



School closures and children's emotional and behavioural difficulties

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Executive summary

School closures have been one of the most dramatic consequences of the COVID-19 pandemic on society. Concerns about the impact of school closures on children's learning were raised early on in the pandemic and work continues to mitigate lost learning. There is also widespread concern about the detrimental impact of the pandemic on children's mental wellbeing, but there are likely to be a number of mechanisms at work here, including parents' employment situation, anxiety about relatives' health and social isolation. In this briefing note we specifically examine the role of school closures in England on the emotional and behavioural wellbeing of children aged 5-11, as measured by the Strengths and Difficulties Questionnaire (SDQ) in the UK Household Longitudinal Study.

We make use of the fact that in England certain primary school year groups (Reception, Year 1 and Year 6) were prioritised to return to school after the first lockdown from 1 June 2020, while in other year groups rates of return were much lower and often only vulnerable children and children of key workers were able to attend school. This allows us to assess how emotional and behavioural difficulties changed from pre-pandemic levels for children who were prioritised to return to school, compared to those who were not, after accounting for ways in which the two groups may differ, including age.

Data collected in late July enables us to assess the short-term effect of missing out on up to an additional six weeks of schooling – on top of the schooling all children missed between March and May – on children's emotional and behavioural difficulties. Data collected in late September allows us to assess whether the effect of these different school experiences during the second half of the summer term persists once all year groups had returned to face-to-face teaching in the new academic year.

Key findings

- Mothers reported a substantial increase in children's difficulties as measured by the SDQ during the pandemic. In pre-pandemic years, children were reported to have an average score of 8.2 for the negative behaviours and emotional difficulties in the index. This rose to 9.3 in late July 2020, an increase of 14% of the pre-pandemic average (or 20% of the pre-pandemic standard deviation). This is equivalent to a child newly exhibiting a particular negative behaviour or experiencing an emotional difficulty some of the time.
- The increase in difficulties was greater among children who hadn't yet been prioritised to return to school. Negative behaviours increased, driven by a rise in conduct problems and hyperactivity. Those in year groups not prioritised to return to school had behavioural and emotional difficulties 40% of a standard deviation higher than year groups who were given priority to return, after accounting for differences in age. This is equivalent to 27% of the pre-pandemic average level of difficulties, or to a child newly exhibiting a particular negative behaviour (or experiencing an emotional difficulty) very often, or newly exhibiting two different negative behaviours/emotional difficulties some of the time.
- While we do not have completely comparable evidence on the impact of school closures on learning loss, the available evidence suggests that these effects are at least as large as the impacts on learning loss. For example, a recent study suggested that Year 2 children in autumn 2021 were two months behind 2017 expectations in maths and reading¹ which is equivalent to 15% of a standard deviation.
- Tracking children over time reveals that the difference in wellbeing between those who were and were not prioritised to return to school in the summer is of roughly similar magnitude at the end of September compared to the end of July. Looking across all children, wellbeing was higher in September 2020 than in July 2020, but still much lower than pre-pandemic levels, and the deterioration in wellbeing incurred as a result of school closures seems to persist for some time.
- These effects tell us about the difference in children's wellbeing that comes from being prioritised to return to school during the summer term vs. not being prioritised to return to school. But differences in wellbeing are most likely to arise from differences in school attendance. Because not everyone in priority year groups returned to school and some children in other year groups were able to attend, the

¹ Rose, S., Twist, L., Lord, P., Rutt, S. Badr, K., Hope, C and Styles, B. (2021). *Impact of school closures and subsequent support strategies on attainment and socio-emotional wellbeing in Key Stage 1: Interim Paper 1* National Foundation for Educational Research for the Education Endowment Foundation.

effect of being in a non-priority year group is not exactly the same as the impact of missing out on a full six weeks of school. To calculate this effect, we can scale our estimates by how different the attendance rates were between children in priority and non-priority year groups. Doing this suggests that missing a whole six weeks of school could increase behavioural and emotional difficulties by more than one standard deviation – roughly equivalent to children newly exhibiting three or four serious negative behaviours or emotional difficulties.

- It is possible that these results could be driven by changes in mothers' perceptions of children's behaviour, rather than changes in their actual behaviour. We investigate this by comparing children's and parents' reports of behaviour, and differences in behaviour between siblings in the same family. This suggests that our results are more likely to be driven by deteriorations in children's behaviour than by changes in parent perceptions alone.
- Taken together, our results suggest that the effects of school closures on children's wellbeing are large, and that they may take some time to mend. Going back to school in itself does not appear to be sufficient for children to 'bounce back'. This suggests that additional support for children's mental health and wellbeing is likely to be required for some time and justifies the focus that many schools have been placing on pupil wellbeing. Given the strong links between children's mental health and educational attainment, this may be an important strand of the educational 'catch-up' that is required.

1 Introduction

Since the outbreak of the COVID-19 pandemic most school children in the UK have been affected by school closures. In England, schools closed in March 2020 for 'lockdown one' and were open only to vulnerable children and children of key workers (with around 2.5% of all students attending on any given day). In June 2020 pupils from some year groups were prioritised to return to school for half a term (roughly six weeks) before the summer holidays. In September 2020 schools reopened for all students, although individual children, bubbles, classes and sometimes whole schools were affected by COVID outbreaks which prevented school attendance for some children at some times. Since January 2021, children – apart from children of critical workers and vulnerable children (around 18% are attending on any given day) – are studying from home again during 'lockdown three', which is due to end on 8 March 2021.²

Concerns about the impact of school closures on children's learning were raised early on in the pandemic, and initiatives were taken to improve access to laptops and internet connections, and to improve the lessons provided by schools. How best to help students recover their lost learning is a live policy issue, as indicated by the recent appointment of an Education Recovery Commissioner for England. However, it is becoming clearer that the pandemic is not only having a detrimental effect on children's educational development but is also taking a significant toll on children's mental health.³

The CoSpace survey of 2,373 4-16-year-olds tracks the outcomes of children and their families during the pandemic in the UK.⁴ Between April and May 2020 the largest deteriorations in mental health symptoms were found for primary age children (aged 4-10) with a 10% increase in those whose mothers reported them having high levels of emotional symptoms, a 20% increase in hyperactivity/inattention, and a 35% increase in conduct problems. In contrast, changes among adolescents were smaller. These changes occurred over a short period when schools were closed.

Longer-term evidence from the Mental Health of Children and Young People survey indicates that the incidence of mental health problems of young people aged 5-16 rose from 10.8% in 2017 to 16.0% in July 2020.⁵ Similar evidence is building from across the world. For example, in China, researchers found

that 22.6% of 2,330 young people surveyed reported elevated depressive symptoms and 18.9% reported elevated anxiety symptoms during lockdown.⁶

While it seems clear that children's mental health and wellbeing has significantly declined during the pandemic, it is less clear to what extent school closures – as opposed to other factors such as parents' employment situation or anxiety about relatives' health – is driving this decline. There are a number of reasons why we might expect school closures to negatively affect children's mental health, including the removal of a regular routine, the elimination of in-person social contact, and the fact that children not attending school may now be spending greater time with relatives who are themselves struggling with mental health or other issues, to name but a few.

Evidence from Japan considers the impact of school closures there from March to June 2020.⁷ Exploiting the fact that pre-schools remained opened, the authors compared children just old enough to go to school with those just young enough to miss out to understand what impact school closures had on a range of parent and child outcomes. The data does not measure children's social-emotional health directly but results show that children affected by school closures experienced weight gain and their mothers reported more anxiety about their parenting. Both of these factors could potentially affect children's overall wellbeing.

In this note we add to the existing evidence by documenting the overall changes in emotional and behavioural wellbeing of primary school aged children in England before and during the pandemic. We then provide evidence on the extent to which school closures specifically affect children's social and emotional health and, importantly, how quickly it recovers once schools are reopened.

2 Department for Education. 'Attendance in education and early years settings during the coronavirus (COVID-19) outbreak' <https://explore-education-statistics.service.gov.uk/find-statistics/attendance-in-education-and-early-years-settings-during-the-coronavirus-covid-19-outbreak>

3 Children's Society (2020). *Life on Hold: Children's Wellbeing and Covid-19* <https://www.childrenssociety.org.uk/information/professionals/resources/life-on-hold>

4 Waite P., Pearcey S., Shum A., Raw J., Patalay P., Cresswell C. (2020). 'How did the mental health of children and adolescents change during early lockdown during the COVID-19 pandemic in the UK?' *PsyArXiv*; published online Dec 8. <https://doi.org/10.31234/osf.io/t8rfx> (preprint).

5 Newlove-Delgado, T., McManus, S., Sadler, K., Thandi, S., Vizard, T., Cartwright, C., and Ford, T. (2021). 'Child mental health in England before and during the COVID-19 lockdown'. *The Lancet* [https://doi.org/10.1016/S2215-0366\(20\)30570-8](https://doi.org/10.1016/S2215-0366(20)30570-8)

6 Xie, X., Xue, Q., Zhou Y., Zhu, K., Liu, Q. Zhang, J and Song R. (2020). 'Mental Health Status Among Children in Home Confinement During the Coronavirus Disease 2019 Outbreak in Hubei Province, China'. Letter to *Journal of the American Medical Association: Paediatrics*.

7 Takaku, R. and Yokoyama, I. (2021) What the COVID-19 School Closure Left in Its Wake: Evidence from a Regression Discontinuity Analysis in Japan. *Journal of Public Economics*. <https://doi.org/10.1016/j.jpubeco.2020.104364>

2 Methods and data

To estimate the effect of school closures on children's emotional and behavioural difficulties we use the fact that some school year groups in England were prioritised to return to school from 1 June until the end of the summer term 2020. Primary schools were encouraged to invite children in Reception, Year 1 and Year 6 to return, while attendance in other adjacent year groups (Years 2, 3, 4 and 5) was more limited (further details can be found in section 5 below).⁸

Our estimates compare changes in emotional and behavioural difficulties among children who were not prioritised to return to school in June 2020 with changes among children of a similar age who were in year groups prioritised to return, where the changes are measured from before to during the pandemic. The estimates show the causal effect of school closures on children's emotional and behavioural difficulties under the assumption that in the absence of school closures emotional and behavioural difficulties of children not in priority year groups would have developed in a similar way to those of other children.

We use data from *Understanding Society*, the UK Household Longitudinal Survey (UKHLS), both from the mainstage sample 2009-2019⁹, and from the COVID-19 study, July and September surveys.¹⁰ In the COVID-19 study, parents of children aged 5-11 provide responses to the Strengths and Difficulties Questionnaire (SDQ) for each of their children in July and September.¹¹ In the mainstage sample the SDQ is collected from parents of children aged 5 and 8. We select households in England and restrict our sample to cases where mothers or female guardians provide information on children (as they do in most cases).

From this data we extract different samples. The main sample we use to estimate the short-term effect of school closures on children's SDQ is based on combined data from the *Understanding Society* mainstage sample and the July COVID-19 study and contains observations for about 1,900 children. The July COVID-19 survey was carried out in the last week of July, around the first week of the summer holidays. To avoid the possibility that mother reports of children's SDQ may vary depending on whether they are observed during or outside term-time, as well as at different times of the year, we restrict attention to children in the July 2020 COVID-19 sample for whom we also have a mother-reported measure of SDQ from the mainstage sample measured during the school

summer holidays. Because the data on SDQ was only collected in the UKHLS for children aged 5 and 8, we observe their pre-pandemic SDQ measure between one and three years before July 2020, with a two year gap on average, plus additional observations for some older children.

We use slightly different samples for some of the graphical analysis described below. We note the differences in samples where relevant.

8 At secondary level, students in Years 10 and 12 were invited to return, but only from 15 June and in many cases on a part-time basis only.

9 *Understanding Society: Waves 1-10, 2009-2019 and Harmonised BHPS: Waves 1-18, 1991-2009* [data collection]. 13th Edition. UK Data Service. SN: 6614, <http://doi.org/10.5255/UKDA-SN-6614-14>. UKHLS, waves 1-10.

10 University of Essex, Institute for Social and Economic Research. (2021). *Understanding Society: COVID-19 Study, 2020*. [data collection]. 7th Edition. UK Data Service. SN: 8644, <http://doi.org/10.5255/UKDA-SN-8644-7>. Wave 4 (July) and 2019 mainstage extract.

11 The Strengths and Difficulties Questionnaire (SDQ) is widely used to measure children's emotional and behavioural problems in psychological research. More details are on the following page. See Goodman, R. (1997) 'The Strengths and Difficulties Questionnaire: A Research Note'. *Journal of Child Psychology and Psychiatry*. 38 (5), pp. 581-586.

The Strength and Difficulties Questionnaire

The Strength and Difficulties Questionnaire presents 25 statements describing children’s behaviour and asks the respondent if the description is ‘not true’ (no points), ‘somewhat true’ (one point) or ‘certainly true’ (two points). Five items are included for each of the following domains: conduct problems; emotional symptoms; hyperactivity; peer relationships and prosocial behaviour and the score for each domain is the sum over the five items. The scores on the first four domains are added together to form a ‘Total Difficulties’ score. In the table below the items in italics are reverse coded.

| | |
|---------------------|---|
| Conduct problems | <ul style="list-style-type: none"> • Often has temper tantrums or hot tempers • <i>Generally obedient, usually does what adults request</i> • Often fights with other children or bullies them • Often lies or cheats • Steals from home, school or elsewhere |
| Emotional symptoms | <ul style="list-style-type: none"> • Often complains of headaches, stomach-ache or sickness • Many worries, often seems worried • Often unhappy, down-hearted or tearful • Nervous or clingy in new situations, easily loses confidence • Many fears, easily scared |
| Hyperactivity | <ul style="list-style-type: none"> • Restless, overactive, cannot stay still for long • Constantly fidgeting or squirming • Easily distracted, concentration wanders • <i>Thinks things out before acting</i> • <i>Sees tasks through to the end, good attention span</i> |
| Peer relationships | <ul style="list-style-type: none"> • Rather solitary, tends to play alone • <i>Has at least one good friend</i> • <i>Generally liked by other children</i> • Picked on or bullied by other children • Gets on better with adults than with other children |
| Prosocial behaviour | <ul style="list-style-type: none"> • Considerate of other people’s feelings • Shares readily with other children (treats, toys, pencils, etc.) • Helpful if someone is hurt, upset or feeling ill • Kind to younger children • Often volunteers to help others (parents, teachers, other children) |

Looking at this list, it is notable that some behaviours might be harder for mothers to observe when children have been out of school for some time. We will comment on the implications of this below.

3 Short-term effect of access to school

Children's emotional and behavioural difficulties over time

Figure 1 compares SDQ scores for children across different domains, as reported by their mothers, before vs. during the pandemic (818 and 305 children respectively). Specifically, it compares the SDQ scores for children aged 5 and 8 in each period whose mothers were interviewed during the school summer holidays.¹² There are some large differences: with the exception of conduct problems, mothers reported that their children exhibited more emotional and behavioural difficulties during the pandemic compared to before. Looking at the total difficulties score suggests an increase of about one point, which is equivalent to around 14% of the pre-pandemic average level of difficulties reported or 20% of the pre-pandemic standard deviation, or to a child newly exhibiting a particular negative behaviour some of the time. The largest contribution to the rise comes from the hyperactivity domain.

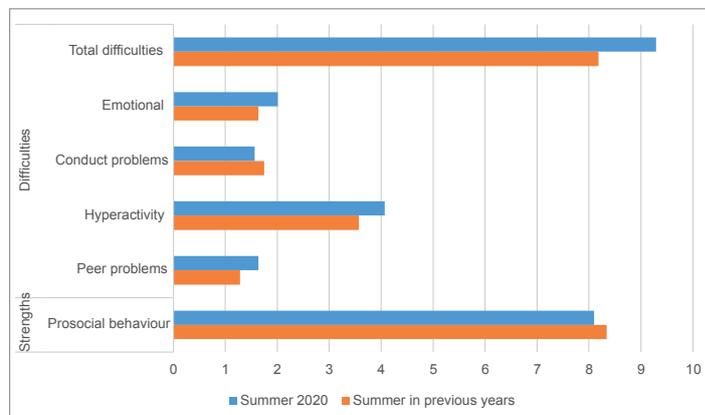
These effects are large compared to the educational effects of the pandemic. A recent study has indicated that Year 2 children in autumn 2021 were around two months behind 2017 expectations in maths and reading which is equivalent to 15% of a standard deviation.¹³ These children were in Year 1 during the summer term of 2020, so they were prioritised to return to school in June. Therefore the children in the study missed half a term of schooling (roughly six weeks) for which schools were closed in April and May, which is comparable to the maximum difference in schooling in our study.

The effects on children's wellbeing are comparable to the impacts of the pandemic on adults. Evidence from the UKHLS finds that adult mental health declined by 25% of a standard deviation for adult women between 2018 and April 2020 and around half as much for adult men.¹⁴

Raw differences in children's emotional and behavioural difficulties by school eligibility

The raw differences described above provide an indication of the overall change in mother-reported SDQ scores over time, some of which may be driven by the pandemic. They do not, however, indicate whether the increase in reported difficulties was different among children in year groups that were prioritised to return to school during the summer term compared to those in year groups that were not. If school

Figure 1 Overall change in SDQ: summer 2020 vs. previous summers



Notes Data from *Understanding Society* and the COVID-19 study. Sample: Children living in England, aged 5 or 8, whose mother or female carer took part in the survey in the last week of July 2020 or in the summer holidays in pre-pandemic years. The figure compares the mean SDQ scores and mean total difficulties observed in the last week of July 2020 and in the summer holidays of pre-pandemic years. Number of observations ranges between 305 and 818, depending on the outcome.

12 Note that this is a slightly restricted sample compared to the sample for our main analysis, as it restricts attention to those aged 5 and 8 in the July COVID-19 survey. It also compares the outcomes of different children (of the same age) in the pre-pandemic vs. pandemic periods, rather than following the same children over time.

13 Rose, S., Twist, L., Lord, P., Rutt, S. Badr, K., Hope, C and Styles, B. (2021). *Impact of school closures and subsequent support strategies on attainment and socio-emotional wellbeing in Key Stage 1: Interim Paper 1* National Foundation for Educational Research for the Education Endowment Foundation.

14 Etheridge, B. and Spantig, S. (2020). *The gender gap in mental well-being during the Covid-19 outbreak: Evidence from the UK*. ISER Working Paper 2020/08.

closures are an important mechanism through which changes in behavioural and emotional difficulties are mediated – a key driver of the negative effects over time seen above – then we would expect there to be differences in SDQ scores during the pandemic between children who may have missed more vs. less school during the summer term.

To illustrate this, Figure 2 compares the SDQ scores of around 1,100 children aged 5-11 observed in the last week of July 2020 (in the first week or so of the summer holidays) in year groups prioritised to return to school during the last six weeks of the school year (in Reception, Year 1 or Year 6) and those in other year groups (Years 2, 3, 4, 5 and 7).

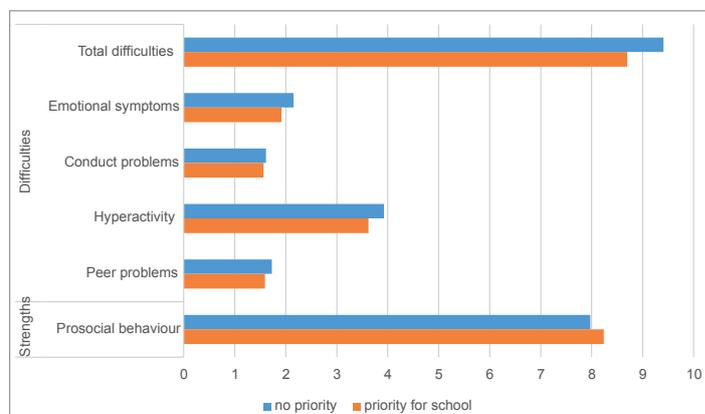
These raw figures suggest that mothers of children who were more likely to have been able to return to school report that their children exhibited fewer behavioural and emotional difficulties than parents of children who were less likely to have been able to return. These differences are smaller than those between children observed before vs. during the pandemic (shown in Figure 1 above), but are still reasonably large: for example, they suggest a difference in total difficulties of about three quarters of a point – equivalent to roughly 15% of a standard deviation – with mothers of children in year groups prioritised to return to school during the summer term reporting them to experience fewer difficulties than those in other year groups. This suggests that even relatively small differences in access to school of half a term or less may have made a big difference to children’s wellbeing.

Estimated effect of school closures on children’s behavioural and emotional difficulties

There are a number of reasons why comparing the SDQ scores of children with access to different amounts of schooling during the pandemic may not isolate the causal effect of school closures on children’s behavioural and emotional difficulties. For example, although there should not be big differences in characteristics (other than age) across different cohorts in the population, there may be in our sample (which is not a representative sample of children in each age group), meaning that the raw differences may not be comparing similar children and families. Moreover, even if we were to compare children that are similar in all the ways we observe in the data, it may still leave open the possibility that children or their families differ in ways that we can’t measure.

To overcome this, as outlined above, we focus on changes in SDQ scores over time for a given child. This enables us to account for any time-invariant ways in which children or their families with the possibility of spending more or less time at school during the pandemic may differ. We also include controls for factors observed in our data that may change over

Figure 2 SDQ in summer 2020, raw difference by priority to return to school



Notes Data from the COVID-19 study. Sample: Children living in England, aged 5-11, whose mother or female carer took part in the survey last week of July 2020. The figure compares the mean SDQ scores and mean total difficulties observed in the last week of July 2020 for children who in June were prioritised for return to school (that is, children in Reception year and school years 1 and 6) and for children who were not prioritised for return to school (that is, in school years 2, 3, 4, 5, and 7). Number of observations ranges between 476 and 659, depending on the outcome.

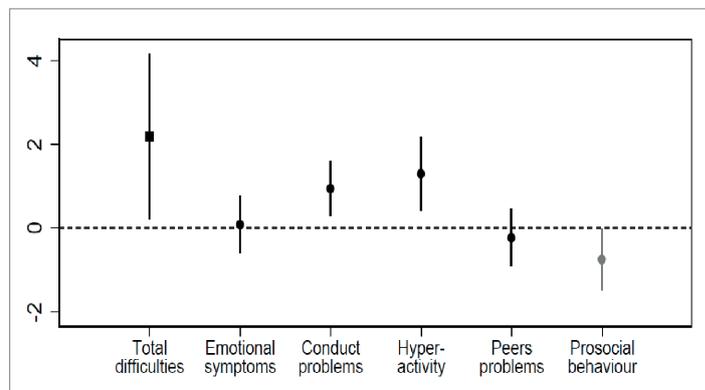
time and which may also matter for children’s wellbeing, such as families’ experiences of financial difficulties. Essentially our estimates compare the changes in SDQ over time for each child, averaged across those in different year groups, who were or were not prioritised to return to school during the summer term.

Figure 3 illustrates the results of this modelling based on 1,900 children. The squares and circles show the average difference in the indicators of emotional and behavioural difficulties reported by parents of children with access to less vs. more school during the summer term of 2020. The lines surrounding these shapes indicate how confident we are in these estimates: the further away these lines are from zero (the dashed line), the more confident we can be about the estimates.

In terms of overall difficulties, this figure suggests that not being prioritised to return to school during the summer term increased the SDQ total difficulty score by around two points, on average, compared to children who were prioritised to return to school during the summer term. This is equivalent to around 27% of the average pre-pandemic level of difficulties or around 40% of the pre-pandemic standard deviation. Alternatively, it is equivalent to a child newly exhibiting a particular negative behaviour very often, or to newly exhibiting two different negative behaviours some of the time. It differs from the raw gaps reported in Figure 2 both because the age range of children included in the sample is slightly wider, and because we are accounting for differences in characteristics between the groups.

Figure 3 also shows that the effect on total difficulties of not being prioritised to return to school seems to be driven by increases in hyperactivity and conduct problems, in line with the findings in the CoSpace study relating to overall changes in SDQ scores during the pandemic. This may at least partly be a result of the fact that it is harder for parents to observe all aspects of the behaviours comprising peer problems and prosocial behaviour during the pandemic, given that many of the components of these domains relate to relationships with other children, with whom there has been less interaction during the pandemic.

Figure 3 Change in SDQ pre-COVID to July 2020: effect of not being prioritised for return to school



Notes Data from *Understanding Society* and the COVID-19 study. Sample: Children living in England, aged 5-11, whose mother or female carer took part in the survey in the last week or July 2020 or in the summer holidays in pre-pandemic years. The squares and circles mark the point estimate of the effect of school closure on SDQ scores and total difficulties. The black lines indicate 90% confidence intervals. The estimates were obtained using child fixed effects methods controlling for: child age, child age squared, year fixed effects, house ownership, mother’s age, if mother reports a good financial situation, if the child lives in London. Number of observations ranges between 1903 and 1912, depending on the outcome.

4 Longer-term effect of access to school

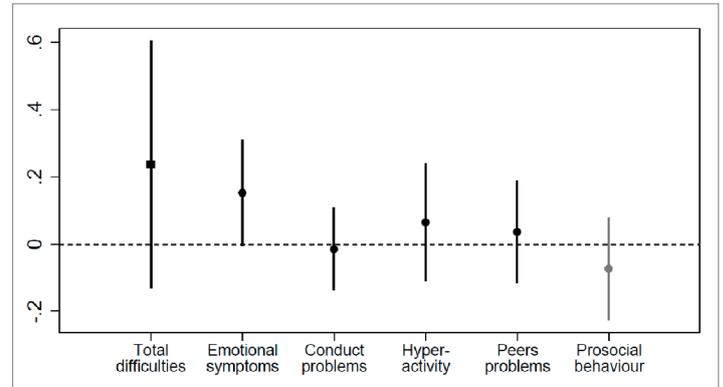
The results in Figure 3 suggest that prolonged school closures are likely to be detrimental to children’s behavioural and emotional difficulties. An important follow-up question is to ask how quickly these effects disappear once schools reopen. If the greater difficulties identified among children who have missed out on more schooling are eliminated once schools reopen, then that may suggest that the effects of school closures on children’s wellbeing are largely transitory. If on the other hand, the differences persist, this suggests that there may be longer-term implications of school closures for children’s wellbeing. These findings are important for policy, as long-lasting effects indicate that children will need additional support for some time after schools reopen.

In this section, we address this question by comparing changes in SDQ scores between July 2020 and September 2020 for children aged 5-11 who were or were not in a year group prioritised for return to school during the summer term. This allows us to identify whether, about a month after all children had the opportunity to return to school, differences in SDQ scores between these two groups remained similar or had fallen.

These results based on just under 2000 children are shown in Figure 4. Figure 4 shows the gap in SDQ between children with access to more vs. less schooling during the summer term measured in July compared to the same gap in September. For example, the first marker from the left shows that the gap in total difficulties is slightly higher in July compared to September, but this difference is very small (note the difference in scale here compared to Figure 3). The fact that the black line crosses zero suggests we cannot tell with sufficient certainty that this difference is different from zero. The markers indicating the results for the other SDQ measures show qualitatively similar results: very small – potentially zero – reductions between July and September in the gaps in SDQ scores between children who were and were not prioritised to return to school during the summer term. This suggests that the gap in emotional and behavioural difficulties has not disappeared around one month after all children could return to school in September.

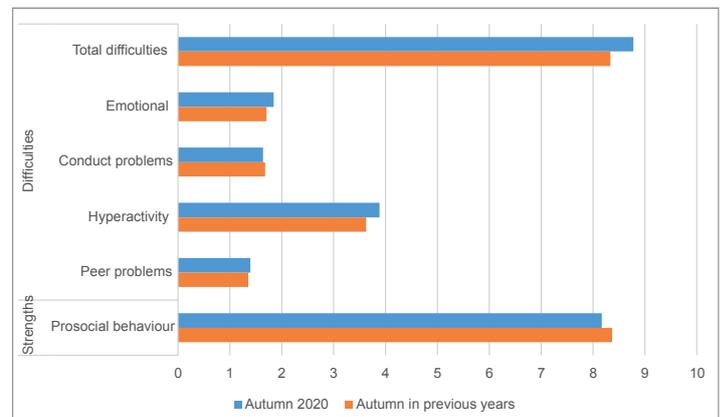
Despite the persistence of the gap in emotional and behavioural difficulties between children with differing access to school in the summer term, we might expect the overall level of wellbeing to have improved since July, e.g. if the wider reopening of schools to all children in September has had a beneficial impact on their emotions and behaviours. In Figure 5 we compare SDQ scores for children aged 5 and 8 whose mothers were interviewed during the last week in September 2020, around a month after all children had been invited to return to school, and in September/October in previous years (235 and 1304 children). Here we see again that reported difficulties are higher, and prosocial behaviour lower, during

Figure 4 Effect of not being prioritised for return to school in July, compared with September



Notes Data from the COVID-19 study. Sample: Children living in England, aged 5-11, whose mother or female carer took part in the survey in the last week or July 2020 and in the last week of September 2020. The squares and circles mark the point estimate of the effect of school closure on SDQ scores and total SDQ. The black lines indicate 90% confidence intervals. The estimates were obtained using child fixed effects methods controlling for: child age, child age squared, year fixed effects, house ownership, mother’s age, if the child lives in London. Number of observations ranges between 1,974 and 1,976, depending on the outcome.

Figure 5 Overall change in SDQ: autumn 2020 vs. previous autumns



Notes Data from *Understanding Society* and the COVID-19 study. Sample: Children living in England, aged 5 or 8, whose mother or female carer took part in the survey in the last week of September 2020 or in the autumn months (September/October and not in the summer holidays) in pre-pandemic years. The figure compares the mean SDQ scores and mean total difficulties observed in the last week of September 2020 and in the autumn months (September/October and not in the school holidays) of pre-pandemic years. Number of observations ranges between 235 and 1304, depending on the outcome.

the pandemic compared to before, but these differences are smaller in magnitude than they were between summer 2020 and previous summers (shown in Figure 1). The difference in July was around one point and in September it was around half a point. The fact that children's emotional and behavioural wellbeing was higher in September 2020 than in July 2020 may be related to the fact that all children had returned to school by then, but it is worth emphasising that it is still lower than the pre-pandemic period overall.

5 Interpreting the results

The effect of the guidance vs. the effect of school attendance

Our main estimates suggest that mothers of children aged 5-11 who were not prioritised to return to school during the summer term reported their children to have total difficulties scores about 40% of a standard deviation higher than mothers of children of similar ages who were prioritised to return to school.

This is an interesting estimate from a policy point of view, as it shows the impact of the guidance itself, i.e. the consequences of making a recommendation that priority should be given to certain children to return to school. However, it is not necessarily the same as the impact of missing out on a full six weeks of schooling. If everyone in priority year groups returned to school and no one in other year groups was able to do so, then the effect of being in a non-priority year group that we have estimated will be the same as the impact of missing out on a full six weeks of school.

However, the picture is rather more complicated than this. Statistics from a survey of families that includes children in Reception, Year 1, Year 4 and Year 5 found that 47% of those in priority year groups (Reception and Year 1) returned to school compared to 20% in Years 4 and 5 – or equivalently, that 53% of those in priority year groups did not attend school during this six week period, compared to 80% of children in Years 4 and 5 – a difference of 27 percentage points.¹⁵ This is similar to figures calculated using Department for Education statistics on a wider range of year groups (see Appendix for further details).

If we were to assume that all of the effects on children's wellbeing are driven by differences in school attendance between year groups that were and were not prioritised to return, we would need to divide the overall effect by the share of children who did not return to school because they were not in a priority group. Dividing our estimate of the effect of being in a non-priority year group on wellbeing in July 2020 of 0.4 of a standard deviation by the 0.27 figure calculated above gives an estimate of 140%. This suggests that not attending school in the second half of the summer term leads to an increase of 140% of a standard deviation in terms of the number of difficulties reported. This is equivalent to children newly exhibiting three to four serious negative behaviours or emotional difficulties, a very substantial effect.

Are the effects driven by real changes in children's wellbeing or are they picking up changes in mothers' perceptions?

It is possible that the effects we estimate are driven at least partly by mother's perceptions of children's behaviour – rather than children's behaviour itself – changing as a result of school closures. We investigate this possibility in two ways: first, for a small subset of children in our sample in July 2020, we observe both mother and child reports of children's SDQ. Importantly, the differences in the SDQ scores of children who were and were not prioritised to return to school during the summer term is larger when estimated using child reports than mother reports. Second, we can compare SDQ scores of children in the same family whose eligibility to return to school differed in the summer term of 2020, and whose SDQ scores were reported by the same parent. This should eliminate any reporting bias that is consistent across children. These results are very similar to our main estimates, suggesting that it is unlikely that our results are driven entirely by changes in reporting behaviour rather than true changes in children's behaviour. Further detail can be found in the Appendix.

15 Thanks to Christine Farquharson for computing these statistics based on the IFS survey data reported in Cattan, S., Farquarson, C., Krutikova, S., Phimister, A., Salisbury, A and Sevilla, A. (2021). *Inequalities in responses to school closures over the course of the first COVID-19 lockdown*. IFS Working Paper 21/04.

6 Conclusion

This note has provided new evidence on the impact of the pandemic on children's wellbeing, focusing on the role that school closures have played in generating these effects.

Comparing changes in mother reports of children's behavioural and emotional difficulties for the same child from before the pandemic to July 2020, and how these differed for children who were or were not prioritised to return to school in the second half of the summer term, suggests large effects of school closures on children's wellbeing: amongst those who were more likely to have been out of school for the whole of the summer term, we find total difficulties scores around two points higher than for those who were more likely to have been able to return for those final six weeks of term. This is equivalent to around 27% of the average pre-pandemic levels, or around 40% of the pre-pandemic standard deviation.

Importantly, we find that these effects do not disappear once all children have returned to school: comparing changes in behavioural and emotional difficulties between July and September provides little evidence that these gaps have fallen significantly, although there appears to be some improvement in SDQ scores across all children relative to the levels observed in July. Overall wellbeing in September 2020 is still well below pre-pandemic levels, however.

Taken together, these results suggest that the effects of school closures on children's wellbeing are large, and that they may take some time to disappear. It does not appear from our analysis – which, admittedly, is not yet able to follow children for very long after they have returned to school – that simply going back to school is in itself enough for children to 'bounce back'. This suggests that additional support for children's mental health and wellbeing is likely to be required for some time to come and justifies the focus that many schools have been placing on pupil wellbeing. There has been a lot of focus on children's learning losses during the pandemic, with the Government committing £1.7billion to help children catch up on the education they have missed. Given the strong links between children's mental health and educational attainment,¹⁶ a focus on mental health will be an important strand of the educational 'catch-up' that is required.

16 Keilow, M., Sievertsen, H. H., Niclasen, J. and Obel, C. (2019). 'The Strengths and Difficulties Questionnaire and standardized academic tests: Reliability across respondent type and age'. *PLoS ONE*, 14(7): e0220193

Appendix

The effect of the guidance vs. the effect of school attendance

According to Department for Education (DfE) statistics, 2.5% of children (across all year groups) were attending school in late May as vulnerable children or the children of key workers.¹⁷ The initial plan was for all primary-age children ‘to get some time in school before the summer’ and although there was certainly a priority attached to students in Years Reception, 1 and 6 we see the number of students attending increase across all year groups after half term. June 11 is the last date when attendance is reported by year group, and attendance is 24% across the target year groups on this date and 9.1% across all years. Assuming that no children in secondary school had returned to school by this date (Years 10 and 12 were not invited back until 15 June) this implies that 9.4% of students in other primary year groups were attending. This is probably a slight overestimate as some children in secondary schools will have been attending as key worker/vulnerable children at this time.

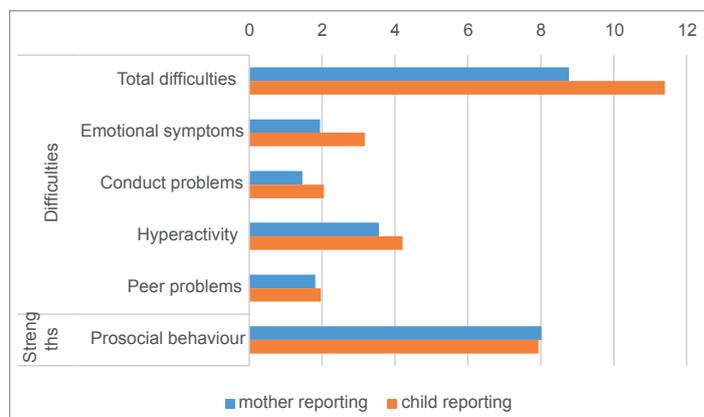
Aggregate statistics from the DfE show that school attendance rose in the weeks after 11 June, peaking on 9 July with 16.9% of children back in school, and making assumptions about the distribution of these children across year groups leads to a range of estimates about the return rates in year groups that were and were not prioritised to return to school during the summer term. These are broadly comparable with those from the survey data that we use.¹⁸

Are the effects driven by real changes in children’s wellbeing or are they picking up changes in mothers’ perceptions?

In our analysis, children’s SDQ is reported by the mother or female carer. This may be problematic if this adult is herself negatively affected by school closures, so that her report of the emotional and behavioural difficulties exhibited by the child partly reflects her own, rather than the child’s, wellbeing. We have two ways of testing whether this type of reporting bias may be affecting our results: 1) comparing SDQ reports by mothers and children, and 2) using within-mother estimates.

As outlined above, in the July COVID-19 study, parents were asked to complete the SDQ for all children aged 5-11. In addition, young people aged 10-15 were also asked to complete a paper questionnaire which contained the SDQ.

Figure A1 SDQ in July 2020: comparing mother and child reports for children aged 10-11



Notes Data from the COVID-19 study. Sample: Children living in England, aged 10-11 whose mother or female carer took part in the survey in the last week or July 2020 and who also returned the July youth questionnaire. The figure compares the mean SDQ scores and mean total difficulties reported by mothers and the self-reported by the young person. Number of observations is 242.

¹⁷ Department for Education ‘Attendance in education and early years settings during the coronavirus (COVID-19) outbreak’ <https://explore-education-statistics.service.gov.uk/find-statistics/attendance-in-education-and-early-years-settings-during-the-coronavirus-covid-19-outbreak/2020-week-29>

¹⁸ The survey data indicates higher return rates than the information from DfE, this is likely to be in part because the DfE reports attendance on a daily basis. For example the survey reports that 10% of children are in school in early lockdown, compared to 2.5% from the DfE data.

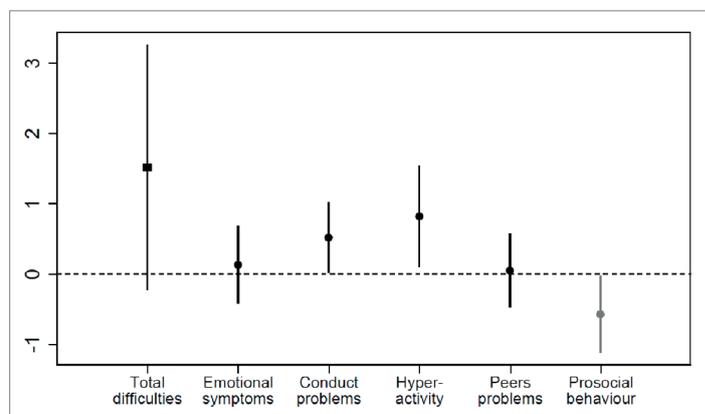
This means that we have a small group of children aged 10-11 (N=242) for whom we have SDQ reports from both the mother and the child. Figure A1 compares how mothers and children rate children's behaviours and emotions using the SDQ. Children aged 10-11 report more difficulties than their mothers, suggesting that, at least in this sample, mothers do not systematically over-report children's SDQ.

This is further corroborated by looking at differences in SDQ scores between children prioritised to return to school in July 2020 and those who were not, and how these differences vary depending on whether it is the mother or the child who reports the SDQ (not shown). This reveals a larger gap in total SDQ when it is the child reporting on their own wellbeing, suggesting that, if anything, our results may be underestimating rather than overestimating the differences in children's wellbeing that we might find if we were relying on child rather than mother reports.

Another way to check whether over-reporting of difficulties on the part of mothers may be driving our results is to use within-mother estimates of the impact of school closures on children's wellbeing. Our main estimates presented in this note compare within-child SDQ changes before and during the pandemic, and how they differ between children who were in the priority groups for returning to school in the summer and those that were not. Because parents are asked to complete the SDQ on behalf of all children aged 5-11 in July and September 2020, however, an alternative approach would be to compare siblings within the relevant age range at a single point in time, exploiting the fact that in some families, some siblings will have been prioritised to return to school while others will not. Making such comparisons allows us to account for any unobserved differences that are constant for all siblings in the same family, potentially including parent-specific factors influencing the way mothers report their children's SDQ.¹⁹

Figure A2 presents results for such within-mother estimates based on July 2020 data for roughly 1,100 children. While the results are less precisely estimated than our main results, they show the same pattern, again suggesting that it is not just changes in the wellbeing of the mother and how she responds to the same children's behaviour before vs. during the pandemic that is driving our results.

Figure A2 SDQ in July 2020: effect of not being prioritised for return to school



Notes Data from the COVID-19 study. Children living in England, aged 5-11, whose mother or female carer took part in the survey in the last week of July 2020. The squares and circles mark the point estimate of the effect of school closure on SDQ scores and total difficulties. The black lines indicate 90% confidence intervals. The estimates were obtained using mother fixed effects methods controlling for: child gender, child age, child age squared. Number of observations ranges between 1,134 and 1,135, depending on the outcome.

¹⁹ Of course, we cannot rule out the possibility that mothers might report differently for different children.

