic level, although they did not find evidence for any changes in the attainment gap in reading. A report from Renaissance Learning and EPI for the Department for Education found that by September-October 2020, primary school pupils from disadvantaged backgrounds (eligible for free school meals at any point in the last six years) had lost about half a month more than non-disadvantaged pupils in reading and around a month more in mathematics (Renaissance Learning and EPI, 2021).

Data collected in the 2020 SEED COVID-19 study (SEED Wave 5) will enable future analysis of how specific experiences during the COVID-19 pandemic have affected short, medium and longer-term outcomes of children in the SEED study and their families and how those effects may have differed depending on the families' pre-pandemic outcomes and experiences. This particular report focuses on data collected in Wave 5 and aims to address the research objectives outlined in the next section.

1.2. Research objectives

The research objectives of this report were:

1) To examine children's schooling during COVID-19 related restrictions from March to October 2020, including school attendance, remote education and additional tuition; and to analyse relationships between children's schooling experiences and disadvantage, special educational needs and home learning environment (chapter 2).

[3] Children in reception, year 1 and year 6 were prioritised in the phased re-opening of schools in England from 1st June 2020.

2) To examine children's health, special educational needs, health behaviours and socialisation and parents' mental health during the pandemic, and to explore the extent to which these were associated with disadvantage (chapter 3).
3) To analyse changes in children's socio-emotional development since the age of 4 years old and explore how these relate to their educational experiences, early years home environment, parenting styles and specific experiences during the COVID-19 pandemic (chapter 4).
4) To investigate the degree of closeness in child-parent relationships during the pandemic and to examine associations between levels of child-parent closeness and early years home environment, parenting styles, parental mental health, socio-demographic factors and child and family experiences during the pandemic (chapter 5).

1.3. Methodology

1.3.1. SEED longitudinal study

The Study of Early Education and Development (SEED) is a major longitudinal study following nearly 6,000 children from across England from age 2. SEED has so far included six waves of data collection:

- Face-to-face surveys of families and children in 2013-2018 when the children were 2, 3, 4 and 5 years old (Waves 1-4)
- A specially commissioned COVID-19 web-CATI survey in September-October 2020, when children were aged 8-10 years (Wave 5)
- An additional COVID-19 web-CATI follow-up later in the same academic year, in May-June 2021 (Wave 6)

Families remain eligible to take part in further sweeps of SEED data collection for as long as the original child selected for the SEED study from Child Benefit records remains living in England.

SEED was established to evaluate the effect of early education on children's outcomes, the quality of provision, and value for money of providing funded early years education and the sample was selected to reflect those aims. Whilst the sample was considered representative for its original aims, we do not know if it is representative for assessing the impact of COVID-19. In particular, we do not know if the sample reflects the proportion of children in the population who were eligible to attend education settings in-person throughout the pandemic as a vulnerable child or a child of a critical worker. Therefore, these findings cannot be used as representative evidence of the impact of COVID-19.

More details about the SEED study methodology are included in Appendix A and can also be found on the SEED website www.seed.natcen.ac.uk.

1.3.2. SEED COVID-19 study (Wave 5)

The sample invited to take part in Wave 5 included SEED participants who completed the SEED Wave 3 survey, had not withdrawn from the study since then and had not become ineligible. The issued sample size was 3,647 families. The number of completed interviews was 1,825, which represents a response rate of 50%.

The vast majority of SEED participants are the mothers of children in the study, though fathers, grandparents and other carers also responded to the study. For brevity throughout this report, the term “parents” is used to describe all respondents to this survey.

Data collection took place from 4th September to 25th October 2020. Participants were able to complete the survey online or on the phone, depending on their preference. They were sent communications with links to the survey by post, email and SMS, with up to three reminders as necessary.

Two-thirds of participants (67%) completed the survey online and one-third (33%) completed it on the phone. The median interview length was 12 minutes online and 25 minutes on the phone.

Data was cleaned, edited and weighted to adjust for unequal selection probabilities and differential non-response. The Department for Education are planning to archive this survey data with the UK Data Service or with the ONS Secure Research Service in due course.

Appendix A includes more details about the survey methodology at Wave 5.

1.3.3. Measures

Analyses in this report used variables collected at different points of a child’s development, as collected in previous waves of the SEED study as well as in Wave 5 during the COVID-19 pandemic. As not all measures were collected in all survey waves, these analyses use the most relevant form of the measure available in the data. This includes variables relating to the COVID-19 pandemic that were collected only in Wave 5. Historical measures of a child’s early years environment were used as these were only collected at earlier time points, and not in Wave 5 of the SEED study. Variables which were collected at multiple timepoints (in Wave 5 and in an earlier wave) were used in this analysis to measure change in the experiences of children and their families over this period.

Home environment measures

- Home learning environment: Responses to questions about the physical characteristics of a child's home and the learning support they received there were combined to create an overall measure of a child's home learning environment, with higher scores reflecting a more positive environment (Wave 3).
- Parenting style: A battery of questions asking parents how frequently they showed certain behaviours towards their child was used with responses combined to calculate respondents' values on three scales reflecting different parenting styles; Authoritarian (characterised as low acceptance and high behavioural and psychological control), Authoritative (high acceptance and behavioural control and low psychological control) and Permissive (high acceptance but low psychological and behavioural control; Robinson et al., 1995) (Wave 2).
- Difficulties in parent-child relationship: Questions from the Mothers Object Relations Scales (MORS; Simkiss et al., 2013) were included in the Wave 2 self-completion questionnaire to capture parents' perception of their child's thoughts, feelings and behaviours from which scales of warmth and invasiveness were created (Wave 2).
- Parents' perceived control: Questions from the parental locus of control instrument (Campis et al., 1986) were asked with responses combined to create an overarching scale reflecting the extent to which respondents believed that they had control over their lives, with higher scores reflecting a higher sense of control (Wave 3).
- Child-parent closeness: 15 questions from the short form of the Child-Parent Relations Scale (CPRS; Driscoll and Pianta, 2011) questionnaire asking parents how often their child exhibited specific behaviours towards them were used. Responses to seven of these questions were combined to create a measure of child-parent closeness, with higher scores reflecting greater closeness (Wave 5).

Socio-demographic measures

- Child's age, sex, ethnic background, parental report of SEN status and long-term health status.
- Household working status, parents' educational attainment, disadvantage group and housing tenure.
- Household size and structure.

Measures of mental health and wellbeing

- Child's social and emotional wellbeing: Questions from the Strengths and Difficulties Questionnaire (SDQ) were asked to parents about the attitudes and behaviours of their child. Responses to these questions were combined to create three domain specific scales (Emotional Problems, Conduct Problems and

Hyperactivity) as well as to create an overall score of children's total socio-emotional difficulties (Goodman and Goodman, 2009). For all scales, higher scores reflect greater difficulties experienced by the child (Wave 3 and Wave 5).

- Parental mental health: The Kessler screening instrument (Kessler et al., 2003) was used to estimate the level of mental distress experienced by respondents at the time of the survey. Higher scores reflect greater distress, with thresholds used to identify those likely experiencing mental distress (Wave 2 and Wave 5). For the advanced analyses in chapters 4 and 5, these responses were combined to create a categorical variable to reflect whether a child's parent had experienced no mental distress (no likely distress in either Wave 2 or 5), early years mental distress (in Wave 2 only), current mental distress (in Wave 5 only) or long-term mental distress (in both Wave 2 and Wave 5).

Measures of child and family experiences during the COVID-19 pandemic

- Household disruption: Survey items asking about levels of organisation, noise, calm and structure in a household were combined to create a Confusion, Hubbub and Order scale (CHAOS; Matheny et al., 1995), with higher values reflecting higher disruption (Waves 2 and 5). For the advanced analyses in chapters 4 and 5, these responses were combined to create a categorical variable to reflect whether a household had experienced long-term low disruption (a score of 8 or under out of 20 in both waves), early years high disruption (a score of 9-20 in Wave 2, but 8 or under in Wave 5), recent high disruption (a score of 8 or under in Wave 2, but 9-20 in Wave 5) or long-term high disruption (a score of 9- 20 in both waves).
- Experiences of COVID-19 (whether anyone in the household reported symptoms of COVID-19 and if the child or anyone else in the household was advised to shield during the pandemic)
- Adverse events in the six months preceding the survey (whether someone in the household had died or become seriously ill, lost their job, experienced a major cut in their household income or lost their accommodation)
- Schooling at three points during the COVID-19 pandemic (whether the child attended school in person in the initial national lockdown before the May half-term (April-May 2020), between May half-term and the end of the 2019/2020 academic year (June-July 2020) or at the start of the new academic year (September-October 2020) and whether or not they had a quiet place to study at home)
- Whether the child regularly saw friends and family during lockdown, had a regular bedtime or took part in regular exercise.

Early childhood education and care (ECEC) experiences

- Whether or not the child attended formal childcare between the ages of 2 and 3
- The number of hours of formal ECEC per week experienced at age 3

Educational attainments measures

- Early Years Foundation Stage Profile (EYFSP) – indicating whether or not the child met the expected level at the end of Reception year.
- Key Stage 1 attainment in English and maths – indicating whether or not the child met the expected level in English and maths at the end of Key Stage 1.

1.3.4. Analysis

All analyses were conducted using weighted data to ensure that the estimates generated were representative of the population from which the sample was drawn. Where appropriate, the clustered structure of the data (whereby respondents are clustered in primary sample unit within strata) was also taken into account.

Descriptive statistics

Weighted, descriptive analyses were conducted for this report, with only statistically significant differences in outcomes presented in the subsequent chapters. Findings are only included in the main body of the report when significance testing has found that there is a less than 5% chance of the association between the variables used in these analyses happening by chance. A child's disadvantage group and whether or not they have special educational needs were the main focus of these analyses.

Regression analyses

Two sets of regression models were estimated to investigate the variables associated with two different outcomes of interests; changes in children's socio-emotional development between the ages of 4 and 8-10 years old and level of parent-child closeness when children were aged 8-10. As there is within wave missing data in both the outcome variables and covariates used in these models, these models were fitted to multiply imputed data.

Models estimating changes in children's socio-emotional development built on findings from the SEED Age 4 report from data collected in Wave 3 of the SEED study (Melhuish and Gardiner, 2018). That report found that a number of home environment variables – including household disruption as well as a parent's psychological distress and their warmth and invasiveness towards their child – were associated with children socio-emotional outcomes at age 4. The fixed effects models presented below therefore investigate the variables associated with higher or lower increases in children's socio-emotional difficulties between the ages of 4 and 8-10 years old. Historic and pandemic-related variables are included in these models to investigate how these factors are related to greater or lesser deterioration in three domains of children's socio-emotional development (their emotional symptoms, conduct problems and hyperactivity) and in their total socio-emotional difficulties scores (as measured through the Strengths and

Difficulties Questionnaire). Due to differences in socio-emotional problems for boys and girls, models were first estimated for all children in the Wave 5 sample combined before being estimated for boys and girls separately.

To investigate the long-term factors and recent experiences that are associated with parent-child relations, multivariate linear regression models were built to examine the extent to which levels of parent-child closeness at ages 8-10 years old were associated with a child's Early childhood education and care (ECEC) experiences, home environment and more recent experiences, including during the COVID-19 pandemic. These regression models controlled for the demographic characteristics and socio-economic situation of children and their families to estimate these associations while controlling for these potentially confounding variables. Due to significant differences in the level of parent-child closeness reported by parents of boys and of girls, models were estimated for all children in the Wave 5 sample combined and for boys and girls separately.

1.4. Ethics

The study received ethical approval from NatCen's Research Ethics Committee (separate approvals for different waves of SEED). This ethics governance procedure is in line with the requirements of the Economic and Social Research Council (ESRC, 2005) and the Government Social Research Unit Research Ethics Frameworks (GSRU, 2005).

Survey communications (letters by post and emails) provided information about the research, the nature of participation, and covered anonymity and confidentiality. The voluntary nature of participation was emphasised and participants were told they could withdraw from the research at any point by contacting the NatCen research team on the freephone number or by email.

NatCen Telephone Unit interviewers explained the research at the start of each interview and sought verbal consent before starting data collection.

Additional information about the survey was included on the SEED website (www.seed.natcen.ac.uk). The SEED website also listed a number of support organisations for SEED participants to contact in instances of the survey causing them any upset or concern.

1.5. Report conventions

All percentages and means are weighted, but unweighted base sizes are shown in each table. All regression analyses were also conducted using weighted data.

Estimates based on unweighted base sizes of fewer than 50 cases are indicated in tables by [ ] and should be interpreted with caution. Estimates based on unweighted base sizes of fewer than 30 cases have been replaced with '*' as these estimates may not be reliable. Reference groups in tests of statistical significance of differences between sub-groups are indicated with '†'.

Percentages are rounded up or down to whole numbers and therefore may not always sum to 100.

Percentages less than 0.5 (but greater than 0) are shown in tables as '0'. Where there were no cases in a particular table cell, this is indicated by '-'.

Throughout the report, whenever the text comments on differences between subgroups of the sample, these differences have been tested for statistical significance and found to be significant at the 95% confidence interval or above.

2. School attendance, remote education and additional tuition

Key findings

- In the period of the initial national lockdown (April-May 2020), almost 9 out of 10 (89%) children in the study did not attend school in person. After schools' phased re-opening (June-July 2020), this proportion went down to 74%, and differences emerged by disadvantage, with those more disadvantaged being less likely to attend school after the May half-term. By the start of the new academic year (September-October 2020), most children (95%) were back attending school in person every weekday, although those more disadvantaged and those with special educational needs were less likely to attend.
- Almost all children in the study (96%) were given work by their school during the national lockdown, and of those given work, 35% completed all of it. Children with special educational needs were less likely to be given work and less likely to complete all of it. Independent schools were more likely to offer online lessons than state-funded schools.
- One in five children (22%) in the most disadvantaged group had no access to a computer during the national lockdown, compared to only 1 in 20 (5%) of the least disadvantaged group. About one in six children (17%) did not have a quiet place to study, and this proportion did not vary significantly by disadvantage or by special educational needs.
- In September-October 2020, 22% of children in the study were receiving additional tuition in maths, English or other academic subjects. For more than half of these children, the additional tutoring was organised by their school. Although there were no significant differences in the proportion of children receiving tutoring by disadvantage group, there were significant differences in who organised that tutoring. Children in the most disadvantaged group were more likely to have their tutoring organised by the school, whereas children in the least disadvantaged group were more likely to have their tutoring organised by their parents. Two out of five parents reported that the additional tutoring was linked to the earlier period of restricted attendance in schools.
- The findings from this report cannot be used to evaluate specific government policies including those in response to the COVID-19 pandemic.

This chapter examines children's schooling during COVID-19 restrictions from March to October 2020. Specifically, this chapter explores in-person attendance in three periods of the academic calendar: in April to May 2020 (during the initial period of restricted attendance in schools at the start of the pandemic, when schools were closed to the vast

majority of pupils unless they were vulnerable or the children of critical worker parents), June to July 2020 (when schools were opened more widely to children in key school years which did not include the SEED cohort), and September to October 2020 (when schools returned with no national restrictions at the start of the new academic year). It also investigates the work and lessons provided to children during the national lockdown period (April-May 2020), children's home learning environments during this national lockdown, and the tutoring children had received by September-October 2020. In most instances, these outcomes are broken down by disadvantage group and special educational needs (SEN) status. Where appropriate, these outcomes are also examined in relation to the home learning environment (HLE) in the pre-school period and by the type of school attended at the time of the survey.

2.1. School attendance

This section explores school attendance during the pandemic and examines how attendance varied by disadvantage group and whether the child had any special educational needs.

On March 20th 2020, schools across England closed to all children except those classified as vulnerable or those with critical worker parents or carers.[4] SEED survey data shows that 89% of children in the study did not attend school in person during this initial national lockdown (i.e. April to May 2020). Of those who did attend, 85% were children of critical workers. Responses demonstrated no significant variation in school attendance rates between disadvantage groups (see Table 1) and children with and without SEN (table not shown). Children with a household member shielding were significantly less likely to attend school than those in non-shielding households. However, children who were themselves shielding were not significantly less likely to attend school in this period (table not shown).

[4] https://explore-education-statistics.service.gov.uk/find-statistics/attendance-in-education-and-early-years-settings-during-the-coronavirus-COVID-19-outbreak

Table 1: School attendance during national lockdown (April-May 2020), by disadvantage group

Whether child attended school in person during national lockdown (April – May 2020)	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Yes, every weekday	7	4	4	5
Yes, some weekdays	5	6	7	6
No, he/she was not attending school in person at all	89	89	90	89
Unweighted Base	*281*	*606*	*936*	*1,823*

Base: All households
Outcome tested: not attending school.
Reference category: the least disadvantaged group (indicated with '†').
**p<0.05, **p<0.01, ***p<0.001*

In June-July 2020, after the half-term break in May 2020, the government asked that children in reception year and academic years 1 and 6 return to school. For children in other academic years (including all children in the SEED sample), only vulnerable children or those whose parents/carers were critical workers were still able to attend school in person. However, even though children in the SEED study were in academic years 4 and 5 and were therefore not affected by this change in policy directly, responses to the SEED study show that more of them started attending school. From April-May to June-July 2020, the percentage of children not attending school at all decreased from 89% to 74% (see Table 2).

This period after the half-term break (June-July 2020) reveals different patterns in attendance between children in different disadvantage groups. In particular, Table 2 shows that children in the 20% most disadvantaged group were significantly less likely to attend school than those in the 60% least disadvantaged group. Children with family members who were shielding, or who were themselves shielding, were significantly less likely to attend school during this period (table not shown). However, attendance during this period did not vary significantly by SEN status (table not shown).

Table 2: School attendance in phased re-opening (June-July 2020), by disadvantage group

Whether child attended school in person after May half-term (June – July 2020)	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Yes, every weekday	9	11	9	10
Yes, some weekdays	8	15	20	16
No, he/she was not attending school in person at all.	83***	74	71	74
Unweighted Base	*281*	*607*	*936*	*1,824*

Base: All households
Outcome tested: not attending school. Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

At the start of the new academic year (from September 2020), all students were encouraged to return to school full time. The SEED survey data collection took place during this period (between September and October 2020, see Appendix A). Just 3% of students were not attending school at all at the time of the survey (see Table 3). Survey responses from this period reflect the same pattern as seen in June-July 2020; children in the 20% most disadvantaged group were significantly less likely to attend school than those from less disadvantaged groups (with 7% in the most disadvantaged group not attending school at all, compared with 2% among the least disadvantaged; see Table 3). As in the previous period, children who were themselves shielding or who were living in a household where another family member was shielding were significantly less likely to attend school in September to October 2020 (table not shown).

Table 3: School attendance at start of new academic year (September-October 2020), by disadvantage group

Whether child attended school in person in September-October 2020	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Yes, every weekday	90	96	98	95
Yes, some weekdays	3	2	0	1
No, he/she was not attending school in person at all	7***	3	2	3
Unweighted Base	*282*	*607*	*936*	*1,825*

Base: All households
Outcome tested: not attending school. Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

While SEN status was not a significant predictor of school attendance in previous periods, at the start of the new academic year (in September-October 2020), children with SEN were significantly less likely to attend school than those without SEN (see Table 4). This difference remained significant when controlling for disadvantage group (table not shown).

Table 4: School attendance at start of new academic year (September-October 2020), by SEN status

Whether child attended school in person in September-October 2020	Child has SEN %	Child does not have SEN† %	Total %
Yes, every weekday	89	96	95
Yes, some weekdays	3	1	1
No, he/she was not attending school in person at all	8***	3	3
Unweighted Base	*245*	*1,577*	*1,825*

Base: All households
Outcome tested: not attending school. Reference category: children without SEN
**p<0.05, **p<0.01, ***p<0.001*

2.2. Remote education during the period of restricted attendance in schools

This section of the report examines responses to questions posed to households where children did not attend school full time during the national lockdown. These questions specifically asked about April-May 2020 - the period from after the Easter holidays to May half-term 2020 - during which time 89% of children did not attend school in person at all and 6% attended on some weekdays only rather than every weekday (see Table 1).

This group of respondents were asked if their child was given work by school during lockdown (April-May 2020). Overall, 96% of children in the SEED study were given work during this period. Significantly fewer children in the most disadvantaged group were reported to have been provided schoolwork during the national lockdown – 92%, compared to 97% in the least disadvantaged group (see Table 5).

Table 5: Whether school provided work during national lockdown (April-May 2020), by disadvantage group

Whether school provided work for child in national lockdown (April-May 2020)	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Yes	92**	96	97	96
No	8	4	3	4
Unweighted Base	*259*	*579*	*909*	*1,747*

Base: Households where child did not or only sometimes attended school during lockdown
Outcome tested: Whether school provided work
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Children with SEN were also significantly less likely to be provided work during this national lockdown period in April-May 2020. Eighty-seven per cent of children with SEN were given work during lockdown, compared to 97% of those without SEN (see Table 6). This pattern remained statistically significant when controlling for disadvantage group (table not shown).

Table 6: Whether the school provided work during national lockdown (April-May 2020), by SEN status

Whether school provided work for child in national lockdown (April-May 2020)	Child has SEN %	Child does not have SEN† %	Total %
Yes	87***	97	96
No	13	3	4
Unweighted Base	*225*	*1,519*	*1,747*

Base: Households where child did not or only sometimes attended school during lockdown
Outcome tested: Whether school provided work
Reference category: children without SEN
**p<0.05, **p<0.01, ***p<0.001*

There was no significant difference between the proportion of children provided work in mainstream state-funded and independent schools. The findings for SEN units or special schools are based on a very low sample size (only 30 children in the study attended an SEN unit or a special school; see Table 7) and therefore should be treated with caution.

Table 7: Whether school provided work during national lockdown (April-May 2020), by school type

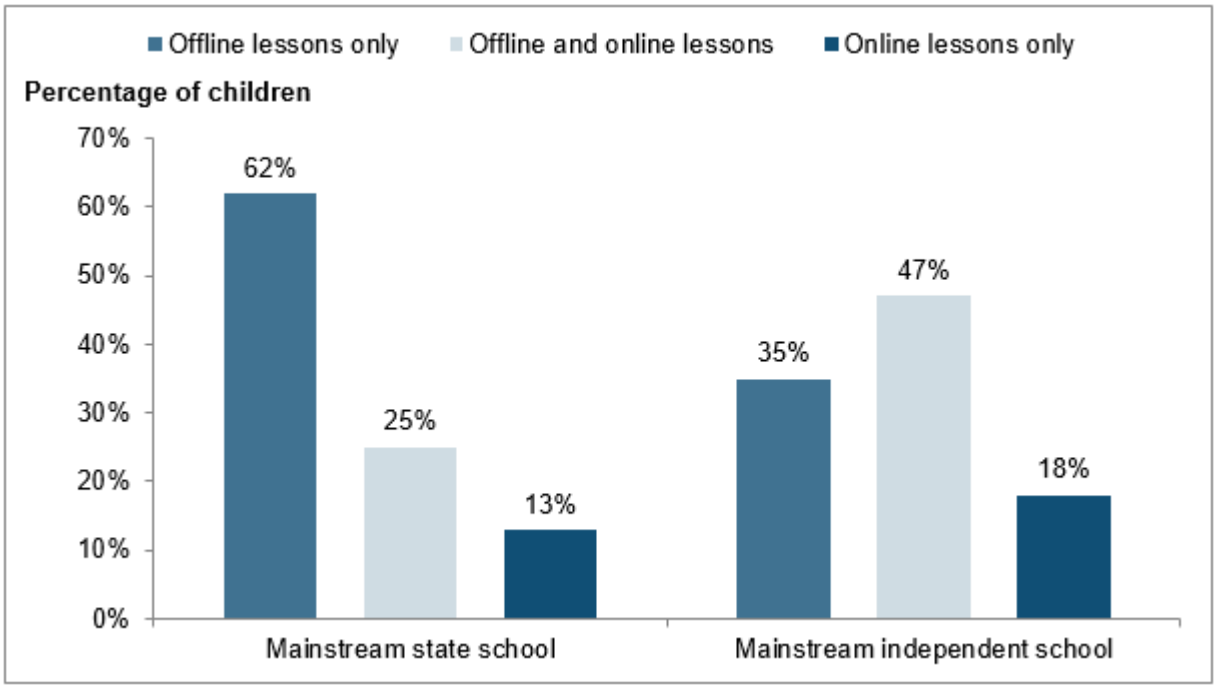
Whether school provided work for child in national lockdown (April-May 2020)	Mainstream state-funded school† %	Mainstream independent school %	SEN unit or special school %	Total %
Yes	96	99	[76]***	96
No	4	1	[24]	4
Unweighted Base	*1,569*	*130*	*30*	*1,747*

Base: Households where child did not or only sometimes attended school during lockdown. Where a child attended a type of school that very few other children attended, those cases are included in the total but are not shown separately.
Outcome tested: Whether school provided work
Reference category: Mainstream state-funded school.
**p<0.05, **p<0.01, ***p<0.001*

In households where children were given work by their school, respondents were asked about the format of this work. Overall, 59% had offline-only lessons (e.g. worksheets, assignments, watching videos), 27% received a combination of offline and online lessons, and 14% had online-only lessons (see Table C.1 in Appendix C). Lesson format did not vary significantly by disadvantage group (Table C.1) or SEN (table not shown).

As shown in Figure 5 and Table C.2 in Appendix C, a significantly greater proportion of children at independent schools had lessons delivered completely or partially online.

Figure 5: Types of lessons provided in national lockdown (April-May 2020), by school type



Those families where the school set work for the child were asked how much of the work the child completed. Over a third of respondents (35%) reported that their child completed all of their work. This proportion did not vary significantly by disadvantage group (Table C.3 in Appendix C).

There was a significant difference in how much schoolwork children completed depending on their SEN status. Significantly fewer children with SEN were reported as having completed all of their work (16%, compared with 38% among children without SEN). 10% of children with SEN did not complete any schoolwork at all, compared with just 1% among children without SEN (see Table 8).

Table 8: How much schoolwork child completed during national lockdown (April-May 2020), by SEN status

How much schoolwork child completed during national lockdown (April-May 2020)	Child has SEN %	Child does not have SEN† %	Total %
None of it	10	1	3
Less than half	35	20	22
Half or more	39	41	41
All of it	16***	38	35
Unweighted Base	*196*	*1,472*	*1,671*

Base: Households where child was provided work during national lockdown
Outcome tested: Child completes all schoolwork
Reference category: children without SEN
**p<0.05, **p<0.01, ***p<0.001*

This report has also investigated the relationship between schooling during the COVID-19 pandemic and the home learning environment (HLE) during the child's pre-school years (derived from surveys responses at SEED Waves 1, 2 and 3, when children were aged 2, 3 and 4 years old respectively). The analysis found that children in families who scored the highest on the HLE measure were significantly more likely to complete all schoolwork during the national lockdown compared to children in the families who scored the lowest (see Table 9). This suggests that ongoing parental encouragement and support might have contributed to the amount of work a child completed in lockdown.

Table 9: How much schoolwork child completed during national lockdown (April-May 2020), by home learning environment band

Whether child completed schoolwork during national lockdown (April-May 2020)	0% to 25%† %	26% to 50% %	51% to 75% %	76% to 100% %	Total %
None of it	4	3	2	1	3
Less than half	27	24	17	18	22
Half or more	39	38	47	40	41
All of it	30	35	35	41*	35
Unweighted Base	*417*	*439*	*396*	*419*	*1,671*

Base: Households where child was provided work during national lockdown
Outcome tested: Child completes all schoolwork
Reference category: 0%-25% HLE band (the lowest HLE scores)
**p<0.05, **p<0.01, ***p<0.001*

About a third (32%) of the children who did not attend school in person, and who completed at least some of the work provided by their school, had all of this work marked by their teacher during the national lockdown. One in five (19%) said their child's work was submitted but not marked, with a further 22% not required to return their work at all (see Table C.4 in Appendix C). There were no significant differences in the amount of work marked by their teacher between children from different backgrounds.

2.3. Digital technology and home environment

Households in which the child never or only sometimes attended school during the national lockdown in April-May 2020 were asked about the child's access to a computer during this period. Children in the 20% and 20-40% most disadvantaged groups were significantly more likely to have no access to a computer. One in five children (22%) in the most disadvantaged group and 15% of children in the moderately disadvantaged group had no access to a computer, compared to only 5% of those in the least disadvantaged group (see Table 10).

Table 10: Access to a computer during national lockdown (April-May 2020), by disadvantage group

Access to a computer during lockdown (April-May 2020)	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
No access to a computer	22***	15***	5	12
Access to a shared computer	33	38	42	39
Exclusive access to a computer	45	46	52	49
Unweighted Base	*259*	*579*	*911*	*1,749*

Base: Households where child did not, or only sometimes attended school during lockdown
Outcome tested: No access to a computer
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Similarly, a significantly greater proportion of students with SEN did not have access to a computer. As Table 11 shows, 21% of children with SEN had no access to a computer, compared to 11% of children without SEN.

Table 11: Access to a computer during national lockdown (April-May 2020), by SEN status

Access to a computer during lockdown (April-May 2020)	Child has SEN %	Child does not have SEN† %	Total %
No access to a computer	21***	11	12
Access to a shared computer	37	39	39
Exclusive access to a computer	43	49	49
Unweighted Base	*226*	*1,520*	*1,749*

Base: Households where child did not, or only sometimes attended school during lockdown
Outcome tested: No access to a computer
Reference category: children without SEN
**p<0.05, **p<0.01, ***p<0.001*

These households were also asked if their child had a quiet place to study during the national lockdown in April-May 2020. Overall, 83% had a quiet place to study over this period. As with children's access to computers, access to a quiet place varied somewhat between disadvantage groups. However, while children in the moderately disadvantaged group were significantly less likely to have a quiet place to study than children in the least disadvantaged group, those in the most disadvantaged group were not significantly less likely to have a quiet place to study than those in the least disadvantaged group (see Table 12). There were no statistically significant differences by SEN status (table not shown).

Table 12: Whether child had a quiet place to study, by disadvantage group

Whether child had quiet place to study	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Yes	82	80**	86	83
No	18	20	14	17
Unweighted Base	*259*	*577*	*910*	*1,746*

Base: Households where child did not, or only sometimes attended school during lockdown
Outcome tested: Having a quiet place to study
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

2.4. Additional tuition

All respondents were asked if their child received tutoring in maths, English or other academic subjects at the time of the survey (September-October 2020). Overall, 22% of children received tutoring and 78% did not. There were no significant differences in tutoring between disadvantage groups, or by home learning environment scores. However, levels of tutoring did differ by SEN status: 32% of children with SEN received tutoring, compared to 21% of children without SEN (Table 13).

Table 13: Whether child received tutoring, by SEN status

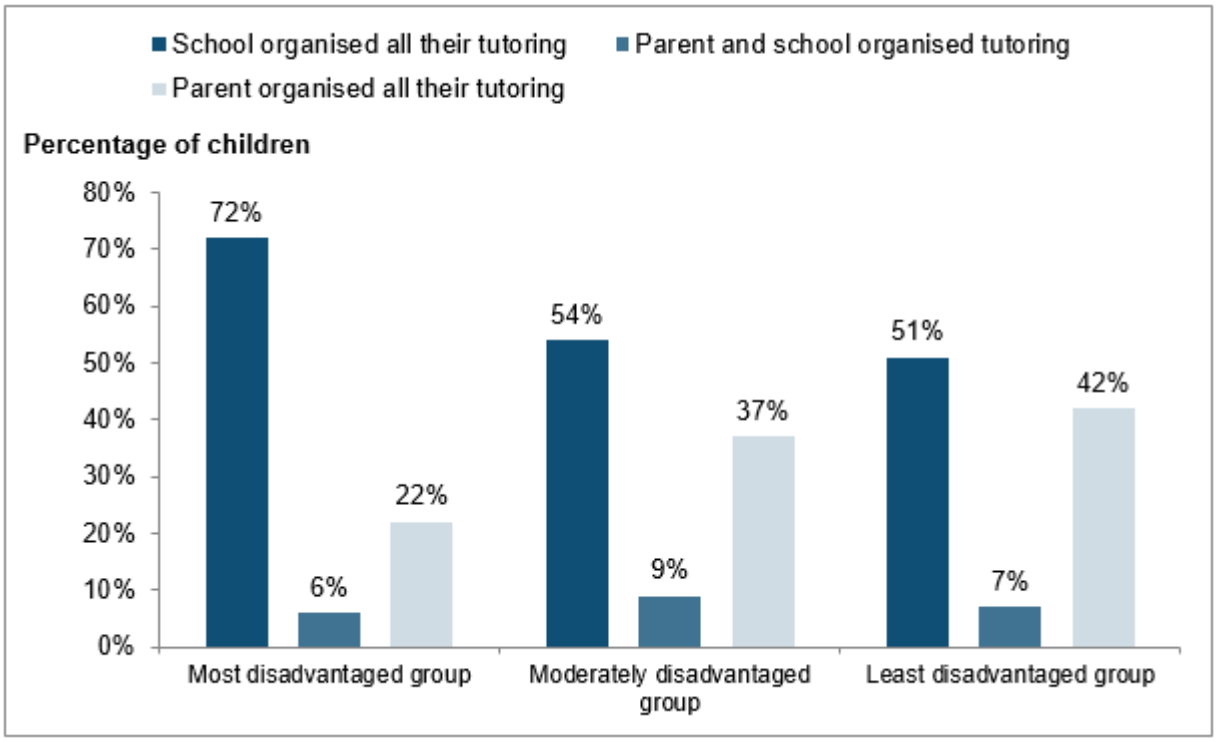
Whether child received tutoring	Child has SEN %	Child does not have SEN† %	Total %
Yes	32***	21	22
No	68	79	78
Unweighted Base	*242*	*1,572*	*1,817*

Base: All households
Outcome tested: Child received tutoring
Reference category: children without SEN
**p<0.05, **p<0.01, ***p<0.001*

Households where children received tutoring were asked about the format of this tutoring. Seventeen per cent of children who received tutoring had online tutoring only, 18% received a mixture of online and face-to-face, and 59% received face-to-face tutoring only. There was no statistically significant association between disadvantage groups and tutoring format (see Table C.5 in Appendix C).

Households where children received tutoring were asked who organised this tutoring. Overall, 57% of children had their tutoring organised by their school, 35% had their tutoring organised by the parent, and 8% had some of it organised by the school and some by the parent. Although there were no significant differences in the proportion of children receiving tutoring by disadvantage group, there were significant differences in who organised that tutoring. Children in the most disadvantaged group were significantly more likely to have their tutoring organised by the school, whereas children in the least disadvantaged group were more likely to have their tutoring organised by their parents (see Figure 6 and Table C.6 in Appendix C). Amongst children in the most disadvantaged group, more than three time as many children had all their tutoring organised by their school (72%) than by their parents (22%) while these figures were much more balanced for children in the least disadvantaged groups (51% by the school and 42% by their parents).

Figure 6: Who organised tutoring, by disadvantage group



There were no statistically significant differences in who organised the tutoring by SEN status.

Households in which the parent organised tutoring were also asked if the tutoring was due to the period of restricted attendance in schools during the pandemic: 40% of respondents said their children were receiving tutoring due to these school restricted attendance and 60% said it was not for this reason. There was no significant variation between disadvantage groups.

3. Health, mental health and health behaviours

Key findings

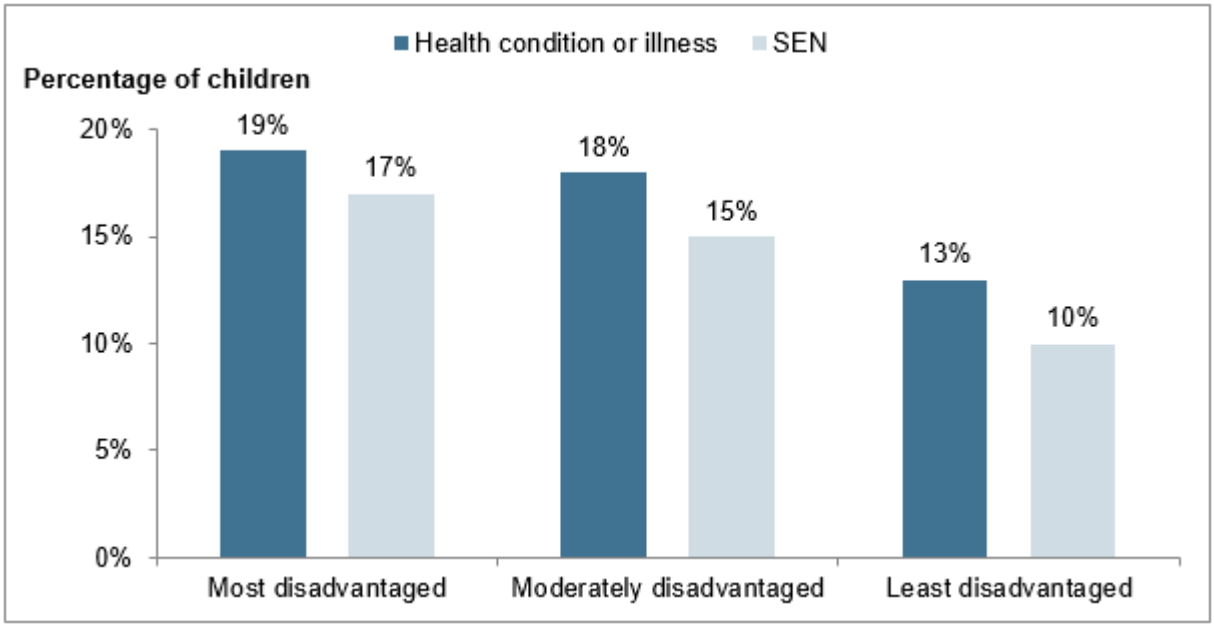
- Sixteen per cent of children in the SEED study had a longstanding physical or mental health condition or illness, and 13% had a special educational need (SEN). Children in the two most disadvantaged groups were significantly more likely to have a health condition or SEN than children in the least disadvantaged group.
- According to parents, 34% of children in the study exercised every day, 29% exercised on 4-6 days per week, 34% exercised 1-3 days per week and 3% never exercised. There was no evidence of a link between exercise and disadvantage but children with SEN were significantly more likely to "never" exercise (10%, compared with 2% of children without SEN). However, children with SEN were not significantly more likely to 'never' exercise when controlling for shielding status and long-term illness and disability.
- Most children had a regular bedtime (50% of parents said "usually" and 40% said "always"). This behaviour did not vary by disadvantage or SEN status.
- One in four (24%) households included someone who had experienced COVID-19 symptoms since the beginning of the pandemic. Almost half of those (44%) sought medical attention for their symptoms. The prevalence of COVID-19 symptoms did not vary significantly by disadvantage or SEN status. However, households where the SEED child had SEN were more likely to seek medical attention than those where the child did not have SEN. One in ten households (11%) contained an individual who was considered to be clinically vulnerable and had been advised to shield by the NHS. Two per cent of children participating in the SEED study were asked to shield. Being asked to shield was strongly associated with disadvantage and SEN status.
- Most children included in the SEED study (72%) saw family members who did not live with them, or spoke with them on video, at least once a week. Most children (63%) also spent time with their friends at least once a week. Children with SEN were less likely to see their family or friends than children without SEN. Controlling for shielding status, children with SEN were not significantly less likely to see their family, however children with SEN were significantly less likely to see their friends.
- One in ten parents (10%) completing the SEED survey could be categorised as experiencing "strong distress", and one in three (36%) were experiencing "moderate distress". Parents from the most disadvantaged families and those whose children had SEN were more likely to experience mental distress.
- The findings from this report cannot be used to evaluate specific government policies including those in response to the COVID-19 pandemic.

This chapter explores the health and well-being of children and parents in the SEED study, and how this varied by disadvantage group and SEN status. First, it will discuss the special educational needs, long-term health conditions and illnesses of children in the SEED study. Second, it will examine children's health behaviours during the COVID-19 pandemic, specifically exercise and bedtime behaviours. Third, it will look at health experiences directly related to the COVID-19 pandemic within the household: whether any household member had experienced symptoms of COVID-19, sought medical attention for any symptoms or was advised to shield by the NHS. This chapter will conclude by exploring levels of socialisation for children with their family and friends, and parental mental health (as measured by the Kessler 6 scale; Kessler et al., 2003) during the pandemic.

3.1. Child health and special educational needs

Overall, 16% of children in the SEED study had a longstanding physical or mental health condition or illness at the time of the Wave 5 survey. Children in the two most disadvantaged groups were significantly more likely to have a health condition or illness than children in the least disadvantaged group (see Figure 7 and Table C.7 in Appendix C).

Figure 7: Child's health condition and SEN status, by disadvantage group



Across the sample as a whole, 13% of children in total had a special educational need (SEN). Children in the 20% most disadvantaged group and those in the 20-40% moderately disadvantaged group were significantly more likely to have SEN (17% and 15% respectively), compared to children in the least disadvantaged group (10%; see Figure 7 and Appendix Table C.7).

There was a significant association between having a longstanding health condition and SEN. Almost half (47%) of children with a health condition also had SEN, compared to just 7% of those without a health condition (see Table 14).

Table 14: Child's SEN status, by health condition or illness

Whether child has SEN	Child has health condition or illness %	Child does not have health condition or illness† %	Total %
Yes	47***	7	13
No	53	93	87
Unweighted Base	*281*	*1,538*	*1,822*

Base: All households
Outcome tested: Child having SEN.
Reference category: Children without a health condition or illness
**p<0.05, **p<0.01, ***p<0.001*

Parents who reported that their child had SEN were asked whether their child had an Education, Health and Care (EHC) Plan. Overall, 29% of children with SEN did have a plan, 22% were being assessed for one but nearly half – 49% – did not. There were no significant differences in the proportion of SEN children who had an EHC plan when these figures were compared between disadvantage groups (see Table C.8 in Appendix C).

3.2. Health behaviours

The SEED COVID-19 study asked parents how often their child had exercised in the previous week. Overall, 34% of children exercised every day, 29% exercised on 4-6 days per week, 34% exercised 1-3 days per week and 3% never exercised. There was no consistent pattern of association between exercise and disadvantage group. Children with SEN were significantly more likely to take part in no exercise in the previous week, with 10% of children with SEN never exercising, compared to just 2% of children without SEN (see Table 15). However, this difference in levels of exercise for children with and without SEN was no longer statistically significant when controlling for whether or not the child had a long-term illness or disability or for whether someone in the child's household was shielding due to COVID-19. This suggests that other factors related to the physical health of the child and their family, which may themselves be associated with the child's SEN status, might explain the differences in levels of exercise between children with and without SEN.

Table 15: Exercise, by SEN status

How often child exercises	Child has SEN %	Child does not have SEN† %	Total %
Every day	34	34	34
On 4-6 days	23	30	29
On 1-3 days	33	34	34
Never	10***	2	3
Unweighted Base	*244*	*1,577*	*1,824*

Base: All households
Outcome tested: Child never exercising in the week
Reference category: Children without SEN
**p<0.05, **p<0.01, ***p<0.001*

Parents were also asked whether the child had a regular bedtime. Across all households, 2% of participants said that their child never or almost never had a regular bedtime, 8% said the child sometimes had a regular bedtime, 50% said “usually” and 40% said “always” (Table C.9 in Appendix C). There was no consistent pattern of association between bedtimes and disadvantage, or between bedtimes and SEN status.

3.3. COVID-19 illness

All respondents were asked about COVID-19 symptoms since February 2020. One in four households (24%) had at least one member who had experienced symptoms. There was no significant association with disadvantage or with SEN status.

Households where any member experienced COVID-19 symptoms were also asked if anyone in their household had sought medical attention for their symptoms. In total, 44% of households included members who had sought medical attention for their COVID-19 symptoms. Across disadvantage groups, no group was more likely to seek medical attention if they experienced symptoms. However, households in which the child had SEN were significantly more likely to seek medical attention for COVID-19 symptoms, with 58% of these households seeking medical attention if they experienced symptoms of COVID-19, versus 42% for households where the child did not have SEN (see Table 16).

Table 16: Whether household members sought medical attention for COVID-19, by child's SEN status

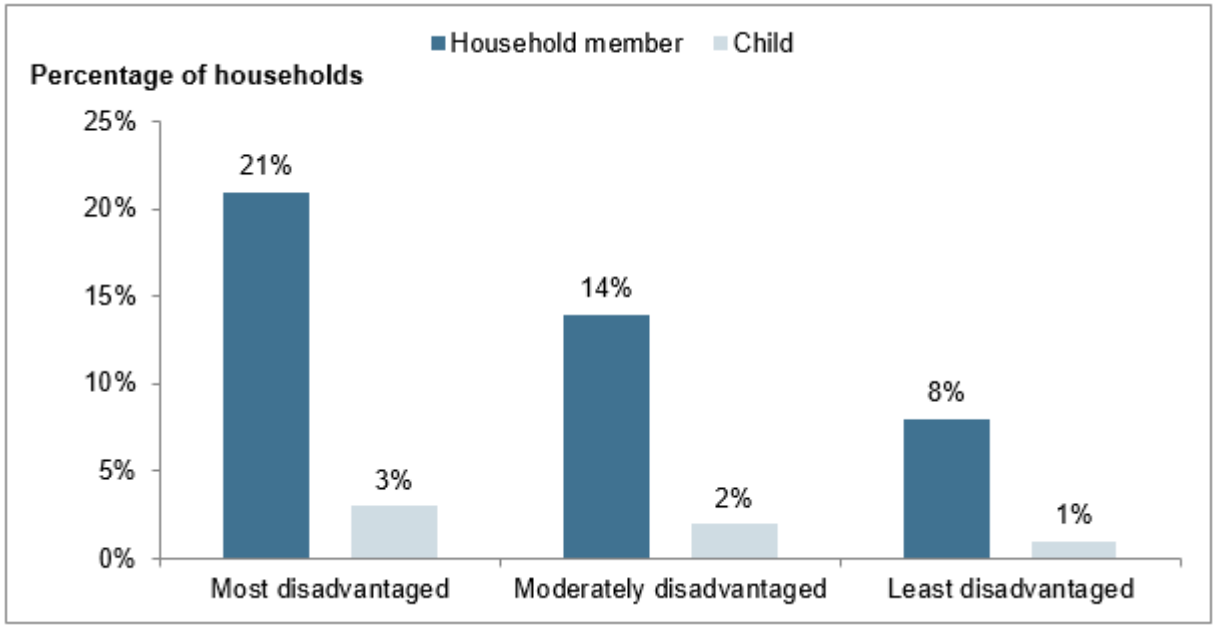
Whether anyone in household sought medical attention for COVID-19 symptoms since February 2020	Child has SEN %	Child does not have SEN† %	Total %
Yes	58*	42	44
No	42	58	56
Unweighted Base	*72*	*359*	*433*

Base: Households that experienced COVID-19 symptoms since February 2020
Outcome tested: Household seeking medical attention for COVID-19 symptoms
Reference category: Children without SEN
**p<0.05, **p<0.01, ***p<0.001*

All households were also asked whether any member of their household received instruction to shield. Overall, 11% of households contained an individual who was considered to be clinically vulnerable and who had been advised to shield by the NHS, while 89% of households did not. In 2% of all households, the child participating in the SEED study was asked to shield (see Tables C.10 and C.11 in Appendix C).

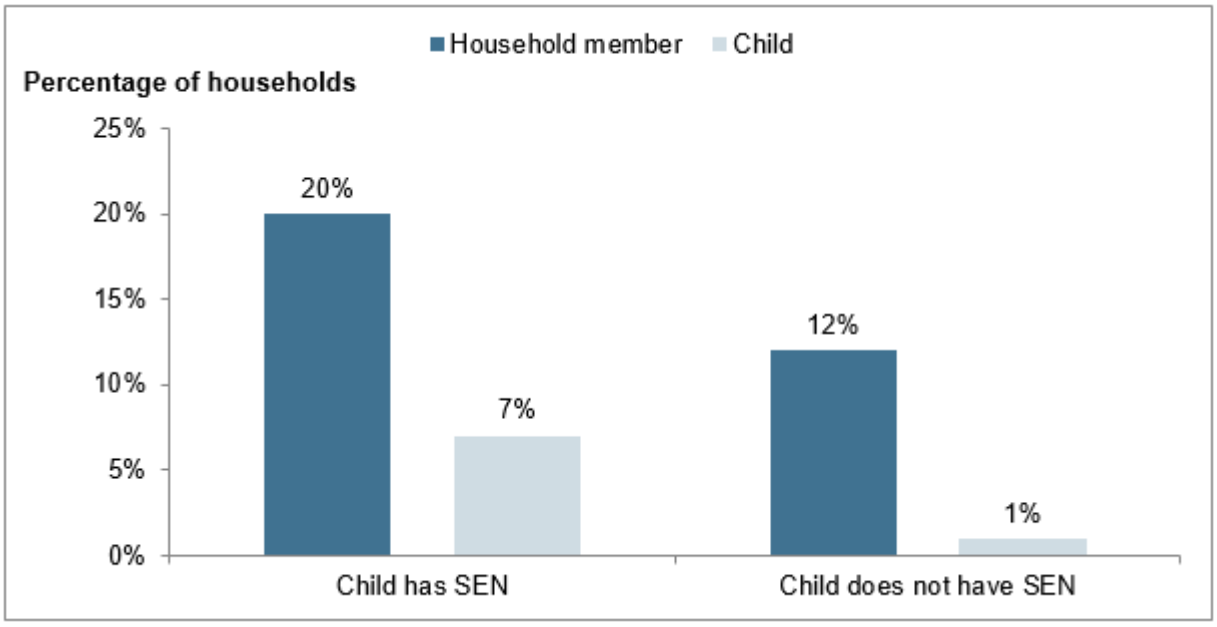
Presence of shielding household members varied significantly between disadvantage groups. Households in the 20% most disadvantaged and 20-40% moderately disadvantaged groups were significantly more likely to contain someone advised to shield (21% and 14% respectively) than those in the 60% least disadvantaged group (where only 8% of households included a shielding individual; see Figure 8 and Table C.10 in Appendix C). Children in the most disadvantaged group were more likely to be instructed to shield; although only a very small minority of children across all disadvantaged groups were advised to shield (between 1% and 3%), this was still significantly higher for children in the most disadvantaged group than those in the least disadvantaged group (see Figure 8 and Table C.11 in Appendix C).

Figure 8: Member of household instructed to shield, by disadvantage group



Members of households where the child had SEN were significantly more likely to be advised to shield (20%), compared to households where the child did not have SEN (12%). Children with SEN were significantly more likely to be asked to shield than children without (7% versus 1%), and this remained significant when controlling for disadvantage group (see Figure 9 and Table C.12 and Table C.13 in Appendix C).

Figure 9: Member of household instructed to shield, by child's SEN status



3.4. Socialisation

All households were asked how often the child saw their family who did not live with them, including via video-calls.[5] Overall, 17% of children saw their family every day or almost every day, 19% saw their family several times a week, 36% saw their family once or twice a week, 17% saw their family once or twice a month, 8% saw them less than once a month, and 3% not at all (for this more detailed breakdown of frequencies, see Table C.14 in Appendix C). Therefore, the majority of children included in the SEED study (72%) saw family members who did not live with them or spoke with them on video at least once a week.

Children in the moderately disadvantaged group were significantly more likely to see their family who did not live with them once a week or more (76%) than those in the least disadvantaged group (67%; see Table 17). Children in the most disadvantaged group were also more likely to see their family every week than those in the least disadvantaged group, however this difference was not statistically significant, which may, in part, be due to the smaller size of the most disadvantaged group.

Table 17: How often child saw family, by disadvantage group

How often the child sees their family including via video	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Once a week or more often	74	76**	67	72
Less often than once a week	25	24	33	28
Unweighted Base	281	607	936	1,824

Base: All households
Outcome tested: Child seeing family once a week or more
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Children with SEN appear to have had less contact with their family that lived outside their household than those without SEN; 67% of children with SEN saw their family at least once a week, compared to 73% of children without SEN (see Table 18). This association remained significant when controlling for disadvantage group. However, it

[5] Respondents were not given a definition of family in this question, so the understanding of what constitutes a family member may vary between respondents.

was no longer significant when controlling for whether anyone in the household was shielding due to COVID-19; suggesting that the differences in contact between children and their extended families may be linked to shielding status which is, in turn, significantly associated with whether or not a child had SEN (Figure 9).

Table 18: How often child saw family, by SEN status

How often the child sees their family including via video	Child has SEN %	Child does not have SEN† %	Total %
Once a week or more often	67***	73	72
Less often than once a week	33	27	28
Unweighted Base	*245*	*1,576*	1,824

Base: All households
Outcome tested: Child seeing family more than once a week
Reference category: Children without SEN
**p<0.05, **p<0.01, ***p<0.001*

Participants were also asked how often their child spent time with friends (including via video calls). Across all households, 14% of children saw their friends every day or almost every day, 18% saw them several times a week, 30% saw them once or twice a week, 16% saw them once or twice a month, 10% less often than once a month and 12% not at all (for this detailed breakdown of frequencies, see Table C.15 in Appendix C). Therefore, the majority of children (63%) spent time with their friends at least once a week (Table C.16) and, as outlined above, the majority of children (72%) saw family that lived outside their home at least once a week.

The relationship between frequency of spending time with friends and disadvantage was not consistent (see Tables C.15 and C.16 in Appendix C). Children with SEN were significantly less likely to spend time with their friends once a week or more: 54% of children with SEN saw their friends less than once a week, compared to just 35% of children without SEN (see Table 19). This difference remained significant when controlling for disadvantage group and when controlling for whether or not anyone in the child's household was shielding due to COVID-19. Therefore, no matter the household's socio-economic situation and shielding status, children with SEN were significantly less likely to see their friends regularly.

Table 19: How often child spent time with friends, by SEN status

How often the child spends time with friends	Child has SEN %	Child does not have SEN† %	Total %
More than once a week	45***	65	63
Less than once a week	54	35	37
Unweighted Base	*244*	*1,577*	1,824

Base: All households
Outcome tested: Child seeing friends more than once a week
Reference category: Children without SEN
**p<0.05, **p<0.01, ***p<0.001*

3.5. Parental mental health

The SEED COVID-19 survey included items from the Kessler screening scale for psychological distress (Kessler 6), which can be combined as a measure of parental mental health (Kessler et al., 2003). The Kessler scale runs from 0 to 24, with higher scores reflecting higher levels of distress. The average (mean) score across all respondents was 5.4, with a median score of 4 suggesting that this distribution is positively skewed (with more values clustered at the lower end of the scale and more spread out at the higher end of the scale). Parents of children in the most disadvantaged group had significantly higher Kessler 6 scores than those in the least disadvantaged group (see Table 20).

Table 20: Parental mental distress, by disadvantage group

Parental mental distress	Most disadvantaged	Moderately disadvantaged	Least disadvantaged†	Total
Mean	7.2***	5.0	4.8	5.4
Standard Deviation	6.1	4.6	4.5	5.0
Median	6	4	3	4
Unweighted Base	279	603	935	1,817

Base: All households
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Although not the main focus of this analysis, Kessler 6 scores can be banded to create three categories of respondents depending on their overall score on the Kessler 6 scale. These categories classify respondents as experiencing “No distress” (a score of 0-4), “Moderate distress” (5-12) and “Strong distress” (13-24). Overall, 54% of research participants were categorised as experiencing “No distress”, 36% as experiencing “Moderate distress” and the remaining 10% as experiencing “Strong distress”. (Further details on parent mental distress band distributions by disadvantage group and SEN status can be found in Tables C.17 and C.18 in Appendix C.)

As shown in Table 21, parents of children with SEN experienced significantly higher distress than those whose child did not have SEN. Respondents whose child had SEN in the SEED COVID-19 study had a mean Kessler 6 score of 6.8, compared to only 5.2 amongst those respondents whose child did not have SEN, and this difference remained significant when controlling for disadvantage group.

Table 21: Parental mental distress, by child’s SEN status

Parental mental distress	Child has SEN	Child does not have SEN†	Total
Mean	6.8***	5.2	5.4
Standard Deviation	5.4	4.9	5.0
Median	6	4	4
Unweighted Base	244	1,570	1,817

Base: All households
Reference category: children without SEN
**p<0.05, **p<0.01, ***p<0.001*

4. Changes in children's socio-emotional development

Key findings

- The socio-emotional wellbeing of children in the SEED study, as measured through parents' responses to the Strengths and Difficulties Questionnaire (SDQ), deteriorated between the ages of 4 and 8-10 years old. This is in line with previous research that has found that socio-emotional difficulties increase as children grow up through the early years into adolescence (NHS Digital, 2018).
- Although the SEED Age 4 report found that parental warmth and parenting styles were significantly associated with socio-emotional wellbeing when children were 4 years old (in line with wider research on this), the new analysis found that these relationships had weakened between the ages of 4 and 8-10 years old.
- Gender differences in socio-emotional difficulties present at age 4 had broadened by ages 8-10 years. Boys continued to report higher levels of total socio-emotional difficulties and hyperactivity difficulties than girls, and boys were more likely to report conduct difficulties by ages 8-10. This is in line with research on children in this approximate age range (Metzler et al., 2000).
- Increases in socio-emotional difficulties were significantly higher between the ages of 4 and 8-10 for children with special educational needs (SEN). The growth of the SEN gap was most acute for hyperactivity and emotional difficulties; children with SEN experienced, on average, a 3.4 point greater increase in total difficulties, a 1 point greater increase in emotional difficulties and a 1.5 point greater increase in hyperactivity difficulties than those with no SEN over this time period.
- Recent experience of household chaos and parental mental distress at age 8-10 were both associated with increases in emotional, hyperactivity and conduct difficulties as well as total difficulties.
- Having a regular bedtime and seeing friends regularly during the pandemic were associated with lower increases in socio-emotional difficulties between the ages of 4 and 8-10 years old, particularly so for girls. For boys, not attending in-person school while at the same time not having a quiet place to study at home was a significant predictor of an increase in total socio-emotional difficulties and emotional difficulties scores.
- Children's educational attainment was significantly associated with their socio-emotional development between the ages of 4 and 8-10 years old. In particular, children who had met the expected level when they were 5 years old (Early Years Foundation Stage Profile) but not the expected levels in English and maths when they were 7 years old (Key Stage 1) experienced a significantly greater deterioration in their socio-emotional development than those who met both levels.

This chapter examines the factors that are associated with changes in a child's socio-emotional development between Wave 3 of the SEED Study (when children were 4 years old) and Wave 5, which was carried out during the COVID-19 pandemic in 2020 (when children were aged 8-10 years old). Four outcome measures are used, constructed from parents' responses to questions from the Strengths and Difficulties Questionnaire (SDQ): a child's emotional problems score, conduct problems score and hyperactivity score along with their score on the total difficulties scale.[6] Higher scores on all scales reflect greater socio-emotional difficulties.

This chapter exploits the longitudinal nature of the SEED study to investigate the relationships between a child's home environment – as measured in earlier SEED waves and in the COVID-19 study – and changes in children's socio-emotional development. It also uses data collected in the COVID-19 study to explore if changes in children's socio-emotional development between the ages of 4 and 8-10 years old were associated with their experiences at home and school during the pandemic. Data from the National Pupil Database (NPD) measuring children's attainment at 5 and 7 years old is also used in this analysis to explore the relationship between children's attainment and socio-emotional development during this time period.

4.1. Method

Descriptive analyses were conducted on the sample of SEED respondents who participated in both Wave 3 (when children were 4 years old) and Wave 5 (when they were 8-10 years old during the COVID-19 pandemic). Weighted descriptive statistics were produced to identify child and family-levels factors associated with differences in children's emotional symptoms, conduct problems, hyperactivity and overall SDQ scores at the age of 4 and when children were aged 8-10 years old. These analyses were also used to compare the extent to which these measures of socio-emotional difficulties have changed since children were 4 years old.

Fixed effects regression models were built for each SDQ outcome of interest (a child's total socio-emotional difficulties, and emotional, conduct and hyperactivity difficulties respectively). A fixed effects regression model uses panel data to estimate the relationship between within-person changes in one or more time-varying predictor variables (such as a child's age) and within-person change in an outcome variable (such as a child's socio-emotional difficulties scores). Time invariant variables are automatically dropped from these models. However, to investigate if children's socio-emotional development trajectories between the ages of 4 and 8-10 years old differed depending on characteristics that did not vary between the ages of 4 and 8-10 years old (including sex,

[6] Two other SDQ scales – the peer problems and prosocial scales – were not included in this analysis.

ethnicity and children's early years experiences), interactions were included in these models between these non-varying factors and a time dummy to reflect the period in which the SDQ scores were collected. Fixed effect models are therefore used to investigate the factors associated with changes in children's SDQ scores between the age of 4 (when these questions were last previously asked at Wave 3) and ages 8-10 (during the COVID-19 pandemic at Wave 5).

All analyses control for the characteristics of the individual child (their sex, ethnicity, age in months and whether or not they had special educational needs or a long-term illness) and of their family (household working status and parents' educational attainment, level of disadvantage, the number of children in the household, family structure and housing tenure) that may otherwise confound and explain the relationship between a child's household environment or their pandemic experiences and changes to their level of socio-emotional difficulties.

Exploratory analyses were conducted to determine if home environment variables and COVID-19 experiences should be included in a final model. Only variables that were significantly associated with changes in the relevant SDQ score (either for all children combined or for boys or girls separately) were included in a final model. Variables were included in the model either as time-varying variables (if they were asked in multiple SEED survey waves) or interacted with variable reflecting the time period (if they were only collected at a single time point), to model the estimated change in difficulties scores associated with that particular characteristic or experience. More details of all variables included in these models can be found in Chapter 1.

Models were built in a stepwise fashion, with additional explanatory variables added in the following, cumulative order: 1) child characteristics; 2) household characteristics; 3) COVID-19 experiences. Fixed effects regression models were estimated separately for boys and girls due to potentially different development trajectories for each.

SEED survey data from Wave 5 was linked to the National Pupil Database to explore the relationship between prior attainment and children's socio-emotional development at ages 8-10. An attainment variable was constructed with four categories indicating whether a child had:

1) Achieved a good level of development in the Early Years Foundation Stage Profile (EYFSP – when they were 5 years old) and the expected standard at Key Stage 1 (KS1 – when they were 7 years old);

2) Achieved a good level of development at EYFSP only (and not the expected standard at KS1);

3) Achieved the expected standard at KS1 only (and not at a good level of development at EYFSP);

4) Not achieved a good level of development at EYFSP nor the expected standard at KS1.

This attainment indicator was added to the fully adjusted models outlined above. These models were estimated for all children combined and for boys and girls separately.

For each set of regression models presented in this section, coefficients from the final, fully adjusted models are shown, with significant coefficients highlighted in bold. Positive coefficients show that higher values of a variable are associated with a greater increase in a child's socio-emotional problems and negative coefficients show that higher values of a variable are associated with lower increases in problems in each area.

4.2. Differences in socio-emotional difficulties at age 4 and 8-10 years old

4.2.1. Demographic differences

Mean total difficulties and hyperactivity scores were significantly higher for boys than girls at age 4. This significant sex difference was still apparent at age 8 to 10, with some evidence that the gap was widening. Furthermore, boys were also more likely to score higher for hyperactivity difficulties than girls (Table 22). There were no significant sex differences in scores for emotional difficulties at either age 4 or ages 8 to 10.

Table 22: Mean SDQ scores by age and sex, at age 4 and 8-10

Sex	Age 4		Age 8-10	
	Mean	***Unweighted Base***	***Mean***	***Unweighted Base***
Total difficulties score				
Boys†	8.5	*953*	10.7	*934*
Girls	7.7*	*859*	9.2***	*843*
Total	8.1	1,812	10.0	1,777
Emotional difficulties score				
Boys†	1.4	*958*	2.4	*954*
Girls	1.5	*861*	2.5	*859*
Total	1.4	*1,819*	2.5	*1,813*
Conduct difficulties score				
Boys†	2.1	*958*	2.2	*953*
Girls	2.0	*860*	1.9**	*858*
Total	2.1	*1,818*	2.1	*1,811*
Hyperactivity difficulties score				
Boys†	3.7	*956*	4.3	*954*
Girls	3.1***	*860*	3.2***	*855*
Total	3.4	*1,816*	3.8	*1,809*

Base: All households
Outcome tested: Mean SDQ scores
Reference category: Boys
**p<0.05, **p<0.01, ***p<0.001*

Differences in socio-emotional development between children with and without special educational needs (SEN) have been established among secondary school aged children (Barnes & Harrison, 2017). SEN has been shown to be independently linked to higher levels of emotional, hyperactivity and conduct difficulties as well as total difficulties among 10- to 15-year-olds. Less is known about the ages at which these SEN-related socio-emotional difficulties emerge. Furthermore, emotional and behavioural difficulties that cause a child to require special education provision can be classed as SEN themselves.

The special educational needs (SEN) gap in socio-emotional difficulties increased between the ages of 4 and 8-10 years. As Table 23 shows, the SEN gap grew over time by 1.5 points for emotional difficulties and by 1.6 points for hyperactivity difficulties, with a more modest relative increase of 0.2 points for conduct difficulties. Consequently, this led to an increase over time in the SEN gap for total difficulties scores of 4.6 points. Due to

the large time period over which these increases were measured, we cannot determine from these analyses the extent to which the COVID-19 pandemic may have contributed to these greater increases in socio-emotional difficulties measured among children with special educational needs. However, analysis of children's socio-emotional difficulties within the pandemic period alone has found that children without SEN experienced greater recovery than those with SEN when restrictions in England were eased (Creswell et al, 2021). This suggests that children with SEN may have been more adversely affected by the restrictions introduced during the pandemic.

Table 23: Mean SDQ scores by age and SEN status, at age 4 and 8-10

SEN	Age 4		Age 8-10	
	Mean	***Unweighted Base***	**Mean**	***Unweighted Base***
Total difficulties score				
No†	7.6	*1,568*	8.8	*1,537*
Yes	11.8***	*241*	17.6***	*238*
Total	8.1	*1809*	9.9	*1775*
Emotional difficulties score				
No†	1.3	*1,573*	2.2	*1,569*
Yes	2.0***	*243*	4.4***	*242*
Total	1.4	*1,816*	2.5	*1,811*
Conduct difficulties score				
No†	2.0	*1,572*	1.9	*1,566*
Yes	3.0***	*243*	3.3***	*243*
Total	2.1	*1,815*	2.1	*1,809*
Hyperactivity difficulties score				
No†	3.2	*1,570*	3.3	*1,564*
Yes	5.0***	*243*	6.7***	*243*
Total	3.4	*1,813*	3.8	*1,807*

Base: All households
Outcome tested: Mean SDQ scores
Reference category: No special educational needs
**p<0.05, **p<0.01, ***p<0.001*

Disadvantage was significantly associated with children's total socio-emotional difficulties, conduct problems and hyperactivity when the children were aged 4 years old – the most disadvantaged had the highest difficulties scores which decreased step-wise with decreasing disadvantage. As Table 24 shows, difficulties scores increased for all

measures by ages 8-10, but the extent of the disadvantage gap in socio-emotional difficulties remained broadly the same at older ages as it was at younger ages.

Table 24: Mean SDQ scores by age and disadvantage, at age 4 and 8-10

Disadvantage group	Age 4		Age 8-10	
	Mean	***Unweighted Base***	***Mean***	***Unweighted Base***
Total difficulties score				
Most disadvantaged	10.1***	280	11.4***	*269*
Moderately disadvantaged	8.6***	601	10.1*	*586*
Least disadvantaged†	7.4	931	9.1	*922*
Total	8.1	*1,812*	10.0	*1,777*
Emotional difficulties score				
Most disadvantaged	1.6*	*282*	2.7*	*277*
Moderately disadvantaged	1.5*	*603*	2.5	*603*
Least disadvantaged†	1.3	*934*	2.3	*933*
Total	1.4	*1,819*	2.5	*1,813*
Conduct difficulties score				
Most disadvantaged	2.6***	*281*	2.4**	*278*
Moderately disadvantaged	2.2*	*604*	2.1	*600*
Least disadvantaged†	1.9	*933*	1.9	*933*
Total	2.1	*1,818*	2.1	*1,811*
Hyperactivity difficulties score				
Most disadvantaged	4.1***	*281*	4.1*	*280*
Moderately disadvantaged	3.6**	*602*	3.8	*597*
Least disadvantaged†	3.2	*933*	3.6	*932*
Total	3.4	*1,816*	3.8	*1,809*

Base: All households
Outcome tested: Mean SDQ scores
Reference category: Least disadvantaged families
**p<0.05, **p<0.01, ***p<0.001*

4.2.2. Differences by ECEC experiences

There were significant differences in children's mean socio-emotional difficulties scores when they were 4 years old depending on the amount of formal early childhood education and care (ECEC) they received when they were 3 years old (Table 25). Increasing hours spent in formal childcare was associated with lower total, emotional and

hyperactivity difficulties scores at age 4, though there was no association for conduct difficulties. It is worth noting that none of the associations with hours of childcare were significant by the ages of 8-10 years, and the significant relationships between higher childcare hours at 3 years old and lower socio-emotional difficulties at 4 years old did not persist to when children were 8-10 years old.

Table 25: Mean SDQ scores by age and amount of ECEC received, at age 4 and 8-10

Childcare hours at 3 years old	Age 4		Age 8-10	
	Mean	***Unweighted Base***	**Mean**	***Unweighted Base***
Total difficulties score				
0-15 hours per week †	8.9	*662*	10.1	*646*
16-30 hours per week	7.8**	*611*	10.5	*599*
31+ hours per week	7.6***	*539*	9.2	*532*
Total	8.1	*1,812*	10.0	*1,777*
Emotional difficulties score				
0-15 hours per week †	1.6	*666*	2.5	*665*
16-30 hours per week	1.3*	*612*	2.5	*610*
31+ hours per week	1.3**	*541*	2.3	*538*
Total	1.4	*1,819*	2.5	*1,813*
Conduct difficulties score				
0-15 hours per week †	2.2	*666*	2.0	*660*
16-30 hours per week	2.0	*612*	2.3	*612*
31+ hours per week	2.1	*540*	2.0	*539*
Total	2.1	*1,818*	2.1	*1,811*
Hyperactivity difficulties scores				
0-15 hours per week †	3.6	*664*	3.7	*656*
16-30 hours per week	3.4	*611*	4.0	*614*
31+ hours per week	3.3*	*541*	3.6	*539*
Total	3.4	*1,816*	3.8	*1,809*

Base: All households
Outcome tested: Mean SDQ scores
Reference category: Children who attended 0-15 hours per week of childcare at age 3
**p<0.05, **p<0.01, ***p<0.001*

4.2.3. Differences by experiences during the COVID-19 pandemic

Children living in households adversely affected by the COVID-19 pandemic were more likely to experience socio-emotional difficulties. Children who lived in households where someone had reported symptoms of COVID-19 had higher total difficulties, conduct difficulties and hyperactivity difficulties scores than their counterparts who lived in households where no one reported such symptoms. (Table 26). This was despite these groups having comparable pre-pandemic levels of socio-emotional health (at age 4).

Table 26: Mean SDQ scores by COVID-19 symptoms in household, at age 4 and 8-10

COVID-19 symptoms in household	Age 4		Age 8-10	
	Mean	***Unweighted Base***	***Mean***	***Unweighted Base***
Total difficulties score				
No†	8.1	*1,382*	9.7	*1,354*
Yes	8.3	*427*	10.9**	*421*
Total	8.1	*1,809*	9.9	*1,775*
Emotional difficulties score				
No†	1.4	*1,387*	2.4	*1,380*
Yes	1.5	*429*	2.7	*430*
Total	1.4	*1,816*	2.5	*1,810*
Conduct difficulties score				
No†	2.1	*1,385*	2.0	*1,379*
Yes	2.2	*430*	2.3**	*429*
Total	2.1	*1,815*	2.1	*1,808*
Hyperactivity difficulties score				
No†	3.4	*1,385*	3.7	*1,377*
Yes	3.5	*428*	4.1**	*429*
Total	3.4	*1,813*	3.8	*1,806*

Base: All households
Outcome tested: Mean SDQ scores
Reference category: Children living in households where no-one reported symptoms of COVID-19
**p<0.05, **p<0.01, ***p<0.001*

Parents of children who did not attend in-person schooling from the onset of the pandemic while at the same time not having a quiet place to study at home reported

significantly higher emotional difficulties for their children during the pandemic (when they were 8-10 years old) than parents of children who continued to attend school in person (Table 27). As was observed for households experiencing COVID-19 symptoms, there were no differences in socio-emotional development between these two groups pre-pandemic at age 4.

Overall, there were weak relationships between this narrow selection of school experiences and socio-emotional difficulties, either before or during the pandemic.

Table 27: Mean SDQ scores by age and COVID-19 schooling experiences, at age 4 and 8-10

COVID-19 schooling	Age 4		Age 8-10	
	Mean	***Unweighted Base***	***Mean***	***Unweighted Base***
Total difficulties score				
Attended in person †	9.3	*90*	10.3	*85*
Remote education - no quiet place to study	8.8	*258*	12.0	*252*
Remote education - with quiet place to study	7.9	*1,462*	9.5	*1,438*
Total	8.1	*1,810*	9.9	*1,775*
Emotional difficulties score				
Attended in person †	1.4	*90*	2.4	*86*
Remote education with no quiet place to study	1.6	*260*	3.2**	*260*
Remote education with a quiet place to study	1.4	*1,467*	2.3	*1,465*
Total	1.4	*1,817*	2.5	*1,811*
Conduct difficulties score				
Attended in person †	2.5	*90*	2.3	*89*
Remote education with no quiet place to study	2.3	*260*	2.7	*260*
Remote education with a quiet place to study	2.0	*1,466*	1.9	*1,460*
Total	2.1	*1,816*	2.1	*1,809*
Hyperactivity difficulties score				
Attended in person †	3.9	*90*	4.0	*89*
Remote education with no quiet place to study	3.7	*260*	4.2	*261*
Remote education with a quiet place to study	3.4	*1,464*	3.7	*1,457*
Total	3.4	*1,814*	3.8	*1,807*

Base: All households

Outcome tested: Mean SDQ scores

Reference category: Children who attended school in-person between March and May half-term 2020

**p<0.05, **p<0.01, ***p<0.001*

4.3. Modelling change in children's socio-emotional difficulties

This section presents regression coefficients for the final fixed effects models built to estimate changes in total, emotional, hyperactivity and conduct difficulties scores between the ages of 4 and 8-10 years. Estimated changes for boys and girls respectively are presented next to the combined estimate. All models controlled for a child's age in months and ethnicity as well as their parents' highest educational qualification, whether or not there was a working parent in the household, household structure, their family's disadvantage group and housing tenure. Combined models also controlled for the child's sex.

It is important to consider that socio-emotional difficulties are known to increase as children grow up through the early years into adolescence (NHS Digital, 2018). Therefore, these analyses looked for differences in the age-related increases by selected risk factors. For example, we can assess whether socio-emotional difficulties increase more over time for children who spent longer in formal childcare than those who did not attend, while being mindful that difficulties scores increased for all children regardless of childcare status.

4.3.1. Total difficulties

Children's health, special educational needs and ECEC experiences

Children with special educational needs experienced the greatest increases in total socio-emotional difficulties between the ages of 4 and 8-10 years (as measured in the COVID-19 pandemic) (Table 28). This association was significant – and large – in models estimated for all children combined as well as when estimated for boys and girls separately. Children with a new long-term health condition, or who had recovered from an earlier long-term health condition, also experienced greater increases in socio-emotional difficulties. However, long-term health was not a significant predictor of change for boys, while having an earlier, ongoing or new long-term health condition were all significant predictors of greater deterioration for girls.

Changes in children's total difficulties scores between the ages of 4 and 8-10 years old were also associated with the child's formal early childhood education and care (ECEC) experiences at the age of 4. Spending more than 15 hours per week in formal childcare (whether 16-30 hours or 31 or more hours per week) was associated with larger increases in socio-emotional difficulties over this period. As shown in Table 28, this appears to reflect a convergence since the age of 4 years when children who attended over 15 hours a week of formal childcare recorded lower scores on the total difficulties scale.

Household environment

The household environment did not significantly predict changes to children's socio-emotional difficulties, for all children combined. However, amongst boys only, a permissive parenting style at the age of 4 was associated with a decrease in socio-emotional difficulties between the ages of 4 and 8-10 years old. For girls, a more authoritarian parenting style and, to a lesser extent, warmer parental feelings were associated with increased difficulties and a more authoritative parenting style was associated with a reduction in difficulties.

These changes over time are counterintuitive to much of the literature based on Baumrind's (1991) typology of parenting styles. In this typology, an authoritarian parenting style is characterised as being low acceptance and high behavioural and psychological control, an authoritative style is characterised as being high acceptance and behavioural control and low psychological control and a permissive parenting style is characterised as being high acceptance but low psychological and behavioural control. Previous research has found that authoritative approaches tend to have positive effects upon the developmental outcomes of young children (Pinquart & Kauser, 2018), rather than the authoritarian and permissive approaches as observed here.

It is worth noting that the relationship between parenting styles and socio-emotional difficulties at age 4 were in line with wider literature and expectations: authoritarian and permissive parenting styles were associated with greater difficulties, and an authoritative parenting style and parental warmth were associated with fewer difficulties when children were 4 years old. One explanation for the divergence from these trends by ages 8-10 may be due to a weakening of these relationships over time. Further caution in the interpretation of this analysis is required as parenting style was not measured at ages 8-10, so it is unknown whether parenting styles at age 4 continued to be practised at older ages.

COVID-19 experiences

Recent parental mental distress and recent high household disruption were both consistently associated with greater increases in socio-emotional difficulties, in models for all children combined as well as when estimated for boys and girls separately. Long-term household disruption was also a significant predictor of greater deterioration in girls' (but not boys') socio-emotional development.

Having a regular bedtime and seeing friends at least once a week during the pandemic were both associated with lower increases in socio-emotional difficulties for girls and for all children combined. Neither bedtimes nor seeing friends significantly predicted changes in socio-emotional difficulties amongst boys, though attending in-person school during the pandemic with no quiet place to study at home was associated with a greater deterioration in boys' socio-emotional development.

Table 28: Fixed effects regression coefficients from models predicting changes in total difficulties scores

Change in total difficulties score	All	Boys	Girls
Child's health, SEN and ECEC experiences			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	**1.0***	0.9	**1.2***
New long-term illness at age 8-10 (not age 4)	**2.0****	1.1	**2.6****
Long-term illness at ages 4 and 8-10	1.3	0.1	**2.4***
Has special educational needs	**3.3*****	**3.4*****	**3.4*****
Hours in childcare at 3 years old – reference category: 0-15 hours per week			
16-30 hours per week	**1.1****	**1.3***	0.7
31 or more hours a week	**0.8***	**1.2***	0.2
Household environment			
Warmth of parental attitudes to child at age 3	0.1	0.0	**0.2***
Authoritarian parenting style at age 4	-1.0	-0.4	**-1.4***
Authoritative parenting style at age 4	0.6	-0.5	**1.3***
Permissive parenting style at age 4	-0.6	**-1.1***	-0.3
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)	-0.9	-2.0	0.1
Recent distress (child aged 8-10)	**1.6*****	**1.5****	**1.6****
Long-term distress (child aged 3 & 8-10)	0.6	1.2	-0.2
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)	-0.8	-1.0	-0.3
Recent high disruption (child aged 8-10)	**2.0*****	**1.7****	**2.4*****
Long-term high disruption (child aged 3 & 8-10)	1.0	0.1	2.6***
Had a regular bedtime	**-1.5***	-1.0	**-2.0***
Saw friends every week	**-0.9****	-0.6	**-1.2****
Schooling during the pandemic – reference category: Continued in-person schooling			
Remote education – no quiet place to study	1.8	**2.8***	0.0
Remote education – with quiet place to study	0.5	0.9	-0.2
Someone in household had COVID-19 symptoms	0.6	0.6	0.8
Financial situation – reference category: Living comfortably			
Doing alright/Just about getting by	0.6	1.0	0.1
Finding it quite difficult/ Finding it very difficult	1.3	1.2	1.7

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
Statistically significant coefficients are shown in **bold***, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*

4.3.2. Emotional difficulties

Children's health, special educational needs and ECEC experiences

Children with special educational needs reported greater increases in emotional difficulties between the ages of 4 and 8-10 years old than those without SEN (Table 29). This relationship remained significant in models estimated for all children combined as well as for boys and for girls separately. Having a new or ongoing long-term health condition was also significantly associated with larger increases in emotional difficulties for all children combined, and for girls when a separate model was estimated. However, boys' long-term health was not associated with changes in emotional difficulties. Similarly, better developed vocabulary at age 4 was associated with greater increases in emotional difficulties for all children combined and for girls (but not for boys) between the ages of 4 and 8-10 years old, suggesting a weakening of the relationship between early years language ability and socio-emotional development between the ages of 4 and 8-10.

Household environment

No household environment variables were significantly associated with changes in children's emotional difficulties between the ages of 4 and 8-10 years old in exploratory analyses, therefore were not included in these models.

COVID-19 experiences

Recent parental mental distress and recent high levels of household disruption were both associated with higher increases in emotional difficulties in models constructed for all children combined and for boys and for girls separately. Long-term parental distress was also a significant predictor of greater increases in emotional problems for all children combined, but not in separate models estimated for boys and for girls. Having a regular bedtime during the pandemic was associated with a smaller increase in emotional symptoms compared with those who did not, for all children combined and for girls (but not for boys). Exercising at least four days a week was associated with a smaller increase in emotional difficulties compared to those who did less exercise, for all children combined and for boys (but not for girls). In contrast, not attending in-person school and having no quiet place to study at home at the onset of the pandemic was associated with a larger increase in emotional difficulties in models estimated for all children and for boys only.

Table 29: Fixed effects regression coefficients from models predicting changes in emotional difficulties scores

Change in emotional difficulties score	All	Boys	Girls
Child's health, SEN and cognitive development			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	0.3	0.2	0.5
New long-term illness at age 8-10 (not age 4)	**0.9*** **	0.5	**1.2*** **
Long-term illness at ages 4 and 8-10	**1.3*** **	0.6	**1.8*** **
Has special educational needs	**0.99*** **	**0.9** **	**1.0** **
BAS Verbal skills at 4 years old	**0.0** **	0.005	**0.0** **
Household environment			
No significant variables included			
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)	0.05	-0.358	0.36
Recent distress (child aged 8-10)	**0.7*** **	**0.5***	**0.9*** **
Long-term distress (child aged 3 & 8-10)	**0.4***	0.4	0.5
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)	-0.1	-0.2	-0.
Recent high disruption (child aged 8-10)	**0.6** **	**0.6***	**0.6***
Long-term high disruption (child aged 3 & 8-10)	0.1	0.1	0.3
Had a regular bedtime	**-0.8** **	-0.3	**-1.2*** **
Saw friends every week	-0.1	-0.0	-0.3
Exercises at least 4 days a week	**-0.3***	**-0.4***	-0.1
Schooling during the pandemic – reference category: Continued in-person schooling			
Remote education – no quiet place to study	**0.7***	**1.0***	0.3
Remote education – with quiet place to study	0.2	0.3	0.1
Financial situation – reference category: Living comfortably			
Doing alright/Just about getting by	0.1	0.2	0.0
Finding it quite difficult/ Finding it very difficult	0.2	0.1	0.4

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
Statistically significant coefficients are shown in **bold***, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*

4.3.3. Conduct difficulties

Children's health, special educational needs and ECEC experiences

Although a number of variables related to a child's health, cognitive development and early years education were associated with changes in conduct problems between the

ages of 4 and 8-10 years old, they did not predict changes in children's conduct problem scores when included in the fully adjusted fixed effect models below (Table 30).

Household environment

None of the measures included in these analyses to capture different dimensions of a child's household environment at age 3 or age 4 was significantly associated with changes in conduct problems between the ages of 4 and 8-10 years old in fixed effect models estimated for all children combined. However, for boys alone, a more permissive parenting style at age three was associated with a smaller increase in conduct problems between the age of 4 and 8-10 years old. For girls alone, an authoritarian parenting style at age three was associated with a smaller increase in these scores.

COVID-19 experiences

Recent parental mental distress (present when the child was 8-10 years old but not when the child was 4 years old) was associated with a greater increase in conduct problems between the ages of 4 and 8-10 years old for all children combined and for girls only. While recent household disruption was associated with higher increases in conduct problems, high household disruption present in a child's early years only (when they were 4 but not when they were 8-10 years old) was associated with lesser deterioration. This relationship, found for all children combined and for boys only, suggests a degree of recovery between the ages of 4 and 8-10 years old for children (and particularly boys) no longer experiencing high levels of household disruption. Although long-term household disruption was not associated with an increase in conduct problems in models estimated for all children combined or for boys only, it was a significant predictor of a greater increase in conduct problems in models estimated for girls only. In contrast, regularly seeing friends during the pandemic was associated with a lower increase in conduct problems for girls, but not for boys or all children combined.

Table 30: Fixed effects regression coefficients from models predicting changes in conduct difficulties scores

Change in conduct difficulties SDQ score	All	Boys	Girls
Child's health, SEN and formal ECEC experiences			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	0.2	0.4	-0.1
New long-term illness at age 8-10 (not age 4)	0.4	0.2	0.4
Long-term illness at ages 4 and 8-10	-0.1	-0.2	0.0
Has special educational needs	0.2	0.3	0.3
Attended formal childcare between 2 and 3 years old	0.1	0.4	0.1
Hours in childcare at 3 years old – reference category: 0-15 hours per week			
16-30 hours per week	0.3	0.3	0.3
31 or more hours a week	0.1	0.2	-0.1
Household environment			
Warmth of parental attitudes to child at age 3	-0.0	-0.0	0.0
Invasiveness of parental attitudes to child at age 3	-0.0	-0.0	-0.0
Authoritarian parenting style at age 4	-0.3	0.1	**-0.8****
Authoritative parenting style at age 4	0.2	-0.1	0.3
Permissive parenting style at age 4	-0.2	**-0.3***	-0.1
Parental locus of control	0.0	0.0	-0.0
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)	-0.4	-0.6	-0.3
Recent distress (child aged 8-10)	**0.4****	**0.5***	0.2
Long-term distress (child aged 3 & 8-10)	-0.1	0.0	-0.4
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)	**-0.4****	**-0.5****	-0.2
Recent high disruption (child aged 8-10)	**0.5****	**0.5***	**0.5****
Long-term high disruption (child aged 3 & 8-10)	0.3	-0.1	**0.9*****
Saw friends every week	-0.1	0.0	**-0.3***
Schooling during the pandemic – reference category: Continued in-person schooling			
Remote education – no quiet place to study	0.4	0.6	0.0
Remote education – with quiet place to study	-0.1	0.1	-0.4
Someone in household had COVID-19 symptoms	0.1	-0.1	0.4

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
Statistically significant coefficients are shown in **bold***, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*

4.3.4. Hyperactivity difficulties

Children's health and special educational needs

In models estimated for all children combined, having special educational needs was associated with a larger increase in hyperactivity scores between the ages of 4 and 8-10 years old (Table 31). However, long-term health conditions were not associated with changes in hyperactivity across this period.

Home environment

Only parent's locus of control (measured when their child was 4 years old) was associated with changes in a child's hyperactivity difficulties between the ages of 4 and 8-10 years old for all children combined. No measure of home environment included in these models was significantly associated with changes in hyperactivity levels for girls. For boys, greater parental control at the age of 4 was associated with greater increases in children's hyperactivity between the ages of 4 and 8-10 years old, whereas a permissive parenting style (measured at the age of 4) was associated with a lower increase in hyperactivity. It is important to note, however, that the greater parental control was associated with lower hyperactivity and a more permissive parenting style was associated with higher hyperactivity when children were 4 years old. Therefore, findings from these fixed effect models that estimate changes in hyperactivity scores between the ages of 4 and 8-10 years old suggest that the relationship between these home environment variables and boys' levels of hyperactivity weakened between the ages of 4 and 8-10 years old.

COVID-19 experiences

Recent parental mental distress was associated with larger increases in hyperactivity for all children combined. Recent as well as long-term parental mental distress were associated with larger increases in hyperactivity between the ages of 4 and 8-10 years old for boys only. Recent household disruption (during the pandemic when children where 8-10 years old) was also a significant predictor of higher increases in hyperactivity for girls and for all children combined. For girls only, having a regular bedtime during the pandemic was associated with smaller increases in hyperactivity.

Table 31: Fixed effects regression coefficients from models predicting changes in hyperactivity difficulties scores

Change in hyperactivity difficulties SDQ score	All	Boys	Girls
Child's health and SEN			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	0.2	-0.1	0.5
New long-term illness at age 8-10 (not age 4)	0.4	0.2	0.6
Long-term illness at ages 4 and 8-10	0.0	-0.0	0.1
Has special educational needs	**1.4*** **	**1.3*** **	**1.5*** **
Household environment			
Authoritarian parenting style at age 4	-0.1	0.1	-0.2
Authoritative parenting style at age 4	0.2	-0.0	0.4
Permissive parenting style at age 4	-0.2	**-0.4***	-0.2
Parental locus of control at age 4	**0.1****	**0.1****	0.0
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)	0.1	-0.2	0.2
Recent distress (child aged 8-10)	**0.5****	**0.7***	0.3
Long-term distress (child aged 3 & 8-10)	0.4	**0.8****	-0.2
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)	-0.3	-0.2	-0.3
Recent high disruption (child aged 8-10)	**0.6****	0.3	**0.9*** **
Long-term high disruption (child aged 3 & 8-10)	0.3	0.0	0.6
Had a regular bedtime	-0.4	0.0	**-0.8***
Someone in household had COVID-19 symptoms	0.3	0.3	0.2

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
Statistically significant coefficients are shown in **bold***, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*

4.4. Investigating the relationship between educational attainment and socio-emotional development

Previous SEED reports, as well as broader research into child development, have found that socio-emotional difficulties at primary school predict worse attainment at older ages. However, less is known about the reverse relationship: the potential impact of earlier attainment on children's later socio-emotional outcomes. Most of the literature demonstrating that inequalities in educational attainment are associated with later life mental health (as well as physical health) inequalities is based on the relationship

between educational attainment at the end of compulsory schooling and adult outcomes (Marmot, 2010). The shorter-term impact of early years attainment on young children's socio-emotional development within the primary school years has only rarely been explored (Deighton et al, 2018) but suggests links between a lack of early academic success and subsequent internalising symptoms. The SEED survey offers a unique opportunity to build on these sparse findings. Linking the data collected in Wave 3 and Wave 5 of the SEED study with data from the National Pupil Database (NPD) measuring children's attainment in the Early Years Foundation Stage Profile (EFYSP) and Key Stage 1 (KS1) standardised tests allows us to investigate how attainment in Reception year and Year 2 is associated with children's socio-emotional development between the ages of 4 and 8-10 years old.

4.4.1. Differences in socio-emotional development by EYFSP and KS1 attainment

Mean total difficulties, conduct difficulties, emotional difficulties and hyperactivity scores were all significantly lower at age 4 for children who achieved a good level of development at EYFSP than for those who did not (Table 32).

Table 32: Mean SDQ scores at age 4, by attainment at EYFSP

Attainment at EYFSP	*Age 4*	
	Mean	***Unweighted Base***
Total difficulties score		
Achieved good level of development†	8.1	1,367
Did not achieve good level of development	11.2***	318
Total	8.8	1,685
Emotional difficulties score		
Achieved good level of development†	1.4	1,369
Did not achieve good level of development	1.9**	321
Total	1.5	1,690
Conduct difficulties score		
Achieved good level of development†	2.1	1,369
Did not achieve good level of development	2.8***	321
Total	2.2	1,690
Hyperactivity difficulties score		
Achieved good level of development†	3.4	1,368
Did not achieve good level of development	4.6***	321
Total	3.6	1,689

Base: All households
Outcome tested: Mean SDQ scores
Reference category: Achieved good level of development in EYFSP
**p<0.05, **p<0.01, ***p<0.001*

This measure of EYFSP attainment was combined with children's Key Stage 1 attainment to create a new, composite measure to reflect if, and how, children's level of attainment had changed over time. This measure distinguished between children who consistently achieved the expected level in both assessment periods (consistently achieved the expected level), those who reached a good level of development in the EYFSP but not the expected level in KS1 testing (recent low attainment), those who reached the expected level in KS1 testing but had not reached a good level of development in the EYFSP (early years low attainment) and those who did not meet the expected level in either set of assessment (consistent low attainment).

The majority of SEED children had achieved both a good level of attainment in the EYFSP and the expected level in KS1 testing. Compared to this reference group, all

other children experienced higher socio-emotional difficulties at ages 8-10 years old, with children who failed to meet the expected level in KS1 testing experiencing significantly higher difficulties (whether or not they had achieved good development in the EYFSP). Children with consistently low attainment (who did not achieve a good level of development in the EYFSP nor the expected level in KS1 testing), experienced the highest level of socio-emotional difficulties across all domains.

Table 33: Mean SDQ scores at age 8-10, by attainment at EYFSP and KS1

NPD attainment	*Age 8-10*	
	Mean	***Unweighted Base***
Total difficulties score		
Achieved good level of development at EYFSP and expected level at KS1†	8.5	1,145
Achieved good level of development at EYFSP and but not expected level at KS1	12.4***	177
Achieved expected level at KS1 but not good level of development at EYFSP	11.6	63
Did not achieve good level of development at EYFSP or expected level at KS1	14.1***	240
Total	10.1	1,625
Emotional difficulties score		
Achieved good level of development at EYFSP and expected level at KS1†	2.2	1,163
Achieved good level of development at EYFSP and but not expected level at KS1	3.1***	180
Achieved expected level at KS1 but not good level of development at EYFSP	2.8	66
Did not achieve good level of development at EYFSP or expected level at KS1	3.2***	248
Total	2.5	1,657
Conduct difficulties score		
Achieved good level of development at EYFSP and expected level at KS1†	1.8	1,162
Achieved good level of development at EYFSP and but not expected level at KS1	2.6***	181
Achieved expected level at KS1 but not good level of development at EYFSP	2.1	66
Did not achieve good level of development at EYFSP or expected level at KS1	2.9***	249
Total	2.1	1,658
Hyperactivity difficulties score		
Achieved good level of development at EYFSP and expected level at KS1†	3.2	1,162
Achieved good level of development at EYFSP and but not expected level at KS1	4.7***	180
Achieved expected level at KS1 but not good level of development at EYFSP	4.3	64
Did not achieve good level of development at EYFSP or expected level at KS1	5.4***	248
Total	3.8	1,654

Base: All children. Outcome tested: Mean SDQ scores

Reference category: Children who achieved both EYFSP and KS1 levels in standardised testing

**p<0.05, **p<0.01, ***p<0.001*

4.4.2. Modelling the relationship between attainment and socio-emotional development

This section presents regression coefficients from additional fixed effects models that were built to estimate the relationship between children's attainment and changes in their total, emotional, hyperactivity and conduct difficulties scores between the ages of 4 and 8-10 years. Estimated changes for boys and girls respectively are presented next to the combined estimate. The models constructed for each SDQ domain included all variables measuring a child's health, SEN and ECEC experiences, their home environment and COVID-19 experiences as outlined above. They also controlled for a child's age in months and ethnicity as well as their parents' highest educational qualification, whether or not there was a working parent in the household, household structure, their family's disadvantage group and housing tenure. Combined models also controlled for the child's sex. Only the coefficients showing the relationship between children's attainment and changes in their SDQ scores are shown in the tables below. The full regression output is shown in tables in Appendix C.

Prior attainment was significantly associated with children's socio-emotional development even when controlling for their socio-demographic characteristics, family environment and experiences during the COVID-19 pandemic. In particular, children who had met the EYFSP level (measured when children were 5) but not the KS1 attainment level (measured when children were 7) experienced greater deterioration in three out of the four socio-emotional outcomes investigated here, compared to children who achieved the expected level at both EYFSP and KS1 (see Table 34). Children who consistently did not achieve the expected level in both the EYFSP and KS1 assessments also experienced a greater increase in hyperactivity difficulties than children who met both levels. Low attainment at both ages was not associated with greater deterioration in overall socio-emotional development or with larger increases in emotional or conduct difficulties.

Table 34: Fixed effects regression coefficients for child attainment from models including child's attainment to predict changes in socio-emotional difficulties scores between 4 and 8-10 years, for all children combined

	Change in difficulties domain			
	Total difficulties	**Emotional difficulties**	**Conduct difficulties**	**Hyperactivity difficulties**
Child attainment – Reference category: Achieved good level of development at EYFSP and expected level at KS1				
Achieved good level of development at EYFSP but not the expected level at KS1	**2.2*** **	**0.7** **	0.4	**0.9*** **
Achieved expected level at KS1 but not good level of development at EYFSP	1.0	0.4	0.1	0.2
Did not achieve good level of development at EYFSP or expected level at KS1	1.0	0.3	0.12	**0.6** **

Sample size = 1,823
*Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*
All regression coefficients reflect change over time estimated by interacting each variable with an indicator of time period.

When models were estimated for boys and girls separately, boys with declining attainment (achieved EYFSP/ did not achieve KS1) experienced a greater increase in all four measures of socio-emotional difficulties between the ages of 4 and 8-10 years old (Table 35). However, consistently low attainment (not meeting either the EYFSP or the KS1 level) was not associated with changes in total difficulties or in any of the three specific domains of socio-emotional development investigated here.

Table 35: Fixed effects regression coefficients for child attainment from models including child's attainment to predict changes in socio-emotional difficulties scores between 4 and 8-10 years, for boys

	Change in difficulties domain			
	Total difficulties	**Emotional difficulties**	**Conduct difficulties**	**Hyperactivity difficulties**
Child attainment – Reference category: Achieved good level of development at EYFSP and expected level at KS1				
Achieved good level of development at EYFSP but not the expected level at KS1	**2.6*** **	**07** **	**0.6***	**1.0** **
Achieved expected level at KS1 but not good level of development at EYFSP	1.5	0.8	0.1	0.1
Did not achieve good level of development at EYFSP or expected level at KS1	1.1	0.5	0.2	0.5

Sample size = 963
*Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*
All regression coefficients reflect change over time estimated by interacting each variable with an indicator of time period.

There were weaker relationships for girls between attainment and socio-emotional development between the ages of 4 and 8-10 years old (Table 36). Nonetheless, for girls, those who achieved the EYFSP but not the KS1 attainment level experienced a greater increase in total difficulties scores as well as in hyperactivity scores. Consistently low-achieving girls (who did not meet either the EYFSP or KS1 expected level) also experienced a greater increase in hyperactivity difficulties between the ages of 4 and 8-10 years old.

Table 36: Fixed effects regression coefficients for child attainment from models including child's attainment to predict changes in socio-emotional difficulties scores between 4 and 8-10 years, for girls

	Change in difficulties domain			
	Total difficulties	**Emotional difficulties**	**Conduct difficulties**	**Hyperactivity difficulties**
Child attainment – Reference category: Achieved good level of development at EYFSP and expected level at KS1				
Achieved good level of development at EYFSP but not the expected level at KS1	**1.5***	0.6	0.2	**0.7***
Achieved expected level at KS1 but not good level of development at EYFSP	0.2	-0.5	0.2	0.4
Did not achieve good level of development at EYFSP or expected level at KS1	0.4	-0.3	-0.1	**0.8***

Sample size = 860
*Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*
All regression coefficients reflect change over time estimated by interacting each variable with an indicator of time period.

The results of this analysis suggest that although children with long-term low attainment experienced greater socio-emotional difficulties at both 4 and 8-10 years old, they did not experience a greater socio-emotional deterioration between these ages. In fact, it is children who used to achieve the expected level but did not achieve it in the most recent assessment at KS1 that experienced the greatest deterioration in socio-emotional outcomes. It appears that for this group, a comparatively slower academic progress between Reception year and Year 2 might have taken place alongside a comparatively faster deterioration in socio-emotional development. These findings suggest that children's socio-emotional development during their primary schooling may be influenced by, as well as impact, children's attainment.

4.5. Summary

While the socio-emotional development of children in the SEED sample has, overall, deteriorated between the ages of 4 and 8-10 years old, this is broadly in-line with existing research that has established that greater socio-emotional difficulties develop through

childhood (NHS Digital, 2018). However, this chapter has shown that increases in socio-emotional difficulties were not consistent across the SEED sample. A number of child and household characteristics were associated with greater and lesser changes in the different socio-emotional outcomes investigated here.

In particular, children with special educational needs have consistently experienced much larger increases in socio-emotional difficulties between the ages of 4 and 8-10 years old. Recently diagnosed or ongoing long-term health conditions were also associated with larger increases in total and emotional difficulties for all children combined and for girls, but not for boys. This highlights important gender differences in how a child's own experiences interacts differently with their socio-emotional development.

The home environment variables used in this chapter are based on data collected from surveys conducted when children were 3 or 4 years old. While almost all of these factors were associated with children's socio-emotional development at the age of both 4 and 8-10 years old, they were not consistently associated with changes in these measures over this time period. Where parenting style, parental feelings of warmth towards their child and parents' locus of control were significantly associated with changes in children's socio-emotional problems, these results suggested that the differences detected at age 4 had weakened by the age of 8-10 years old. Whether that is because these home environment variables play a smaller role in children's socio-emotional health later in childhood (and, in particular, when children are attending school full-time) or because these measures were collected at least four years before the most recent SEED data collection during the pandemic is unclear. Nonetheless, many of the differences in home environment variables that were detected when children were 4 years old persisted when children were aged 8-10 years old amidst the COVID-19 pandemic.

Evidence of the relationship between children's experiences during the COVID-19 pandemic and changes in their socio-emotional development was more compelling. In particular, children whose parents were experiencing recent mental distress or who lived in a household with high levels of disruption in only the most recently collected data tended to experience greater increases in all measures of socio-emotional difficulties analysed here. Recent parental mental distress was a consistent predictor of increases in socio-emotional problems for boys, while recent high levels of household disruption was for girls. Furthermore, measures of disruption (including not having a regular bedtime and not seeing friends during the pandemic) appeared to be associated with worsening socio-emotional development for girls (but not for boys) while not attending in-person school and having no quiet place to study was associated with deterioration for boys.

Furthermore, even when controlling for child and family characteristics as well as early years experiences and recent experiences during the COVID-19 pandemic, school attainment remains a significant predictor of socio-emotional development between the ages of 4 and 8-10 years old. In particular, children who did not meet the expected level

of attainment at Key Stage 1 (when they were 7), but who had met the EYFSP level when they were 5 years old, experienced the largest deterioration in their socio-emotional health between 4 and 8-10 years old.

Overall, therefore, the findings from this chapter suggest that the increases in socio-emotional difficulties measured in the SEED sample have not been uniformly spread. Table 37 summaries the direction of significant relationships between variables measuring children's health, SEN and ECEC experiences, their early years household environment, their COVID-19 experiences and their attainment and changes in socio-emotional difficulties between the ages of 4 and 8-10 years old from the fixed effects regression models outlined above. While many of the differences in socio-emotional development that were measured when children were 4 years old still persist, changes since then have seen particular deterioration amongst children with special educational needs, those whose parents experienced mental distress during the pandemic and those living in household with high levels of disruption. Therefore, even though there are ongoing differences in children's socio-emotional development (particularly when comparing boys and girls, or children from more or less disadvantaged households), recent events were also associated with children's socio-emotional development.

Table 37: Summary of significant fixed effects regression coefficients from models predicting changes in socio-emotional difficulties scores between 4 and 8-10 years

	Total			Emotional			Conduct			Hyper-activity		
Change in difficulties score	**All**	**Boys**	**Girls**	**All**	**Boys**	**Girls**	**All**	**Boys**	**Girls**	**All**	**Boys**	**Girls**
Child's health, SEN and ECEC experiences												
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10												
Long-term illness at age 4 only	+		+									
New long-term illness at age 8-10	+		+	+		+						
Long-term illness at ages 4 and 8-10			+	+		+						
Has special educational needs	+	+	+	+	+	+				+	+	+
BAS Verbal skills at 4 years old				+		+						
Hours in childcare at 3 years old – reference category: 0-15 hours per week												
16-30 hours per week	+	+										
31 or more hours a week	+	+										
Household environment												
Warmth of parental attitudes at age 3			+									
Authoritarian parenting style at age 4			-						-			
Authoritative parenting style at age 4			+					-				
Permissive parenting style at age 4		-										
Parental locus of control at age 4										+	+	
COVID-19 experiences												
Parental mental health – reference category: no reported distress at ages 3 or 8-10												
Early years distress												
Recent distress	+	+	+	+	+	+	+	+		+	+	
Long-term distress				+							+	
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10												
Early years high disruption							-	-				
Recent high disruption	+	+	+	+	+	+	+	+	+	+		+
Long-term high disruption			+						+			
Had a regular bedtime	-		-	-		-						-
Saw friends every week	-		-						-			
Exercises at least 4 days a week				-	-							
Schooling during the pandemic – reference category: Continued in-person schooling												
Remote education – no quiet place to study		+		+	+							
Remote education – with quiet place to study												
Child attainment												
Child attainment – achieved good level of development at EYFSP and expected level at KS1												
Achieved EYFSP level but not KS1 level	+	+	+	+	+					+	+	+
Achieved KS1 level but not EYFSP level												
Did not achieve EYFSP or KS1 level										+		+

Only the direction of statistically significant coefficients ($p < .05$) are shown and highlighted in shaded cells

5. Closeness in parent-child relationships

Key findings

- Levels of parent-child closeness were very high across the SEED sample at ages 8-10 years old. Parents of girls in the SEED sample reported higher levels of closeness than parents of boys.
- Multiple measures of a child's home environment in their early years (between the ages of 3 and 4 years old) were significantly associated with parent-child closeness when children were 8-10 years old, even when controlling for child and family level characteristics. In particular, a more authoritative parenting style and parental feelings of warmth towards their child were consistently associated with higher parent-child closeness.
- Household disruption – particularly during the COVID-19 pandemic – also appeared to have a significant relationship with parent-child closeness. Parents living in households with high levels of CHAOS during the COVID-19 pandemic reported lower levels of closeness with their child. This relationship held in models estimated for boys only, but for girls, long-term chaos was more strongly associated with parent-child closeness.
- COVID-19-related factors were more clearly associated with parent-child closeness in models estimated for boys than in models for girls. For boys, regularly seeing their family outside of the household was associated with higher levels of closeness with their parents, and living in a household that was experiencing financial difficulties during the COVID-19 pandemic was associated with lower levels of closeness.

5.1. Overview

This chapter examines the relationship between a child's home and family environment, their socio-demographic characteristics and their experiences of the COVID-19 pandemic and the level of parent-child closeness measured in the SEED COVID-19 study (Wave 5 of the SEED survey). As well as comparing mean values of parent-child closeness between children depending on these characteristics, this chapter also uses regression modelling to estimate the relationship between each of these factors and respondents' parent-child closeness in the COVID-19 survey, while controlling for other relevant factors. Due to the variables used in this analysis (including the parent-child closeness scale as well as explanatory variables, such as parents' highest education qualification), only respondents who indicated that they were the mother or father of the child included in the SEED study were included in the analysis reported in this chapter.

The Short Pianta Child-Parent Relationship Scale (CPRS; Driscoll and Pianta, 2011) is a survey instrument that asks parents or guardians 15 questions designed to assess their emotional relationship with their child. These questions can be combined to reflect scales relating to the level of closeness and the level of conflict between the respondent and their child. The closeness subscale is composed of seven items designed to assesses the extent to which a parent feels that the relationship with their child is characterised by warmth, affection, and open communication. This scale ranges from seven points (reflecting the lowest possible level of closeness) to 35 points (the highest possible level of closeness). As no suitable measure of parent-child closeness was collected in previous SEED waves[7], this analysis explores levels of parent-child closeness measured when the child was between 8 and 10 years old in the SEED COVID-19 survey.

Parents – particularly mothers – generally report high levels of parent-child closeness (Driscoll and Pianta, 2011). The high levels of parent-child closeness measured within the SEED sample during the pandemic are not therefore surprising; in the COVID-19 wave, the mean value of parent-child closeness was 32.9 out of a maximum value of 35. Levels of parent-child closeness were also very condensed across the sample, with almost eight out of 10 respondents (79%) scoring above 32 out of 35 on this scale. However, there were nonetheless a number of significant differences in parent-child closeness within the sample.

This chapter uses data collected in Wave 5 of the SEED study (during the COVID-19 pandemic) to investigate if a child's and their family's experiences of the pandemic were associated with current levels of parent-child closeness. As well as looking at specific COVID-19-related experiences (such as school attendance during lockdown), measures of parental mental distress and household disruption from the child's early years and the pandemic period are used in combination to investigate the relationship between these variables and parent-child closeness in both the long and short term.

This chapter also adopts a longitudinal approach and explores how factors relating to a child's home and family life between the ages of 3 and 4 years old (as collected in Waves 2 and 3 of the SEED study) were associated with current levels of parent-child closeness. These variables include the child's home learning environment as well as their parents' sense of control and three parenting styles scales (authoritarian, authoritative and permissive) measured when the child was 4 years old. The parent's sense of warmth and invasion towards their child (measured through the Mother Object Relations scale) was also collected when the child was 3 years old (Wave 2). These measures are included as continuous variables in the regression models at the end of this chapter. For ease of

[7] Questions relating to parent-child closeness were included in Wave 1 of the SEED study, when over 90% of the sample was aged under 3 years old. As this scale has not been validated for children under 3 years old, this Wave 1 measure is not used in this analysis.

interpretation in the descriptive statistics, suitable banding is used to create meaningful categories for reporting.

The majority of historical variables used in this analysis were collected when the child was 3 years old (Wave 2) or in the summer before the child started in the reception year of schooling (Wave 3). As this information was collected before children started their formal primary school education, this allows us to investigate the long-term association between pre-school experiences and later childhood outcomes, as measured during the COVID-19 pandemic. More details of the variables used in this analysis can be found in Chapter 1.

5.2. Child and family demographics

This section explores if socio-demographic characteristics of SEED respondents and their households were associated with parent-child closeness at ages 8-10. The socio-demographic factors used in this exploratory analysis included household measures (including household composition, housing tenure, employment status of parents, highest educational qualification of parents, socio-economic classification, household income, financial security and disadvantage group).

The majority of these factors were not significantly associated with levels of parent-child closeness in the COVID-19 wave. For example, there was no significant relationship in the SEED COVID-19 study between parent-child closeness and a household's disadvantage group (whether the child's household was in the 20% most disadvantaged group, the 20%-40% moderately disadvantaged group or the 60% least disadvantaged group), parental education, number of children in the family, and whether the family included two resident parents or just one.

Similarly to what was commonly found in previous survey research (Driscoll and Pianta, 2011), parents of girls in the SEED study reported higher parent-child closeness than parents of boys, when their child was aged between 8 and 10 years old (see Table 38).

Table 38: Parent-child closeness by child's sex

Sex	Mean parent-child closeness score	*Unweighted Base*
Boys†	32.6	*948*
Girls	33.2***	*847*

Base: All households
Outcome tested: parent-child closeness score. Reference category: Boys
**p<0.05, **p<0.01, ***p<0.001*

Although parents from families in the least disadvantaged groups reported higher levels of parent-child closeness than those from the most disadvantaged groups, these differences were not statistically significant (table not shown).

5.3. Child's health status and ECEC experiences

There was a strong association between the child having a long-term health condition or a special educational need and how close the parent and child were. On average, parent-child closeness scores were lower when a child had a new or ongoing long-term health condition or illness at the time of the SEED COVID-19 survey and when the child had special educational needs (see Table 39).

Table 39: Parent-child closeness by SEN and child health condition or illness

	Mean parent-child closeness score	***Unweighted Base***
Has special educational needs		
No†	33.2	*1,557*
Yes	31.0**	*235*
Has long-term health condition or illness		
No long-term condition†	33.2	*1,235*
Previous health condition	33.1	*268*
New health condition	32.0***	*182*
Ongoing condition	30.7***	*88*

Base: All households
Outcome tested: parent-child closeness score
Reference category: No special educational needs/ long-term health condition
**p<0.05, **p<0.01, ***p<0.001*

Parent-child closeness at ages 8-10 was not associated with children's formal ECEC experiences in bivariate analyses (table not shown).

5.4. Historic measures of home environment

This section explores the relationship between measures of a child's home environment recorded in early waves of the SEED study and current measures of parent-child closeness. This allows us to investigate the longer-term impact of the environment in which a child was brought up in the early years of their life on their relationship with their parents during the COVID-19 pandemic. As home environment measures and parent-

child outcome levels are measured as continuous variables, this chapter presents correlation coefficients between the different measures of a child's home environment and levels of parent-child closeness.

5.4.1. Home Learning Environment

A child's Home Learning Environment (HLE) was measured in the first three waves of the SEED survey, when the child was aged 2, 3 and 4 years old. This analysis uses the data collected in the most recent of these surveys (Wave 3) as a measure of the child's HLE when they were 4 years old. HLE captures the characteristics of the home and quality of learning support such as the activities and available resources a child has access to that affect their development and learning. The HLE measure covers parent-child activities such as reading, sports, numeracy and literacy, music, and drawing. The total HLE score reflects the occurrence and frequency of parents engaging their children in these activities.

Children who lived in households with richer home learning environment at age 4 were significantly more likely to have higher closeness with their parents in the COVID-19 wave (as shown in Table 40).

Table 40: Correlation between Home Learning Environment and parent-child closeness

HLE measure	Correlation with parent-child closeness score	*Unweighted Base*
Home learning environment	0.121***	*1,791*

5.4.2. Parental locus of control

When children were aged 4 in the SEED study (Wave 3), respondents were asked a series of questions designed to assess the extent to which they believed that they had control over their lives (Pearlin and Schooler, 1978). Responses to these seven questions can be combined to create a measure reflecting respondents' overall locus of control on a scale from seven to 28, with higher values reflecting a greater sense of control.

Higher scores on this scale (and thus a higher locus of control measured when the child was 4 years old) were significantly associated with higher levels of parent-child closeness when the child was aged 8-10 years old (see Table 41).

Table 41: Correlation between parental locus of control and parent-child closeness

Parental locus of control	Correlation with parent-child closeness score	*Unweighted Base*
Parental locus of control	0.211***	*1,776*

5.4.3. Parenting styles

Parents of 4-year-olds were asked a battery of questions about how often they showed certain behaviour in their parenting of their child (Robinson et al, 1995). Responses to these questions can be combined to calculate values for each respondent on scales reflecting three parenting styles:

- Authoritarian parenting style is low on acceptance and high on psychological control and is often linked to worse child outcomes
- Authoritative parenting style is high on acceptance and behavioural control and low on psychological control and is often deemed as the optimal parenting style.
- Permissive style is high on acceptance, low on psychological and behavioural control (Baumrind, 1967)

Parent-child closeness scores in the COVID-19 survey varied by all three parenting styles, as measured when the children were 4 years old (see Table 42). Parent-child closeness scores were significantly lower for households with higher authoritarian and permissive parenting style scores and higher for those with higher authoritative parenting style scores.

Table 42: Correlations between parenting styles and parent-child closeness

Parenting style	Correlation with parent-child closeness score	*Unweighted Base*
Authoritarian parenting style scale	-0.125***	*1,776*
Authoritative parenting style scale	0.227***	*1,776*
Permissive parenting style scale	-0.132***	*1,776*

5.4.4. Mothers Object Relations Scales (MORS)

The Mothers Object Relations Scales (MORS) are used to measure a parent's or caregiver's representation of the feelings their child has for them. When children were aged 3 years old (Wave 2), respondents were asked 14 questions about their relationship with their child. Responses to these questions were combined to create two separate scales: one measuring a parent's feelings of warmth towards their child and another measuring invasiveness.

As Table 43 shows, both scales were significantly associated with parent-child closeness when the child was 8-10 years old. Greater feelings of warmth towards a child at age 3 were associated with significantly higher levels of parent-child closeness at age 8-10, while greater feelings of invasiveness at age 3 were associated with significantly lower closeness.

Table 43: Correlations between MORS Scales and parent-child closeness

Mothers Object Relations Scales	Correlation with parent-child closeness score	*Unweighted Base*
Parent's warmth towards child	0.315***	*1,782*
Parent's invasion towards child	-0.235***	*1,782*

5.5. Experiences during the COVID-19 pandemic

The SEED COVID-19 survey asked parents about their child's behaviours and experiences during the COVID-19 pandemic, both in and outside of school. This section uses responses to these questions to investigate which of these experiences were significantly associated with parent-child closeness during the pandemic. However, questions asking about the general family situation at the time of the COVID-19 survey (and not about specific COVID-19-related events), such as parental mental health, are not necessarily reflecting experiences directly brought about by the pandemic itself.

Only significant associations between these experiences and parent-child closeness are reported below. Variables measuring whether anyone in the household had experienced symptoms of COVID-19 or had been advised to shield and whether the child attended school in person at three specific time points during the pandemic (April-May 2020 at the start of the national lockdown, June-July 2020 after schools' phased re-opening and September-October 2020 at the start of the new academic year) were not significantly associated with levels of closeness, so they were not included in these models.

5.5.1. Child experiences during the COVID-19 pandemic

In the SEED COVID-19 survey, respondents were asked how often their child saw family members who did not live in their household (including via video-calls). As this question did not ask about specific family members, it could include parents living outside the household as well as more distant relatives. There was an association between how often a child saw family members who did not live in their household and parent-child closeness, with parents whose children saw family several times a week reporting higher closeness (see Table 44).

Table 44: Mean level of parent-child closeness by contact with family

How often see family not in household	Mean parent-child closeness score	*Unweighted Base*
Once or twice a week or less†	32.7	*1,177*
Several times a week/Every day	33.2***	*630*

Base: All households
Outcome tested: parent-child closeness score
Reference category: Once or twice a week or less
**p<0.05, **p<0.01, ***p<0.001*

There was also an association between financial circumstances of the family at the time of the COVID-19 study and the parent-child closeness, with those struggling financially reporting lower levels of closeness (see Table 45).

Table 45: Mean level of parent-child closeness by household financial wellbeing

Household financial wellbeing	Mean parent-child closeness score	*Unweighted Base*
Living comfortably†	33.3	*567*
Doing alright/Just about getting by	32.9**	*1,133*
Finding it quite difficult/ Finding it very difficult	32.1**	*106*

Base: All households
Outcome tested: parent-child closeness score
Reference category: Living comfortably
**p<0.05, **p<0.01, ***p<0.001*

5.5.2. Parental mental health

SEED Wave 2 survey included a series of questions about parents' mental health. These questions, from the Kessler screening instrument, are designed to estimate parents' levels of mental distress. They were asked again in the COVID-19 survey (Wave 5) and have therefore been used to explore how parent-child closeness during the pandemic varied by historic and current levels of parents' distress.

An indicator of long-term changes in parental mental distress was created to capture parents' distress based on Kessler assessment. A longitudinal variable reflected whether a parent was experiencing a moderate or strong distress in both Wave 2 and Wave 5 (long-term parental distress), in Wave 2 only (early years parental distress), in Wave 5 only (current parental distress) or no distress either in Wave 2 or Wave 5 (no parental distress).

Levels of distress, as measured in both Wave 2 and Wave 5, were significantly associated with levels of parent-child closeness at Wave 5. No matter if a historic or current measure of parental distress was used in this analysis, households in which parents were experiencing higher levels of distress reported lower levels of parent-child closeness in the COVID-19 survey (as shown in Table 46). In the COVID-19 wave, a higher proportion of respondents recorded moderate or strong distress than had done pre-pandemic, but direction of the relationship remained consistent when both Wave 2 and Wave 5 measures of distress were used.

Table 46: Mean level of parent-child closeness by parental level of distress (Kessler 6)

Mental distress	Mean parent-child closeness score	*Unweighted Base*
No distress†	33.4	*921*
Early years distress only (child aged 4)	31.8	88
Recent distress only (child aged 8-10)	33.0**	543
Long-term distress (early years & recent)	31.9***	248

Base: All households
Outcome tested: parent-child closeness score
Reference category: No parental mental distress
**p<0.05, **p<0.01, ***p<0.001*

5.5.3. Household disruption

Respondents were also asked four questions about the atmosphere in their household, asking about how organised, noisy, calm and structured the household was when the child was aged 3 (Wave 2). These questions were repeated in the COVID-19 survey and can be used to generate a measure of confusion, hubbub and order (CHAOS) (Matheny et al, 1995) in a child's home. The scale runs from 4 to 20, with higher scores reflecting greater disruption.

From these scales, respondents who scored 8 or lower (thus an average of two out of five or less for each CHAOS question) were classified as having low household disruption and those who scores 9 or more were classified as having high household disruption. A new variable was then created to reflect four groups of respondents depending on their levels of disruption at the two time periods: households experiencing low disruption at both time periods; high disruption when the child was 3 years old but not in the COVID-19 wave; high disruption in the COVID-19 wave but not when the child was 3 years old; and high disruption at both time points.

Households that recorded long-term low disruption reported higher parent-child closeness than all other households, with those experiencing long-term high disruption reporting lower levels of parent-child closeness than households that experienced long-term low disruption or early years high disruption only (Table 47).

Table 47: Mean level of parent-child closeness by household disruption

Household disruption	Mean parent-child closeness score	*Unweighted Base*
Long-term low disruption (at age 3 and 8-10)†	33.2	1,457
Early years high disruption only (at age 3)	32.3**	120
Current high disruption only (at age 8-10)	32.0***	144
Long-term high disruption (at age 3 and 8-10)	30.7***	75

Base: All households
Outcome tested: parent-child closeness score
Reference category: Long-term low disruption
**p<0.05, **p<0.01, ***p<0.001*

5.6. Modelling parent-child closeness

To ensure that our estimates of the relationship between the factors discussed earlier in this chapter and parent-child closeness are not influenced by other, confounding factors, this section uses regression modelling technique to investigate the relationship between different measures of a child's socio-demographic background, household and family environment and COVID-19 experiences and levels of parent-child closeness during the pandemic.

5.6.1. Method

Regression models were built to predict parent-child closeness in a stepwise fashion, whereby three categories of variables were added to models in a cumulative fashion. The first model was estimated using only a child's health, cognitive development and education experiences, along with child- and family-level control variables. A second model was then estimated which also included historic measures of a child's home environment measured between the ages of 3 and 4. A third and final model was then estimated that included all of these variables along with child- and family-level COVID-19 experiences

Exploratory analyses were conducted to determine which home environment variables and COVID-19 experiences should be included at each stage of regression modelling. Only variables that were found to be significantly associated with parent-child closeness in individual regression models including the full set of control variables outlined above (either for all children combined or for boys or girls separately) were included in these fully adjusted models.

Although this method cannot be used to determine if there were causal relationships between the explanatory variables included in these models and levels of parent-child closeness during the COVID-19 pandemic, they can be used to identify historic home environment factors and current experiences that are associated with higher and lower levels of parent-child closeness.

5.6.2. Results

Table 48 shows the coefficients of interest from these models,[8] built in a stepwise fashion. Positive coefficients show that the variable of interest was associated with higher parent-child closeness, and negative coefficients show the variable was associated with

[8] Full output from these models, including child and family level control variables, can be found in Appendix C.

lower parent-child closeness. The larger the size of the coefficient the stronger the association.

All models also control for a child's sex, age in months and ethnicity as well as their parents' highest educational qualification, whether or not there is a working parent in the household, household structure, their family's disadvantage group and housing tenure. Of these controls, only a child's sex was significantly associated with parent-child closeness when the child was 8-10 years old, with parents being closer with girls than with boys. There was no evidence from this analysis that a family's disadvantage group was associated with levels of parent-child closeness reported during the COVID-19 pandemic (when the child was aged between 8 and 10 years old), either in bivariate analyses or these adjusted models.

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Table 48: Regression coefficients from models predicting parent-child closeness for all children

	Model 1	Model 2	Model 3
Child's health, SEN and formal ECEC experiences			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	-0.052	0.011	0.072
New long-term illness at age 8-10 (not age 4)	-0.581	-0.456	-0.472
Long-term illness at ages 4 and 8-10	**-1.677***	**-1.265***	-1.073
Has special educational needs	**-1.701*****	**-1.471*****	**-1.360*****
Hours in childcare at 3 years old – reference category: 0-15 hours per week			
16-30 hours per week	-0.209	-0.17	-0.149
31 or more hours a week	-0.164	-0.211	-0.214
Household environment			
Warmth of parental attitudes to child at age 3		**0.197*****	**0.195*****
Invasion of parental attitudes to child at age 3		**-0.066****	**-0.054***
Authoritarian parenting style at age 4		0.161	0.17
Authoritative parenting style at age 4		**0.937****	**0.932****
Permissive parenting style at age 4		-0.218	-0.197
Home Learning Environment at age 4		-0.001	0.001
Parental Locus of control at age 4		0.037	0.01
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)			-0.518
Recent distress (child aged 8-10)			-0.054
Long-term distress (child aged 3 & 8-10)			**-0.540***
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)			0.394
Recent high disruption (child aged 8-10)			**-0.769*****
Long-term high disruption (child aged 3 & 8-10)			-0.265
Financial situation – reference category: Living comfortably			
Doing alright/Just about getting by			-0.176
Finding it quite difficult/ Finding it very difficult			-0.549
Saw family not in household several times a week			**0.369***

Sample size = 1,825. Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

5.6.3. Discussion

In Model 1, which used a child's physical health, SEN status and ECEC experiences (as well as control variables) to predict current levels of parent-child closeness, a child's long-term health and SEN status were significant predictors of parent-child closeness. Having a long-term illness or health condition at both ages 4 and 8-10 years old and having special educational needs were associated with significantly lower levels of closeness between children and their parents. However, the number of hours the child spent in formal childcare when they were 3 years old was not associated with parent-child closeness, as measured when the child was 8-10 years old, when child and family characteristics were controlled for in this model.

When home and family environment variables were added to the model, an authoritative parenting style was the strongest, significant predictor of parent-child closeness; a one-point increase on the authoritative parenting scale was associated with a 0.9-point increase in parent-child closeness. Higher parent-child closeness at ages 8-10 was also associated with parents' reporting greater feelings of warmth towards their child when they were 3 years old, while lower parent-child closeness was associated with parents' feelings of invasion towards their child.

In the third and final model that also included child- and family-level variables measured during the COVID-19 pandemic, levels of household disruption (measured through household CHAOS levels both at age 4 (Wave 3) and during the pandemic), were significantly associated with parent-child closeness. Living in a household with high levels of CHAOS during the pandemic (but not when the child was 4 years old) was associated with lower levels of parent-child closeness. In contrast, only long-term parental mental distress (present both when the child was 4 and 8-10 years old) was associated with lower closeness. A child having regular contact with family members who did not live in the household was also associated with higher parent-child closeness.

5.7. Modelling parent-child closeness for boys and girls

Although there were high levels of parent-child closeness measured across the SEED sample during the COVID-19 pandemic, there were significant differences in the mean level of closeness measured for parents of boys (32.6) and girls (33.2). Given that factors may impact parent-child closeness differently for boys and girls, this section estimates separate models to explore the relationship between parent-child closeness and child characteristics, household environment and COVID-19 experiences for boys and for girls.

5.7.1. Methods

To investigate potentially different relationships for boys and girls, models stratifying the sample by the sex of the child in the SEED study were estimated to examine the relationships for boys and girls separately. Variables included in the final model estimated for all children combined (Model 3 above) were included as explanatory variables of parent-child closeness for boys and girls separately.

5.7.2. Results

The results from these models are shown in Table 49. All models control for a child's age in months and ethnicity as well as their parents' highest educational qualification, whether or not there was a working parent in the household, household structure, their family's disadvantage group and housing tenure. None of the control variables in these models was significantly associated with parent-child closeness for either boys or girls.

Table 49: Regression coefficients from models predicting parent-child closeness for boys only and girls only

	Boys	Girls
Child's health, SEN and formal ECEC experiences		
Has special educational needs	**-1.476*** **	**-1.018** **
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10		
No longer reports long-term illness at age 8-10	0.075	0.21
New long-term illness at age 8-10	**-1.156***	0.149
Long-term illness at ages 4 and 8-10	**-1.614***	-0.225
Hours in childcare at 3 years old – reference category: 0-15 hours per week		
16-30 hours per week	-0.366	0.06
31 or more hours a week	**-0.707***	**0.482***
Household environment		
Warmth of parental attitudes to child at age 3	**0.243*** **	**0.137** **
Invasion of parental attitudes to child at age 3	**-0.067***	**-0.054***
Authoritarian parenting style at age 3	0.317	0.122
Authoritative parenting style at age 3	**1.250** **	**0.505***
Permissive parenting style at age 3	-0.385	-0.131
Home Learning Environment at age 4	0.001	-0.003
Parental Locus of control at age 4	0.02	0.021
COVID-19 experiences		
Parental mental health – reference category: no reported distress at ages 3 or 8-10		
Early years distress (child aged 3)	-0.95	0.559
Recent distress (child aged 8-10)	0.088	-0.163
Long-term distress (early years & recent)	-0.252	-0.661
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10		
Early years high disruption (child aged 3)	0.613	0.029
Recent high disruption (child aged 8-10)	**-0.988** **	-0.42
Long-term high disruption (child aged 3 & 8-10)	0.134	**-0.802** **
Financial situation – reference category: Living comfortably		
Doing alright/Just about getting by	**-0.623** **	0.41
Finding it quite difficult/ Finding it very difficult	-1.044	0.165
Saw family not in household several times a week	**0.621** **	0.124

Sample size = Boys: 963; Girls: 862.Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

5.7.3. Discussion

Child's special educational needs was a strong predictor of lower levels of parent-child closeness for both boys and for girls, though the association was greater for boys than for girls. There was also evidence of other, sex-specific relationships between a child's health and educational experiences and levels of parent-child closeness. Having a new or ongoing long-term health condition or illness was associated with significantly lower levels of parent-child closeness for boys. Contrasting relationships were also detected; attending childcare for 31 or more hours per week at the age of 3 years old was associated with lower levels of parent-child closeness for boys but higher levels of closeness for girls.

A more authoritative parenting style and a parent having warmer feelings towards their child were strongly associated with greater parent-child closeness for both boys and girls. However, these associations were stronger for boys than girls. Invasive feelings from the parent to the child also continued to be associated with lower closeness reported by parents of boys and girls.

There was more evidence of differences between boys and girls in the relationship between COVID-19 experiences and parent-child closeness. While recent levels of household CHAOS remained significantly associated with lower levels of parent-child closeness for boys, only long-term household CHAOS was associated with lower levels of closeness in the models estimated for girls alone. Parents of boys (but not of girls) were more likely to report lower levels of parent-child closeness if they were experiencing financial difficulties at the time of the COVID-19 survey and higher levels of closeness if their son had regularly contact with family members who lived outside their household.

5.8. Summary

The results from the regression models presented in this chapter showed that children across the SEED sample were generally experiencing high levels of parent-child closeness during the COVID-19 pandemic. Although these values were high across the sample, there were still notable differences between different groups of children within the sample and the relationships between many child and family characteristics, as well as their experiences during the pandemic, persisted even when demographic and socio-economic controls were included in regression models.

In particular, measures of a child's home environment when they were aged 3 or 4 years old were significantly associated with parent-child closeness when the child was aged 8-10 years old, during the COVID-19 pandemic. In particular, authoritative parenting style and parents' warm attitudes towards their children in pre-school years were consistently associated with higher levels of closeness between parent and child at ages 8-10.

Furthermore, results of regression models estimated separately for boys and for girls in the SEED sample showed that the relationship between these factors and parent-child closeness varied between different groups of children. While levels of closeness between boys and their parents were more clearly associated with recent experiences during the COVID-19 pandemic (including recent household disruption, financial difficulties and contact with family), closeness between parents and their daughters appeared to be more closely related to longer-term factors (including long-term household disruption).

6. Conclusions

This report examined findings from Wave 5 of the SEED longitudinal study. It focused on experiences of children and parents during the COVID-19 pandemic, including both at the time of data collection in September-October 2020 and retrospectively, during the period of restricted attendance in schools from April to May 2020 and in June to July 2020.

Children's schooling

The findings of this COVID-19 study show that children's schooling was severely disrupted by the COVID-19 restrictions in place during the 2019/20 and 2020/21 academic years. Children in the most disadvantaged groups and children with special educational needs were hit particularly hard. They were less likely than children in the least disadvantaged groups to be attending school in-person in June to July 2020 and in September to October 2020. They were also less likely to have work provided for them by their school during the national lockdown, according to parental reports. Where the work was provided, over a third of children completed all of it. This proportion did not vary by disadvantage, but it varied by SEN status, with children with SEN completing less work than those without SEN.

One in five children in the most disadvantaged group had no access to a computer during the national lockdown, compared to only 1 in 20 of the least disadvantaged group. About one in six children did not have a quiet place to study, and this proportion did not vary significantly by disadvantage or by special educational needs.

Additional tuition in maths, English and other academic subjects is one of the ways to support children to catch up with their peers and/or to improve their academic progress more generally. The results of the SEED Wave 5 survey show that about one in five children were receiving such tuition in September-October 2020. For more than half of these children, the additional tutoring was organised by their school. Although there were no significant differences in the proportion of children receiving tutoring by disadvantage group, there were significant differences in who organised that tutoring. Children in the most disadvantaged group were more likely to have their tutoring organised by the school, whereas children in the least disadvantaged group were more likely to have their tutoring organised by their parents. Two out of five parents reported that the additional tutoring was linked to the earlier period of restricted attendance in schools.

Children and parents' health and wellbeing

Children in the most disadvantaged group were more likely to have a longstanding health condition than less disadvantaged children, and they were also more likely to have

special educational needs. There were significant differences in health behaviours and specific experiences during the pandemic linked to SEN status; children with SEN were less likely to exercise but more likely to live in households that reported seeking medical attention for COVID-19 symptoms.

Households from more disadvantaged group were also particularly badly hit by the health implications of the pandemic. More than twice as many respondents from the most disadvantaged group than from the least disadvantaged group reported a member of their household shielding due to COVID-19. This was also seen in the households of children with SEN, and these children themselves were much more likely than children with no SEN to have been instructed to shield. Children with special educational needs were also less likely to have seen their friends and family from outside their immediate household regularly during the pandemic.

Parents of these children also appeared to be suffering particularly badly during the pandemic. Respondents in the most disadvantaged groups reported significantly higher levels of mental distress (as measured through the Kessler-6 instrument) than those in less disadvantaged groups, with parents of children with special educational needs also reporting significantly higher distress than those without. While these measures of distress collected during the pandemic do not allow us to determine that these elevated levels of distress were a product of the pandemic itself, they do highlight how the families of children with SEN or in the most disadvantaged groups were experiencing greater difficulties during the pandemic.

Changes in children's socio-emotional development

While the overall increases in socio-emotional difficulties recorded for SEED children between the ages of 4 and 8-10 years old are broadly in line with general age-related trends in socio-emotional development (NHS Digital, 2018), there were some notable differences in rates of change for children with different individual and family characteristics, household environments and COVID-19 experiences. The SEED Age 4 report found that children from families with a less stimulating home learning environment or higher household disorder as well as those whose parents were experiencing mental distress or reported lower feelings of warmth and greater feelings of invasiveness to their child had worse socio-emotional outcomes when children were 4 years old (Melhuish and Gardiner, 2018). This report has found that the experiences of children and their families continued to be associated with children's socio-emotional development between the ages of 4 and 8-10 years old.

In particular, a child having special educational needs was associated with larger increases in all four measures of socio-emotional difficulties analysed here. In addition, a child having a long-term health condition (whether recently diagnosed or reported when a

child was both 4 and 8-10 years old) was associated with larger increases in total socio-emotional difficulties and emotional difficulties (but not conduct or hyperactivity difficulties). However, this association was only significant in models estimated for all children combined and for girls. The lack of significant relationship in this data between long-term health conditions and socio-emotional development of boys between the ages of 4 and 8-10 years old highlights important gender differences in the relationship between children's own experiences and their socio-emotional development.

Although many of the early years home environment variables used in this analysis continued to be associated with children's socio-emotional outcomes at the age of 8-10 years old, as they had when children were aged 4, these relationships had weakened between the ages of 4 and 8-10 years old. However, it is not possible to determine from this analysis whether this is because these home environment variable measures contribute less to children's socio-emotional health in later childhood, especially once they were attending school full-time, or because of the time period that had lapsed since these measures were collected, when children were aged 3 or 4 years old.

There was also evidence to suggest that children's experiences during the COVID-19 pandemic (when children were 8-10 years old) were associated with changes in their socio-emotional difficulties since they were 4 years old. Recent household disruption and parental mental distress were consistently associated with a deterioration in children's socio-emotional wellbeing over this period. Further measures of pandemic-related disruption (including not having a regular bedtime and not seeing friends during the pandemic) were also associated with worsening socio-emotional development for girls (but not for boys). Amongst boys, not attending in-person school and having no quiet place to study at the onset of the pandemic was associated with a deterioration in their socio-emotional health. This, once again, highlights the different relationships between individual experiences and children's socio-emotional development.

Additionally, children's attainment was also associated with their socio-emotional development between the ages of 4 and 8-10 years old. Although children with consistently long-term low attainment experienced greater socio-emotional difficulties at both 4 and 8-10 years old, they did not experience greater socio-emotional deterioration between these ages than children who achieved a good level of development in the EYFSP and the expected level of development in KS1 testing. However, children who had achieved good development in the EYFSP but did not meet the expected level in KS1 assessment experienced the greatest deterioration in socio-emotional outcomes over this period. This suggests that these children, who experienced comparatively slower academic progress between Reception year and Year 2, also experienced comparatively larger deterioration in their socio-emotional development. It therefore appears that children's attainment may influence, as well as be influenced by, their socio-emotional development during their primary schooling.

Closeness in relationships between parents and children

Parent-child closeness was generally high when children were aged 8-10 years old during the COVID-19 pandemic, though parents of girls reported slightly higher levels of closeness than parents of boys. There was not, however, any significant relationship between family's disadvantage group and levels of parent-child closeness. Parents whose child had special educational needs reported lower levels of parent-child closeness, and this relationship remained significant even when controlling for family and child characteristics in regression models.

In these models, a number of measures of child's home environment during the early years of their childhood were significantly associated with levels of parent-child closeness in later childhood. A more authoritative parenting style and high levels of warmth from parent to child when the child was 3 years old were consistently associated with greater parent-child closeness when the child was aged between 8 and 10 years old. In contrast, higher feelings of invasion from parents towards their child were associated with less closeness.

While children's early years childcare experiences were not significantly associated with parent-child closeness in models estimated for all children combined, this was likely because significant relationships in different directions were detected for boys and for girls. Amongst boys, experiencing 31 or more hours of formal childcare a week at age 3 was associated with lower parent-child closeness whereas for girls, this was associated with higher closeness.

There was also evidence that specific family experiences during the pandemic were also associated with parent-child closeness. High levels of household disruption during the pandemic were associated with lower levels of parent-child closeness, whereas regular contact with family outside the household was associated with greater closeness. For boys, financial difficulties within the family were also associated with lower levels of parent-child closeness.

Final conclusions

It is not possible to attribute the findings in this report directly to the effects of the COVID-19 pandemic on children and their families as there is no equivalent comparison population which did not experience this event. While this report documents the experiences during the time period covered by the COVID-19 pandemic, we cannot conclude that experiences were as a consequence of the pandemic. Despite this unavoidable limitation, there are a series of overarching conclusions from this report that reflect common experiences by children and their families throughout the COVID-19 pandemic. Many of the differences in experiences reflect established and ongoing

differences between children and their families. In particular, children with special educational needs and from the most disadvantaged group of families reported greater disruption to their schooling and a bigger impact on their health during the time of the COVID-19 pandemic.

However, while children with special educational needs experienced a larger decline in their socio-emotional health between the ages of 4 and 8-10 years old, there was no such compelling evidence that the differences between the socio-emotional development of children from the most and least disadvantaged groups had widened over this time period. Therefore, the differences in socio-emotional outcomes that were found between children from most disadvantaged, moderately disadvantaged and least disadvantaged groups that were present at age 4 appear to have largely persisted as children have grown older. In contrast, there was no evidence of a significant relationship between disadvantage group and levels of parent-child closeness during the COVID-19 pandemic.

This analysis also found that measures of a child's early years home environment continued to be associated with child outcomes in later childhood. Although relationships between home environment measures collected when children were 3 or 4 years old and children's socio-emotional development had weakened between the ages of 4 and 8-10 years old, early years home environment variables continued to be significantly associated with children's socio-emotional development, as well as with parent-child closeness, when children were 8-10 years old.

Experiences during the COVID-19 pandemic were also found to be associated with children's socio-emotional development and/or with parent-child closeness. These included children being out of school and not having a quiet place to study, frequency of seeing family members living outside of household and seeing friends, family financial difficulties, parental mental distress and disruptions to household life. Therefore, even though the home environment experienced by a child in their early years continues to be associated with their socio-emotional development and their relationship with their parent when they are 8-10 years old, more recent experiences offer additional insights into child and family outcomes.

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Appendix A – Methodology

Design of the SEED longitudinal study

The Study of Early Education and Development (SEED) is a major longitudinal study following nearly 6,000 children from across England from age 2. SEED so far has included six waves of data collection:

- Face-to-face surveys of families and children in 2013-2018 when the children were 2, 3, 4 and 5 years old (Waves 1-4)
- A specially commissioned COVID-19 web-CATI survey in September-October 2020, when children were aged 8-10 years (Wave 5)
- Another COVID-19 web-CATI follow-up later in the same academic year, in May-June 2021 (Wave 6)

Information is collected from the child's parent or guardian at all six waves, and cognitive assessments of children were administered at Waves 2-4. Information collected in the interviews has been linked with information from the National Pupil Database to track children's progress as they enter school and up to the age of seven.

Two-year-old children living in the 20% lower income households, as well as those looked after by their local authority, became eligible for 15 hours of funded early education per week for 38 weeks of the year in September 2013. In September 2014, this was extended to children in the 40% lower income households in England, children with special needs and those who have left care. SEED was designed to cover families across the spectrum of eligibility so that comparisons could be made that explore the effect of eligibility on children's outcomes. The SEED study includes families whose children were born across six consecutive academic terms, covering two complete academic years.

The oldest children in SEED were born between September and December 2010 (cohort 1), and the youngest children were born between April and August 2012 (cohort 6). Children from the most disadvantaged (20%) families in cohort 1 were eligible for the two-year-olds offer for just one term, and then they became eligible for the three- and four-year-olds offer instead. Children from the moderately disadvantaged (20-40%) families in cohort 1 were not eligible for the two-years-olds offer at all. In contrast, for cohort 6, children from both the most disadvantaged (20%) and moderately disadvantaged (20-40%) families were eligible for all three terms of the two-year-olds offer.

Sampling

The sampling frame for the longitudinal survey was Child Benefit records. This was considered to be an appropriate sampling frame because until January 2013 it was a universal benefit, with a take-up rate of around 98%. Although changes came into effect in January 2013 that affected Child Benefit records as a universal sampling frame,[9] HMRC estimated at the time that 90% of families in the Child Benefit population would continue to receive some or all of their Child Benefit (HMRC, 2012). Furthermore, as the range of dates of birth determining eligibility to be selected for the SEED study was from September 2010 to August 2012, it was assumed that the changes to the Child Benefit would not have a substantially negative impact on the coverage of the eligible population in the Child Benefit records, and a spread of income groups would be adequately covered.

For the SEED COVID-19 study (SEED Wave 5), the issued sample consisted of families from Wave 3 of the longitudinal study who had agreed to be contacted for future research.

Clustering

Face-to-face surveys are often geographically clustered to improve fieldwork efficiency. For this study, clustering was particularly important because of the desire to assess the quality of early years and childcare settings used by parents. In many areas (particularly urban areas), a large number of settings are available locally, and without adequate clustering we would have found that many settings would have been used by just one family in our achieved sample. To improve the chance that families in our achieved sample used the same settings as each other, we used two stages of clustering for SEED. First we selected postcode districts (or groups of postcode districts) as Primary Sampling Units (PSUs), followed by three postcode sectors (or groups of sectors) as Secondary Sampling Units (SSUs) within each PSU. This meant that the cost of assessing a setting's quality involved a more efficient use of money because the score could be associated with many children instead of just one.

In practice the sampling was done in three stages:

[9] In January 2013, the High Income Child Benefit Charge was introduced. It applied to anyone with an adjusted net income over £50,000 who received Child Benefit, or whose partner received it. This was a stepped charge, and families where either of the parents' income was over £60,000 became effectively ineligible to receive the Child Benefit.

- 111 PSUs were selected in proportion to a weighted sum of the number of eligible families within each PSU (with weights calculated to reflect the final desired proportions of the three disadvantage groups, see below)
- Three SSUs were selected within each PSUs in proportion to a weighted sum of the number of eligible families within each SSU
- Five or six families in each disadvantage group were selected within each SSU in proportion to their weights.

Disadvantage groups

To maximise our ability to make comparisons of child outcomes across the spectrum of eligibility for funded early education for two-year-olds, each cohort of children within SEED was designed to have three subgroups:

(1) the 20% most disadvantaged families

(2) the moderately disadvantaged (20-40%)

(3) the 60% least disadvantaged.

The three subgroups were sampled in equal proportion, i.e. such that each group made up around a third of the sample in each cohort. As the three groups were not of equal size in the population, a weighted sampling approach was used to create as close to an equal probability sample as possible, with weights equal to the ratio of the desired proportion (one third) to the population proportion in each cohort.

Families were put into groups by DWP prior to sampling using the following criteria.

- The *20% most disadvantaged families* had a parent in receipt of one of the following benefits or tax credits:[10]
    - Income-based Jobseeker's Allowance (JSA-IB)
    - Income-related Employment Support Allowance (ESA-IR)
    - Income Support (IS)

[10] The full DfE eligibility criteria from September 2013 were: (i) All two-year-olds who were looked after by their local authority; (ii) two-year-olds whose family received one of the following were also eligible: income support; income-based Jobseeker's Allowance (JSA); income-related Employment and Support Allowance (ESA); support through part 6 of the Immigration and Asylum Act; the guaranteed element of State Pension Credit; Child Tax Credit (but not Working Tax Credit) and had an annual income not over £16,190; the Working Tax Credit 4-week run on (the payment you get when you stop qualifying for Working Tax Credit) or Universal Credit.

    - Guaranteed element of the State Pension Credit (PC with Guarantee Credit)
    - Child Tax Credit *only* (not in receipt of an accompanying Working Tax Credit award) with household gross earnings of less than £16,190.
- The *moderately disadvantaged group (20-40%)* had a parent in receipt of Working Tax Credits with household gross earnings of less than £16,190.[11]
- The *60% least disadvantaged group* had parents not in receipt of any of the qualifying benefits or tax credits.

Questionnaire

The questionnaire was programmed in UI, a software suite which can be used for both online questionnaires as well as computer assisted telephone interviewing (CATI) fieldwork.

When completing the survey over the web, respondents took 12 minutes, on average, to complete it. Over the phone, completion time was 25 minutes on average.

Table A.1. SEED Wave 5 questionnaire topics

Section	Subtopics included
A. Eligibility	▪ Whether same respondent as main contact in SEED sample ▪ Eligibility
B. Schooling	▪ School attendance ▪ Remote education during period of restricted attendance in schools ▪ Digital technology during period of restricted attendance in schools and environment ▪ Additional tuition
C. COVID-19 illness in the family	▪ Symptoms amongst family members

[11] From September 2014, the eligibility criteria included two-year-olds who met any one of the following criteria: eligibility criteria also used for free school meals; if their families received Working Tax credits and had annual gross earnings of no more than £16,190 per year; if they had a current statement of special educational needs (SEN) or an education, health and care plan; if they attracted Disability Living Allowance; if they were looked after by their local authority; or if they had left care through special guardianship or through an adoption or child arrangements order.

	▪ Any treatment ▪ Any shielding in the household
D. Parental mental illness	▪ Kessler 6 scale
E. Child health and health behaviours	▪ Child health and SEN ▪ Child health behaviours and socialisation
F. Child socio-emotional development	▪ Strengths and difficulties questionnaire (SDQ)
G. Home environment	▪ Pianta parent-child relationship scale ▪ Confusion, Hubbub and Order (CHAOS) scale
H. Socio-demographics and general info	▪ Housing and socio-demographics ▪ Financial and food security ▪ Adverse events during the pandemic
I. Administration	▪ Verification of contact information ▪ New contact information (where needed)

The questionnaire was developed by NatCen Social Research in collaboration with Oxford University and the Department for Education.

Data collection

Data collection took place from September 4th to October 25th 2020. Unlike in prior waves of SEED, where data was entirely collected through face-to-face fieldwork, the SEED COVID-19 survey involved a web-CATI approach, were participants were, in the first instance, given the opportunity to complete the survey online, followed by a period where they were invited to complete it over the phone. The process is outlined below:

- All families sampled were first invited by post and email (where email addresses were available), which was followed up by reminders through the same channels, as well as by text (up to three email and SMS reminders)
- In the first two weeks of fieldwork – from September 4th to September 20th – participants were only able to complete the survey online
- From September 21st to October 25th they were able to complete the survey either online or over the phone

- CATI fieldwork was carried out by NatCen's dedicated Telephone Unit, who received a briefing on the study from the research team
- Communications to participants provided them with a freephone telephone number (also directed to NatCen's Telephone Unit) and email address they could use to contact NatCen with any questions about the project

Participants were not offered any incentives – financial or otherwise – to take part in this study.

Two-thirds (67%) of the participants completed the survey online, and one-third (33%) completed it on the phone.

Response rates

In total, 1825 parents took part in the Wave 5 survey (1820 fully productive and five partially productive cases).[12] The overall response rate was 50% (see Table A.2). The response was the lowest among the most disadvantaged families (32%), higher among the moderately disadvantaged (47%) and the highest among the least disadvantaged (64%). This was despite the extra fieldwork effort that was put by the Telephone Unit in trying to obtain an interview with parents from more disadvantaged families. The refusal rate did not differ by disadvantage, but the non-contact rate did. The non-contact rate varied from 28% among the least disadvantaged families to 62% among those in the most disadvantaged group, which was linked to availability of up-to-date phone numbers. Even though up to two phone numbers were available for each issued family at the start of the fieldwork (these phone numbers were collected in previous SEED waves but had not been used prior to Wave 5), Wave 5 fieldwork revealed that a large proportion of those phone numbers were not valid.

[12] A case was considered partically productive if Sections A-G were completed, and the participant dropped off from the survey in sections H or I.

Table A.2. Fieldwork response figures, by disadvantage

Outcome	Total	Most disadvantaged	Moderately disadvantaged	Least disadvantaged
Issued	3647	884	1297	1466
	100%	100%	100%	100%
Ineligible	5	2	3	0
	0%	0%	0%	-
Eligible	3642	882	1294	1466
	100%	100%	100%	100%
Productive	1825	282	607	936
	50%	**32%**	**47%**	**64%**
Fully productive	*1820*	*281*	*606*	*933*
Partially productive	*5*	*1*	*1*	*3*
Refusal	275	55	107	113
	8%	6%	8%	8%
Other unproductive	10	2	5	3
	0%	0%	0%	0%
Non-contact	1532	543	575	414
	42%	62%	44%	28%

Source: SEED Wave 5 outcomes for all issued cases

Weighting

All respondents who took part in SEED Wave 3 and agreed to take part in further research were issued at Wave 5. Two weights were produced: a cross-sectional weight and a longitudinal weight.

The cross-sectional weight will be used for analysis of the SEED COVID-19 (Wave 5) data in its own right (e.g. prevalence of behaviours and opinions in the 2020 data). The

cross-sectional sample consists of 1825 cases that previously completed Waves 1 to 3 or Waves 1 to 4 (129 productive cases at Wave 5 did not take part at Wave 4).

The longitudinal weight will be used for longitudinal analysis of cases with complete data for all five waves of SEED. The longitudinal consists of 1696 cases that previously completed Waves 1 to 4.

Cross-sectional weight

Non-response at Wave 5 was modelled using logistic regression with a dichotomous outcome variable (1=response; 0=non-response). The model was weighted by Wave 3 non-response weight and only those families assumed to be eligible were included. This is a similar approach to that used at previous waves; this time we used measures from both the Wave 1 and Wave 3 surveys as predictors in the model (this is because some questions were asked again after Wave 1 but others were not).

The following variables (taken from Wave 1 where not specified) were considered as predictors of response:

- Cohort * Disadvantage group (18 categories indicating the cohort 1-6 and disadvantage group);
- Sex of child
- Ethnicity of child (White/ethnic)
- Age group of parent (grouped)
- Number of adults in the household (at wave 3)
- Number of children under 15 in the household (at wave 3)
- Number of siblings to the sample child (at wave 3)
- Number of birth parents to the sample child (at wave 3)
- Whether respondent living with spouse/partner (at wave 3)
- Whether couple or lone parent household (at wave 3)
- Whether working household or not (at wave 3)
- Whether mother works or not (at wave 3)
- Mothers level of qualifications
- Household work status (at wave 3)
- Whether claiming any benefits
- Household income (grouped) (at wave 3)
- Tenure (at wave 3)
- Whether English a first language
- Whether speak English with child (mainly)
- Region (based on wave 5 issued postcode)
- IMD quintile (based on wave 5 issued postcode)
- Population density quintile (based on wave 5 issued postcode)
- Urban/rural indicator (six groups) (based on wave 5 issued postcode)

The variable indicating cohort/disadvantage group was fixed in the model along with region and sex of child. (This ensured that bias was minimised for these measures, regardless of whether they were significant predictors of response.) A forward stepwise procedure was then used to select the other predictors (double checked using backwards stepwise which produced a similar model). The final model included the following variables:

- Cohort * Disadvantage group (18 categories indicating the cohort 1-6 and disadvantage group);
- Region
- Sex of child
- Age group of parent (grouped)
- Number of siblings to the sample child (at wave 3)
- Whether respondent living with spouse/partner (at wave 3)
- Household work status (at wave 3)
- Whether mother works or not (at wave 3)
- Mothers level of qualifications
- Tenure (at wave 3)
- Whether English a first language
- Population density quintile (based on wave 5 issued postcode)

Non-response weights were created as the inverse of the predicted probability of response. The top 0.5% of these non-response weights was trimmed back to the 99.5th percentile. These weights were then multiplied by the Wave 3 weights to produce a final cross-sectional weight for Wave 5 (which was scaled to have a mean value of 1).

Longitudinal weight

Non-response at Wave 5 was modelled using logistic regression with a dichotomous outcome variable (1=response; 0=non-response). The model was weighted by Wave 4 non-response weight and only those families assumed to be eligible were included. This is a similar approach to that used for the cross-sectional weights; for the longitudinal weights we used measures from both the Wave 1 and Wave 4 surveys as predictors in the model.

The following variables (taken from Wave 1 where not specified) were considered as predictors of response:

- Cohort * Disadvantage group (18 categories indicating the cohort 1-6 and disadvantage group);
- Sex of child
- Ethnicity of child (White/ethnic)
- Age group of parent (grouped)

- Number of adults in the household (at wave 4)
- Number of children under 15 in the household (at wave 4)
- Number of siblings to the sample child (at wave 4)
- Number of birth parents to the sample child (at wave 4)
- Whether respondent living with spouse/partner (at wave 4)
- Whether couple or lone parent household (at wave 4)
- Whether working household or not (at wave 4)
- Whether mother works or not (at wave 4)
- Mothers level of qualifications
- Household work status (at wave 4)
- Whether claiming any benefits
- Household income (grouped) (at wave 4)
- Tenure (at wave 4)
- Whether English a first language
- Whether speak English with child (mainly)
- Region (based on wave 5 issued postcode)
- IMD quintile (based on wave 5 issued postcode)
- Population density quintile (based on wave 5 issued postcode)
- Urban/rural indicator (six groups) (based on wave 5 issued postcode)

As was the case for the cross-sectional weights, the variable indicating cohort/disadvantage group was fixed in the model along with region and sex of child. A forward stepwise procedure was then used to select the other predictors (double checked using backwards stepwise which produced a similar model). The final model included the following variables:

- Cohort * Disadvantage group (18 categories indicating the cohort 1-6 and disadvantage group);
- Region
- Sex of child
- Age group of parent (grouped)
- Number of adults in the household (at wave 4)
- Number of siblings to the sample child (at wave 4)
- Household work status (at wave 4)
- Whether mother works or not (at wave 4)
- Mothers level of qualifications
- Tenure (at wave 4)
- Whether English a first language

Non-response weights were created as the inverse of the predicted probability of response. The top 0.5% of these non-response weights was trimmed back to the 99.5th percentile. These weights were then multiplied by the Wave 4 weights to produce a final longitudinal weight for Wave 5 (which was scaled to have a mean value of 1).

Appendix B – Socio-demographic characteristics of participants

Table B.1: Current educational setting, by disadvantage

Type of school child currently attends	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Mainstream state-funded school	92	89	89	90
Mainstream independent school	5	7	9	7
Special educational needs unit or resourced provision within a mainstream school	1	1	0	1
Special school – state-funded school	2	2	0	1
Special school – independent school	0	1	0	0
Pupil referral unit	-	-	0	0
Home educated	1	1	1	1
Unweighted Base	*282*	*607*	*936*	*1,825*

Base: All households

Table B.2: Family structure, by disadvantage group

Family structure	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Two parents	42	76	94	76
One parent	58	24	6	24
Unweighted Base	*282*	*607*	*934*	*1,823*

Base: All households

Table B.3: Number of children aged under 18 in household, by disadvantage group

Number of children aged under 18	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
1 child	24	16	15	17
2 children	31	46	60	49
3 children	26	27	19	23
4 children	13	9	4	8
5 or more children	6	2	3	3
Unweighted Base	*281*	*607*	*935*	*1,823*

Base: All households

Table B.4: Family employment status, by disadvantage group

Family employment status	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Working household	69	92	96	88
Workless household	31	8	4	12
Unweighted Base	*282*	*607*	*933*	*1,822*

Table B.5: Child's ethnicity by disadvantage group

Child's ethnicity	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
White	68	83	86	81
Mixed	13	5	5	7
Asian	7	7	7	7
Black	12	5	2	5
Other	-	-	0	0
Unweighted Base	*282*	*607*	*935*	*1,824*

Base: All households

Table B.6: Accommodation type by disadvantage group

Accommodation type	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Own it outright	2	6	10	7
Buying it with the help of a mortgage or loan	12	42	69	47
Pay part rent and part mortgage (shared ownership)	1	1	1	1
Rent it from a local authority or housing association	53	25	6	23
Rent it from a private landlord	27	24	12	20
Live here rent-free (included rent-free in relative's/friend's property; excluding squatting)	4	2	2	2
Unweighted Base	*282*	*605*	*933*	*1,820*

Base: All households

Table B.7: Current subjective financial situation, by disadvantage group

Current subjective financial situation	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Living comfortably	12	19	42	27
Doing alright	41	50	42	44
Just about getting by	33	25	12	21
Finding it quite difficult	9	5	3	5
Finding it very difficult	5	1	1	2
Unweighted Base	*281*	*607*	*935*	*1,823*

Base: All households

Table B.8: Receipt of universal credit, by disadvantage group

Receipt of universal credit	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Yes	34	21	7	18
No	66	79	93	82
Unweighted Base	*281*	*607*	*932*	*1,820*

Base: All households

Table B.9: Whether household went hungry in last week, by disadvantage group

Whether family went hungry in last week	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Yes	9	3	2	4
No	91	97	98	96
Unweighted Base	*280*	*606*	*935*	*1,821*

Base: All households

Table B.10: Whether household used a foodbank in last month, by disadvantage group

Whether household used a foodbank in the last month	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Yes	7	2	0	2
No	93	98	100	98
Unweighted Base	*281*	*604*	*935*	*1,820*

Base: All households

Table B.11: Adverse events during the pandemic, by disadvantage group

Adverse events in last 6 months	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Lost job	4	6	5	5
Partner lost job	5	9	5	6
Cut in income	3	30	19	24
Lost accommodation	0	1	0	0
Seriously ill	6	3	4	4
Family death	17	13	10	13
Unweighted Base - All	*281*	*606*	*934*	*1,821*
Unweighted Base – Partner lost job	*130*	*469*	*876*	*1,395*

Base: All households

Appendix C – Additional tables

Table C.1: Type of lessons provided in national lockdown (April-May 2020), by disadvantage group

Type of lessons school provided for child in national lockdown (April-May 2020)	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Offline lessons only (such as worksheets, assignments, or watching videos)	57	60	60	59
Offline lessons (e.g. worksheets) and online (live or real-time) lessons	22	27	29	27
Online (live or real-time) lessons or meetings only	21	13	11	14
Unweighted Base	*237*	*549*	*884*	*1,670*

Base: Households where child was provided work during national lockdown
Outcome tested: Whether lessons were solely offline
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.2: Type of lessons provided in national lockdown (April-May 2020), by school type

Type of lessons school provided for child in national lockdown (April-May 2020)	Mainstream state-funded school† %	Mainstream independent school %	Total %
Offline lessons only (such as worksheets, assignments, or watching videos)	62	35 ***	59
Offline lessons (e.g. worksheets) and online (live or real-time) lessons	25	47	27
Online (live or real-time) lessons or meetings only	13	18	14
Unweighted Base	*1,507*	*129*	*1,670*

Base: Households where child was provided schoolwork during national lockdown
SEN units and special schools not shown but included in total figure
Outcome tested: Whether lessons were solely offline

Table C.3: Whether child completed schoolwork during national lockdown (April-May 2020), by disadvantage group

Whether child completed schoolwork during national lockdown (April-May 2020)	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
None of it	2	4	2	3
Less than half	25	25	17	22
Half or more	41	39	42	41
All of it	32	32	38	35
Unweighted Base	*237*	*549*	*885*	*1,671*

Base: Households where child was provided work during national lockdown
Outcome tested: Child completes all schoolwork
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.4: Whether teacher marked schoolwork during national lockdown (April-May 2020), by disadvantage group

Whether teacher marked schoolwork during national lockdown (April-May 2020)	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
None of it	15	22	19	19
Less than half	9	13	15	13
Half or more	11	16	14	14
All of it	32	31	33	32
Doesn't apply – child was not required to submit any work	33	18	19	22
Unweighted Base	*220*	*521*	*854*	*1,595*

Base: Households where child was provided work during national lockdown, and child completes at least some of it

Table C.5: Tutoring format, by disadvantage group

Format of tutoring	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Online only	21	12	19	17
Online and face-to face	16	22	16	18
Face-to-face only	57	57	63	59
Unweighted Base	*71*	*129*	*170*	*370*

Base: Households where child receives tutoring

Table C.6: Who organised tutoring, by disadvantage group

Who organised tutoring	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Their school organised all their tutoring	72*	54	51	57
I organised some, and their school organised some	6	9	7	8
I organised all their tutoring	22	37	42	35
Unweighted Base	*71*	*129*	*170*	*370*

Base: Households where child received tutoring
Outcome tested: School organised tutoring
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.7: Health condition or illness and SEN status, by disadvantage group

Whether child has a health condition / SEN	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Health condition				
Yes	19 *	18 *	13	16
No	81	82	87	84
SEN				
Yes	17 **	15 *	10	13
No	83	85	90	87
Unweighted Base	282	605	935	1,822

Base: All households
Outcomes tested: Child having health condition or Illness / child has SEN
Reference group: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.8: EHC Plan, by disadvantage group

Whether child has an EHC Plan	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Has EHC plan	27	39	22	29
Being assessed for EHC plan	18	25	21	22
Doesn't have an EHC plan	55	35	57	49
Unweighted Base	57	90	98	245

Base: Children with special educational needs
Outcome tested: Having, or being assessed for, an EHC plan
Reference group: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.9: Child bedtime, by disadvantage group

Whether child has a regular bedtime	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Never or almost never	4	2	1	2
Sometimes	9	8	9	8
Usually	45	44	57	50
Always	42	46	34	40
Unweighted Base	*282*	*607*	*936*	*1,825*

Base: All households

Table C.10: Household shielding, by disadvantage group

Whether household member received instruction to shield	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Yes	21***	14**	8	11
No	79	86	92	89
Unweighted Base	*282*	*607*	*936*	*1,825*

Base: All households
Outcome tested: Household member being instructed to shield
Reference group: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.11: Child shielding, by disadvantage group

Whether child received instruction to shield	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Yes	3*	2	1	2
No	97	98	99	98
Unweighted Base	*282*	*607*	*936*	*1,825*

Base: All households
Outcome tested: Child being instructed to shield
Reference group: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.12: Household shielding, by child's SEN status

Whether household member received instruction to shield	Child has SEN %	Child does not have SEN† %	Total %
Yes	20 *	12	11
No	80	88	89
Unweighted Base	*245*	*1,577*	*1,825*

Base: All households
Outcome tested: Household member being instructed to shield
Reference group: Children without SEN
**p<0.05, **p<0.01, ***p<0.001*

Table C.13: Child shielding, by child's SEN status

Whether child received instruction to shield	Child has SEN %	Child does not have SEN† %	Total %
Yes	7 ***	1	2
No	93	99	98
Unweighted Base	*245*	*1,577*	*1,825*

Base: All households
Outcome tested: Child being instructed to shield
Reference group: Children without SEN
**p<0.05, **p<0.01, ***p<0.001*

Table C.14: How often child sees family, by disadvantage group

How often child sees their family incl. on video	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Every day or almost every day	30	15	12	17
Several times a week	17	21	19	19
Once or twice a week	28	40	36	36
Once or twice a month	10	14	23	17
Less often than once a month	12	7	8	8
Not at all	4	4	2	3
Unweighted Base	*281*	*607*	*936*	*1,824*

Base: All households

Table C.15: How often child sees friends, by disadvantage group

How often child spend time with their friends incl. on video	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
Every day or almost every day	20	13	12	14
Several times a week	15	19	19	18
Once or twice a week	31	26	33	30
Once or twice a month	10	17	17	16
Less often than once a month	8	12	9	10
Not at all	17	12	9	12
Unweighted Base	*282*	*607*	*935*	*1,824*

Base: All households

Table C.16: How often child spent time with friends, by disadvantage group (combined categories)

How often the child spends time with friends	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged† %	Total %
Once a week or more often	65	59 *	65	63
Less often than once a week	35	41	35	37
Unweighted Base	282	607	935	1,824

Base: All households
Outcome tested: Child seeing friends more than once a week
Reference category: the least disadvantaged group
**p<0.05, **p<0.01, ***p<0.001*

Table C.17: Parental mental distress bands, by disadvantage group

Banded parental mental distress	Most disadvantaged %	Moderately disadvantaged %	Least disadvantaged %	Total %
No distress	41	55	59	54
Moderate distress	39	37	34	36
Strong distress	19	8	6	10
Unweighted Base	*279*	*603*	*935*	*1,817*

Base: All households

Table C.18: Parental mental distress bands, by child's SEN status

Banded parental mental distress	Child has SEN %	Child does not have SEN %	Total %
No distress	39	56	54
Moderate distress	45	35	36
Strong distress	16	9	10
Unweighted Base	*244*	*1,570*	*1,817*

Base: All households

Table C.19: Regression coefficients from fixed effects models including attainment measures estimating changes in total difficulties scores

Change in total difficulties score	All	Boys	Girls
Change in association with total difficulties score between wave 3 and wave 5			
Child characteristics			
Long-term illness (Reference category = no long-term illness)			
Early years long-term illness or disability	0.9	0.7	1
Current long-term illness or disability	**1.6***	0.7	**2.2***
Ongoing long-term illness or disability	1.5	0.3	2.3
Special educational needs	**2.9*****	**3.1****	**3.1*****
Early years childcare (Reference category = 0-15 hours per week)			
16-30 hours per week	**1.0***	**1.1***	0.8
31+ hours per week	0.6	1.0	0.2
Home environment			
Parental warmth	0.1	0	**0.2***
Authoritarian parenting style	-1	-0.5	**-1.6***
Authoritative parenting style	0.5	-0.4	**1.1***
Permissive parenting style	-0.7	**-1.2****	-0.2
COVID-19 experiences			
Parental mental health (Reference category = no mental distress)			
Early years distress	-0.7	-1.8	0.1
Current distress	**1.7*****	**1.7****	**1.7*****
Ongoing distress	0.7	1.3	-0.1
Household CHAOS (Reference category = low household disruption)			
Early years high disruption	-0.8	-1.0	-0.2
Current high disruption	**1.8*****	**1.5****	**2.3*****
Ongoing high disruption	0.6	-0.1	**2.0***
Has regular bedtime	**-1.5***	-1.1	**-2.0***
Saw friends regularly	**-0.9***	-0.1	**-1.9*****
Someone in the house had COVID-19 symptoms	-0.6	-0.6	-0.8
Schooling during pandemic (Reference category = Continues in-person schooling)			
Remote education with no quiet place	1.7*	2.7**	0.4
Remote education with quiet place	0.4	0.7	0.0
Financial situation (Reference category = Living comfortably)			
Just getting by	0.6	**1.0***	0.1
Finding it difficult	1.3	1.1	1.6
Child's attainment			
Child attainment (Reference category = achieved EYFSP & KS1)			
EYFSP but not KS1	**2.2*****	**2.6*****	**1.5***
KS1 but not EYFSP	1.0	1.5	0.2
Neither EYFSP nor KS1	1.0	1.1	0.4

Table C.19. (Cont.)

Change in total difficulties score	All	Boys	Girls
Change in association with total difficulties score between wave 3 and wave 5			
Control variables			
Child's sex (Reference category = Male)			
Female	-0.6*		
Child's age in months	0.0	0.0	0.0
Child's ethnicity	-0.2	-0.1	-0.4
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	0	-1.6	1.6
Both parents/Lone parent in work	1.2	-0.4	2.2
Parental education (Reference category = Foundation qualifications (none or GCSE D-G))			
Intermediate qualifications (GCSE A-C)	-0.4	-0.6	-0.3
Advanced qualifications (A levels)	-0.7	-0.7	-0.8
Higher education	-0.5	-0.5	-0.4
Disadvantage group (Reference category -= 60%-100% least disadvantaged)			
20% most disadvantaged	0.7	1	0.1
20%-40% moderately disadvantaged	0.1	0.2	-0.4
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	-0.9*	-0.9	-0.9
Family composition (Reference category = single parent household)			
Two parent household	0.4	0.0	0.2
Number of children in household (Reference category = one child)			
Two children	0.3	0.9	-0.1
Three children or more	-0.5	0.4	-1.0
Association with total difficulties score			
Control variables			
Pandemic time period indicator	-2.7	7.3	-12.0*
Child's age in months	0.0	0.0	0.0
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	0	0.9	-0.8
Both parents/Lone parent in work	-0.7	0.1	-1.2
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	0.1	0.4	-0.4

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
*Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*
Changes in the association between each explanatory variable and the total difficulties score over time has been estimated by interacting each variable with an indicator of time period; the associations between explanatory variables and total difficulties score at a fixed time point are shown in the final section of the table and do not reflect change over time.

Table C.20: Regression coefficients from fixed effects models including attainment measures estimating changes in emotional difficulties scores

Change in emotional difficulties scores	All	Boys	Girls
Change in association with emotional difficulties scores between wave 3 and wave 5			
Child characteristics			
Long-term illness/disability (Reference category = no long-term illness or disability)			
Early years long-term illness or disability	0.2	0.1	**0.5***
Current long-term illness or disability	**0.8****	0.3	**1.1****
Ongoing long-term illness or disability	**1.3****	0.7	**1.7*****
Special educational needs	**0.9*****	**0.8***	**1.2****
BAS Vocabulary score at age 4	**0.01****	0	**0.02****
Home environment			
No significant household variables			
COVID-19 experiences			
Parental mental distress (Reference category = no mental distress)			
Early years distress	0	-0.4	0.3
Current distress	**0.7*****	**0.5****	**0.8*****
Ongoing distress	**0.5***	0.4	0.6
Household CHAOS (Reference category = low household disruption)			
Early years high disruption	-0.1	-0.2	0
Current high disruption	**0.6****	**0.5***	**0.6***
Ongoing high disruption	0.1	0.1	0.1
Had regular bedtime	**-0.8****	-0.3	**-1.2****
Saw friends regularly	-0.2	0	-0.2
Regular exercise	**-0.3***	**-0.4***	-0.2
Schooling during pandemic (Reference category = Continues in-person schooling)			
At-Remote education with no quiet place	**0.9*****	**1.1*****	0.6
Remote education with quiet place	0.4	0.3	0.5
Financial situation (Reference category = Living comfortably)			
Just getting by	0.1	0.2	0
Finding it difficult	0.1	0	0.1
Child's attainment			
Child's attainment (Reference category = achieved EYFSP & KS1)			
EYFSP but not KS1	**0.7****	**0.7****	0.6
KS1 but not EYFSP	0.4	0.8	-0.5
Neither EYFSP nor KS1	0.3	0.5	-0.3

Table C.20. (Cont.)

Change in emotional difficulties scores	All	Boys	Girls
Change in association with emotional difficulties scores between wave 3 and wave 5			
Control variables			
Child's sex (Reference category = Male)			
Female	-0.1		
Child's age in months	0.0	0.0	0.0
Child's ethnicity	-0.4	0.2	-1.1*
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	-0.4	0.2	-1.1*
Both parents/Lone parent in work	-0.5	0.1	-1.0
Parental education (Reference category = Foundation qualifications (none or GCSE D-G))			
Intermediate qualifications (GCSE A-C)	0.0	-0.1	0.2
Advanced qualifications (A levels)	-0.4	-0.5	-0.2
Higher education	-0.2	-0.1	-0.1
Disadvantage group (Reference category -= 60%-100% least disadvantaged)			
20% most disadvantaged	0.4	0.2	0.5
20%-40% moderately disadvantaged	0.0	-0.1	-0.1
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	-0.2	-0.4	0.0
Family composition (Reference category = single parent household)			
Two parent household	0.0	-0.3	0.0
Number of children in household (Reference category = one child)			
Two children	0.1	0.3	0.1
Three children or more	-0.1	0.2	-0.1
Association with emotional difficulties score			
Control variables			
Pandemic time period indicator	-0.9	0.8	-2.7
Child's age in months	0.0	0.0	0.0
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	0.4	-0.7	1.5*
Both parents/Lone parent in work	0.8	-0.2	1.7*
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	-0.1	0.1	-0.4

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
*Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*
Changes in the association between each explanatory variable and the total difficulties score over time has been estimated by interacting each variable with an indicator of time period; the associations between explanatory variables and total difficulties score at a fixed time point are shown in the final section of the table and do not reflect change over time.

Table C.21: Regression coefficients from fixed effects models including attainment measures estimating changes in conduct difficulties scores

Change in conduct difficulties scores	All	Boys	Girls
Change in association with conduct difficulties score between wave 3 and wave 5			
Child characteristics			
Long-term illness/disability (Reference category = no long-term illness or disability)			
Early years long-term illness or disability	0.1	0.4	-0.1
Current long-term illness or disability	0.3	0.2	0.3
Ongoing long-term illness or disability	0	-0.1	0
Special educational needs	0.2	0.2	0.3
Attended childcare between ages of 2 and 3 years old	0.1	0.4	-0.1
Early years childcare (Reference category = 0-15 hours per week)			
16-30 hours per week	0.2	0.1	0.4
31+ hours per week	0	0.1	-0.2
Home environment			
Parental warmth	0.0	0.0	0.0
Parental invasiveness	0.0	0.0	0.0
Authoritarian parenting style	-0.3	0.1	**-0.8****
Authoritative parenting style	0.2	-0.1	0.4
Permissive parenting style	-0.2	-0.3*	-0.1
Parental locus of control	0.0	0.0	0.0
COVID-19 experiences			
Parental mental distress (Reference category = no mental distress)			
Early years distress	-0.4	-0.6	-0.4
Current distress	**0.4****	**0.5***	0.2
Ongoing distress	-0.1	0	-0.4
Household CHAOS (Reference category = low household disruption)			
Early years high disruption	**-0.4****	**-0.5***	-0.1
Current high disruption	**0.5****	**0.4***	**0.5***
Ongoing high disruption	0.2	-0.1	**0.7***
Regularly saw friends	0	0.3	**-0.5***
Symptoms in household	-0.1	0.1	**-0.4***
Schooling during pandemic (Reference category = Continues in-person schooling)			
Remote education with no quiet place	0.4	**0.7***	0.1
Remote education with quiet place	0	0.2	-0.4
Child's attainment			
Child's attainment (Reference category = achieved EYFSP & KS1)			
EYFSP but not KS1	0.4	**0.6***	0.2
KS1 but not EYFSP	0.1	0.1	0.2
Neither EYFSP nor KS1	0.1	0.2	-0.1

Table C.21. (Cont.)

Change in conduct difficulties scores	All	Boys	Girls
Change in association with conduct difficulties score between wave 3 and wave 5			
Control variables			
Child's sex (Reference category = Male)			
Female	-0.2*		
Child's age in months	0.0	0.0	0.0
Child's ethnicity	0.1	-0.2	0.4
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	0.1	0.0	0.0
Both parents/Lone parent in work	0.3	0.2	0.2
Parental education (Reference category = Foundation qualifications (none or GCSE D-G))			
Intermediate qualifications (GCSE A-C)	-0.2	-0.2	-0.2
Advanced qualifications (A levels)	0.1	0.1	0.0
Higher education	0	0	-0.2
Disadvantage group (Reference category -= 60%-100% least disadvantaged)			
20% most disadvantaged	0.2	0.4	-0.1
20%-40% moderately disadvantaged	0.0	0.0	-0.1
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	0.0	0.3	-0.3
Family composition (Reference category = single parent household)			
Two parent household	0.0	0.1	-0.2
Number of children in household (Reference category = one child)			
Two children	0.2	0.4	0.1
Three children or more	0.1	0.4	-0.2
Association with conduct difficulties score			
Control variables			
Pandemic time period indicator	0.6	2.3	0.3
Child's age in months	0.0	0.0	0.0
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	0.1	-0.1	0.5
Both parents/Lone parent in work	-0.2	-0.2	0.1
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	0.0	-0.2	0.0

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
*Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*
Changes in the association between each explanatory variable and the total difficulties score over time has been estimated by interacting each variable with an indicator of time period; the associations between explanatory variables and total difficulties score at a fixed time point are shown in the final section of the table and do not reflect change over time.

Table C.22: Regression coefficients from fixed effects models including attainment measures estimating changes in hyperactivity difficulties scores

Changes in hyperactivity difficulties scores	All	Boys	Girls
Change in association with hyperactivity difficulties between wave 3 and wave 5			
Child characteristics			
Long-term illness/disability (Reference category = no long-term illness or disability)			
Early years long-term illness or disability	0.1	-0.2	0.4
Current long-term illness or disability	0.3	0.1	0.5
Ongoing long-term illness or disability	0.2	0.1	0.3
Special educational needs	**1.1*** **	**1.0** **	**1.1** **
Home environment			
Authoritarian parenting style	-0.1	0.1	-0.2
Authoritative parenting style	0.2	0	0.4
Permissive parenting style	-0.3	**-0.4***	-0.2
Parental locus of control	**0.1** **	**0.1** **	0.1
COVID-19 experiences			
Parental mental distress (Reference category = no mental distress)			
Early years distress	0.2	0.1	0.3
Current distress	**0.5** **	**0.7***	0.4
Ongoing distress	0.4	**0.8** **	0
Household CHAOS (Reference category = low household disruption)			
Early years high disruption	-0.3	-0.2	-0.3
Current high disruption	**0.5** **	0.2	**0.9** **
Ongoing high disruption	0.2	0.0	0.4
Had regular bedtime	-0.4	0.0	**-0.8***
Someone in household had symptoms	-0.2	-0.3	-0.1
Child's attainment			
Child's attainment (Reference category = achieved EYFSP & KS1)			
EYFSP but not KS1	**0.9*** **	1.0**	**0.7***
KS1 but not EYFSP	0.2	0.1	0.4
Neither EYFSP nor KS1	**0.6** **	0.5	**0.8***

Table C.22. (Cont.)

Changes in hyperactivity difficulties scores	All	Boys	Girls
Change in association with hyperactivity difficulties between wave 3 and wave 5			
Control variables			
Child's sex (Reference category = Male)			
Female	-0.4**		
Child's age in months	0.0	0.0	0.0
Child's ethnicity	0.1	0.1	0.0
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	-0.1	-0.2	0.0
Both parents/Lone parent in work	0.2	0.0	0.3
Parental education (Reference category = Foundation qualifications (none or GCSE D-G))			
Intermediate qualifications (GCSE A-C)	-0.3	-0.5	-0.2
Advanced qualifications (A levels)	-0.1	-0.3	0.1
Higher education	-0.1	-0.2	0.1
Disadvantage group (Reference category -= 60%-100% least disadvantaged)			
20% most disadvantaged	0.2	0.3	-0.1
20%-40% moderately disadvantaged	0.0	0.1	-0.2
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	-0.5**	-0.5*	-0.5
Family composition (Reference category = single parent household)			
Two parent household	0.0	-0.3	0.2
Number of children in household (Reference category = one child)			
Two children	0.1	0.4	-0.1
Three children or more	-0.1	0.2	-0.2
Association with hyperactivity difficulties score			
Control variables			
Pandemic time period indicator	-0.8	0.6	-2.2
Child's age in months	0.0	0.0	0.0
Parental employment (Reference category = no parent in work)			
One parent in work and one parent not in work	0.0	0..0	0.0
Both parents/Lone parent in work	-0.5	-0.5	-0.4
Housing tenure (Reference category = live in rented accommodation)			
Owns home outright/buying on mortgage	0.3	0.1	0.5

Sample sizes = 1,823 (All children); 963 (Boys); 860 (Girls)
*Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = p < .05, ** = p < .01, *** = p < .001.*
Changes in the association between each explanatory variable and the total difficulties score over time has been estimated by interacting each variable with an indicator of time period; the associations between explanatory variables and total difficulties score at a fixed time point are shown in the final section of the table and do not reflect change over time.

Table C.23: Regression coefficients for all variables included in models predicting parent-child closeness for all children

	Model 1	Model 2	Model 3
Child's health, SEN and ECEC experiences			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	-0.052	0.011	0.072
New long-term illness at age 8-10 (not age 4)	-0.581	-0.456	-0.472
Long-term illness at ages 4 and 8-10	**-1.677***	**-1.265***	-1.073
Has special educational needs	**-1.701*****	**-1.471*****	**-1.360*****
Hours in childcare at 3 years old – reference category: 0-15 hours per week			
16-30 hours per week	-0.209	-0.170	-0.149
31 or more hours a week	-0.164	-0.211	-0.214
Household environment			
Warmth of parental attitudes to child at age 3		**0.197*****	**0.195*****
Invasion of parental attitudes to child at age 3		**-0.066****	**-0.054***
Authoritarian parenting style at age 4		0.161	0.170
Authoritative parenting style at age 4		**0.937****	**0.932****
Permissive parenting style at age 4		-0.218	-0.197
Home Learning Environment at age 4		-0.001	0.001
Parental Locus of control at age 4		0.037	0.010
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)			-0.518
Recent distress (child aged 8-10)			-0.054
Long-term distress (child aged 3 & 8-10)			**-0.540***
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)			0.394
Recent high disruption (child aged 8-10)			**-0.769*****
Long-term high disruption (child aged 3 & 8-10)			-0.265
Financial situation – reference category: Living comfortably			
Doing alright/Just about getting by			-0.176
Finding it quite difficult/ Finding it very difficult			-0.549
Saw family not in household several times a week			**0.369***

Table C.23. (Cont.)

	Model 1	Model 2	Model 3
Control variables			
Child's sex – reference category: Male			
Female	**0.565****	**0.455****	**0.390***
Child's age in months	0.010	0.006	0.010
Child's ethnicity – reference category: White British or other White background			
Black, Asian or Minority Ethnic background	-0.012	0.144	0.061
Disadvantage group – reference category: Most disadvantaged			
Moderately disadvantaged	0.080	0.058	0.046
Least disadvantages	0.110	0.222	0.207
Parent's highest level of education – reference category: Foundation level or below			
Intermediate level (GCSEs at grades A*-C or equivalent)	0.123	-0.231	-0.279
Advanced level (A-levels or equivalent)	0.081	-0.193	-0.13
Degree level or higher	0.285	-0.049	-0.023
Long-term household composition – reference category: Long-term one parent household			
Long-term two parent household	0.188	0.228	0.219
Change from two to one parent household	0.355	0.381	0.342
Change from one to two parent household	0.291	0.380	0.372
Number of children in household – reference category: One child			
Two children	0.041	-0.013	0.055
Three or more children	0.317	0.174	0.304
At least one parent in work	0.082	-0.157	-0.100
Own home outright or with mortgage	-0.037	-0.230	-0.296
Constant	31.370***	22.190***	22.421***

Sample size = 1,825. Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Table C.24: Regression coefficients for all variables predicting parent-child closeness for boys only

	Model 1	Model 2	Model 3
Child's health, SEN and ECEC experiences			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	-0.091	0.019	0.075
New long-term illness at age 8-10 (not age 4)	**-1.322***	**-1.134***	**-1.156***
Long-term illness at ages 4 and 8-10	**-2.458***	**-1.727***	**-1.614***
Has special educational needs	**-1.639****	**-1.586*****	**-1.476*****
Hours in childcare at 3 years old – reference category: 0-15 hours per week			
16-30 hours per week	-0.358	-0.424	-0.366
31 or more hours a week	-0.645	**-0.819****	**-0.707***
Household environment			
Warmth of parental attitudes to child at age 3		**0.248*****	**0.243*****
Invasion of parental attitudes to child at age 3		**-0.075****	**-0.067***
Authoritarian parenting style at age 4		0.289	0.317
Authoritative parenting style at age 4		**1.311***	**1.250****
Permissive parenting style at age 4		-0.381	-0.385
Home Learning Environment at age 4		0.002	0.001
Parental Locus of control at age 4		0.041	0.020
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)			-0.950
Recent distress (child aged 8-10)			0.088
Long-term distress (child aged 3 & 8-10)			-0.252
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)			0.613
Recent high disruption (child aged 8-10)			**-0.988****
Long-term high disruption (child aged 3 & 8-10)			0.134
Financial situation – reference category: Living comfortably			
Doing alright/Just about getting by			**-0.623****
Finding it quite difficult/ Finding it very difficult			-1.044
Saw family not in household several times a week			**0.621****

Table C.24. (Cont.)

	Model 1	Model 2	Model 3
Control variables			
Child's age in months	0.000	-0.004	0.004
Child's ethnicity – reference category: White British or other White background			
Black, Asian or Minority Ethnic background	-0.117	-0.028	0.027
Disadvantage group – reference category: Most disadvantaged			
Moderately disadvantaged	0.247	0.363	0.448
Least disadvantages	0.278	0.407	0.441
Parent's highest level of education – reference category: Foundation level or below			
Intermediate level (GCSEs at grades A*-C or equivalent)	0.180	0.084	-0.066
Advanced level (A-levels or equivalent)	0.140	0.130	0.150
Degree level or higher	0.422	0.237	0.179
Long-term household composition – reference category: Long-term one parent household			
Long-term two parent household	0.060	0.407	0.411
Change from two to one parent household	0.758	1.047	0.993
Change from one to two parent household	0.251	0.571	0.724
Number of children in household – reference category: One child			
Two children	0.306	0.057	0.073
Three or more children	0.308	-0.127	-0.012
At least one parent in work	0.780	0.038	0.002
Own home outright or with mortgage	0.019	-0.259	-0.397
Constant	31.878***	20.059***	20.154***

Sample size = 963. Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Table C.25: Regression coefficients for all variables predicting parent-child closeness for girls only

	Model 1	Model 2	Model 3
Child's health, SEN and ECEC experiences			
Has long-term illness – reference category: no long-term illness at ages 4 or 8-10			
Long-term illness at age 4 (not age 8-10)	-0.014	0.059	0.210
New long-term illness at age 8-10 (not age 4)	-0.600	-0.402	-0.225
Long-term illness at ages 4 and 8-10	-0.600	-0.402	-0.225
Has special educational needs	**-1.492*** **	**-1.204*** **	**-1.018** **
Hours in childcare at 3 years old – reference category: 0-15 hours per week			
16-30 hours per week	-0.049	0.043	0.06
31 or more hours a week	**0.481***	**0.491***	**0.482***
Household environment			
Warmth of parental attitudes to child at age 3		**0.136** **	**0.137** **
Invasion of parental attitudes to child at age 3		**-0.064***	**-0.054***
Authoritarian parenting style at age 4		0.021	0.122
Authoritative parenting style at age 4		**0.504***	**0.505***
Permissive parenting style at age 4		-0.123	-0.131
Home Learning Environment at age 4		-0.001	-0.003
Parental Locus of control at age 4		0.040	0.021
COVID-19 experiences			
Parental mental health – reference category: no reported distress at ages 3 or 8-10			
Early years distress (child aged 3)			0.559
Recent distress (child aged 8-10)			-0.163
Long-term distress (child aged 3 & 8-10)			-0.661
Household CHAOS – reference category: long-term low disruption at ages 3 & 8-10			
Early years high disruption (child aged 3)			0.029
Recent high disruption (child aged 8-10)			-0.42
Long-term high disruption (child aged 3 & 8-10)			**-0.802** **
Financial situation – reference category: Living comfortably			
Doing alright/Just about getting by			0.410
Finding it quite difficult/ Finding it very difficult			0.165
Saw family not in household several times a week			0.124

Table C.25. (Cont.)

	Model 1	Model 2	Model 3
Control variables			
Child's age in months	0.012	0.009	0.011
Child's ethnicity – reference category: White British or other White background			
Black, Asian or Minority Ethnic background	0.171	0.368	0.204
Disadvantage group – reference category: Most disadvantaged			
Moderately disadvantaged	0.028	-0.077	-0.162
Least disadvantages	0.005	0.053	0.047
Parent's highest level of education – reference category: Foundation level or below			
Intermediate level (GCSEs at grades A*-C or equivalent)	0.101	-0.335	-0.376
Advanced level (A-levels or equivalent)	0.021	-0.340	-0.321
Degree level or higher	0.17	-0.187	-0.112
Long-term household composition – reference category: Long-term one parent household			
Long-term two parent household	0.347	0.199	0.187
Change from two to one parent household	0.034	-0.026	-0.004
Change from one to two parent household	0.413	0.333	0.264
Number of children in household – reference category: One child			
Two children	-0.456	-0.378	-0.345
Three or more children	-0.030	0.003	0.052
At least one parent in work	-0.649	-0.604	-0.521
Own home outright or with mortgage	-0.086	-0.165	-0.186
Constant	32.396***	26.425***	26.351***

Sample size = 862. Statistically significant coefficients are shown in **bold**, the level of significance is indicated by stars: * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

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