Tips by Text

Evaluation Report

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The Education Endowment Foundation (EEF) is an independent grant-making charity dedicated to breaking the link between family income and educational achievement, ensuring that children from all backgrounds can fulfil their potential and make the most of their talents.

The EEF aims to raise the attainment of children facing disadvantage by:

- identifying promising educational innovations that address the needs of disadvantaged children in primary and secondary schools in England;

- evaluating these innovations to extend and secure the evidence on what works and can be made to work at scale; and

- encouraging schools, government, charities, and others to apply evidence and adopt innovations found to be effective.

The EEF was established in 2011 by the Sutton Trust as lead charity in partnership with Impetus Trust (now part of Impetus – Private Equity Foundation) and received a £125m founding grant from the Department for Education. Together, the EEF and Sutton Trust are the government-designated What Works Centre for improving education outcomes for school-aged children.

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Executive summary

Tips by Text seeks to improve children's literacy, language, numeracy, and socio-emotional skills by providing information and strategies that empower parents and encourage them to do more developmental activities, such as introducing children to new words when doing household tasks at home or counting the number of cars they pass on the way home from school.

The intervention was universal and open to all parents and children in Reception year. Target children were aged four to five in Reception year and because of delays due to the Covid-19 pandemic this intervention also continued into the first term of Year 1 when children were aged five to six. A total of 109 schools took part in the trial.

The texts were sent three times a week by the delivery team at the Behavioural Insights Team (BIT). Texts were originally due to be sent for nine months, but the programme was extended to 12 months due to the Covid-19 pandemic. The three types of messages sent were:

- 'FACT' texts, designed to inform and motivate parents by highlighting the importance of a particular skill or set of skills;

- 'TIP' texts, designed to minimise the cognitive, emotional, and time burdens of engaged parenting by including short, simple, and highly specific activities for parents to do with their children that build on existing family routines; and

- 'GROWTH' texts, which provide encouragement, reinforcement, and extend the TIP texts.

The evaluation used a two-arm individual level randomised controlled trial, randomised at the parent level. The primary outcome was literacy (assessed using the York Assessment for Reading for Comprehension, YARC) and socio-emotional development was the secondary outcome (using the Strengths and Difficulties Questionnaire, SDQ). Additional outcomes were also planned but had to be dropped due to the Covid-19 pandemic.

The evaluation included baseline and endpoint teacher surveys, parent surveys, case studies, and telephone interviews with parents and teachers as part of the implementation and process evaluation (IPE). The trial began in November 2018 and ran until February 2021. The developers were the BIT and Professor Susanna Loeb (Director, Annenberg Institute and Professor in Education and International and Public Affairs, Brown University). The project is funded as part of the Education Endowment Foundation (EEF) Home Learning Environment Round, where the EEF has partnered with the Department for Education and the Leeds-based education charity SHINE.

Table 1: Key conclusions

Key conclusions
1. Tips by Text took place in an unprecedented time, and the results of the evaluation need to be interpreted with this in mind. Not only did the trial experience significant attrition (approximately 70%), as far fewer post-tests could be completed due to Covid-19, but children experienced substantial disruption to their education and lives during this time, in a way that could not have been envisaged at the start of the evaluation
2. With the above caveat in mind, children whose parents received the Tips by Text programme showed no additional progress on a measure of literacy skills compared with children whose parents had not received the programme. There was also no statistically significant impact of the programme on children's socio-emotional outcomes
3. Amongst pupils eligible for free school meals, the estimated effect size for literacy skills was equivalent to one month's additional progress. However, this was not statistically significant and should be interpreted with caution
4. Parents reported that the texts were useful, were delivered at the right frequency, and that they were pitched at the right level with appropriate content. Most parents were using the tips but were cautious when describing impacts due to it being hard to attribute change due to the Covid-19 pandemic. A small number of parents felt that the texts were similar to what they were already doing with their children and did not use them. Teachers were unable to comment on impacts as they were not involved in the delivery of the programme
5. Parents' phone numbers changed regularly—this will need to be considered in any potential future roll-out, as this could be quite burdensome on schools to keep updated

The EEF security rating

These findings have a very low security rating. This was an efficacy trial, which tested whether the intervention worked under developer-led conditions in a number of schools. It was a well-conducted randomised controlled trial, but circumstances largely relating to the impact of Covid-19 led to very high attrition of >70% of pupils at post-testing.

Additional findings

- The significant disruption to the trial as a result of Covid-19 makes it difficult to draw firm conclusions on the extent to which the evidence supports the logic model and limits the generalisability of the results.

- Findings from the IPE showed the intervention was acceptable and feasible for parents and posed relatively little burden on schools.

- Tips by Text was in large part inspired by the READY4K! programme in the United States, which found an impact on literacy skills of pre-school children of 0.11 standard deviations. Given the unprecedented times in which the Tips by Text evaluation took place, a comparison with this study, or other text messaging programmes, is unlikely to be valid. Our study does lend support to previous research by Cortes *et al.* (2018) and Fricke *et al.* (2018) indicating that three messages per week was an optimal number of messages. The study also supported other research in finding that text messages were an easy way of delivering to parents that was generally well received.

Cost

From the perspective of a participating school, cost per pupil per year over three years is estimated at £47. This relates primarily to the cost of sending text messages, set-up, and monitoring costs. Differences in how the programme may be delivered in any future roll-out would be likely to impact on this estimate, however, the cost of the intervention would be expected to remain very low.

Impact

Table 2: Summary of impact on primary outcome(s)

Outcome/ group	Effect size (95% confidence interval)	Estimated months' progress	The EEF security rating	No. of pupils	p-value	The EEF cost rating
YARC	0.02 (-0.10, 0.13)	0	🔒🔒🔒🔒🔒	753	0.74	£ £ £ £ £
YARC (FSM pupils)	0.09 (-0.16, 0.33)	1	–	227	0.49	£ £ £ £ £

EEF, Education Endowment Foundation; FSM, free school meals; YARC, York Assessment for Reading for Comprehension.

Introduction

Background

'Tips by Text' builds upon pre-existing work that explores the value of text-based parental interventions as a relatively low cost way of improving educational outcomes (Doss *et al.,* 2018; Cortes *et al.*, 2018; Miller *et al.*, 2016; York and Loeb, 2018). Tips by Text seeks to improve children's literacy, language, numeracy, and socio-emotional skills by providing information and strategies that empower parents, and encourage them to do more developmental activities (for example, introducing children to new words when doing household tasks at home or counting the number of cars they pass on the way home from school) at home with their young children.

Evidence widely suggests both home- and school-based parental engagement positively affects children's learning and academic achievement (Higgins and Katsipataki, 2015; Jeynes, 2005, 2007, 2015; Pomerantz *et al.,* 2007). Notably, several robust randomised controlled trials (RCTs) in the Unites States and the UK have shown that timely, personalised, and actionable text messages to parents or trusted other members of their social network can yield educational benefits. For example, Bergman and Chan (2017) report results from a text message programme for parents of pupils in middle and high schools in West Virginia, alerting parents to absences, missed assignments, and grades. They found a positive impact of the intervention on attendance as well as reducing course failure, although there was no impact on test scores. In another United States study, Kraft and Rogers (2015) found that sending weekly text messages to parents of high school students about their child's performance increased their child's chance of gaining course credits. A UK study looking at college students used text messages sent to study supporters (who could be family members or friends) to prompt conversations with the student improved college attendance (Smith *et al.,* 2020). A previous evaluation by the Education Endowment Foundation (EEF) examining a texting parents' intervention for students in Years 7, 9, and 11, showed a small positive impact on maths and English attainment (ES 0.07 and 0.03, respectively but English was considered possibly biased) and in addition it reduced absenteeism (ES -0.05; Miller *et al.,* 2016).

Studies have also shown positive impacts for preschool children; indeed, the Tips by Text project is inspired by York and Loeb's (2018) READY4K! trial, an eight-month texting programme conducted in the United States where 1,031 parents of four-year-olds received three texts per week structured around a 'FACT, TIP, and GROWTH' format as described in the 'Intervention' section below for the current trial. Parents in the control group received placebo texts on a fortnightly basis, for example, about vaccinations or enrolment requirements. The READY4K! trial showed positive cognitive outcomes, with treated children improving their literacy skills by 0.11 standard deviations (SDs) (using the Phonological Awareness Literacy Screening, PALS™; Ivernizzi *et al.,* 2015). The trial showed even larger impacts for lower attainers, with those with poor baseline literacy skills improving by 0.31 SDs (York and Loeb, 2018). The trial also showed positive impacts on parental engagement, with treated parents engaging more in home literacy activities (0.16 SD) and communicating more with the school (0.14 SD). This intervention had not been used before in the UK context.

A follow-up study examining the optimal dosage of text messages per week within READY4K! found that three texts was most effective (Cortes *et al.*, 2018). This is reinforced by Fricke *et al.* (2018), which showed increased drop-out amongst parents receiving a higher dosage of texts, as well as amongst those subject to more complex content. Another study looking at sending parents of preschoolers text messages found that personalisation and differentiation of text messages were shown to increase efficacy (Dosset *et al.,* 2017).

The evaluation is a parent-level randomised controlled trial (RCT)exploring the impact of the Tips by Text intervention on literacy of children aged four to five as a primary outcome. The linked implementation and process evaluation (IPE) included practitioner surveys at pre- and post-test, parent surveys at post-test, and school case studies, which included interviews with teachers and senior leaders. The design was chosen to reduce the minimum detectable effect size compared to a cluster RCT; although the evaluation team was concerned about intervention group parents sharing text messages with control group parents, the delivery team believed that contamination was low risk based on their experiences of using individual-level randomisation in previous texting trials, and as schools and teachers were not directly involved in the intervention. Parent perceptions of the feasibility of the intervention and impacts was of particular interest in this trial as teaching staff necessarily had low involvement.

Changes to the trial due to Covid-19

There was major disruption to the running of schools in the 2019–2020 and 2020–2021 school years due to the Covid-19 pandemic, which caused partial school closures from March 2020–July 2020 and again in January 2021–March 2021. This had implications for the way that delivery of the trial and the subsequent evaluation were run in ways that are summarised in this section and discussed throughout the report. It is important to consider the report and the findings with this context in mind.

The delivery of the intervention was extended from nine to 12 months, finishing at the end of October 2020 instead of July 2020 as the school disruption meant that post-testing could not be completed when originally planned in June 2020–July 2020. Whilst children were therefore, in Reception year at the start of the programme, by the end of the programme children were in Year 1. Due to the extension of the delivery and outcome testing the project evaluation was extended by approximately an extra six months—detailed in the 'Methods' section. Post-testing was therefore, postponed until November 2020–January 2021 with a lot of schools opting for January 2021 testing dates. Due to further school disruption and partial closures in January 2021, testing in these schools could not be completed at this time. It was decided that it was best to conclude post-testing at this point rather than wait and post-test when schools reopened to all pupils, as the gap between post-testing from those tested in November 2020 would be very large and given considerable uncertainties at the time about when schools would be able to re-open and when testing would become feasible.

The impact this disruption had on post-testing numbers of the primary literacy outcome (York Assessment for Reading Comprehension, YARC) were as follows. Tips by Text was expected to be evaluated with ~2,730 children in Reception year (four- to five-year-olds) and their parents. We expected the Behavioural Insights Team (BIT) to recruit ~105 (and a maximum of 125) schools from the North-East of England to participate in the trial. A total of 109 schools were recruited to the trial and 2,390 children were pre-tested, however, only 39 schools went through post-testing, which included 791 pupils (full details on numbers tested are provided in the 'Impact Evaluation' section).

There were also changes to the secondary outcome measures. The socio-emotional development measure (Strengths and Difficulties Questionnaire, SDQ) was changed from a paper measure with Reception year teachers to an online measure with Year 1 teachers as it was collected in November 2020–February 2021 instead of May 2020–July 2020. We expected to examine communication and language, maths and socio-emotional outcomes using the Early Years Foundation Stage Profile (EYFSP) outcomes, but these were not collected in 2020 due to the Covid-19 pandemic and were therefore, not available to be analysed.

The timing and design of the IPE was also updated so that case studies were moved to telephone or video calls and the case studies, interviews, and surveys were all completed in November 2020–February 2021 (online surveys were the only measurement used in January 2021–February 2021) instead of April 2020–July 2020.

Intervention

Tips by Text is a text message curriculum developed by Professor Susanna Loeb (Director, Annenberg Institute and Professor in Education and International and Public Affairs, Brown University), which aims to improve the developmental outcomes of young children. The curriculum has been adapted to the UK context by the BIT. The BIT have edited the content of the text messages so that they are aligned with the EYFSP and piloted these in a number of schools in the North-East of England. In this project, we aimed to test the impact of a text message intervention compared to business-as-usual using a two-arm RCT.

Parents were randomly allocated to one of two groups: (1) the control group (no text messages); or (2) the treatment group who receive three text messages per week. The delivery team decided that there would be no placebo texting programme for the control group (as there was in READY4K!) as there was a concern that this would have an effect on the outcomes as any type of education focused on text may improve engagement in school. There was also a concern that placebo messages may also make contamination more likely as parents in the control group could discuss the texts they have received with parents in the intervention group as both groups would then be receiving messages. The delivery team also considered sending control messages unrelated to the outcomes in the trial, but these were also not included due to the danger of an opportunity cost effect where parents in the control group may spend less time focusing on literacy because they are spending more time on another outcome, which could artificially inflate the effect size. The text

messages were designed to provide parents with information and strategies to help their children's development outside of the school environment. Three types of messages were sent every week including during the school holidays, which parents can tailor to work with their children (more detail below). Parents randomly allocated to the treatment group received text messages from early November 2019 and these were supposed to stop in late July 2020 (nine months in total). However, as outcome testing was not possible in summer 2020, the decision was made in collaboration with the EEF and the BIT to extend the text messages by three months until the end of October (12 months in total) with outcome testing taking place in November 2020–December 2020. The additional messages were developed by the BIT in collaboration with Professor Loeb.

We examined literacy outcomes using the YARC and then the SDQ (socio-emotional outcomes only) as a secondary outcome.

The **template for intervention description and replication (**TIDieR) framework (Hoffmann *et al.,* 2014) for the intervention is as follows:

Name: Tips By Text:

Why: Recent research has shown that texting parents can be an easy, low-cost way to encourage new behaviours at home with their children, which can in turn impact on children's academic achievement and socioemotional skills.

Who (recipients): All parents of pupils in Reception year (aged four to five) who have moved to Year 1 by the end of this trial due to delays caused by Covid-19. The parents are the direct recipients of the texts and then carry out activities with their children.

What (materials): Those allocated to receive the intervention normally receive three text messages a week (including during school holidays) for nine months, but this was 12 months in this trial due to delays caused by Covid-19. The three types of messages are: 1) 'FACT' texts, designed to inform and motivate parents by highlighting the importance of a particular skill or set of skills; 2) 'TIP' texts, designed to minimise the cognitive, emotional, and time burdens of engaged parenting by including short, simple, and highly specific activities for parents to do with their children that build on existing family routines; and 3) 'GROWTH' texts, which provide encouragement, reinforcement, and extend the TIP texts (see Figure 1).

What (procedures): The delivery team send the messages out to parents so this requires collecting parents and pupils details from schools at the start of the programme and updating phone numbers when needed. Schools were involved in facilitating this process at both time points for the trial with the evaluation team collecting baseline details and passing them on to the delivery team and then the delivery team chasing any updated numbers needed when messages were not delivered (they were tried for a second time first 24 hours later in case of other reasons for messages not being delivered and after eight send-outs the schools were contacted to get new telephone numbers). The delivery team estimated that 330 phone numbers needed updating during the trial of which 110 were during the first two months of the trial. Schools also let the delivery team know if there were any reasons not to continue to send the messages from their perspective (for example, if there was a safeguarding issue or a child left the school).

Who (provider): Fionnuala O'Reilly and her team at the BIT developed and set-up delivery of the messages and responded to any messages that needed a follow-up, including alerting teachers to any safeguarding concerns if/when they arose.

How (format): The messages are sent Tuesday (3.45 p.m.), Thursday (3.45 p.m.), and Saturday (10.30 a.m.) in a standard text format using the BIT's texting platform Promptable (https://promptable.com). If texts were not delivered, they were attempted again the next day 24 hours after initially sent. If eight messages in a row were undelivered (four messages and four resends) then the school was contacted to check the phone numbers with the parents.

Where (location): The schools were from North-East England.

When and how much (dosage): Three messages a week were sent from November 2019–October 2020 (this was originally going to be July 2020, but this was extended due to the Covid-19 pandemic as mentioned above).

Adaptation: Parents can adapt the activities that are suggested in the TIPs to suit them and their circumstances. Some messages had to be adapted over the course of the intervention to keep with government restrictions on socialising and spending time outside, which would not happen in the usual intervention. For example, the delivery team explained that instead of saying: *'when you're out and about with your child'* or *'when you're in the park'*, they said: *'when you're at home'* or *'look around the room you're in now';* see the examples below (Figure 1).

Figure 1: Example text messages adapted for Covid-19

FACT	TIP	GROWTH
Having a strong vocabulary helps children become better communicators, readers, and writers	Pick an object in the room (like a soft toy), but don't tell {{child first name}}. Describe it to {{child him–her}}—try to use describing words like 'fuzzy, brown, cuddly…' Can {{child he–she}} guess what you're thinking of?	Keep working on vocabulary! Have {{child first name}} pick a secret item that {{child he–she}} can see in the room and describe it to you. Can you guess what it is? Ask for clues!
Shapes are all around us! Pointing out shapes and asking children questions about them can help build their maths skills. As {{child first name}} gets used to spending more time at home, we hope you'll find the activities and games we're sending you helpful during these trying times. Stay safe over the coming weeks and months! The Tips by Text team.	Look for shapes in your home. Point and say: "The window is a rectangle." Then ask {{child first name}}: "What shape are the plates?" (circles)	Keep pointing out shapes. Make it a game! Who can find a circle, square, rectangle, and triangle? Are they big or small? You could also play with 3D shapes, like cubes (box) or spheres (apple).
It's important for children to know the difference between MORE and LESS. The concept of MORE and LESS helps to build maths skills like addition and subtraction	At mealtime, ask [childname]: 'Who has more mashed potato on their plate, me or you? Who has less?' Then, eat some and say: 'Who has more now?' Encourage [childname] to eat some and then ask again	Keep comparing numbers! There are so many LESS and MORE games you can play with [childname]! During bath time, put water in two plastic cups, one with more. Then ask [childname]: 'Which has less water? Can you make them the same?'

Control condition: The control condition is business as usual communication between schools and families (and they will not receive any Tips By Text messages).

The theory of change developed after the initial IDEA workshop with the delivery team is shown in the protocol available **here**[1] and then following the changes to the programme due to Covid-19, we created an updated version of the theory of change, which can be seen in Figure 2.

The main changes between the models are as follows:

- the length of delivery (from nine to 12 months);

- an increase in number of schools from 105 to 109;

- the change from the delivery team providing ongoing support in 'Activities' to clarify that there were replies sent to text messages if required, but no additional support was given; and

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[1]https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/tipsbytext

- Covid-19 was added as a factor that could have increased or decreased engagement with the programme (for example, it may have increased engagement due to greater time at home, and potentially more interest in using the tips whilst children were missing conventional schooling and usual activities, but could also have decreased engagement if parents had less time available or where families were experiencing illness or other challenges as a result of the Covid-19 pandemic).

Figure 2: Theory of change model created for reporting stage based on Covid-19 changes

RATIONALE / NEED FOR INTERVENTION

- Parents can get overwhelmed with knowing what to do at home to help improve children's abilities in literacy, numeracy, language, communication and social development so evidence-based suggestions through texts every week can help minimise the cognitive, emotional, and time burdens of engaged parenting (York and Loeb, 2018)
- Parental engagement programmes are often time consuming, burdensome, and expensive so there is a need for a cost-effective easy way for parents to be contacted such as text messages, which have been shown to be an effective way to keep in touch that parents find easy to use (Miller *et al.,* 2016)
- Home activities need to be easy to implement in day-to-day life and ideally free so they are available to all families

Long term outputs/ Impacts

- Improved home learning environment (HLE)- demonstrated by parents reporting greater warmth, more consistent behaviour and more frequent activities with their children.
- Improved HLE leads to improved child outcomes in literacy, numeracy, language and communication and social development.
- Improved later school readiness due to improved self-regulation skills.
- Improved parental and school relationships.

Theory of change

To provide a digital curriculum in literacy, numeracy, and social development that can be communicated to parents through texts:

- No school- or teacher-based requirements once parents' details have been passed on
- Can be sent over school holidays
- Impacts positively on parental engagement with their children and the school

Inputs

- Selection of 109 schools from the North-East
- Parent and pupil details collected (by evaluator for trial only, normally this will be the delivery team)
- Time needed to send out weekly messages from delivery team
- Time needed to request updated parental phone numbers from schools and update the system accordingly
- Time needed for monitoring any messages from parents
- Time needed to develop extra messages due to Covid-19 and alter messages, which were not Covid-19 government regulations compliant

Activities

- Parents are sent three messages a week for 12 months (extended from nine months because of Covid-19)
- The three types of messages are: 'FACT' texts, designed to inform and motivate parents by highlighting the importance of a particular skill or set of skills; 'TIP' texts, designed to be short, simple, and highly specific activities for parents to do with their children that build on existing family routines; and 'GROWTH' texts, which provide encouragement, reinforcement, and extends the TIP texts
- Delivery team sends responses to parental texts if required

Outputs

- Parents carry out the 'TIP' activities with their children on a weekly basis
- Parents carry out 'GROWTH' activities with their children on a weekly basis and think of their own ways to extend the practice

Short-term outcomes/ mediators

- Parents report more confidence in including new activities with their children
- Parents have greater knowledge about evidence-based activities to help with their children's development
- Parents are more engaged in their children's learning
- Parents use their new knowledge of child development to provide more focused teaching and learning

Enabling factors / conditions for success

- Parents from low-income families may be more or less willing to implement the activities (evaluated by free school meals analysis)
- Children's baseline attainment may act as a moderator and make the intervention more or less effective for some children (evaluated by examination of low and high baseline assessment)
- Spillover-effect to parents not involved in the trial is a possible risk through sharing messages or activities and this could reduce the size of the impact. This will be monitored in the implementation and process evaluation.
- Geographical region may also have an impact on intervention effectiveness due to different family demographics, but this will not be examined in the current trial
- Covid-19 disruption to schools may mean that the intervention is more or less effective as schools change the way they interact with parents. In addition, parents

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Evaluation objectives

The primary research question for the impact evaluation was:

RQ1. Did the Tips by Text intervention improve Reception year children's literacy outcomes?

The secondary research questions were:

RQ2. Did the Tips by Text intervention improve Reception year children's numeracy outcomes? (This was not possible to explore as EYFSP outcomes were not available for summer 2020 due to the Covid-19 pandemic.)

RQ3. Did the Tips by Text intervention improve Reception year children's language and communication outcomes? (This was not possible to explore as EYFSP outcomes were not available for summer 2020 due to the Covid-19 pandemic.)

RQ4. Did the Tips by Text intervention improve Reception year children's social development skills?

RQ5. Did the Tips by Text intervention improve literacy outcomes differentially for children eligible for free school meals (FSM)?

RQ6. Did the Tips by Text intervention improve literacy outcomes differentially for children with low and high baseline attainment?

The primary research question focuses on literacy outcomes as measured by the YARC.

The research questions for the IPE were:

Fidelity

To establish fidelity in implementation, we looked particularly at whether the programme was delivered as intended and examined what compliance to the intervention means for the BIT and how well schools have achieved this using the following research questions:

1. Is the intervention acceptable and useful for parents?

2. Could the intervention be rolled-out on a larger scale? Would anything need to be adapted for large scale work?

Implementation

We considered the wider range of issues, which affect implementation including the necessary conditions for success and barriers to successful implementation using the following questions:

3. What did parents do after receiving the texts and how different is this to their usual practice? This includes exploring activities that happened at home after receiving the texts, and how these activities were carried out.

4. Were there any unintended or negative effects of the intervention?

5. What are the facilitators/barriers to the programme?

6. Would parents and teachers have found additional in-person support useful, and if so, from whom?

7. Did engagement with the intervention change (decline) over time?

8. Was the intervention a worthwhile investment from the perspective of management (considering any staff time input required)?

9. Would schools be able to deliver the intervention themselves in the future?

10. How has Covid-19 impacted on schools' communication with parents and how has this affected how parents have used the TIPs messages? (This research question was added in late 2020 as a result of the Covid-19 pandemic.)

Perceived outcomes

We explored how parents and teachers perceived the impacts of the programme, both anticipated and actual, since they could have affected their commitment to the project and therefore, its impact and effectiveness. To understand outcomes, it was also necessary to establish what took place in the schools at the time of the intervention around parental engagement and particularly texting interventions for everyone so we know what the control group are getting as business as usual). We also explored:

11. Did the intervention lead to higher literacy and numeracy child outcomes?

12. Did the intervention lead to improved behavioural outcomes?

13. Did the intervention increase parental engagement with the school?

14. Did the intervention improve parent–child relationships?

15. Did the intervention improve the home learning environment?

16. Did parents prefer one area of support (for example, literacy) over another (for example, social development or numeracy)?

We have also included a section on usual practice to establish what schools were doing with communication with parents before the trial and any changes over the course of the year, which they may attribute to the intervention.

The protocol and amended protocol from December 2020 (following Covid-19 changes) as well as the statistical analysis plan are all available on the EEF website **here.**[2]

Ethics and trial registration

An ethics application describing the evaluation was prepared by the evaluation team and submitted to the National Institute of Economic and Social Research (NIESR) Research Ethics Committee for review; this was approved in February 2019.

Schools were given a Memorandum of Understanding (MOU) during recruitment, which detailed the requirements of the trial from the schools' perspective and what roles the delivery team and evaluation team would play and their responsibilities. This also included a statement on how the data from the trial would be used and kept securely. Schools had to sign this MOU to be recruited to the trial (see Appendix C). Once a school had been recruited, parents of children in Reception year were given a letter in September 2019, detailing what would be involved from their perspective and given access to a privacy notice, which detailed which data of theirs and their children would be collected and how it would be shared and stored (see Appendix F). The letter included a short form for parents to complete and return if they did not wish to participate, or if they did not wish their child to participate. They were also able to withdraw from the study at any time by emailing the delivery team and could also reply to the texts asking for them to be stopped if they just wanted to be removed from having the text messages. There was also a link to the privacy notice, which contains the General Data Protection Regulation (GDPR) requirements on how the parents' and children's information was stored, for what purpose, who it was shared with, and the rights of the participants. An addendum to the MOU was issued to schools in summer 2020 to explain the changes to the project arising as a result of Covid-19. An updated parent information letter explaining the changes was also provided to schools to distribute to parents as their children returned to school in September 2020 (see Appendix E) and the privacy notice was also updated accordingly with new testing dates added and the removal of the EYFSP data requirements. The NIESR Research Ethics Committee was also notified of the changes to the evaluation. Finally, schools were also written to in January 2021 to inform them that testing was not continuing, with different letters drafted depending on whether the school had completed testing, was part-way through testing, or had not yet started testing.

In regard to taking part in the evaluation activities including surveys and interviews, participants were told they could withdraw at any time from any research activity.

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[2] https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/tipsbytext

All recruitment materials were jointly developed and agreed by the delivery and evaluation teams, as well as by the EEF.

The trial was registered at **www.controlled-trials.com** and the **ISRCTN** (International Standard Randomised Controlled Trial Number) is 17575452 where the record is available at **https://doi.org/10.1186/ISRCTN17575452**. The registry was updated in February 2021 after the disruption from Covid-19 and will be updated with the project outcomes at the end of the project.

Data protection

The NIESR and the Institution for Employment Studies (IES) recognise the utmost importance of data protection and are fully committed to complying with the Data Protection Act 2018 and GDPR legislation. For the purposes of conducting the evaluation to assess the impact of Tips by Text, the NIESR, the IES, the BIT and the University of Oxford were all data controllers of personal data of parents, school staff, and pupils. We reserved the ability to share personal data with trusted processors such as academics, test administrators, transcribers, and research assistants solely for the purposes of proper delivery, management, and evaluation of the project. At the end of the project, data will be submitted to the EEF data archive and at this point, the EEF will become a data controller.

Our project involved the collection of personal data and special personal data (in the case of gender only). For processing personal data, we used legitimate interest as the legal basis, which was subject to a full legitimate interest assessment, which was approved on 12 April 2019. This is in line with both the NIESR and the IES organisation policies, which both list research as one of the purposes of the organisation. Our condition for processing special category personal data (gender) is that this was necessary for scientific research purposes and is in the public interest. Further details setting out our approach to GDPR compliance are contained in the project privacy notice (Appendix F). All participants interviewed for the research were given the aims of the interview and data sharing details as well as an assurance of anonymity of themselves and their school and they were asked if they agree to the interview being recorded and transcribed. Schools were given an initial information letter (Appendix D) and then signed an MOU at the start of the project clearly laying out the requirements of the project and how the data would be used, shared, and stored, which was updated in August 2020 due to the changes caused by the Covid-19 pandemic; please see Appendix C for the updated version. Parents received an information letter explaining the project and clearly detailing how they could withdraw from receiving the text messages and how they could withdraw their data and/or their child's data from the study, these were also updated in August 2020 due to the Covid-19 pandemic; please see Appendix E for the original version of the letter.

The NIESR, the IES and the BIT will securely delete all personal data within six months of the project finishing. The University of Oxford will retain the data from this project until spring 2025 to permit further analysis.

We developed a privacy notice in collaboration with the delivery team explaining how information collected from participants would be used and stored and communicating to participants their right to withdraw from data processing at any time. This was available online throughout the course of the project. The project privacy notice was updated in autumn 2020 to reflect the changes to the evaluation as a result of Covid-19. Please see Appendix F for the updated version.

We also developed a data sharing agreement between both evaluation teams, the delivery team and the EEF, which states which data will be shared by who, how, and why to ensure full data security throughout the project.

Project team

Delivery team

Tips by Text was delivered by the education team at the BIT who have collectively run over 40 RCTs in educational settings over the past five or more years. Key personnel include:

Fionnuala O'Reilly (Senior Advisor, BIT): Fiona is the project lead for the BIT. She has led research in several areas of education policy including parental engagement, fostering social and emotional learning in the classroom, and improving student motivation. She now leads the BIT's work in Early Years, exploring ways to improve the home learning environment and empowering Early Years practitioners to foster key skills in the earliest years of life.

Anna Bird (Principal Advisor, BIT): Anna oversees BIT's education, skills, and Early Years work. Before the BIT, she was the head of research at the Social Mobility Commission, where she focused on reducing attainment gaps throughout school. She also led research on youth welfare for the Department for Work and Pensions. Prior to moving to the government, Anna spent ten years at a global research consultancy with public and private sector clients. Anna holds an MSc in Social Psychology from the London School of Economics and an undergraduate degree from the University of Oxford.

Alice Farrell (Associate Advisor, formerly BIT): Alice worked within the education team at the BIT and focused primarily on Early Years learning and development. Prior to the BIT, Alice worked for an EdTech start up where she headed up their impact evaluation and research arm. She holds a degree in Biological Sciences from Oxford University.

Elspeth Kirkman (Senior Director, formerly BIT): Elspeth was responsible for the BIT's work on health, education, and local government. Prior to this role she oversaw the establishment and growth of the BIT's North American office from New York. She has taught behavioural science at Harvard, acts as an expert advisor to a number of global institutions, and serves as a senior fellow for Casey Family Programs, advising on the applications of behavioural and decision science to child welfare systems. Prior to joining the BIT in 2013, Elspeth was a management consultant working with government clients around the world.

Evaluation team

The team comprised of highly experienced staff across the NIESR and the IES; brief biographies are below. Lucy and Anneka were co-principal investigators for the project and designed, project managed, and quality assured all stages of the project. David Wilkinson (NIESR Fellow) provided expert input on the impact evaluation.

Lucy Stokes (Co-PI, Principal Economist, NIESR): Lucy has more than 15 years' research experience, with a particular interest in education, especially Early Years. She has led or worked on multiple evaluations for the EEF, including leading the NIESR's input into the EEF evaluation of Using Research Tools to Improve Language in the Early Years (URLEY) and was co-principal investigator for the pilot evaluation of Early Years Toolbox (EYT). She has previously conducted research on the relationship between quality of Early Years' provision and children's outcomes. Lucy was co-PI on the project and lead on the impact evaluation.

Nathan Hudson-Sharp (Senior Social Researcher, formerly NIESR): Nathan is a mixed methods researcher with extensive experience in researching barriers to academic attainment. Having previously worked on several projects by the EEF, he is experienced in undertaking process evaluations within trials of complex interventions and exploring both cognitive and non-cognitive outcomes. Nathan led the NIESR's input to the IPE until he left the NIESR in summer 2020.

Johnny Runge (Senior Social Researcher, NIESR): Johnny has extensive experience in qualitative evaluation methods. He led the evaluation of the pilot intervention Embedding Contextualisation in English and Maths GCSE Teaching and has been part of the process evaluation teams on Embedding Formative Assessment, Improving Working Memory, Growing Learners, URLEY, and EYT. He is highly experienced in designing and analysing surveys and conducting focus groups and interviews in schools. Prior to starting at the NIESR, Johnny worked as a primary school teacher. Johnny supported the process evaluation activities on the project.

Chiara Manzoni (Senior Social Researcher, NIESR): Chiara is a mixed methods sociologist and her main interests lie in the field of vulnerable groups, including disadvantaged pupils. She has worked on a number of different policy and impact evaluations. Chiara supported the process evaluation activities on the project.

Lei Xu (Economist, formerly NIESR): Lei has broad interests in labour economics, economics of education, and applied micro-econometrics. He contributed to the data set-up and analysis for the impact evaluation.

Anneka Dawson (Co-PI, Principal Research Fellow, IES): Anneka has vast experience in education and family research. She currently leads the IES' research on pre-16 education and directs projects including the Flexible Phonics project for the EEF and other projects with Sutton Trust, OVO Foundation, Esmeé Fairbairn Foundation and Mercers Company, and she also directed the EYT project for the EEF (in collaboration with the NIESR). She was formerly the senior evaluation manager at the EEF and had responsibility for the Early Years and also worked with the University

College of London, Institute of Education team to produce the Early Years measures database in 2017.[3] Anneka was co- PI on the project and helped develop research instruments, provide quality assurance across all stages of the project, and report writing.

Ceri Williams (Research Fellow, IES): Ceri has over 17 years' social research experience on employment and educational topics including literacy development in the Early Years, career leaders' training, employment programmes for disadvantaged groups, and use of government department resources in schools. Ceri is a mixed methods researcher and has managed a number of large-scale projects. In addition to well-developed quantitative skills, she has in-depth knowledge and experience of qualitative methods including case study visits to schools, interviewing pupils, teachers, and other staff on a number of projects. Ceri is a qualified teacher, with experience of working in the primary sector and has managed projects for the EEF, Teach First, Central London Forward, OVO Foundation and Mercers as well as supporting a number of projects including the EYT project for the EEF and Class of Covid for the Sussex Learning Network. Ceri was the project manager for the IES team and worked across all activities on the project.

Clare Huxley (Senior Research Fellow, IES): Clare's research interests include education and learning, equality and diversity, and she is experienced in a range of qualitative and quantitative approaches. Clare received a PhD in Psycholinguistics from the University of Edinburgh and has knowledge of language processing and acquisition development from childhood. Clare was the project manager on the EEF EYT project. Clare supported the process evaluation activities on the Tips by Text project.

Helena Takala (Research Officer, formerly IES): Helena is a mixed methods researcher interested in education policy, and has experience conducting focus groups and semi-structured and in-depth interviews, producing systematic literature reviews, and survey analysis on SPSS (Statistical Package for the Social Sciences). Helena is currently also working on the EEF EYT project. Helena supported the process evaluation activities on the project until she left IES in summer 2020.

Kate Alexander (Research Officer, IES): Kate is a mixed methods researcher in public policy with experience in conducting and analysing in-depth interviews and data analysis in SPSS. She is currently also working on the evaluations of Flexible Phonics and EEFective Kent. Kate contributed to interviews with parents and school staff, and to reporting results of the process evaluation.

Georgie Akehurst (Research Officer, formerly IES): Georgie is a mixed methods researcher and has experience conducting focus groups and semi-structured and in-depth interviews, producing systematic literature reviews, and survey analysis on SPSS. Georgie is currently also working on the EEFective Kent project and the EEF Flexible Phonics/Direct Mapping project. Georgie has been supporting the fieldwork aspects of these projects, in addition to working on the fieldwork and reporting on this project.

Jade Talbot (Project Support Officer): Jade is an experienced project support and facilitation professional, having particular experience in the education sector as well with a variety of private sector clients. Jade has a wealth of experience providing end-to-end support on large research projects, utilising skills in survey programming, participant recruitment, and the proofing and formatting of research outputs. Jade supported the surveys for this project and formatted the report.

Administration of the YARC assessments that form the primary outcome for the trial were conducted by Qa Research, with the Qa team led by Helen Hardcastle (Research Director), Amy Price, and Claire Bevan.

Dr Sue Stothard (Independent Consultant) trained the test administrators in the use of the YARC.

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[3] (Dockerell *et al.,* 2017).

Methods

Trial design

Table 3: Trial design

Trial design, including number of arms		Two-arm multi-site randomised controlled trial
Unit of randomisation		Parent
Stratification variable (s) (if applicable)		None
Primary outcome	Variable	Literacy attainment
	Measure (instrument, scale, source)	YARC total score (0–86), YARC Early Reading, GL Assessment
Secondary outcome(s)	Variable(s)	Socio-emotional outcomes
	Measure(s) (instrument, scale, source)	Total Difficulties Score (0–40), Strengths and Difficulties Questionnaire
Baseline for primary outcome	Variable	Literacy attainment
	Measure (instrument, scale, source)	YARC score (YARC Early Reading sound deletion and sound isolation subscales), GL Assessment
Baseline for secondary outcome(s)	Variable	None
	Measure (instrument, scale, source)	None

YARC, York Assessment of Reading for Comprehension.

This evaluation was an efficacy stage trial and in collaboration with the delivery team, we agreed to run an individual-level randomisation (at the parent level, in order to avoid a scenario whereby twins are assigned to different groups) to reduce the number of schools needed for the trial and to maximise the power to detect an effect. We did have some concern about contamination of the control group, but it was expected that the number of parents who speak to each other about the text messages, or directly share the messages with one another, would be limited. The trial had two arms so that half the eligible children's parents within participating schools were allocated to the treatment arm (receiving the programme) and half to the control arm (who do not receive the programme and operate business as usual). All Reception year classes were randomised, so that for each Reception year class half were randomly allocated to receive the intervention and half were not. As a large number of schools were recruited, we only carried out assessments on one class per school, which was randomly selected (where there was more than one class per Reception year) but all parents randomised to the intervention group received the messages.

The primary outcome measure of literacy was selected as previous research had also explored impacts on literacy and the YARC was selected as a robust standardised measure of early literacy suitable for the age group and administration by non-specialists. Originally EYFSP data was selected for secondary outcome measures in literacy, numeracy, and social development but this was not completed by schools in 2020 or 2021 due to Covid-19 so could not be included in

the project. The SDQ (Goodman, 1997) is a well-used, standardised measure on socio-emotional outcomes for which we obtained permission and the required licence to collect through an online survey from YouthInMind (https://youthinmind.com/products-and-services/sdq/). We were originally going to use paper versions of the SDQ but decided due to the Covid-19 pandemic that collection using an online platform would elicit a higher response and would be more appropriate given any potential concerns regarding virus transfer.

The Covid-19 pandemic potentially began to impact on the project from March 2020, but it did not change the intervention delivery method as text messages were delivered directly to parents. However, the intervention was extended (messages were continued) from July 2020 to the end of October 2020 as outcome testing had to be delayed from June 2020–July 2020 to November 2020–December 2020 so that the intervention was closer to the outcome testing. The revised plan was to continue the primary outcome testing to January 2021, but due to further school disruption this was not possible as schools were closed to most pupils at this time. The collection of SDQ data was delayed until November 2020 as well and went into January 2021 as this was an online survey and so was not as impacted by school disruption. The timing of the implementation and process evaluation post-survey and parents and staff interviews also had to be moved to November 2020–January 2021 and from in-person case studies to telephone interviews (see Table 6 for the timeline).

Participant selection

Eligible schools were based in the North-East of England. Those with more than one Reception year class and with larger numbers of FSM pupils were prioritised in recruitment. All pupils in the Reception year group of the schools were eligible to take part. Larger schools were prioritised in recruitment, on the grounds that if it proved challenging to recruit the desired number of schools, it would still have been possible to obtain a similar minimum detectable effect size (MDES) with a smaller number of schools where these had a higher average number of pupils per school. However, ultimately 109 schools were recruited and therefore one class of each Reception year group within a school was selected for outcome testing using randomisation, which at pre-test comprised 2,647 pupils (with 2,389 of these pupils completing pre-tests).[4] Due to the Covid-19 pandemic greater than expected attrition was experienced and 791 pupils were ultimately post-tested (30% of the original sample).

The delivery team (BIT) recruited schools during February 2019–June 2019. They sent schools a school information letter and then schools could email to express interest. This was followed up by an initial phone call to someone in the Senior Leadership Team (SLT) at each school to talk through the project at a high level. If the SLT member was happy, the BIT then looked to book in a webinar with other staff at the school—the official project lead and Reception year teachers. The webinar lasted approximately 20 minutes and went into detail about how the project would be run, who would be involved, and when schools would be required to facilitate certain tasks (for example, testing). Once this was completed, the school was sent the MOU to sign to officially be recruited to the project. The BIT team presented to Northumberland City Council to gain Local Authority buy-in and the North-East Teaching School Alliance to gain interest from headteachers in the locality as part of their strategy. The trial was also advertised on the EEF website and included in the EEF newsletter, which went to over 10,000 people with an interest in education research, including many schools. Over 500 schools were contacted directly and 185 expressed an interest. Of these, 122 signed an MOU and 109 went on to be randomised once they had completed pre-testing (see the discussion in the 'Participant Flow' section for further details).

Outcome measures

Baseline measures

The primary outcome assessed in this trial is literacy, as measured by the YARC.[5] This is a commercial test and so cannot be included in the report. The version of the YARC suitable for four- to seven-year-olds is called Early Reading and covers four dimensions: sound isolation; sound deletion; letter sound knowledge; and early word recognition. To

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[4] The number of pupils for whom pre-tests were completed was lower than anticipated in the trial protocol; we discuss this further within the participant flow section of this report.

[5] Available from GL Assessment at **https://www.gl-assessment.co.uk/products/york-assessment-of-reading-for-comprehension-yarc/**.

reduce testing time and burden on the school, only the former two measures were used as a pre-test as they are considered the most sensitive and more appropriate for the younger age of the children by GL Assessment [6] and all four dimensions were used at post-test. Pre-tests were administered in September 2019–October 2019, prior to randomisation. No other baseline measures were collected.

Primary outcome

Literacy was chosen as the primary outcome in line with the theory of change, which shows that literacy is seen as one of the long-term outcomes anticipated by the model. Approximately 50% of the messages were intended to focus on literacy so the delivery team felt that this was possibly the outcome most likely to be seen in the time being examined in the trial (compared to 25% of messages focused on numeracy and 25% on social development). In addition, the previous study by York and Loeb (2018) found impacts on literacy using the Phonological Awareness Literacy Screening (PALS™; Invernizzi *et al.,* 2015). The primary outcome is a 'total' YARC score, where each of the components is standardised to have a mean of zero and 1 SD. These are then added together to create a composite measure and re-standardised (calculated where all four components are non-missing). The evaluation team adopt this approach, rather than simply summing together the four scales, given the subscales are not of equal length and thus a simple sum would give greater weight to the longer subscales.[7] The same approach is adopted with the two subscales used for the pre-test. An overview of the four subscales are given below, including internal reliability scores and correlation with the Single Word Reading Test (SWRT)[8] as a measure of validity, as reported in the GL Assessment YARC Early Reading Test manual (Hulme *et al.*, 2011).[9]

The **early word recognition** test measures reading attainment in young readers. Children are asked to read 30 single words, which are graded in difficulty. Half of the words have regular correspondence between the graphemes and phonemes, namely, letter to sound mapping, and half are irregular. The test's internal reliability using Cronbach's alpha is 0.98, and correlation with the SWRT was 0.88. This test is a measure of overall literacy outcomes, which are a longer term outcome/impact identified in the logic model.

The **letter sound knowledge** test measures alphabetic knowledge. Children are shown lower case letters and digraphs, one at a time, and are asked to say what sound the letters and digraphs make. The core test comprises 11 letters and six digraphs. The extended test (used in this trial) comprises 26 letters and six digraphs. The Core test's internal reliability using Cronbach's alpha is 0.95. Its correlation with the SWRT was 0.55.

The **sound isolation** test measures phoneme isolation skills, which are a component of phonemic awareness. Children hear a series of 12 nonsense words and are asked to identify either the first or the final sound in the word. The test's internal reliability using Cronbach's alpha is 0.88, and correlation with the SWRT was 0.62.

The **sound deletion** test measures phoneme deletion skills, which are a component of phonemic awareness. Children hear a series of 12 words accompanied by a picture of what they represent and they are asked to repeat the word but 'take away' a sound from the word. The test's internal reliability using Cronbach's alpha is 0.93, and correlation with the SWRT was 0.76. If the Sound Isolation and Sound Deletion scores are combined, this combined score has an internal reliability of 0.95 using Cronbach's alpha.

The YARC assessments were administered by Qa Research test administrators at both time points. The team of test administrators received training in the use of the YARC from Dr Sue Stothard, an expert in the field. They piloted the training of test administrators and testing process in June 2019 in one school to ensure that both worked effectively and the timings for the pre-testing were planned robustly as there was such a small testing window. Test administrators were blind to which condition pupils were in, as was Qa Research as an organisation. GL Assessment scored all the tests and were also blind to which condition the pupils were in.

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[6] See **https://www.gl-assessment.co.uk/support/yarc-support/** on early word reading assessment.
[7] Results for the individual scales are also reported separately as additional analysis.
[8] The SWRT is available from GL Assessment: **https://www.gl-assessment.co.uk/products/single-word-reading-test-swrt/.**
[9] As summarised in the EEF Early Years Measures database available at: https://v2.educationendowmentfoundation.org.uk/projects-and-evaluation/evaluating-projects/early-years-measure-database/early-years-measures-database/york-assessment-of-reading-for-comprehension-early-reading/.

Post-tests were planned to be conducted towards the end of children's Reception year in June 2020–July 2020. However as previously mentioned, YARC post-tests were postponed until November 2020–January 2021 due to Covid-19, by which time, pupils were in Year 1. All pupils who were in classes selected for testing at baseline (one class randomly selected per year group) were attempted for post-testing. Where possible, assessments were conducted in-person by trained administrators, following all relevant safety protocols. Post-tests at three schools took place remotely, rather than in-person, according to school preferences and further schools were booked in January 2021 to perform remote testing as this was a popular choice during the school disruption. However, these were cancelled due to partial school closures. Remote testing involved a trained test administrator carrying out the assessment virtually using a laptop and Zoom or other video conferencing software. A teaching assistant had to sit with the pupil (ideally behind them so not as to prompt them and in line with safety protocols) whilst the assessments took place. The assessments otherwise remained the same. It is worth noting that these tests had not previously been used remotely to our knowledge, but remote administration was piloted by Qa Research with a small number of children in autumn 2020 and then was used in 18 schools as part of the Flexible Phonics by the EEF-funded project in November 2020–early December 2020 (before it was used in this project) in which the IES was also working with Qa Research on at the time. The remote testing was deemed acceptable by the evaluation team to both children and schools on the Flexible Phonics project with good feedback received and this enabled more schools to take part in the outcome testing. The testing window was supposed to be extended by an additional month relative to the original protocol to give schools more time to schedule the assessments amid other disruptions caused by Covid-19. This was decided as, although it would have increased the distance between the end of programme delivery and outcome assessment for some pupils, it may have helped to increase the final sample size for analysis. However, in January 2021, in light of the third national lockdown and associated school closures as a result of Covid-19, the decision was taken to stop the remaining post-testing.

Secondary outcomes

The secondary outcome was social development, and this was chosen as another long-term outcome outlined in the theory of change. This was measured through the SDQ (Goodman, 1997), which has been widely used for both research and clinical purposes and has been shown to have robust psychometric properties, particularly for the teacher version (Stone *et al.*, 2010). At the same time, it is user-friendly and fairly quick to complete. The total difficulties score is a standard SDQ measure, which is constructed from summing together responses on four of the five SDQ subscales, giving a score, which ranges from 0 to 40. The analysis also explores separate models for three components; 'internalising problems' (which combines the emotional symptoms and peer relationship problems scales, 10 items), 'externalising problems' (which combines the conduct problems and hyperactivity scales, 10 items) and the 'prosocial' scale (5 items). This division of the scales has been shown to be more appropriate for low risk or general population samples (Goodman *et al.*, 2010). The SDQ is widely used for assessing child mental health, including as a screening tool, but has also been used widely in research studies, for example, as a measure of social and emotional development in the evaluation of the Families Connect programme (Lord *et al.*, 2021). The SDQ was completed by children's class teachers, at post-test only. This was originally going to be the Reception year class teachers, but with the delay to post-testing from the summer 2020 to autumn 2021 this was the Year 1 teachers instead as they would have been the teachers working alongside the pupils at the time. Although teachers were not necessarily blind to trial-arm allocation (as parents may have contacted the teacher and discussed the text messages, but from the IPE data this seems like it happened infrequently), the SDQ had to be completed by teachers as it must be conducted by someone who is familiar with the child.

To reduce burdens on schools and teachers, the SDQ was only collected for one randomly selected class per school (which was the same as the class chosen for the YARC measure). The SDQ was sent to teachers by email in November 2020 for completion online rather than by paper, which was the initial plan before the Covid-19 pandemic. The SDQ was developed in SNAP software and approved by YouthInMind who hold the licence for the SDQ.[10] Year 1 teachers received an individualised email with a personalised link for each pupil they need to complete the SDQ for. The Year 1 teacher completed the SDQs for the same pupils that are eligible to complete the YARC testing, so in multiple form entry schools this was children from the randomly selected class. The classes were sometimes now split across more than one Year 1 teacher, in which case both teachers received the email and were asked to complete this for their relevant pupils.

[10] https://youthinmind.com/products-and-services/sdq/.

EYFSP scores in numeracy, communication and language, literacy, and social development were also originally going to be obtained through linkage to the National Pupil Database (NPD). This was to help to reduce burdens on schools and children rather than testing all pupils additionally on these areas as well as literacy through the YARC. However, as previously mentioned, the EYFSP was not carried out in 2020 or 2021 so this was not possible for this trial.

Sample size

At protocol stage, the sample size was determined with the aim of establishing a MDES of 0.1, given the previous research by York and Loeb (2018), which found an impact of the programme on literacy of 0.11 SDs. MDES calculations were conducted using Optimal Design software (see Table 7 within the 'Impact Evaluation' section for details of the MDES at different stages of the trial).

Figure 3 below shows the variation in the estimated effect size as the number of schools increases. This further distinguishes between a scenario with an average of 26 pupils per school (assuming an average of 30 pupils per school, and then allowing for around 5% of pupils to withdraw before randomisation and around 10% of the remainder lost to follow-up) and a scenario with an average of 38 pupils per school (assuming around 45 pupils per school and again with some withdrawal prior to randomisation and some lost to follow-up). All estimates are based on standard assumptions of 80% power and 5% significance level. Further, we assume the pre-test explains 40% of the variation in the post-test scores,[11] and that 10% of variance is explained by the blocking variable (here the school).[12] Our analysis includes school identifiers as fixed effects (see discussion in 'Statistical Analysis' section below). To achieve an MDES of 0.1 this suggested a required sample size of around 105 schools (at the point of analysis) based on an average of 26 pupils per school. This led to our suggestion to aim for an ultimate sample size of around 105 schools, which was also considered by the delivery team to be the maximum number of schools that it would be feasible to deliver to in this trial.

Figure 3: Minimum detectable effect size scenarios

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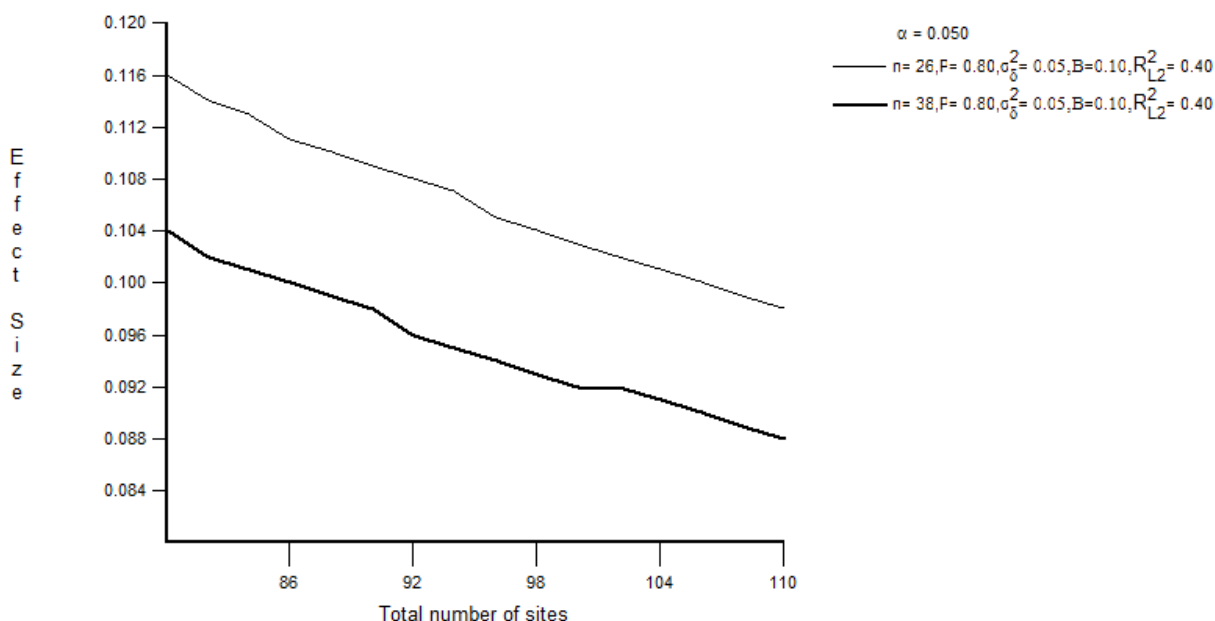
[11] At the time of preparing the protocol, to our knowledge, there was no publicly available information on the likely correlation between pre- and post-test scores for our primary outcome measure, the YARC. The efficacy trial of the Nuffield Early Language Intervention (implemented with a similar age group) found that around 55% of the variation in post-test scores (a composite language score) was explained by the pre-test and pupil characteristics (Sibieta, 2016). This would be higher due to the additional inclusion of pupil characteristics; we therefore, use a lower estimate of 40% for our assumptions.
[12] Although based on secondary schools, previous research has indicated that schools explain around 10% of the variation in pupil attainment at the end of Key Stage 4 (Wilkinson *et al.*, 2018).

Department for Education statistics for January 2019 show that 15.8% of pupils in primary schools were eligible for and claiming FSM (Department for Education, 2019). However, schools with above average proportions of pupils eligible for free school meals (FSM) were targeted in recruitment. On the assumption that on average ten pupils within Reception year per school would be eligible for FSM, equivalent to around 38% of pupils (at the time of writing the protocol, this was the average percentage of pupils eligible for FSM in recruited schools to date), and keeping all other assumptions the same, resulted in an MDES of 0.14. The trial is not powered to detect an impact on FSM pupils as a primary population of interest. The MDES at randomisation and analysis stages are discussed later in this report.

Randomisation

Randomisation took place at parent level. Randomisation was conducted within each Reception year class, so that within each class, half were assigned to the treatment group and half to the control group. This was conducted using simple randomisation.

The randomisation was conducted by the evaluation team, using Stata. The randomisation process and results were recorded in a log file. The process was as follows:

- each parent was assigned a randomly generated number;

- parents were sorted within school on the basis of this random number;

- the first parent was randomised to treatment or control; and

- each subsequent parent was given the opposite outcome of the previous parent.

The randomisation syntax is available in Appendix G.

The BIT were informed which parents were allocated to the treatment group in order to facilitate the sending of text messages to those parents. Analysts were not blind to trial-arm allocation. Due to a small number of schools (five) having an earlier half-term, the randomisation took place in two batches, with this group of schools randomised one week earlier. This enabled parents in these schools to start receiving the texts immediately following half-term, which the delivery team felt gave a sense of a 'fresh start' to the intervention after the half-term break.

In addition, one class per school (in schools where there are multiple classes in Reception year) was randomly selected for the YARC assessment and SDQ measures. This was to reduce burden on the schools and to keep costs and time for the testing to a minimum. For schools with multiple classes, each class was assigned a randomly generated number. The class assigned with the highest number value in each school was selected to receive the YARC assessment and SDQ. This meant that whilst around 2,600 pupils were in classes eligible for testing, approximately 3,600 pupils form part of the overall trial. Pupils in the classes that were not selected for testing were still randomised to treatment or control groups; the original intention being that outcomes from the EYFSP would be analysed as secondary outcomes for the full sample of around 3,600 pupils. As documented above, analysis of the EYFSP outcomes is no longer possible. Whilst beyond the scope of the current report, this larger sample could potentially be followed up in future longitudinal analysis.

Statistical analysis

Primary analysis

As specified in the Statistical Analysis Plan (SAP), we estimate the impact of the intervention using a linear regression model including a dummy variable indicating trial-arm allocation, our measure of prior attainment (the YARC total score as captured at pre-test), and a dummy variable to indicate those schools, which were randomised in the first batch. As this is a multi-site trial, school identifiers are included as fixed effects. This is in line with the EEF Statistical Analysis

Guidance 2018[13] for an efficacy trial (and thus, implies no attempt to generalise beyond the sample of schools within the trial).[14] The estimated impact is based on the difference between those assigned to the treatment and control groups, regardless of contamination of the control group or drop out, in order to estimate the 'intention-to-treat' (ITT) effect.

The equation estimated for the primary analysis is:

$$Y_{ijt} = \alpha + \beta_1 Treat_i + \beta_2 Y_{ijt-1} + \beta_3 \gamma_j + \beta_4 s_j + \varepsilon_{ij}$$

where i are pupils and j are schools, Y_{ijt} is the YARC post-test score, Y_{ijt-1} is the YARC pre-test score, $Treat_i$ is our treatment indicator (a dummy variable where 1 represents being allocated to receive the intervention and 0 represents allocation to the control group, i.e. not receiving the intervention), γ_j is a dummy variable indicating randomisation batch, s_j represent school fixed effects (representing a set of n-1 dummy variables for the n schools) and ε being an error term.

As specified in the SAP, not all pupils in the classes selected for testing completed pre-tests, and it had been the original intention to post-test all eligible pupils in these selected classes, regardless of whether they had completed pre-tests, in order to maximise the sample. This meant that it was possible that some post-tested pupils would not have completed pre-tests, and in this scenario, the SAP specified that we would seek to impute pre-test scores following the principles specified around missing data in the SAP. As noted earlier in this report, the number of completed post-tests was far smaller than originally anticipated, due to the need to stop post-tests as a result of Covid-19. The SAP was prepared after the start of the Covid-19 pandemic, and at that time, post-tests had been postponed, rather than stopped—in the end, post-testing was partially completed. Amongst the eventual sample for which post-tests were completed, less than 5% had a missing pre-test score, and we base our primary analysis on the sample of complete cases. We undertake a number of sensitivity checks around the handling of missing data, as described below, and as reported in the impact evaluation results.

Secondary analysis

The approach to the secondary outcome analysis follows the same approach as for the primary outcome. We do not have a measure of the secondary outcome at baseline, but include the YARC pre-test score, as it is still expected that this should account for some of the variance. In all other respects the analysis is the same. Thus, the equation estimated is:

$$YS_{ijt} = \alpha + \beta_1 Treat_i + \beta_2 Y_{ijt-1} + \beta_3 \gamma_j + \beta_4 s_j + \varepsilon_{ij}$$

where YS_{ijt} is the SDQ score, instead of the YARC post-test score (and all other elements are as defined above).

Analysis in the presence of non-compliance

We construct a measure of compliance for the intervention group based on information on the delivery of text messages. Compliance is effectively determined at parent level (and applied at pupil level in the analysis—in most cases this is effectively the same, except in the case of siblings). The delivery team provided the evaluation team with information on delivery of messages, which the evaluation team used to construct the compliance measure. This takes a value between 0 and 1, set proportionately according to the number of messages delivered as a proportion of total possible messages (thus, a value of 1 represents a parent who received all possible messages, and a value of 0.5 would represent a parent who received half of all messages). We also examine non-compliance as part of the IPE.

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[13] EEF (2018) Statistical Analysis Guidance for EEF Evaluations: March 2018. EEF, London. Available at: https://educationendowmentfoundation.org.uk/public/files/Grantee_guide_and_EEF_policies/Evaluation/Writing_a_Protocol_or_SAP/EEF_statistical_analysis_guidance_2018.pdf.

[14] Given the significant attrition from the trial, there would be considerable concern over making any such inference regardless.

We use the compliance measure described above in conducting a Complier Average Causal Effect (CACE) analysis, for the primary outcome only. An instrumental variable (IV) approach is used. We estimate the CACE using two stage least squares (2SLS) regression by estimating a (first stage) model of compliance, using the measure of compliance described above and group allocation as the IV. The predicted values from the first stage are then used in the estimation of a model of our outcome measure. This analysis is conducted using the ivregress command in Stata, which allows the necessary adjustments to be made to standard errors in response to the clustered nature of the data.

Missing data analysis

We follow the principles set out in the SAP as far as possible in relation to missing data, however, it should be acknowledged that the SAP was originally prepared before the full extent of attrition as a result of the need to stop post-tests due to Covid-19 was known.

We report the number of missing observations by treatment arm, for the post-test and pre-test (for pre-test we present this both for the randomised sample eligible for testing (i.e. in classes to be assessed) and based on the sample with completed post-tests). In the SAP, we specified that in the event of greater than 5% missing data at either cluster or individual level we would conduct further investigation into the mechanisms of missingness.

Pre-test scores are missing for less than 5% of pupils with completed post-tests. However, if we consider missingness amongst the sample of pupils that was to be approached for post-testing, this stands at around 10%. We progress to running a logistic regression of whether the pre-test was missing for both of these samples. Amongst our sample with post-tests, none of the included characteristics are statistically significant and thus, for our main analysis, we present the results of a complete case analysis. Amongst the randomised sample in classes selected for testing, we find that pupils who were eligible for FSM were more likely to be missing a pre-test score, as were pupils in larger schools and in schools with higher proportions of pupils with English as an Additional Language (EAL) or special educational needs (SEN). We check the sensitivity of our results to instead imputing a school-level mean for the pre-test, for including a dummy variable for missing pre-tests, and multiple imputation. Findings from these alternatives are presented in the 'Impact Evaluation' results section (although none substantively change the findings).

The significant attrition experienced from post-tests means that multiple imputation is less likely to be appropriate (Jakobsen *et al.*, 2017). We therefore, do not conduct multiple imputation for missing post-test data, but do report results from exploring associations between missing post-test data and baseline characteristics.

Subgroup analyses

We conduct separate analysis of the subgroup of pupils eligible for FSm. Pupils eligible for FSM are identified using the variable EVERFSM_6_P available from the NPD. We run analyses interacting treatment allocation with FSM status, as well as running separate models for the FSM and non-FSM subgroups. The same specification is used as for the primary analysis. The effect size for FSM pupils is presented on the basis of the subgroup model, as per the EEF statistical analysis guidance. We conduct this analysis for both the primary and secondary outcomes; all other subgroup and additional analysis is conducted for the primary outcome only.

Given existing research from similar trials has suggested differences in impact according to prior attainment (for example, York and Loeb, 2018), as specified in the trial protocol, we also conduct a separate subgroup analysis for 'high' and 'low' attaining pupils, based on the pre-test scores. These groups are defined by dividing the sample in half, based on the median score on the pre-test, which follows the approach adopted by York and Loeb (2018). Again, we report results both using interaction effects and as separate subgroups.[15] The same model specification is used as for the primary analysis.

Additional analyses and robustness checks

A number of additional analyses were conducted as described in the SAP:

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[15] The disadvantage of analysing above and below median groups as separate subgroups is that power is reduced; however, interpretation is arguably easier. Nevertheless, results from both approaches are presented.

- For a small number of pupils, post-tests were conducted remotely as a result of Covid-19 restrictions. We run an additional model for our primary outcome, including a dummy variable for whether tests were conducted remotely. We also repeat the analysis excluding pupils for whom post-tests were conducted remotely.

- We run an additional model for the primary analysis that additionally includes school by treatment interaction effects as well as school effects.

- We run a model that excludes pre-test scores and simply regresses post-test scores on treatment indicator and randomisation batch, to assess the sensitivity of results to the inclusion of the pre-test. This is of particular relevance given the fact that there are indications of floor effects in the pre-test data, even though the subscales used at pre-test are intended to be suitable for this age group based on guidance from the test provider.

- We conduct exploratory analysis examining whether there is an impact on each of the four YARC subscales administered at post-test: letter sound knowledge; early word recognition; sound isolation; and sound deletion. This follows the same model specification for the primary outcome and adjusts for the total YARC pre-test score in each case.

- We conduct a further exploratory analysis, estimating the impact of the intervention using a Bayesian approach. This was not pre-specified in the original SAP, and arose as a suggestion by the delivery team, in part in response to the smaller than anticipated sample size (this was discussed between the EEF, the delivery and evaluation teams, and is documented in the updated version of the SAP available **here**). The smaller than anticipated sample size available for analysis inevitably has implications for the ability of the originally proposed frequentist analysis to detect a statistically significant effect (more generally, there is of course wider debate around the use of p-values to judge statistical significance, see for example, the discussion in Nuzzo, 2014). Bayesian methods can be used as an alternative means of evaluating effectiveness and may, though not in all circumstances, offer benefits when working with smaller sample sizes (McNeish, 2016). The motivation behind this additional analysis was to provide exploratory evidence into the probability that the intervention had a positive effect.

  We adopt non-informative priors for the Bayesian analysis; with the aim of ensuring that the results would be in large part driven by the data, rather than on a subjective judgement regarding priors (Uwimpuhwe *et al.*, 2020). This seemed particularly relevant given the late stage of the trial in which this proposed analysis was added to the original plan. We adopted the same assumptions regarding non-informative priors as used in the analysis by Uwimpuhwe *et al.* (2020), which uses vague Gaussian priors (N(0,106) for each of the regression parameters and inverse gamma priors (IG(0.0001, 0.0001) for the variance parameters.[16] In our results, we present the effect sizes and credible intervals estimated through this approach, along with the posterior probability that the intervention has an effect size of at least 0.1. This follows the recommendation made by Uwimpuhwe *et al.* (2020) regarding a suitable threshold for assessing effectiveness of educational interventions but is also consistent with the fact that the trial was designed with the aim of establishing a MDES of 0.1, given the previous research for the United States by York and Loeb (2018), which found an impact of the programme on literacy of 0.11 SDs. For completeness, we also report the probability that the intervention has an effect size of at least zero (that is, that it has a positive effect).

Two additional analyses were noted in the SAP:

- The possibility of an additional model to include a dummy variable for any assessments conducted in January 2021 (from an extension of the post-testing period), but ultimately no assessments were conducted in this month and so this analysis is not undertaken.

- Running the model restricting to the sample for which pre-test scores are available—as discussed above, this now forms the sample for our main analysis. Results when imputing pre-test scores are also presented as robustness checks.

Estimation of effect sizes

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[16] Following Uwimpuhwe *et al.* (2020), we also use three chains for the Markov Chain Monte Carlo sampling; with 200,000 iterations for each chain, and the first half of these discarded as burn-in.

Effect sizes are calculated using Hedges' g, following the standard approach for the EEF trials as set out in the EEF statistical analysis guidance (2018). This is therefore calculated as:

$$ES = \frac{(Y_T - Y_{C)adjusted}}{s *}$$

Where $(Y_T - Y_{C)adjusted}$ is the adjusted difference in means between the treatment and control groups as recovered from the regression model, and s* is the SD, based on the pooled unconditional variance of the outcome measure for the treatment and control groups. In total, 95% confidence intervals are reported around the resulting effect, calculated by inputting the lower and upper confidence limits for the coefficient on the treatment variable from the regression model into the effect size formula.[17] Note, however, that the standardisation of the YARC measure means that this is already in units of SD for this outcome.

Estimation of ICC

This is not a cluster randomised trial; however, we do report the ICC for the post-test and pre-test, at school level. Effectively, this is at class level, as in schools with more than one Reception year class per year group, one class was randomly selected to complete testing.

Implementation and process evaluation

The overall aim of the IPE was to establish fidelity and identify the factors influencing impact and, which may explain the quantitative findings. We also looked for evidence of effectiveness and issues, which would need to be considered for a wider roll-out.

Process evaluation methods and analysis

Drawing on the EEF IPE guidance (Humphrey *et al.*, 2016) we used a multiphase design, based around a triangulation of mixed methods, to examine the research questions outlined above. To do this, we used the following methods:

- A parental online survey towards the end of the programme (parents were sent a link to the survey by text message and a small number of parents were also emailed a link to the survey, where we had addresses for them).

- Case studies of eight schools towards the end of the programme to carry out brief interviews with Reception year teachers/member of the SLT (the achieved number of schools was seven as due to Covid-19, one of the schools dropped out very late on and we were unable to secure another school due to partial school closures).

- Telephone interviews with 25 parents towards the end of the programme.

- Online survey (baseline and post-treatment) of teachers/other relevant school staff to capture change in practices in texting and parental engagement with schools.

- Telephone interviews with parents who withdrew from the intervention, to explore the reasons why.

- Review of texts and other programme materials was used to inform our production of research instruments such as surveys and interview schedules.

- We were also planning to analyse any data collected by the delivery team, such as responses to texts, but this was not possible as responses to texts were very limited.

These methods have been designed to enhance the impact evaluation by providing rich data from a wide range of sources and at different stages of the process. This lets us explore in greater detail the implementation process and

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[17] As applied, for example, in the evaluation of URLEY (Wright *et al.*, 2020).

understand the outcomes of the impact evaluation. An overview of the methods, numbers of participants, data analysis, the research questions, and aspects of the logic model they covered are summarised in Table 4.

The IES and the NIESR evaluation teams collected all IPE data (telephone and case study interviews were shared and survey data was collected by the IES alone). The data collection tools were all drafted by the two evaluation teams collaboratively and the delivery team also made some suggestions about what could be included in the parental interviews.

The parental survey was developed with an online platform (SNAP, which is always used by the IES team), which was made to be smartphone/smart device compatible so that it could be completed on whatever was easiest for parents. The survey examined how interesting and useful the parents found the texts, what they did after receiving the texts, whether the frequency, length, and time of day that they received the texts was appropriate, and any changes they would like to make. We also asked about contamination here and if the parents shared the texts with other parents in the same or different year groups.

The eight semi-structured case studies were hand selected to cover a spread of areas and school characteristics (such as school size, rural/ urban; see Table 5 for characteristics of the schools and staff involved in the case studies). Visits were not possible due to Covid-19 so these were all telephone/video calls. We conducted brief interviews with the Reception year teacher and if possible a member of the SLT team at each school, these were the same person in some schools, which is common in small schools. These interviews explored their input (if any) to the intervention and any perceived impacts on children, parental engagement with children, and parental engagement with them and the school. We also asked them if they believed there has been any contamination with parents sharing texts. Staff were also asked about any costs incurred or time taken for the intervention.

Telephone interviews with 25 parents allowed greater exploration of the perspectives of parents. To maximise response from parents we used short 20-minute semi-structured telephone interviews at a time to suit them. The interview questions built on the parental survey questions but also delved into more detail and allowed parents to talk about their experiences of the texts and activities, any barriers or facilitators, and what they found useful (or not) about the intervention, as well as any perceived outcomes on parental engagement, on children's abilities or any unintended outcomes. To ease recruitment and cover any potential incurred costs such as childcare we offered a monetary incentive of £20 for each parent. We recruited parents by including an opt-in at the end of the parental survey, which invited them to take part, asked them for their contact details and offered entry into a prize-draw worth £100. Parents from a range of different schools were then randomly sampled.

The baseline and post-treatment surveys of teachers focused on establishing an indicator of existing practices within the school for using texts with parents and the purpose of these and also any other parental engagement methodologies the school were using (therefore, establishing usual practice). Through these surveys, we explored if schools appeared to be adopting any compensating behaviours for parents who are assigned to the control group. As the intervention was not focused on teacher change, we kept questions very brief and asked about any perceived impacts. The surveys with staff established the counter-factual and enabled an assessment of programme differentiation, at the two main time points (baseline and endline) and during the intervention. The surveys were with Reception year teachers at both time points even though the children had moved to Year 1 by the end of the project, because Year 1 teachers had not been teaching the children during the majority of the intervention and had not received any details of the project.

The delivery team also informed the evaluation team about any schools or parents that decided to withdraw from the programme, so that they could be contacted by the evaluation team and asked about their reasons for doing so via **short telephone interviews with withdrawn parents**. We selected a variety of parents based on when they had withdrawn from the trial—immediately after randomisation (November 2019–December 2019), some that withdrew in the middle of the trial (January 2020–July 2020) and some from the extension period of delivery (August 2020–October 2020).

With regard to dosage, due to the nature of the intervention, namely, using text messages, the delivery team were unable to report whether a text has been read or not but could see delivery rates (these were also used for the compliance analysis described in the 'Impact Evaluation' section). However, the survey and interviews with parents enabled us to explore what they did with texts. Similarly, the work with parents also provided us with an opportunity to assess the

reach and responsiveness of the intervention as we asked them about their participation in reading the texts and engagement with the activities/tasks set by the texts.

Qualitative data analysis: Interviews and focus groups were digitally recorded with the agreement of participants and transcribed verbatim. We then analysed the data using a 'framework' approach (adapted from Ritchie and Lewis, 2003), drawing themes and messages from an analysis of interview transcripts using an Excel matrix with one interviewee per row and quotations for illustrative purposes. For the withdrawn parents' interviews, which were very short, we carried out a simpler thematic analysis of the responses. The two teams had an emerging findings meeting to discuss the interviews' main themes and their perceptions of the IPE results before beginning writing the report in summer 2021.

Table 4. IPE methods overview

Research methods	Data collection methods	Participants/ data sources	Data analysis methods	Research questions addressed	Implementation/ logic model relevance
Parental survey	Online survey	Parents (Total N=867)	SPSS (frequencies)	1, 3, 5, 10, 11, 12, 13, 14, 15, 16	Short-term outcomes, long-term outcomes, enablers
Parental interviews	Telephone interviews	Parents (N=25)	Framework	1, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16	Short-term outcomes, long-term outcomes, enablers
Teacher survey	Online survey at baseline and endpoint	Teachers (Baseline N=131 Endline N=71)	SPSS (frequencies)	2, 8, 9, 10, 11, 12, 13	Short-term outcomes, long-term outcomes, enablers
Staff case study interviews	Teacher and Senior Leadership Team interviews	Teachers/ SLT (N=11)	Framework	2, 4, 6, 7, 8, 9, 10, 11, 12, 13	Short-term outcomes, long-term outcomes, enablers
Interviews with withdrawn parents	Telephone interviews	Parents (N=15)	Thematic	1, 2, 5	Enablers

Table 5. Case study school characteristics

Case study number	ID	Job role	School type (small/large)	School type (rural/ urban)
1	School 1	Reception year teacher and Senior Leadership Team (SLT)	Large	Rural

2	School 2	Reception year teacher and SLT	Small	Urban
3	School 3	Reception year teacher (SLT was leaving and not available)	Small	Urban
4	School 4	Reception year teacher/ SLT combined role	Small	Urban
5	School 5	Reception year teacher and SLT	Large	Urban
6	School 6	Reception year teacher	Small	Urban
7	School 7	Reception year teacher and SLT	Large	Urban

One other school was booked in for case study interviews, but this was cancelled due to school disruption in January 2021.

Job roles of respondents in the practitioner surveys[18]

The majority of teachers who responded to the survey were Early Years teachers (93% at baseline and 70% at endline).[19] This drop can be explained by the fact that in the baseline survey, a number of practitioners reported that they were Early Years Lead, so this category was added to the options in the endline survey and another 29% of staff ticked this box. Following the Early Years teacher category, 29% of respondents were primary teachers at baseline (32% at endline), 14% held a specialist role, for example, Special Educational Needs and Disability (SEND) Lead, safeguarding, literacy or maths leader at baseline (9% at endline) and 6% of teachers marked 'other' at baseline (3% at endline). The free-text answers indicate teachers who chose the 'other' category at baseline held assistant headteacher or subject and curriculum lead roles. Respondents at endline indicated they also held assistant headteacher roles.

Costs

Cost information was collected from the BIT, covering costs of delivery and development. This information has been used by the evaluation team to construct an estimate of cost per pupil per year (based on a three-year time horizon, following the EEF cost evaluation guidance, 2018), and focuses on costs from the perspective of a participating school. Costs were calculated based on costs incurred in the trial, although we note where there may be potential differences were the programme to be rolled out more widely. For the purposes of producing the cost estimates, we use the pupil numbers from the trial. Costs were also provided separately in relation to expenditure associated with the extension of the project as a result of the Covid-19 pandemic.

Parents and school staff were also asked about time and costs of the programme as part of the interviews conducted as part of the IPE; we also report on these findings within the section reporting on 'Costs'.

Timeline

The original timeline from the first version of the protocol (October 2019) is given in Table 6 below, with updates made in response to Covid-19.

Table 6: Timeline

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[18] The total number of respondents at baseline was 131 and at endline was 71.
[19] Where the results sum to more than 100%, this is because they are multiple response questions.

Dates	Activity	Responsibility
October 2018–February 2019	Set-up meetings and IDEA workshop	Delivery team and evaluation team
January 2019–June 2019	Piloting and finalisation of research materials	Delivery team
February 2019–June 2019	Recruitment of schools	Delivery team with support from evaluation team
June 2019	Piloting of YARC measure	Evaluation team*
September 2019–October 2019	Recruitment of parents Business as usual survey of teachers Collection of pre-test data* (YARC assessments) Collection of schools and parents data Randomisation	Delivery team and evaluation team
November 2019–July 2020 **(Extended to October 2020)**	Approximately nine-month intervention period **(Extended to approximately 12-month intervention period)**	Delivery team
April 2020–June 2020 **(Postponed to November 2020–December 2020)**	School case studies Parent telephone interviews Collection of data from delivery team	Evaluation team
June 2020–July 2020 **(Postponed to November 2020–January 2021)**	Administration of post-test data (YARC assessments)	Evaluation team*
July 2020 **(Postponed to November 2020–February 2021)**	SDQ collection Post-intervention survey of teachers Online parental survey	Evaluation team
Autumn 2020 **(Postponed to December 2020–May 2021; EYFSP data no longer collected)**	Collection of FSM data from NPD Analysis of project and evaluation data	Evaluation team
January 2021–February 2021 **(Postponed to April 2021–June 2021)**	Report writing	Evaluation team
27th February 2021 **(Postponed to August 2021 due to NPD access delays)**	First draft of evaluation report	Evaluation team

*Carried out by independent test administrator Qa Research on behalf of the evaluation team.
EYFSP, Early Years Foundation Stage Profile; FSM, free school meals; NPD, National Pupil Database; SDQ, Strengths and Difficulties Questionnaire; YARC, York Assessment for Reading for Comprehension.

Results

Impact evaluation results

Participant flow including losses and exclusions

The trial aimed to achieve a sample of around 105 schools. As discussed above, the trial was advertised widely, and more than 500 schools were contacted directly by the BIT. It is not possible to specify exactly how many schools were approached as we cannot identify how many may have seen the trial advertised. A total of 185 schools expressed an interest, and 63 of these schools were lost due to a mix of the following reasons: located in the wrong geographic area; participating in another education trial; insufficient class size; school lost touch; deprioritised for inclusion due to below-average percentage of FSM pupils; and confusion/disagreement around approach to consent. Thus, of the 185 schools initially expressing interest, 122 signed an MOU (it was recommended that the delivery team aimed to over-recruit initially with the aim of achieving a sample of around 105 schools). Ultimately, 109 of the 122 schools provided the necessary pupil and school data, as well as participating in pre-testing, and thus, were randomised.

As randomisation is conducted within school, all 109 schools form part of both the treatment and control arms. These 109 schools comprised a total of 3,658 pupils in Reception year[20], of which 1,834 pupils were allocated to the treatment arm and 1,824 pupils to the control arm. In schools with multiple classes, only one class was selected for testing (randomly), and based on these classes only, the number of pupils stood at 1,325 in the treatment arm and 1,322 in the control arm. Thus, pupils were allocated to the intervention by randomising within classes, within school, but in schools with multiple classes, only one class was randomly selected to participate in testing. In a small number of schools at pre-test (four schools in total), the wrong class was assessed, or pupils from more than just the selected classes were assessed. In order to maximise the sample numbers, these pupils were all retained in the analysis sample and are included in the numbers presented above.

Whilst all 109 schools participated in the pre-testing, it did not prove possible to pre-test all pupils in the selected classes. This was particularly due to the short time frame within which pre-testing needed to happen, meaning that the number of mop-up visits to assess absent pupils had to be limited, but in a small number of cases was due to special needs preventing children from being able to participate, or children not wanting to participate in the assessment at the time. A total of 1,185 pupils in the treatment group and 1,204 pupils in the control group completed pre-tests. In order to maximise the potential number of post-tests and the final sample, it was decided that all pupils in selected classes would be approached to complete post-tests, regardless of whether they had completed a pre-test.

As discussed elsewhere in this report, post-testing was initially postponed from summer 2020 to begin in November 2020 instead. In January 2021, part-way through the post-testing period, the decision was taken to stop post-testing due to the lockdown and associated school disruption. This meant that ultimately post-tests were achieved in 39 schools covering a total of 791 pupils. For ten of these pupils, the assessment was partially completed, and for the main analysis we exclude these tests (although we check the sensitivity of our results to their inclusion). A total of 753 of these 781 pupils had also completed a pre-test and this forms our sample for the primary analysis.

A total of nine pupils (all in the treatment group) were withdrawn from the trial following randomisation. Some pupils had also left their schools since the point of randomisation, but it is not possible to provide figures for how many as not all schools completed the post-tests (whilst some provided information in advance on any pupils that had left the school, this was not submitted in all cases).

Figure 4 focuses on numbers achieved in terms of post-tests for our primary outcome measure. In addition, secondary outcomes were captured through the SDQ. Administration of the SDQ was conducted online and was able to continue beyond the YARC post-testing period. Ultimately, 53 schools returned completed SDQs, covering a total of 1,124 pupils, with 565 returned for pupils in the treatment group and 559 for pupils in the control group (whilst a total of 1,161
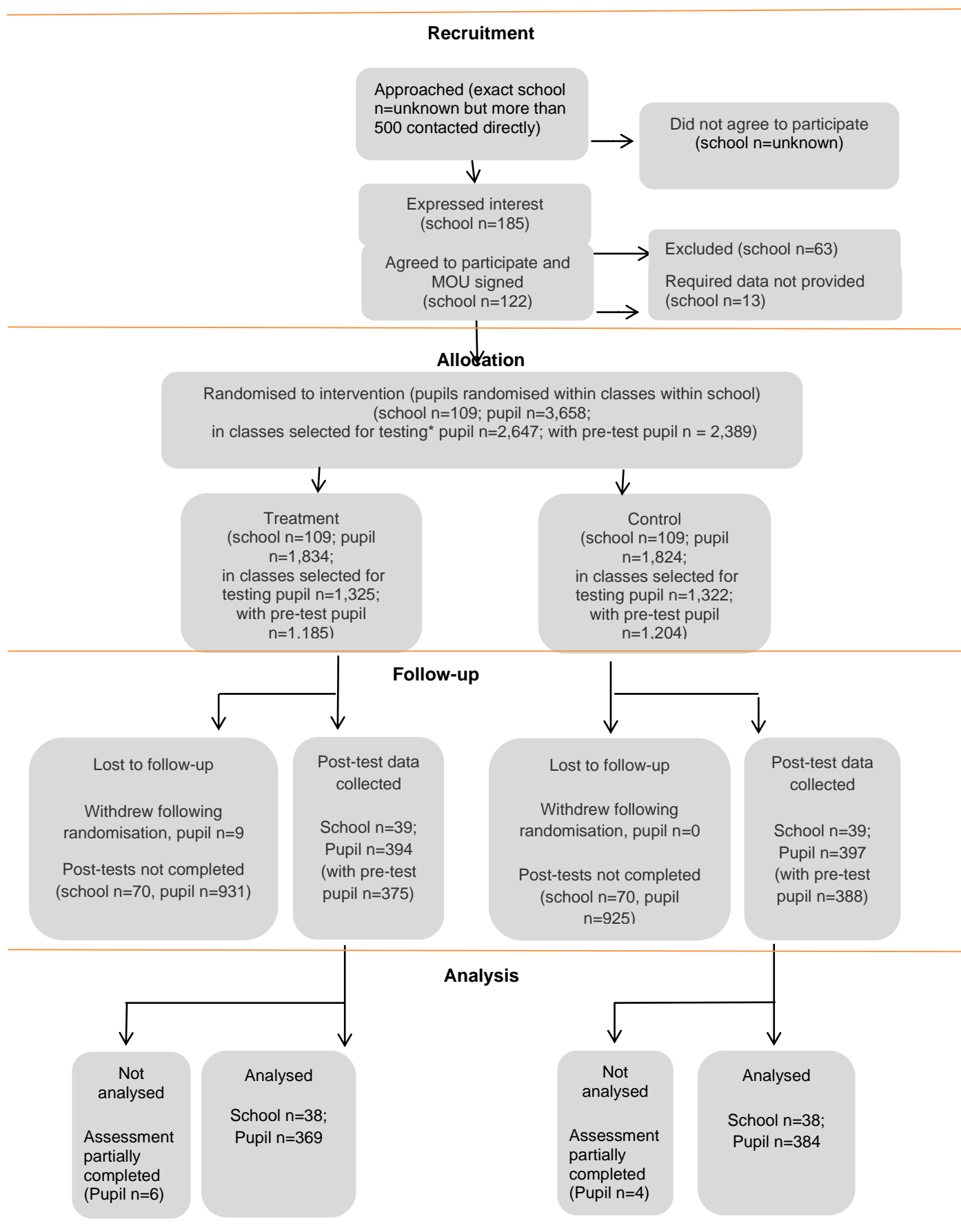
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[20] The total number of pupils in these schools would be higher; this is the number participating in the trial after exclusion of any who were withdrawn before randomisation (though the number withdrawn was typically low).

responses were received, some responses were empty or provided invalid information that did not permit linking). A total of 1,037 pupils also completed a YARC pre-test, which forms our baseline measure for the secondary analysis as well.

A match was found for all pupils in the study in the NPD data, however, for a small number of pupils (ten in total), no spring census 2020 records were available, meaning that FSM data were not available for these pupils. However, none of these pupils were within the primary analysis sample and so we have complete information on FSM eligibility for this sample.

Figure 4: Participant flow diagram

Recruitment

Approached (exact school n=unknown but more than 500 contacted directly)

Did not agree to participate (school n=unknown)

Expressed interest (school n=185)

Agreed to participate and MOU signed (school n=122)

Excluded (school n=63)

Required data not provided (school n=13)

Allocation

Randomised to intervention (pupils randomised within classes within school) (school n=109; pupil n=3,658; in classes selected for testing* pupil n=2,647; with pre-test pupil n = 2,389)

Treatment (school n=109; pupil n=1,834; in classes selected for testing pupil n=1,325; with pre-test pupil n=1.185)

Control (school n=109; pupil n=1,824; in classes selected for testing pupil n=1,322; with pre-test pupil n=1,204)

Follow-up

Lost to follow-up

Withdrew following randomisation, pupil n=9

Post-tests not completed (school n=70, pupil n=931)

Post-test data collected

School n=39; Pupil n=394 (with pre-test pupil n=375)

Lost to follow-up

Withdrew following randomisation, pupil n=0

Post-tests not completed (school n=70, pupil n=925)

Post-test data collected

School n=39; Pupil n=397 (with pre-test pupil n=388)

Analysis

Not analysed

Assessment partially completed (Pupil n=6)

Analysed

School n=38; Pupil n=369

Not analysed

Assessment partially completed (Pupil n=4)

Analysed

School n=38; Pupil n=384

*As discussed in text, in schools with multiple classes, one class was randomly selected to participate in testing.

Table 7 summarises the MDES at different stages of the trial. As discussed earlier in this report, the trial was designed with the aim of achieving an MDES of 0.10. At the point of randomisation, 109 schools formed part of the trial. Whilst the total number of participating schools was slightly higher than at protocol stage, the average number of pupils per school was slightly lower. Boosting sample sizes (for example, through bringing in other classes in schools with multiple form entry) could have been considered earlier in the testing phase. However, due to the dynamic nature of data collection and the short window for which we had to collect data, the lower-than-expected pupil sample was not discovered until near the end of the testing phase. At that point, testing further classes would have delayed the beginning of the intervention, which was not deemed feasible. Keeping all other assumptions the same as at protocol stage, the MDES remained at 0.10, and for the FSM subgroup the MDES stood at 0.15 (rather than 0.14 for this subgroup at protocol stage). This is on the basis of the sample sizes at randomisation (and assuming no attrition), and although the substantial attrition as a result of Covid-19 could not have been foreseen at the point of randomisation, scenarios of between 10 and 20% attrition still implied a relatively low MDES of around 0.11 to 0.12 (as detailed within the SAP).

By the point of analysis, the trial had experienced significant attrition as a result of Covid-19. The pre- post-test correlation was higher than assumed at protocol stage and the proportion of variance explained by the school was lower. However, the most substantive impact on the MDES came from the significantly reduced sample size, and on the basis of this much smaller sample, this resulted in an MDES of 0.18. For the FSM subgroup this stood at 0.29.

Table 7: Minimum detectable effect size at different stages

		Protocol		Randomisation		Analysis	
		Overall	FSM	Overall	FSM	Overall	FSM
MDES		0.10	0.14	0.10	0.15	0.18	0.29
Pre-test/post-test correlations	Level 1 (pupil)	0.4	0.4	0.4	0.4	0.5	0.5
	Level 2 (class)	-	-	-	-	-	-
	Level 3 (school)	-	-	-	-	-	-
Intracluster correlations (ICCs)	Level 2 (class)	-	-	-	-	-	-
	Level 3 (school)	0.10	0.10	0.10	0.10	0.06	0.00
Alpha		0.05	0.05	0.05	0.05	0.05	0.05
Power		0.8	0.8	0.8	0.8	0.8	0.8
One-sided or two-sided?		2	2	2	2	2	2
Average cluster size		26	10	24	9	20	7
Number of schools	Intervention	105	105	109	109	38	34
	Control	105	105	109	109	38	34

	Total:	105	105	109	109	38	34
	Intervention	1365	525	1325	510	369	119
Number of pupils	Control	1365	525	1322	508	384	108
	Total:	2730	1050	2647	1018	753	227

Attrition

Table 8: Pupil-level attrition from the trial (primary outcome)

		Intervention	Control	Total
Number of pupils	Randomised	1,325	1,322	2,647
	Analysed	369	384	753
Pupil attrition (from randomisation to analysis)	Number	956	938	1,894
	Percentage	72.2	71.0	71.6

The trial experienced a substantial amount of attrition as a result of Covid-19. The numbers randomised, as presented in the first row of Table 8, represent the numbers of pupils in the classes selected for testing. The numbers analysed are those that form the sample for our primary analysis, which comprises those pupils that had complete post-tests and completed the pre-test. On this basis, the numbers analysed account for just under 30% of the randomised sample, representing attrition of 71.6%, with the extent of this loss similar in both intervention and control groups. If we measure attrition on the basis of those completing at least part of the post-test, and regardless of whether the pre-test was completed or not, attrition stands at 70.1%. Whilst a small number of cases were lost due to withdrawal, and some pupils would have been lost to follow-up due to leaving the school or absenteeism, the majority of the attrition experienced is as a result of the disruption caused by the Covid-19 pandemic, which meant that the decision was taken to stop post-testing.

Pupil and school characteristics

Table 9a presents pupil and school-level characteristics for the intervention and control group at the point of randomisation. As randomisation took place within schools, the same schools form both the treatment and control group. The majority of schools in the sample (almost 80%) were rated good at their most recent Ofsted (Office for Standards in Education) inspection; whilst a further 13% were rated outstanding, and fewer than 10% were rated as requiring improvement or inadequate. Thus, compared with the national averages for state-funded primary schools, schools participating in Tips by Text were more likely to have been rated good, and less likely to have been rated outstanding or as requiring improvement or inadequate. The vast majority (around 90%) of schools were located in an urban area, which is likely to reflect the regional location of the trial, and potentially also the prioritisation of larger schools in recruitment. Just under one-third of schools in the sample were academies, whilst around two-fifths were community schools.

In terms of school composition, the average proportion of pupils eligible for FSM in this sample of schools stood at 38%; as to be expected, this was above the national average for state-funded primary schools given the focus on recruiting schools with a greater proportion of FSM pupils. The average proportion of EAL pupils stood at 15%. Average performance at Key Stage 2 appeared in line with the national average for primary schools.

For pupil-level characteristics, Table 9a reports these for both the full randomised sample, as well as for the randomised sample selected to complete pre-tests. So, for example, 50.7% of pupils in the treatment group in the full randomised sample were male, whilst this applied for 49.5% of treatment group pupils in the classes selected for pre-testing. The figures presented confirm that randomisation resulted in two balanced groups across all characteristics considered; they are also very similar whether considering both the full or pre-tested class samples. The mean YARC pre-test score was very slightly higher in the treatment group compared with the control group (0.017 compared with -0.017, respectively), equivalent to an effect size of 0.03. However, this difference is small. Histograms showing the distribution of the pre-test scores are provided in Appendix H. These indicate floor effects, which are present in both subscales used at pre-test (and appear similar across both treatment and control groups). This means the pre-test is limited in its ability to distinguish variation in baseline literacy skills and can therefore, also affect the ability of the impact evaluation to detect an effect.

Table 9a: Baseline characteristics of groups as randomised

School-level (categorical)	National-level mean	Intervention group		Control group		
		n/N (missing)	Count (%)	n/N (missing)	Count (%)	
Ofsted overall effectiveness[1]:						
Outstanding	17%	13/104 (5)	13 (12.5%)	13/104 (5)	13 (12.5%)	
Good	71%	82/104 (5)	82 (78.8%)	82/104 (5)	82 (78.8%)	
Requires improvement/ inadequate	12%	9/104 (5)	9 (8.7%)	9/104 (5)	9 (8.7%)	
School type[2]:						
Academy converter	25%	32/109 (0)	32 (29.4%)	32/109 (0)	32 (29.4%)	
Academy sponsor led	9%	4/109 (0)	4 (3.7%)	4/109 (0)	4 (3.7%)	
Community school	36%	44/109 (0)	44 (40.4%)	44/109 (0)	44 (40.4%)	
Foundation school	3%	12/109 (0)	12 (11.0%)	12/109 (0)	12 (11.0%)	
Voluntary aided/controlled	25%	17/109 (0)	17 (15.6%)	17/109 (0)	17 (15.6%)	
In urban area[3]:	72%	98/109 (0)	98 (89.9%)	98/109 (0)	98 (89.9%)	
School-level (continuous)		n/N (missing)	Mean (SD)	n/N (missing)	Mean (SD)	
Number of pupils	282	109 (0)	342.2 (301.3)	109 (0)	342.2 (301.3)	
% pupils eligible for FSM in the past six years	25%	109 (0)	38.4% (17.0)	109 (0)	38.4% (17.0)	

		n/N (missing)		n/N (missing)		
% pupils with EAL	21%	109 (0)	8.8% (15.2)	109 (0)	8.8% (15.2)	
% eligible pupils with SEN support	12.9%	109 (0)	16.0% (7.3)	109 (0)	16.0% (7.3)	
Key Stage 2: % pupils reaching expected standard in reading, writing and maths, 2019	65%	99 (10)	65.8% (13.1)	99 (10)	65.8% (13.1)	
Key Stage 2: % pupils reaching higher standard, 2019	11%	99 (10)	9.9% (6.0)	99 (10)	9.9% (6.0)	
Pupil-level (categorical)		n/N (missing)	Count (%)	n/N (missing)	Count (%)	
Male	51%	925/1825 (0)	925 (50.7%)	916/1824 (0)	916 (50.2%)	
Male (pre-tested classes only)	51%	653/1319 (0)	653 (49.5%)	674/1319 (0)	674 (51.1%)	
Eligible for FSM	18%	521/1825 (*)	521 (28.6%)	533/1824 (*)	533 (29.2%)	
Eligible for FSM (pre-tested classes only)	18%	372/1325 (*)	372 (28.1%)	382/1322 (*)	382 (28.9%)	
Pupil-level (continuous)		n/N (missing)	Mean (SD)	n/N (missing)	Mean (SD)	Effect size
Age in months at October 2019	-	1820/1825 (5)	55.6 (3.57)	1819/1824 (5)	55.5 (3.55)	-
Age in months at October 2019 (pre-tested classes only)	-	1315/1319 (4)	55.6 (3.57)	1317/1319 (2)	55.6 (3.53)	-
Pre-test scores	-	1185/1325 (140)	0.0174 (1.028)	1204/1322 (118)	-0.0171 (0.972)	0.034

Notes and sources:
1. Ofsted overall effectiveness ratings as at 31st December 2019. Requires improvement and inadequate categories are combined due to low sample sizes in the individual categories.
2. As reported in 'Schools, pupils and their characteristics: January 2020', Department for Education.
3. As reported in DfE Performance Tables, 2019.
*We do not report separately the N missing due to this number being below the SRS/NPD disclosure threshold for pupil-level data.
If missings are excluded from the base, the percentages are effectively unchanged.

Table 9b presents pupil and school-level characteristics for the intervention and control group at the point of analysis, based on the sample used for the primary analysis (that is, all with both YARC post-test and pre-test scores). Given the substantial attrition at post-test, we may have concerns that this could have introduced imbalance across treatment and control groups. However, looking at the pupil characteristics of the analysis sample, we see no signs of imbalance on our observed characteristics (all apparent differences between treatment and control groups are not statistically significant). There are some differences in the composition of the sample between randomisation and analysis, with for example, the average size of participating schools (226 pupils) at post-test smaller than observed at randomisation (342 pupils).

Again, average pre-test scores are slightly higher in the treatment than control group, equivalent to an effect size of 0.06, but this apparent difference is not statistically significant. It is worth noting the slightly higher average pre-test scores

within the analysis sample, than were observed at randomisation, and bearing this in mind when interpreting the results of the impact evaluation, as this may have implications for the generalisability of the results. Nevertheless, the floor effects seen within the full sample at randomisation are also present within the smaller analysis sample.

Table 9b: Baseline characteristics of groups as analysed

School-level (categorical)	National-level mean	Intervention group		Control group	
		n/N (missing)	Count (%)	n/N (missing)	Count (%)
Ofsted overall effectiveness[1]:					
Outstanding	17%	8/38 (0)	21.05%	8/38 (0)	21.05%
Good	71%	28/38 (0)	73.68%	28/38 (0)	73.68%
Requires improvement/ inadequate	12%	2/38 (0)	5.26%	2/38 (0)	5.26%
School type[2]:					
Academy converter	25%	10/38 (0)	26.32%	10/38 (0)	26.32%
Academy sponsor led	9%	2/38 (0)	5.26%	2/38 (0)	5.26%
Community school	36%	14/38 (0)	36.84%	14/38 (0)	36.84%
Foundation school	3%	5/38 (0)	13.16%	5/38 (0)	13.16%
Voluntary aided/controlled	25%	7/38 (0)	18.42%	7/38 (0)	18.42%
In urban area[3]:	72%	35/38 (0)	92.11%	35/38 (0)	92.11%
School-level (continuous)		n/N (missing)	Mean (SD)	n/N (missing)	Mean (SD)
Number of pupils	282	38 (0)	225.79 (114.12)	38 (0)	225.79 (114.12)
% pupils eligible for FSM in the past six years	25%	38 (0)	27.45% (13.04)	38 (0)	27.45% (13.04)
% pupils with EAL	21%	38 (0)	11.42% (15.21)	38 (0)	11.42% (15.21)
% eligible pupils with SEN support	12.9%	38 (0)	15.23% (7.60)	38 (0)	15.23% (7.60)
KS2: % pupils reaching expected standard in reading, writing	65%	32 (6)	68.78% (14.79)	32 (6)	68.78% (14.79)

and maths, 2019						
KS2% % pupils reaching higher standard, 2019	11%	32 (6)	11.03% (6.48)	32 (6)	11.03% (6.48)	
Pupil-level (categorical)		n/N (missing)	Count (%)	n/N (missing)	Count (%)	
Male	51%	184/369 (0)	184 (49.9%)	200/384 (0)	200 (52.1%)	
Eligible for FSM	18%	119/369 (0)	119 (32.3%)	108/384 (0)	108 (28.1%)	
Pupil-level (continuous)		n/N (missing)	Mean (SD)	n/N (missing)	Mean (SD)	Effect size
Age in months at October 2019	-	369 (0)	55.6 (3.59)	384 (0)	55.7 (3.63)	-
Pre-test scores	-	369 (0)	0.098 (1.058)	384 (0)	0.033 (1.015)	0.065

See Table 9a for notes and sources.

Table 9c presents absolute standardised differences between treatment and control groups for the percentage of pupils ever eligible for FSM, the percentage of male pupils and the average age of pupils. This confirms the information presented in Tables 9a and 9b above, and that whilst there is some sign of a slightly higher proportion of FSM pupils in the treatment rather than control sample in the primary analysis sample, there is no indication of any serious imbalance (the absolute standardised difference is less than ten).

Table 9c: Absolute standardised differences: ever eligible for free school meals (FSM), gender, and age

|	Treatment Mean	Control Mean	Absolute standardised difference
Ever eligible for FSM			
Ever eligible for FSM (at randomisation)	28.6	29.2	-1.486
Ever eligible for FSM (at randomisation, pre-tested classes only)	28.1	28.9	-1.816
Ever eligible for FSM (primary analysis sample)	32.2	28.1	8.981
Ever eligible for FSM (secondary analysis sample)	31.1	28.5	5.823
Gender			
% male (at randomisation)	50.7	50.2	0.931
% male (at randomisation, pre-tested classes only)	49.4	51.0	-3.098
% male (primary analysis sample)	49.9	52.1	-4.434
% male (secondary analysis sample)	51.3	53.0	-3.304
Age in months at October 2019			
Age (randomisation sample)	55.6	55.5	0.950
Age (randomisation sample, pre-tested classes only)	55.6	55.6	-1.312
Age (primary analysis sample)	55.6	55.7	-3.977
Age (secondary analysis sample)	55.8	55.7	2.985

Outcomes and analysis

Primary analysis

Table 10 summarises the results of the primary analysis. This shows a slightly higher mean YARC score in the treatment group (standing at 0.052) compared with in the control group (-0.001). Histograms of the distribution of post-test scores are presented in Figure 5 and show broadly similar distributions across trial arms. As perhaps to be expected, given the age of the children at post-test, we do not see the same indications of floor effects that were observed at pre-test.

The analysis indicates an effect size of 0.02 (calculated as Hedges g, the underlying parameters for the effect size calculation are reported in Appendix Table J.1). This is equivalent to zero months' additional progress. Given the substantial attrition from the trial and the considerable disruption resulting from the Covid-19 pandemic, considerable caution should be taken in interpreting these results. We discuss this further in the conclusions.

Table 10: Primary analysis

| | Unadjusted means | | | | Effect size | | |
| | Intervention group | | Control group | | | | |
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
YARC	369	0.052 (-0.047, 0.152)	384	-0.001 (-0.101, 0.100)	753 (369; 384)	0.02 (-0.10, 0.13)	0.74

Figure 5: Histograms of YARC composite score, by trial arm
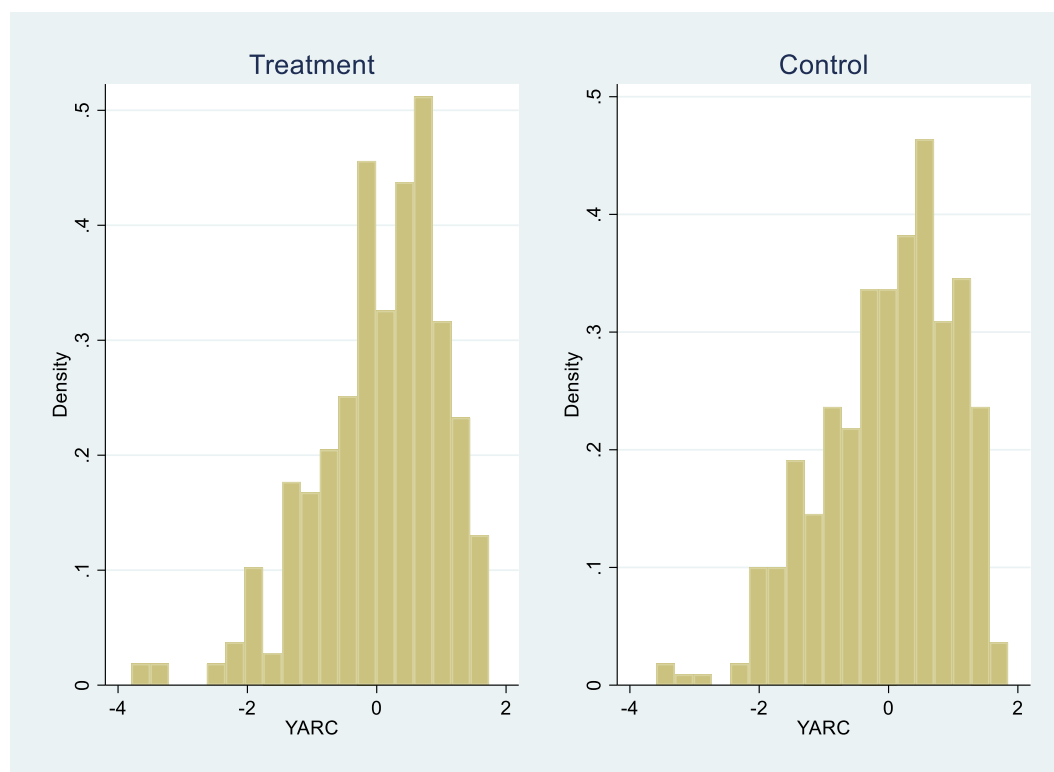
Secondary analysis

As specified in the SAP, analysis of secondary outcomes focuses on measures from the SDQ, namely the total difficulties score, internalising problems, externalising problems, and the prosocial scale. Results are presented in Table 11.

Higher scores on the total difficulties score, internalising and externalising problems indicate poorer outcomes, whilst a higher score on the prosocial scale indicates a more favourable outcome. Mean scores were slightly higher amongst the treatment group than in the control group on all four measures; however, all differences were of relatively small magnitude, as indicated by the effect sizes, with confidence intervals that span zero in all cases (see Appendix J for effect size calculations). Histograms of all four scales are provided in Appendix I.

Table 11: Secondary analysis, Strengths and Difficulties Questionnaire outcomes

| | Unadjusted means | | | | Effect size | | |
| | Intervention group | | Control group | | | | |
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
Total difficulties score	520	6.87 (6.39, 7.35)	517	6.67 (6.20, 7.14)	1037 (520; 517)	0.08 (-0.03, 0.19)	0.14
Internalising problems	520	2.51 (2.28, 2.74)	517	2.40 (2.16, 2.64)	1037 (520; 517)	0.07 (-0.05, 0.18)	0.25
Externalising problems	520	4.36 (4.00, 4.71)	517	4.27 (3.93, 4.61)	1037 (520; 517)	0.07 (-0.05, 0.18)	0.24
Prosocial scale	520	7.42 (7.20, 7.64)	517	7.36 (7.14, 7.58)	1037 (520; 517)	-0.02 (-0.12, 0.09)	0.77

CI, confidence interval.

Analysis in the presence of non-compliance

Our measure of compliance is based on information provided by the delivery team on the delivery of text messages.

Delivery records were available for all parents (and thus pupils) in the treatment group. These provided information on the total number of messages sent, the number successfully delivered, and the number, which failed. Information was also provided on the number of delivered messages that had been re-sent. Eight records were flagged for potential issues by the delivery team; these were cases where there were two numbers uploaded for the same parents either at the start or during the course of the trial, which resulted in some duplication of messages. Typically, only two–three messages were affected; we retain information for all these cases, and in these cases take the record with the highest number of messages sent (we do not sum as these would have been duplicate messages).

The full programme comprised a total of 165 messages. Table 12 summarises the number of delivered messages.[21] This shows that 73% of parents received 165 messages or more (and thus, could be considered to have received the full programme). A further 8% received at least 150 messages (almost the full programme) and a further 10% received between 100 and 149 messages. Just 2% of parents had fewer than ten messages delivered.

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[21] This is based on all parents and pupils who remained part of the evaluation, even if they withdrew from receiving messages; it excludes those parents where the pupil/parent was withdrawn from the trial entirely (applying for nine pupils, as noted in the participant flow section earlier in this report).

Table 12: Number of messages delivered

Number of messages delivered	Number of parents	Percentage of parents
Fewer than 10	34	2
10–49	68	4
50-99	66	4
100–149	185	10
150–164	144	8
165 or more	1,328	73
Total	1,825	100

Note: percentages may not sum to 100 due to rounding. Some parents received more than 165 messages, the maximum number of messages delivered was 170.

Our measure of compliance, as described in the SAP, takes a value between 0 and 1, set proportionately according to the number of messages received as a proportion of total possible messages (thus, a value of 1 represents a parent who received all possible messages, and a value of 0.5 would represent a parent who received half of all messages). The average value of this variable is 0.91, representing that on average, parents received 91% of all possible messages.

We use this compliance variable in conducting a CACE analysis, as described earlier in this report, for the primary outcome only. The estimated effect size remains at 0.02 (p-value = 0.73) (see Appendix K for the regression results). Given the high levels of compliance observed, it is not surprising that we see no substantive change to the main results.

In interpreting these results, it is important to acknowledge that this is not an ideal measure of compliance—just because a message was successfully delivered, does not mean that the message was read, and further, it does not mean that the activities were necessarily implemented by parents. However, findings from the IPE suggest that the majority of parents were using the messages to a varying extent (see details in the 'IPE' chapter).

The information on delivery rates does indicate that relatively few parents withdrew from receiving the messages. It is not possible to completely distinguish between parents actively withdrawing from receiving messages, and messages stopping due to numbers becoming out of date. However, frequent attempts were made by the delivery team to source updated numbers, with around 330 numbers updated over the course of the trial (approximately equivalent to around 18% of participating parents).

Finally, it should also be noted that this analysis is based on the extended delivery period, and it is worth bearing in mind that the programme already ran for longer than originally expected. It is possible therefore, that these figures may under-estimate 'compliance', although even in the context of the extended delivery time frame, compliance levels were high.

Missing data analysis

The SAP set out an approach for exploring missingness in post-test and pre-test data, stating that in the event of greater than 5% of data being missing, we would undertake further exploration. In practice, the extent of missing data at post-test was far greater than originally envisaged, given the need to stop post-tests as a result of Covid-19. As noted earlier in this report, this meant only around 30% of the intended sample completed post-tests for the primary outcome.

Table 13a summarises the availability of post-test and pre-test data for both our YARC and SDQ outcome measures, at pupil level.

Table 13a: Distribution of missingness, by trial arm, pupil level

	Intervention	Control	All
Full randomised sample	1,325	1,322	2,647
YARC post-test and pre-test score available*	369	384	753
Missing either YARC post/pre-test score	956	938	1,894
YARC pre-test score available	1,185	1,204	2,389
Missing pre-test score	140	118	258
YARC post-test score available	388	393	781

Missing post-test score	937	929	1,866
SDQ post-test and YARC pre-test available*	520	517	1,037
Missing SDQ or YARC pre-test	805	805	1,610
SDQ post-test score available	565	559	1,124
Missing SDQ score	760	763	1,523

*Indicates samples used in main analyses, note that YARC is used as the pre-test for both the YARC and SDQ post-test outcomes.

SDQ, Strengths and Difficulties Questionnaire; YARC, York Assessment of Reading for Comprehension.

Table 13b shows missingness at school level. Of the 109 schools in the sample at randomisation, 38 had post-test data (around 35% of schools)—this number is unaffected by whether we count those that additionally had pre-tests or not. All 109 schools had pre-test data and thus, no schools are missing on this basis. In terms of SDQ outcomes, 53 of the 109 schools had at least some pupils for whom an SDQ outcome was available (thus, this was the case for almost half of schools, at 49%). Thus, where pre-test data is missing, this does not affect the number of schools included within the analysis, only the number of pupils.

Table 13b: Distribution of missingness, by trial arm, school level

	Intervention	Control	All
Full randomised sample	109	109	109
YARC post-test score available	38	38	38
Missing YARC score	71	71	71
SDQ post-test score available	53	52	53
Missing SDQ score	56	57	56

SDQ, Strengths and Difficulties Questionnaire; YARC, York Assessment of Reading for Comprehension.

With such substantial attrition, multiple imputation of post-test scores is unlikely to be appropriate. Nevertheless, it is still relevant to consider whether there are associations between missingness in post-test scores and characteristics observed in the data. In Table 14a we report the results of running a logistic regression, where the dependent variable is a binary indicator for missing post-test data. We regress this indicator of missingness on pupil age, gender, FSM status, pre-test score where available, and treatment arm. There was no statistically significant association between treatment arm and a missing YARC post-test score.

Pupils who were missing a pre-test were more likely to be missing a post-test. There was no statistically significant association between missing post-test data and gender, age, or FSM status. If we repeat the same analysis for the SDQ scores, again there is no statistically significant association between treatment arm and a missing SDQ score. There was no significant association between having a YARC pre-test score and having an SDQ score; whilst those missing the YARC pre-test were also more likely to be missing an SDQ score, this was only statistically significant at the 10% level. No statistically significant associations were evident for age or FSM status, but female pupils were more likely to be missing an SDQ score. If we repeat this analysis, with our indicator of missingness instead based on the samples that are used in the main analyses[22] (columns 3 and 4), the substantive results are unchanged (although the relationship observed for female pupils for SDQ is no longer statistically significant at the 5% level.

Table 14a: Analysis of missing post-test data, primary and secondary outcome, regression results, pupil characteristics

	YARC	SDQ	YARC (analysis sample)	SDQ (analysis sample)
Female	0.049 (0.054)	0.093* (0.044)	0.034 (0.055)	0.082 (0.047)
Age (months)	-0.002 (0.007)	-0.010 (0.006)	-0.003 (0.006)	-0.009 (0.007)
FSM	-0.124 (0.099)	-0.117 (0.096)	-0.087 (0.098)	-0.070 (0.092)

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[22] That is, counting an individual as missing if they do not have a pre-test or post-test.

YARC pre-test score	-0.065 (0.044)	-0.023 (0.042)	-0.063 (0.045)	-0.020 (0.044)
Missing YARC pre-test	0.763** (0.200)	0.260 (0.139)	-	-
Treatment	0.002 (0.023)	-0.015 (0.023)	0.037 (0.025)	-0.005 (0.027)
N	2,647	2,647	2,647	2,647

*significant at 0.05, **significant at 0.01

Standard errors in parentheses, clustered at school level. For both YARC and the SDQ, the table presents the results of regressing an indicator of whether post-test data is missing on gender, pupil age, eligibility for free school meals (FSM), YARC pre-test score and treatment arm.

SDQ, Strengths and Difficulties Questionnaire; YARC, York Assessment of Reading for Comprehension.

In Table 14b, we extend the analysis of missingness to additionally explore whether missingness is related to observable school characteristics. We expand the model above so that it not only includes pupil characteristics, but also school characteristics, with standard errors clustered at school level. The first two columns relate to the full post-test samples; the second two columns count as missing those individuals not observed at post-test or pre-test. As before, treatment arm is not related to missingness of post-test data in any of the specifications. Amongst the included school characteristics, the only statistically significant association we observe is that schools rated outstanding by Ofsted were less likely to be missing post-test YARC data. If we look at those included in our primary analysis sample (column 3), schools with higher percentages of SEN pupils were more likely to be missing from the sample.

Our SAP stated that in the event that we observed a significant association, we would conduct an additional analysis including significant covariates in our primary analysis model (reported in 'Additional Analysis' section below). This makes no substantive difference to the main results.

Table 14b: Analysis of missing post-test data, primary and secondary outcome, regression results, pupil and school characteristics

	YARC	SDQ	YARC (analysis sample)	SDQ (analysis sample)
Female	0.045	0.094*	0.024	0.082
	(0.050)	(0.042)	(0.053)	(0.046)
Age (months)	-0.005	-0.011	-0.006	-0.010
	(0.007)	(0.007)	(0.007)	(0.007)
FSM	-0.036	-0.023	0.004	0.026
	(0.071)	(0.071)	(0.068)	(0.070)
YARC pre-test score	-0.075	-0.061	-0.069	-0.050
	(0.054)	(0.040)	(0.055)	(0.042)
Missing pre-test score	0.810***	0.321*		
	(0.221)	(0.147)		
School size (number of pupils)	0.003	-0.000	0.003	0.000
	(0.002)	(0.000)	(0.002)	(0.000)
% pupils with EAL	-0.017	-0.008	-0.015	-0.006
	(0.010)	(0.007)	(0.010)	(0.006)
% pupils FSM	-0.012	-0.014	-0.013	-0.014
	(0.008)	(0.008)	(0.008)	(0.008)
% SEN pupils	0.031	0.011	0.037*	0.015
	(0.019)	(0.019)	(0.018)	(0.018)
Urban location	-0.148	-0.351	-0.118	-0.332
	(0.488)	(0.445)	(0.484)	(0.432)
School type (reference category: community school)				

Academy	-0.291	0.338	-0.312	0.275
	(0.300)	(0.306)	(0.292)	(0.293)
Foundation school	-0.091	0.749	-0.175	0.642
	(0.418)	(0.430)	(0.408)	(0.401)
Voluntary aided/controlled	-0.358	-0.130	-0.405	-0.116
	(0.347)	(0.368)	(0.335)	(0.339)
Ofsted (reference category: good)				
Rated outstanding	-0.718*	-0.220	-0.680*	-0.191
	(0.285)	(0.347)	(0.274)	(0.328)
Rated below good/missing	0.487	-0.087	0.388	-0.107
	(0.415)	(0.400)	(0.412)	(0.377)
Treatment	-0.005	-0.016	0.038	-0.006
	(0.026)	(0.023)	(0.028)	(0.027)
N	2647	2647	2647	2647

*significant at 0.05, **significant at 0.01
School-level clustered standard errors in parentheses.

We also estimated school level models in order to further explore characteristics of schools that were missing from the post-test sample (Table 15). This shows the same broad picture seen above; no statistically significant associations were observed with SDQ completion. For YARC, again we see that schools rated outstanding by Ofsted were less likely to be missing at post-test. Here we also observe a statistically significant association with school size, with larger schools more likely to be missing post-test data.

Table 15: Analysis of missing post-test data, school level, regression results

	YARC	SDQ
School size	0.003*	-0.000
	(0.001)	(0.001)
% pupils EAL	-0.017	-0.008
	(0.011)	(0.009)
% pupils FSM	-0.014	-0.012
	(0.009)	(0.009)
% SEN pupils	0.037	0.019
	(0.021)	(0.020)
Urban location	-0.292	-0.587
	(0.434)	(0.439)
School type (reference category: community school)		
Academy	-0.181	0.319
	(0.338)	(0.322)
Foundation	-0.080	0.658
	(0.472)	(0.466)
Voluntary aided/controlled	-0.146	-0.011
	(0.406)	(0.373)
Ofsted (reference category: good)		
Rated outstanding	-0.874*	-0.236
	(0.416)	(0.397)
Rated below good/missing	0.510	-0.199

	(0.572)	(0.454)
N	109	109

*significant at 0.05, **significant at 0.01

We also explore missingness in pre-test data. Around 10% of the randomised sample were missing pre-test data, but within the sample that completed YARC at post-test, 4% were missing pre-test data. Again, we regress an indicator of missing pre-test score on pupil characteristics (Table 16a).

In the post-test sample, pupils allocated to the intervention group were more likely to be missing a pre-test score than those in the control group; this is not the case in the full randomised sample eligible for testing (although this would have been just significant at the 10% level). In the sample with post-tests, there is no statistically significant association between being missing on the pre-test and the observed pupil characteristics. If we consider the sample eligible for testing at the point of randomisation, pupils eligible for FSM, were more likely to be missing a pre-test score.

Table 16a: Analysis of missing pre-test data, YARC primary analysis sample and sample assessed at pre-test, regression results, pupil characteristics

	YARC (post-test sample)	YARC (assessed class sample)
Female	-0.112	-0.043
	(0.142)	(0.063)
Age (months)	0.017	-0.002
	(0.021)	(0.010)
Free school meals (FSM)	0.155	0.175*
	(0.196)	(0.074)
Missing FSM	-	1.685*
		(0.713)
Treatment	0.345*	0.094
	(0.150)	(0.056)
N	781	2,647

*significant at 0.05, **significant at 0.01, ***significant at 0.001
School-level clustered standard errors in parentheses.
Yarc, York Assessment of Reading for Comprehension.

The models presented in Table 16b additionally control for school characteristics. Amongst the primary analysis sample, few statistically significant associations are observed (although this may reflect the smaller sample size). Amongst the full sample eligible for testing at the point of randomisation, YARC pre-test scores were more likely to be missing in larger schools, and where schools had a higher proportion of pupils with EAL and higher proportions of SEN pupils.

Table 16b: Analysis of missing pre-test data, YARC primary analysis sample and sample assessed at pre-test, regression results, pupil and school characteristics

	YARC (post-test sample)	YARC (assessed class sample)
Female	-0.158	-0.045
	(0.169)	(0.064)
Age (months)	0.013	-0.001
	(0.023)	(0.010)
Free school meals (FSM)	0.089	0.182*
	(0.180)	(0.072)
Missing FSM	-	1.839**
	-	(0.658)
School size	-0.001	0.001**
	(0.001)	(0.000)

% pupils EAL	-0.006	0.007**
	(0.007)	(0.003)
% pupils FSM	-0.008	-0.003
	(0.011)	(0.004)
% SEN pupils	0.061*	0.021**
	(0.024)	(0.008)
Urban location	0.483	0.080
	(0.332)	(0.159)
School type (reference category: community school)		
Academy	-0.039	-0.362**
	(0.261)	(0.125)
Foundation	-0.896	-0.172
	(0.535)	(0.180)
Voluntary aided/controlled	-0.510	-0.046
	(0.371)	(0.177)
Ofsted (reference category: good)		
Rated outstanding	-0.090	0.250
	(0.274)	(0.217)
Rated below good/missing	-	-0.326
	-	(0.197)
T	0.318*	0.097
	(0.160)	(0.059)
N	781	2647

*significant at 0.05, **significant at 0.01
School-level clustered standard errors in parentheses.

Subgroup analyses

Table 17 presents the results of running the analysis for the subgroup of pupils eligible for FSM (and for completeness, Table 18 below shows the results for the subgroup of pupils not eligible for FSM). For pupils eligible for FSM, the effect size on the primary outcome stands at 0.09, higher than observed for the full sample, although the confidence interval is wide and crosses zero. This may provide some very tentative evidence of greater effects for FSM pupils, but given the small sample and significant attrition, this should be treated with considerable caution. For secondary outcomes, effect sizes are all very close to zero (again, with wide confidence intervals).

Table 17: Primary and secondary outcomes, pupils eligible for FSM

	Unadjusted means				Effect size		
	Intervention group		Control group				
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
YARC	119	-0.174 (-0.368, 0.020)	108	-0.353 (-0.544, -0.163)	227 (119; 108)	0.09 (-0.16, 0.33)	0.49

Total difficulties score	162	7.25 (6.40, 8.11)	147	7.61 (6.68, 8.53)	309 (162, 147)	-0.01 (-0.23, 0.22)	0.95
Internalising problems	162	2.76 (2.32, 3.20)	147	2.93 (2.43, 3.42)	309 (162, 147)	-0.02 (-0.25, 0.21)	0.87
Externalising problems	162	4.49 (3.87, 5.12)	147	4.68 (4.03, 5.33)	309 (162, 147)	0.00 (-0.23, 0.24)	0.97
Prosocial scale	162	7.26 (6.86, 7.65)	147	7.29 (6.84, 7.75)	309 (162, 147)	-0.01 (-0.22, 0.20)	0.96

Estimates for pupils not eligible for FSM are more in line with those observed for all pupils, unsurprisingly given they would contribute the majority of the sample. Effect sizes for socio-emotional development outcomes are larger (though still relatively small) amongst pupils not eligible for FSM compared with those eligible for FSM. Higher scores here mean poorer outcomes and point to any negative impacts being concentrated amongst those not eligible for FSM. However, again caution is required in interpreting these results given the smaller than intended sample and the context of Covid-19.

Table 18: Primary and secondary outcomes, pupils not eligible for FSM

	Unadjusted means				Effect size		
	Intervention group		Control group				
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
YARC	250	0.160 (0.047, 0.273)	276	0.137 (0.023, 0.252)	526 (250; 276)	0.03 (-0.11, 0.16)	0.71
Total difficulties score	358	6.70 (6.11, 7.28)	369	6.29 (5.74, 6.83)	727 (358; 369)	0.11 (-0.03, 0.24)	0.12
Internalising problems	358	2.40 (2.13, 2.67)	369	2.18 (1.91, 2.45)	727 (358; 369)	0.08 (-0.06, 0.22)	0.24
Externalising problems	358	4.29 (3.85, 4.73)	369	4.11 (3.71, 4.51)	727 (358; 369)	0.09 (-0.05, 0.23)	0.20
Prosocial scale	358	7.50 (7.24, 7.75)	369	7.41 (7.16, 7.66)	727 (358; 369)	-0.01 (-0.14, 0.12)	0.92

As specified in the SAP we also run models that include an interaction between treatment and eligibility for FSM; results are presented in Table 19 below. For the YARC, total difficulties score and internalising problems score, outcomes are less favourable for pupils eligible for FSM. However, across all outcomes, the interaction between treatment and eligibility for FSM is never statistically significant.

Table 19: Regression results, interacting treatment and FSM status, primary and secondary outcomes

	YARC	Total difficulties	Internalising	Externalising	Prosocial
Treatment	0.018 (0.069)	0.613 (0.375)	0.236 (0.189)	0.377 (0.283)	-0.0446 (0.166)
Eligible for FSM	-0.216* (0.095)	1.174* (0.511)	0.675** (0.259)	0.499 (0.387)	-0.133 (0.227)
Treatment*Eligible for FSM	0.030 (0.130)	-0.648 (0.698)	-0.263 (0.353)	-0.385 (0.528)	-0.00421 (0.310)
N	753	1,036	1,036	1,036	1,036

Note: Each column shows selected coefficients from a regression of the outcome on treatment arm, eligibility for FSM, treatment*eligibility for FSM, YARC pre-test score, indicator for randomisation batch and school fixed effects. Standard errors in parentheses. Statistical significance is indicated as *significant at 0.05, **significant at 0.01.

Given existing research has suggested differences in impact according to prior attainment (for example, York and Loeb, 2018), as specified in the trial protocol, we also conduct a separate subgroup analysis for 'high' and 'low' attaining pupils, based on the pre-test assessments. We define these groups by dividing the sample in half, based on the median score on the pre-test, which follows the approach adopted by York and Loeb (2018). In both cases, the effect size is also small, although positive in the below median group and negative in the above median group. However, there is no strong evidence of a difference in impact across the two subgroups (Table 20), and when including an interaction term between treatment and being below median at pre-test, this is not statistically significant (Table 21).

Table 20: Subgroup analysis, above/below median at pre-test, primary outcome

	Unadjusted means				Effect size		
	Intervention group		Control group				
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
YARC (below baseline median)	174	-0.37 (-0.52, -0.22)	185	-0.48 (-0.63, -0.33)	359 (174, 185)	0.04 (-0.15, 0.23)	0.71
YARC (above baseline median)	195	0.43 (0.32, 0.54)	199	0.44 (0.34, 0.55)	394 (195; 199)	-0.05 (-0.22, 0.11)	0.52

Table 21: Regression results, interacting treatment and above/below median on pre-test, primary outcome

	YARC
Treatment	-0.029 (0.081)
Below median at pre-test	-0.181 (0.109)
Treatment*below median at pre-test	0.106 (0.118)
N	753

Note: Each column shows selected coefficients from a regression of the outcome on treatment arm, being below median on the pre-test, treatment*below pre-test median, YARC pre-test score, indicator for randomisation batch and school fixed effects. Standard errors in parentheses. Statistical significance is indicated as *significant at 0.05, **significant at 0.01

Additional analyses and robustness checks

A number of additional analyses were specified in the SAP, to be conducted for the primary outcome measure only. The first row in Table 22 reports the results of excluding the pre-test scores from the regression model but using the same sample as for the primary analysis. This shows an increased effect size of 0.06 compared with 0.02 for the primary analysis (equivalent to the difference between one month's additional progress and none); confidence intervals remain wide and span zero. If we run this analysis on the full sample for which we have complete post-tests (second row), the effect size is very similar at 0.05. Whilst this may provide some indication that the results of the main analysis have been affected by the floor effects observed at pre-test, the wide confidence intervals observed and significant attrition mean that we should be cautious not to over-interpret these results.

In the third row, we add in eligibility for FSM as an additional covariate, given we observed an association between being eligible for FSM and missing pre-test score in our missing data analysis noted above; this makes no substantive difference to the primary analysis results.[23] We explore three alternative scenarios around multiple imputation for missing pre-test scores (rows 4–6), but the effect size remains the same as reported in the primary analysis. The final two rows show the results when using a dummy to capture missing pre-tests and imputing the school-level mean where the pre-test is missing; neither substantively changes the main results.

Table 22: Additional analysis, YARC composite measure

	Unadjusted means				Effect size		
	Intervention group		Control group				
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
YARC, no pre-test, primary analysis sample	369 (0)	0.052 (-0.047, 0.152)	384	-0.001 (-0.101, 0.100)	753 (369; 384)	0.06 (-0.08, 0.20)	0.37
YARC, no pre-test, full sample	388	0.020 (-0.078, 0.119)	393	-0.020 (-0.121, 0.080)	781 (388; 393)	0.05 (-0.08, 0.19)	0.43
YARC, including FSM as additional covariate	369	0.052 (-0.047, 0.152)	384	-0.001 (-0.101, 0.099)	753 (369, 384)	0.03 (-0.09, 0.14)	0.64
YARC, missing pre-test scores imputed using MI (FSM)	388	0.020 (-0.078, 0.119)	393	-0.020 (-0.121, 0.080)	781 (388; 393)	0.02 (-0.09, 0.14)	0.69
YARC, missing pre-test scores imputed	388	0.020 (-0.078, 0.119)	393	-0.020 (-0.121, 0.080)	781 (388; 393)	0.02 (-0.09, 0.14)	0.69

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[23] We observed some statistically significant associations between some school characteristics and missing post-test scores. As our models include school fixed effects, we cannot additionally control for these specific school characteristics. If we omit school fixed effects and instead control for the specific school variables on which we saw associations (Ofsted, SEN, school size), this has no substantive effect on the results, with the effect size remaining unchanged at 0.02 (and still not statistically significant).

using MI (FSM, female, age)						
YARC, missing pre-test scores imputed using MI (FSM, female, age, plus school chars*)	388	0.020 (-0.078, 0.119)	393	-0.020 (-0.121, 0.080)	781 (388; 393)	0.02 (-0.09, 0.14)	0.69
YARC, with dummy for missing pre-test	388	0.020 (-0.078, 0.119)	393	-0.020 (-0.121, 0.080)	781 (388; 393)	0.03 (-0.08, 0.15)	0.58
YARC, imputing school-level mean for missing pre-test	388	0.020 (-0.078, 0.119)	393	-0.020 (-0.121, 0.080)	781 (388; 393)	0.02 (-0.10, 0.13)	0.74

*School characteristics are school size, EAL pupils, SEN pupils, Ofsted, and school type. If we additionally include an urban-rural indicator and per cent FSM pupils, the results are substantively unchanged; the effect size remains at 0.02 (p-value=0.71).

Table 23 reports the results of analysing each of the YARC subscales separately (in each case, using the same pre-test measure as for the primary analysis). Again, across all subscales, the magnitude of effects are consistently small. The greatest effect size (although still not large) is seen for letter sound knowledge, with an effect size of 0.07. We present histograms for each subscale in Appendix I. These show similar distributions across treatment and control groups, although it is worth noting that for letter sound knowledge, there are some indications of ceiling effects.

Table 23: Additional analysis, YARC subscales

	Unadjusted means				Effect size		
	Intervention group		Control group				
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
Letter sound knowledge	369 (0)	0.071 (-0.023, 0.164)	384 (0)	-0.006 (-0.100, 0.088)	753 (369; 384)	0.07 (-0.06, 0.20)	0.28
Early word recognition	369 (0)	0.022 (-0.075, 0.119)	384 (0)	-0.001 (-0.103, 0.101)	753 (369; 384)	-0.01 (-0.13, 0.11)	0.84
Sound isolation	369 (0)	0.028 (-0.072, 0.128)	384 (0)	0.014 (-0.087, 0.115)	753 (369; 384)	-0.01 (-0.13, 0.11)	0.90
Sound deletion	369 (0)	0.051 (-0.051, 0.153)	384 (0)	-0.008 (-0.107, 0.091)	753 (369; 384)	0.02 (-0.10, 0.14)	0.78

The SAP also stated that in the event of some tests being conducted remotely, an additional analysis would be conducted to include a dummy variable to identify remote tests. In the end, only three schools completed post-assessments remotely. As all children in these three schools completed the tests remotely, and as we include school fixed effects in

our models already, the inclusion of a dummy to indicate remote testing has no effect on the results (if we run a regression without school fixed effects, but including the remote dummy, there is no statistically significant relationship between remote testing and the YARC outcome). If we exclude those schools where post-tests were conducted remotely, there remains no impact of the programme on the primary outcome (Table 24).

Table 24: Additional analysis, excluding schools where remote testing was conducted

	Unadjusted means				Effect size		
	Intervention group		Control group				
Outcome	n (missing)	Mean (95% CI)	n (missing)	Mean (95% CI)	Total n (intervention; control)	Hedges g (95% CI)	p-value
YARC, excluding remote testing schools	348	0.060 (-0.04, 0.16)	362	0.019 (-0.08, 0.12)	710 (348; 362)	-0.000 (-0.117, 0.117)	1.00

The SAP also stated that if post-testing extended into January 2021 we would explore any differences between those assessments conducted earlier and those conducted later, but in the end no testing was conducted after December 2020.

The EEF guidance for multi-site efficacy trials is to use school fixed effects, as adopted in all analysis presented so far. As a robustness check, we additionally ran a model including school by treatment interactions. These interaction terms were not statistically significant, and thus did not suggest the presence of differences in effectiveness of treatment by site. This analysis may however, be limited by the smaller than anticipated sample size.

Finally, we present in Table 25 the results of an exploratory analysis using a Bayesian approach. The first panel of Table 25 repeats the results from our frequentist analysis presented above, for both primary and secondary outcomes, for ease of reference. The second panel presents the Bayesian estimates, along with the 95% credibility intervals. For the primary outcome, the YARC, we see that the effect size remains the same under the Bayesian approach, with a probability of 0.95 that this lies between -0.09 and 0.13.[24] Overall, for both the primary and secondary outcomes, we see that estimates from the Bayesian models are very similar to those obtained in the frequentist analysis, both in terms of the effect sizes, as well as when comparing the estimated confidence intervals under the frequentist approach with the Bayesian credible intervals.[25]

The final two columns of the table present the posterior probabilities, with the first of these columns showing the probability of the intervention having a positive effect, and the second column showing the probability that the effect size was greater than 0.1. Thus, for the primary outcome, there is a posterior probability of 0.63 that the intervention had a positive effect, and a posterior probability of 0.08 that there was a positive effect of greater than 0.1 SDs. Recall that for the total difficulties score, internalising problems and externalising problems, a 'positive' effect means a less favourable outcome; the reverse applies for the prosocial scale.

Whilst the Bayesian results provide a further perspective on the likely impact of the intervention, the same concerns regarding the significant attrition still apply, and thus these results should also be interpreted with caution.

Table 25: Additional analysis: comparison of effect sizes, frequentist and Bayesian methods, plus posterior probability estimates

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[24] Diagnostics for the primary outcome model are presented in Appendix M.
[25] Uwimpuhwe *et al.* (2020) also find this to be the case in their re-analysis of a sample of EEF projects.

	Total n (intervention; control)	Frequentist			Bayesian				
		Effect size	95% LB	95% UB	Effect size	95% LB	95% UB	P(ES>0.0)	P(ES>0.1)
YARC	753 (369; 384)	0.02	-0.10	0.13	0.02	-0.09	0.13	0.63	0.08
Total difficulties score	1037 (520; 517)	0.08	-0.03	0.19	0.08	-0.03	0.19	0.93	0.37
Internalising problems	1037 (520; 517)	0.07	-0.05	0.18	0.06	-0.05	0.18	0.87	0.27
Externalising problems	1037 (520; 517)	0.07	-0.05	0.18	0.07	-0.05	0.18	0.88	0.28
Prosocial scale	1037 (520; 517)	-0.02	-0.12	0.09	-0.02	-0.12	0.09	0.38	0.02

IPE results

This section describes the findings of the IPE around fidelity, implementation, and outcomes.

Fidelity

This section describes to what extent the Tips by Text intervention was delivered as intended (fidelity); and whether the intervention model was acceptable and feasible for parents and schools (feasibility). The section also explores whether the intervention can be rolled out on a larger scale, and whether anything needs to be adapted to achieve this.

RQ1 Is the intervention acceptable and useful for parents?

The intervention was broadly delivered as intended. Parents reported they received texts three times per week, as outlined in the intervention logic model. The parents survey showed that 96% of respondents (691 parents) confirmed they received three texts per week. Only 2% (17 parents) said they did not receive three texts per week, and another 2% (15 parents) said they 'didn't know'. This is very similar to the compliance analysis of the actual delivery rates found in the Impact chapter.

As already described, the intervention was extended by three months due to the Covid-19 pandemic and school closures, which delayed testing of impact. However, as described in other sections, the continuation did not alter the fundamental design of the intervention, as parents continued to receive texts three times per week until the end of the intervention. In total, this meant parents received three messages a week for 12 months, as opposed to the nine months originally planned for. The additional texts were designed by the same people with the same 'FACT, TIP, and GROWTH' format. The impact of school disruption and home-schooling is discussed further in the 'Introduction' and 'Conclusion' sections.

The last activity highlighted in the intervention design (from the logic model) was that the delivery team would send responses to parents, if required. According to information from the delivery team, this primarily involved following up with schools on updating parents telephone numbers, discontinuing text messages when schools updated that it was no longer appropriate to send messages to those parents, and raising safeguarding concerns with schools if the delivery team received worrying responses to text messages.

The intervention was also seen as feasible and acceptable by parents. In the parent survey, 83% of respondents (599 parents) said the amount of texts was right for them. Only one in six (112 parents) said they would have preferred fewer texts, whilst less than 1% (three parents) said they would have preferred to receive more texts. In a separate question, parents were asked what they would change about the delivery of the texts. Of the 97 parents (14%) who said they would change something, 70% (68 parents) said they would change the number of texts, almost all of these said they would prefer the texts either once or twice a week (both 47%).

These findings were confirmed and elaborated by parents in the interviews. Most parents said three per week was an appropriate amount of texts, though some of those parents emphasised that it was the maximum amount. They said that adding more texts would be too much and might risk putting unnecessary pressure on parents. A typical comment was:

> *I think three per week was a good amount. I think any more than that might have gotten a little bit overwhelming.* (Parent 18)

A few parents said there could have been more texts. This view seemed to be related to their experiences of school disruption and home schooling at the time of the intervention due to Covid-19. For instance:

> *I think it was the right amount. I wouldn't have minded if there were more… because we were stuck inside from March until September, because we were shielding as well.* (Parent 6)

> *Because of everything that was going on, to be honest, I wish I had more. Because there was nothing going on. It was awful.* (Parent 8)

Some parents said they would prefer to receive fewer texts per week. Those parents explained they led busy lives, and had struggled to implement the tips at the same pace as they were coming in. For instance:

> *I probably thought it was a bit too much. I think if you got one that was more detailed, you would make more effort to put that into practice. If you are getting them quite regularly, it's easier to think, 'oh I'll deal with that later', and then a couple of days go by and you get another one, and you still haven't done the first one. You feel like you're not really getting the chance to do them.* (Parent 22).

The timing of the texts also worked well for parents. The vast majority (92%) of respondents (666 parents) said the days they received the texts (Tuesdays, Thursdays, and Saturdays) were right for them. Only 4% (26 parents) said this was not right for them, whilst another 4% (31 parents) answered 'don't know'. Similarly, 91% (661 parents) said the time of day (3.45 p.m. on Tuesdays and Thursdays, and 10.30 a.m. on Saturdays) were right for them. Only 4% (28 parents) said it wasn't the right time of day for them, whilst 5% (34 parents) said 'don't know'.

In interviews, parents especially highlighted that the Saturday morning texts fit their schedule well, because they were definitely at home and typically had more time and headspace to do activities with their children. Some emphasised it was great that it came early, which gave them time to plan their day and activities. A couple of parents also said the Saturday text prompted them to look at previous texts that they might have missed during the week, especially the Thursday text. Some parents also found the weekday afternoon texts useful, because it came 'not long after the school run', which meant they would often do the activity during the afternoon, for instance after doing homework. For instance, one parent explained:

> *It worked out fine, because it meant obviously during the week she was home from school, and then it was almost like a prompt to remind me to do the things.* (Parent 18).

Some parents said the timing was not important. They said they put the tips into practice at whatever time was convenient for them, and that they could look back at the texts whenever they wanted. Some parents said they were 'always on the go' and usually very busy, so it was not possible to predict a day or time where they would definitely put them into practice, so the flexibility given by the text format was perfect for them. One parent explained:

> *Because it was a text, it was just like, right okay, I will have a look at it when I am free. So, it was fine.* (Parent 15).

There were also examples of parents who said the timing of the texts did not fit their schedule. A couple of parents said they would prefer to receive all the texts during the working week, as they thought that 'weekends are for fun' (Parent 8) and 'on the weekends they are not so much about learning new things' (Parent 19). The latter parent explained that she

would actually prefer five texts on weekdays, as she found her child to be more focused and in the right mindset after school. One parent said she was at work during the weekday ones, and reckoned she tended to forget to implement those more often than the Saturday texts. Finally, a small number of parents said the schedule did not fit them, but typically recognised this was for personal reasons that would not necessarily apply to other parents. For instance, one parent said she received many other text messages on Saturdays due to her personal business, so it was inconvenient to receive other messages on that day, and one parent said she liked to sleep in on Saturdays and she did not like to be woken up.

This section has outlined that the intervention was delivered as intended and seen broadly as feasible and useful by parents.

RQ2 Could the intervention be rolled out on a larger scale? Would anything need to be adapted for large-scale work?

In the interviews, we also asked school staff whether they would recommend that Tips by Text is rolled out to a larger number of schools. Most said they were unsure as they had not seen the texts that parents received. A small number of school staff said that they would recommend that it is rolled out, based on the idea and aims of the intervention, although a few caveated this by saying it should only be rolled out to those without similar systems in place for supporting parents with home learning.

Whilst this was a parent-focused intervention, schools still had a small role to play in order to achieve fidelity, especially from a trial perspective. School staff had a practical role to play, as they needed to pass over parent phone numbers and help keep them up-to-date. Apart from one teacher who said it had been a burdensome task to constantly update phone numbers, the interviews did not identify other teachers who saw this as a significant constraint for teachers and schools, which increases the chance it could be rolled out on a larger scale easily. Nevertheless, it should be monitored in potential larger roll-outs of the intervention. In addition, the trial design of not involving teachers in the intervention was deemed successful (see section on 'Teacher Awareness' in 'Implementation' section) and therefore, there would be no need to change the model for future trials unless it was decided that teacher involvement could help reinforce some of the skills from the tips and help support engagement with parents, in which case then a cluster randomised trial would be recommended for a future evaluation to reduce the likelihood of contamination and also to make things simpler for schools. The possibility of a different delivery model for the text messages in the future is discussed in the 'Cost' chapter (with the BIT providing schools with the messages for them to send out) and this model would have greater school involvement, which would have impacts on the ease of which schools could take part and would need to be carefully considered in the future.

Parents who had withdrawn from the intervention

This section describes the reasons for withdrawal amongst the 15 parents interviewed who opted out of the intervention during the treatment period and any suggestions they provided for project improvement, which could be used in the future for larger scale roll-out. Overall, 131 parents withdrew from receiving the text messages and three parents withdrew from the whole trial (including the evaluation and so were not contacted). The withdrawals were slightly higher when the trial first began, with very little over the period of school disruption due to Covid-19 in March 2020–July 2020 and then raised slightly again at the start of the 2020 autumn term before going down again for October 2020 before the messages stopped.

Reasons for withdrawal

Half of parents that we spoke to felt that the texts were 'not relevant' to them, in that they were mostly 'common sense' activities that they were already doing with their child. One parent felt the texts were 'patronising' in this sense. A few parents explained that they felt that there were too many texts sent as part of the intervention—one parent in particular felt 'bombarded' by the texts. Another parent worked for most of the day and so the times the texts were sent were not suitable for her. One other parent felt that after receiving the texts for a while they 'knew enough' and so withdrew.

Suggestions for improvement

Half of parents said there was not anything the programme team could have done to have kept them in the programme. A couple of parents suggested that the programme involve fewer messages. A couple of other parents suggested

changes to the content of the texts: one parent suggested games each week, which would promote more of a community aspect, they gave the example of drawing the rainbows for the National Health Service (NHS) during the Covid-19 pandemic. The other parent suggested the texts focus on topics such as bedtime routines or sleeping tips, which would be helpful. One other parent suggested the ability to personalise the times they would receive the texts would have been helpful. Some of these suggestions could be considered in future versions of the intervention but numbers of parents who opted out were fairly low.

Additional support

When these parents were asked whether they would have benefited from additional support, eight out of ten said no and that they would not have benefited from additional support. One parent was unsure, and the other felt that they would have benefited from extra support as it would have been useful during lockdown.

Implementation and compliance

This section of the report covers implementation of the Tips by Text programme and how compliant parents were to the intervention in respect of using the messages they were sent (further quantitative compliance analysis of messages delivered is discussed in the 'Impact Evaluation' chapter). Findings are drawn from parent and teacher surveys, and qualitative interviews with parents, Reception year teachers and members of the SLT.

RQ3 What did parents do after receiving the texts and how different is this to their usual practice?

To explore how the programme was implemented, surveys and interviews with parents explored what parents did after receiving the texts, and their thoughts on the tips that they received. Survey findings indicated that most parents put at least some texts into use, with 2% (16 parents) indicating that they did not put the texts into use after receiving them. Nearly two-fifths of parents (38% or 259 respondents) reported putting all or most tips into use whilst 60% told us they put some of the tips into use. This indicates that, as is assumed in the logic model, the vast majority of parents carried out activities with their children on a weekly basis, although the survey did not differentiate between 'TIPS' and 'GROWTH' activities.

Qualitative interviews with parents further explored what parents did after receiving the texts, and their reasons for putting the texts into use. All parents interviewed described putting at least some tips into use, with several parents reporting putting all activities into use and in some cases reusing the tips throughout the year.

More often, parents said they had used some and not others, because they would forget some or because they found some more useful than others:

> *I have to say, sometimes I would forget… when I was busy doing something else, and it's nice that it's on your phone because you can look back at them instead. But there are still quite a few that I haven't done yet, but I am planning to.* (Parent 3)

> *Some of them I did, and some of them I didn't find very helpful at all. But there was maybe like one a week that I found quite interesting, and that I could use.* (Parent 16).

Those parents who said they had used some but not others, explained that this was because they were already implementing some, or a lot, of the tips already in their existing activities with their children.

> *Some of them I'd think we do that anyway, so I kind of just brushed it off.* (Parent 8).

> *I often found that we'd already done what the text was suggesting. I would only do the ones that were new to him.* (Parent 22).

Other parents explained they had not always had time to use all the tips, and that their busy lives had sometimes been an obstacle, and that they simply could not always fit them around their family life and their busy household.

> *There were times when I wasn't even opening the texts, I was just too busy with stuff.* (Parent 24).

> *I did most of them, I mean there were some of the that I just didn't have time to do. Because there were three every week and sometimes I didn't have time to do it.* (Parent 25).

Several parents reported putting all activities into use and, in some cases, reusing the tips throughout the year. As discussed in RQ10, some parents explained they had used the tips more during lockdown and school closures, where they were home schooling their child. The interviews also explored why parents used the tips and the extent to which the activities were different to their usual practice. Overall, the parents who were interviewed bought into the rationale of the intervention and saw the texts as useful and feasible to implement. These parents highlighted a number of factors. First, they said the texts helped them organise activities with their child, by giving them new and different ideas, often activities that they had not thought about before.

> *They really helped me to think outside of the box when organising activities for my son, which kept him interested and engaged.* (Parent 1).

Normally you don't really get tips [to help your child at home] from the school. You're quite clueless normally really. (Parent 21).

Second, parents emphasised that the texts were useful because they were often focused on bringing learning into everyday activities, which made it easy to achieve in practice.

I thought there were a lot of good ideas, especially with helping her learn her letters, just when you're out and about. The same with numbers, we'll count the door numbers when we go out as well. (Parent 25).

They were quite useful because they're things that can be incorporated into everyday things. So, you can be getting on with stuff, while you're also doing things. (Parent 14).

Third, the texts were useful for some parents as they helped them support their child's learning. These parents found that the texts meant they gained a better understanding of their child's curriculum, which made it easier to support home learning (especially during lockdown). This was most useful in subject areas where parents lacked confidence. Some parents said the texts had been particularly useful for them, as their child had fallen behind at school, and they appreciated any support they could get to help their child with their learning.

Finally, although some parents did not think the tips were necessarily very different to their existing practices, the texts still gave them the reassurance and confirmation that the learning activities they were already doing were appropriate, such as looking for shapes, working out numbers, making up stories, and talking about their day. For example:

It was useful to think, oh actually, it sounds like I'm doing the right things, because sometimes you think, is it that useful? It was useful to get that reinforcement. (Parent 14)

Whilst most parents described using the activities immediately after receiving the texts, some parents discussed using the activities later, if they were busy when they arrived. A few parents told us that they did not use the tips around behaviour immediately, but instead waited until they were relevant to their child's emotional state. A few parents reported using the tips with older and younger children, with some saying they had to adapt the tips for older siblings, whilst others finding that the tips worked well for all under tens.

A couple of interviewed parents had initially misunderstood the purpose of the intervention, which affected their use of the texts in the early stages of the intervention. They thought they had been chosen for the intervention specifically due to their child not doing so well at school. They felt 'singled out' and described it as 'patronising' and were therefore, hesitant about using the texts in the beginning. They explained they were worried they were doing something wrong as parents, or that their child was not progressing at the expected rate. Both those parents, however, eventually thought the texts were useful, but their concerns highlight how effective and regular communication is vital in parent-focused interventions and it could make a cluster randomised trial more appealing in the future as then all children would be receiving the same thing within a school. The current trial was designed so not all parents in each class participated in the intervention. This might have made it harder to communicate the intervention effectively, especially the purpose of why some parents had been chosen to participate and not others.

At first, I felt a bit patronised, as if they thought that I wasn't doing anything with her. But when I got the texts, there were a lot of facts and tips, which were quite helpful at time. (Parent 24).

Well, at first, I thought, 'is it something I'm doing wrong? Does she need help?' … When I'd spoken to a couple of parents, they were like, 'oh yeah, my son's/daughter's got it', so I thought, 'well at least she's not just being singled out' … Once the texts started coming through, I still thought it was because she was struggling. It was a couple of months in, when we were using them more, then I noticed it was actually alright. (Parent 8)

Ease of use

Almost all parents interviewed told us that it was easy to put the tips into use. One reason given for this by some parents was that the texts were short and used concise and simple language. Parents told us that this meant the texts were easy to explain to their children and to follow:

They were very to the point. They were very easy to follow, and they were worded right.' (Parent 6)

Parents also told us that the design of the tips, in three parts, meant that they were easier to implement:

> *They were easy and straightforward; honestly I really liked the way it was in three parts. Because you know it kind of sunk in, and I kind of liked that.* (Parent 15)

The interviews also suggested that parents were able to put the tips into use as the activities were enjoyable for their children. Several parents described their children having fun with the activities suggested and one parent even said that their child eagerly awaited the texts:

> *The tips were also interesting and for my son, who usually isn't interested in writing, the activities suggested made it fun.* (Parent 12)

> *When they came through, she'd go, 'Mam, is this the text?* (Parent 8)

However, most of these parents told us that they appreciated that their current practice was affirmed by the tips, and in one case it reinforced their existing practices.

As well as being easy to read and understand and fun to do, many parents interviewed reported that the tips were simple to put into use and offered a different approach to learning and doing homework:

> *I think they were really simple, really simple ideas.* (Parent 20)

> *To be honest they* (the texts) *were brilliant. You couldn't fault them at all... Obviously it tells you how to count, what you can count on with like using coins for learning. Everything really.* (Parent 2)

Parents also pointed out that the simplicity of the texts was also the fact that they used everyday items and did not need any extra spending. For example, when asked whether the tips were easy or difficult to put into use, several parents said that that they were straightforward to put into use as they did not require buying any additional resources:

> *They were all really practical you don't need anything to be able to do them…I didn't have to try and find anything specific.* (Parent 9)

This also meant that the intervention was accessible to parents regardless of income, which was highlighted in the logic model as an enabling factor for short-term outcomes of the intervention. Interviews with parents suggested that all parents regardless of income were able to deliver the tips activities, limiting the impact of income on outcomes.

Parents interviewed also highlighted the fact that the activities could fit into daily activities such as walks, mealtimes, and household chores, as a reason that they were easily able to put the tips into use. When asked whether the activities could fit into their daily routine almost all parents said that they did. When asked for examples of particularly successful tips, common examples included counting games with laundry, identifying letters, numbers or shapes during walks, and numeracy activities related to cooking, all enabling parents to easily put the tips into use. One parent told us that:

> *It was just things like go and find something in the kitchen that's like…see if you can find as many things that are shaped like a triangle, count the different corners, and then the next day, it could be a different shape, the next tip that came through and then other times it was try reading the things on, tins of food or a box of washing powder, see if you can find the letter 'a' on these items, it was really straightforward.* (Parent 17)

Just one parent said that the tips were hard to fit into their daily life, as the family tends to be busy during evenings and weekends. They still used the tips but usually not as soon as they arrived.

Age appropriateness

We also asked parents whether the tips were right for their child's age and ability and almost all parents said that the tips were pitched correctly. A very small number of parents told us that some of the tips were not at the right level. This seemed to depend on individual children's abilities and subject strengths and weaknesses, as this feedback included reports that numeracy tips were too hard for some children, and too easy for others. One parent told us that their child

struggles with counting so found these activities too challenging, whilst another said that counting games were too simple meaning that their daughter got bored of the activities:

> *I think some of them for me seemed a little bit as if they were aimed at a younger audience. There were ones about counting and using numbers up to 10 and that was it, it seemed a little bit young at times for my daughter.* (Parent 18)

However, these parents also said that most of the tips were pitched correctly to their child's ability, and they adapted them when needed, to make them more suitable for their child's abilities. Children's baseline ability was noted in the logic model as an enabling factor for short-term outcomes of the intervention, which is reflected in the fact that some parents were less likely to implement activities depending on their child's ability; however, this was only reported by a small minority of parents interviewed.

Teachers' awareness

The trial design meant that school staff, including Reception year teachers, were not meant to be told about the content of the texts or, which parents in their class had been randomised to receive text messages. In this way, their actions could not contaminate the trial design or impact findings. The endline survey with school staff shows this was achieved with the majority (92% or 57 respondents) said they did not know what was contained in the texts that parents received, and 81% (50 school staff) were not aware, which parents were receiving the texts. Furthermore, the school staff reported very little interaction with parents about the intervention, which meant they would not have found out which parents participated. Whilst 97% (60 school staff) said no parents or carers had asked for advice or help with the intervention, just 3% (two school staff) said they had. These findings were all confirmed in interviews with Reception year teachers and senior leaders. They said they had either no awareness of the text content, or at the most they remembered the general information about the types of texts given in the beginning of the intervention. In terms of awareness, one school respondent said they had a list of children receiving the texts, whilst everyone else said they were unaware.[26] As such, no one had adapted their practices or compensated to those who were not part of the treatment group. We also asked teaching and leadership staff in qualitative interviews about their awareness of who was involved in the intervention and their views on the tips. The majority of staff were unaware of which parents received the tips, as expected, except for a few instances where teaching staff had to update a parent's phone number. However, the interviews with staff in one school did reveal that they were aware of all parents who were receiving the tips, as they had a list of those parents in the intervention group.[27] None of the staff who were aware of some or all parents who were in the trial group felt like they had to compensate for those parents who were not receiving the texts. Therefore, the evaluation team can be confident that we are comparing outcomes between the business as usual control, which has not been influenced by compensation rivalry (on the part of school staff at least) and the intervention group. None of the school staff interviewed were aware of the content of the tips, beyond the initial guidance provided outlining the types of texts and subjects covered and they were also not aware of whether the parents were putting the tips into use.

As well as exploring what parents did after receiving the texts in respect to activities, we also asked to what extent parents spoke to their children's teachers about the texts. In response to a survey question asking whether they spoke with their child's teacher about the texts, the vast majority (86%, 583 parents) reported that they did not do so. Around 2% (14 parents) discussed the tips regularly with their child's teacher and 12% (84 parents) did so once or a small number of times.

This was further explored in interviews with parents and school staff. Reflecting survey findings, the majority of parents said that they did not discuss the texts with their children's teacher, with a few reporting that this was due to reduced contact with the teacher during the Covid-19 pandemic. The small number of parents who did discuss the texts with their children's teacher did so infrequently and as a means to update teachers on their home learning practice, rather than to ask questions. This included parents mentioning the texts in home learning diaries, and check-ins with teachers. One parent also spoke to their teacher regarding concerns around why they had been chosen as part of the intervention group (as discussed in the 'Fidelity' section).

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[26] These were not provided by the delivery or evaluation team so we are unsure how this has happened.

Interviews with teachers and leadership staff also suggested that parents had little contact with school staff about the tips, with only one staff member reporting have any contact from parents about the intervention. This teacher told us that they had received queries from several parents at the start of the intervention as parents were unclear about the purpose of the texts and what they were expected to do, despite the school circulating this information in letters prior to the start of the intervention.

RQ4 Were there any unintended or negative effects of the intervention?

Contamination

To gauge potential spillover from the intervention group (with parents in the intervention group sharing text messages with other parents in the control group), parents surveyed were asked whether they shared the tips with other parents at their child's school. Nearly half (47% or 318 parents) did not share tips with any other parents, whilst one-fifth (22% or 150 parents) did not share the tips with other parents at their child's school but did share them with other parents. However, one-fifth (21%) reported sharing the tips with parents in the same year group and school as their child (141 parents). These findings indicate that there may be some spillover effects of the intervention as some children in the control group may have also received some of the activities provided by the texts. Finally, a tenth (11% or 72 parents) reported sharing the tips with parents whose children attend the same school to their child, but in a different year group. As over 30% (31.3%) of parents reported sharing the texts with another parent either at their child's school or in another school there is evidence of contamination that may impact the results of our evaluation, as those parents in other classes or at other schools may have shared the tips activities with parents whose children are in the control group.

Interviews with parents who had received the texts also explored the extent to which the texts had been shared with parents not taking part in the intervention and provided more details on how and why parents were sharing the tips. Most parents said they had not shared the texts with any other parents. Just one of these parents said that this was because they had been told not to in the information they received about the trial.[28] A few of these parents said that they would have been more likely to discuss the tips with other parents in casual conversation, but that Covid-19 had limited opportunities for these kinds of discussions with friends or at the school gate, such as one parent who when asked if they had shared the tips with other parents told us that they probably would have if it had not been for the Covid-19 pandemic.

> *No, but I think COVID's affected that a lot this year…it definitely would have been something that we talked about [if we had been able to meet up], I would imagine.* (Parent 17)

Whilst most parents interviewed did not share the texts with anyone, some told us that they did either share the texts or discuss the activities with other parents. These included family members, friends, neighbours, and parents they knew through school. Of these, there was an even split between those who shared or discussed the tips with parents in their child's school, and those who shared them with other parents. Those parents who had shared or discussed the tips with parents in their child's school included a few parents who had shared them with parents of children in their child's class, and parents whose children were in the same year group but in a different class.

A number of parents who had shared the tips with parents in their school provided more detail on how and why they shared them. One parent described sending all of the texts to their brother whose child was in the same year group but different class to their child, whilst a few parents described sharing some or all of the texts in group chats with other parents from their school. Another parent said that she sent some of the tips to a parent in her child's class as both of their children had autism, and she thought they would benefit from the tips that she had found particularly useful.

> *I've got a friend, her daughter's in the same class as my daughter…they're trying to get her diagnosed as autistic…Some of the ones that have worked on my two autistic children… that I've found helpful and quite useful I've passed on to her. I've forward her Tips by Texts to her, the whole text and she's found some of them quite useful to put into place for her daughter as well.* (Parent 19)

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[28] It was not part of the trial to tell parents to share or not to share the tips.

The small number of parents who had shared the texts with parents from outside of their school also told us about who they had shared the tips with and why. This included forwarding the texts to other parents or describing activities that they had found useful. A number of these parents said that they shared the texts or activities to help friends, family, and neighbours with home schooling during lockdown. For example, when asked whether they had shared the tips with other parents one parent interviewed said:

> *Yeah, like my next-door neighbour. Her child goes to a different school but is the same age as my son and obviously we have like a little group chat…if she'd written that she was struggling doing something with the kids, or what have we been up to today, I would explain what we'd done and she would do some of the things with her daughter.* (Parent 6)

Whilst this evidence comes from a relatively small number of parents, it does suggest that there was contamination as children who were in the control group may have participated in tips activities, either through direct sharing of tips to their parents or indirect sharing as parents beyond those in the trial group became aware of the activities.

We also asked teaching and leadership staff in interviews whether they were aware of parents sharing the texts. No school staff said that they were aware of this, with most saying that this was because they have had little interaction with parents about the trial.

RQ5 What are the facilitators and barriers to the programme?

Parents

In the survey, parents were asked, which factors, if any, made it difficult to put the tips into practice (Table 26). Responses showed that the main reason why parents were not putting the tips into place was that they had already used some of the suggested activities, with over a half (54%) of parents highlighting this as a factor (the impact of this is further discussed in the 'Outcomes' section below). Not having enough time to put the activities to use (20%) was the next most common barrier, followed by finding that activities did not fit into a normal day and that some of the messages were not so useful (15% and 14%, respectively). Messages being hard to understand or difficult to put into use were only seen as barriers by small percentages of parents.

Table 26: Factors which made it difficult to put the tips into use

Factor that made it difficult to put the tips into use	Number of parents (%)
Some were activities that I have done before	368 (54%)
I did not have time	135 (20%)
Some activities could not be fitted into a normal day	102 (15%)
Some were not so useful	94 (14%)
Some were not adaptable for my child's/children's ability	73 (11%)
Some were not adaptable for my child's/children's age	53 (8%)
Some were not interesting	51 (7%)
Some were not easy to put into use	25 (4%)
Some were harder to understand	13 (2%)
Something else	75 (11%)
N =	685

A small number of parents provided more detail on why they found it hard to fit the tips into the working day, such as the parent quoted below who found it hard to fit in home learning activities around work, especially during the Covid-19 pandemic.

> *I haven't got a rigid routine, where I would spend time with kids purposely working on their development. Most of the days after completing a full day's work with all of us in the house since pandemic broke out ... alongside running the households, I have no energy for organised activities...even though tips are very good and easy to use in practice.* (Survey parent 112)

Another parent reporting finding the tips repetitive, giving the example of lots of tips around cutting different objects into shapes:

> *Some felt repeated, such as cutting shapes from paper & then the next tip cutting shapes from sandwiches.* (Survey parent 63)

Whilst the parent of another child said they just did not enjoy the tips.

The survey also asked the small number of parents who indicated that they had not put the tips into use (16) why they had not and again, the most common reason was that parents had already done the suggested activities before (63%), followed by the tips not being right for their child's ability or age (38% and 31%, respectively).

Facilitators and barriers to parents implementing the tips activities were further explored in qualitative interviews with parents. No parents reported having had any problems receiving the texts, although one parent had received duplicate texts once or twice. In line with survey responses, the most common reason for the tips not being put into place was that they were already doing some of the suggested activities, and some of which, fairly regularly. This included tips around emotional regulation and the importance of reading. For example, one parent said they did not use some of the tips around reading for this reason:

> *I think some of them just weren't relevant...Some of them were just things that I would already do anyway.* (Parent 16)

However, one parent said that some of the tips were too difficult for her child's ability, especially around numeracy, and another parent said that her child was reluctant to engage in the activities at first, although this improved over time, and she attributed the change to the impact of Covid-19 and lockdowns.

School staff

We also asked school staff in qualitative interviews whether they had identified any challenges parents faced in implementing the tips. Most school staff said they were unaware of any issues, citing a lack of awareness of the trial and who was receiving the texts, as well as the impact of Covid-19 on their engagement with parents meaning they had fewer opportunities to discuss the intervention. One teacher mentioned that some of their parents do not have access to a phone, but this was cited as a barrier in communicating with parents more generally, as well as meaning that those parents could not take part in the project.

The evaluation also explored facilitators and barriers to schools participating in the programme. Qualitive case study interviews with teachers and leadership staff explored this by asking school staff what was negative and positive about the project.

Most school staff felt positively about the aims of the intervention. When asked what they felt was positive about the project, many staff said that they like the idea of an intervention aimed at supporting parents to change their behaviour and improve home learning environments. A smaller number highlighted that this supported teachers in providing ideas and help for parents to be involved in their child's learning.

> *[A positive of the project was that] I wasn't having to think of ideas to pass onto parents to sort of get them onboard with trying things with their children…it makes my job easier.* (School 3, Reception year teacher)

A few members of school staff also liked the model of using texts to deliver simple tips, as they thought that it was a more accessible way of providing tips on improving home learning environments than alternatives such as worksheets. For example, one Reception year teacher told us:

> *I think definitely a positive is that parents can use ideas for little activities to help with their children's learning. I think with it being a text message it can, for some parents may be less daunting than having like a sheet in front of them, because it's a bit more informal maybe. And if these parents are doing the activities as well that's going to benefit the children, so that would be the positive side of it I would say.* (School 6, Reception year teacher)

Just two members of staff provided examples of negative impacts of the intervention. In the case of one school, this was put down to the small amount of additional work generated for staff whilst in the other, the class teacher said that they would have liked to know what was included in the texts to help them gauge the quality and impact of the intervention. However, neither of these views of the project acted as a barrier to these schools' participation.

We also asked school staff in interviews if they could recommend any changes to improve the programme. All of the changes suggested by staff related to the trial conditions. Several staff members interviewed said that they would have liked greater awareness of the content of the texts, which would have allowed them to make links in class to the subject covered in the texts, to monitor the impact of the programme, and to offer support to parents.

> *I would say get teachers involved a little bit more. Show them what it is you're assessing, what it is you're doing with them, and give examples of what type of texts the parents are receiving... So, if parents were coming to me to tell me about it, or ask me about it, I would know a bit more about it.* (School 6, Reception year teacher)

> *If they had let us know the messages that were going out to parents, I think that would have been useful, so then we could look at that, and then do more links, or if there was a, sent a message out, saying, looking at about counting to ten for example, we could do that in school, from the link, but I don't know what parents were receiving.* (School 1, Early Years Lead)

One member of staff said that they would have liked all pupils to be involved in the project, whilst a small number of schools raised issues with the initial pupil assessment. One staff member reported that the assessment was disruptive, and another felt it should have been conducted in the first week of term as her pupils had already developed significantly between the start of the school year and the assessment. As both suggested changes related to the trial they do not act as significant barriers to schools participating in the intervention.

RQ6 Would parents and teachers find additional in-person support useful, and if so, from whom?

This section explores what parents and staff thought of an alternative model of the intervention, which the delivery team were considering using in the future, which involved additional support being provided to help parents understand and apply the tips, from the delivery team or from the school.

Support for parents

Qualitative interviews with parents revealed there was no strong need for additional support amongst our sample, with most parents saying that they would not have found the support useful. Many parents said that the tips were so straightforward to understand and implement that they would not have used this support were it available, whilst a few parents said that receiving additional support would have made the intervention less flexible and more time consuming, therefore, undermining some of the key strengths of the project.

> *I just saw the texts and I just thought it's so straightforward, there is no need for an explanation.* (Parent 20)

> *They were quite self-explanatory; I don't think there's anything tricky in there.* (Parent 14)

> *I was fine receiving the texts because I guess it is convenient for me to look at the message whenever I wanted to. But if somebody was to come in or have a call, then that would take my time and I would have to make time for that person.* (Parent 15)

A number of parents said that they would have liked the option of additional support (although they did not specify whether this would be from someone at their child's school or from the delivery team). Although these parents reported that they had not struggled to understand or implement any of the texts, they would have liked the option to contact someone about the tips on an ad hoc basis even if they may not have used it:

> *[It would have been useful to have extra support] Just in case if I was doing something wrong because I was just doing it as how it was on the texts. If there was another way or if I was not understanding, even if I could text back or something like that. Just something in case I wasn't sure. But I didn't struggle because they were alright for me to understand but I think that would be good, if I was to struggle, then I have that [option].* (Parent 8)

A few of these parents mentioned that they would have specifically liked the option to receive the support over text, for example, by having the option to respond to the texts with questions and for further clarification.

Parents who said that they did not require any extra support said this because they felt they understood the texts and were able to put them into practice. However, a few of these did say that it would have been a useful option for other parents who may have struggled to understand or implement the tips.

> *I would be fine just going with the texts, but I think if that support is available out there for other people that are struggling then that's a good thing, but it's not something that I would need.* (Parent 18)

Teaching and leadership staff were also asked if they knew whether parents at their school would find additional in-person support around the tips useful. Most staff members said that they were not sure as they had little engagement with the intervention. A few staff members said in theory, additional support would have been useful, with one school highlighting parents with EAL as a group that could have benefited from this, although again this was not based on conversations with parents as staff were largely unaware of how the intervention progressed. Finally, one member of staff said that they would have liked the option to provide this additional support as it may have improved parental engagement with the school.

Support for teaching staff

The interviews also explored whether school staff needed additional support to deliver the intervention. Teaching staff were asked in qualitative interviews whether they received sufficient support from the SLT to deliver the intervention, whilst members of the SLT were asked whether there has been sufficient support from the school community, including governors, headteachers, and other SLT members for the project. Most staff members said that they did not need any support as the project generated only a small workload, whilst a few staff members said that the SLT and the broader school community were very supportive, but that they also did not require much support to deliver the project.

> *I didn't really have any work to do around it, all I needed to do was, I'd give the administrator, the date of birth, and then help them get the children to go to them, so there wasn't a lot for me to do really.* (School 1 Reception year teacher)

This indicates that, as is assumed in the logic model, that there were no school- or teacher-based requirements once parents' details were passed on to the intervention team.

RQ7 Does engagement with the intervention change over time?

School staff were asked in qualitative interviews whether they had seen parent's engagement with the programme change over time, however, they were unable to speak about this as they have had little involvement with the intervention and few discussions with parents about the tips.

In the interviews with parents, a few said that they continued to engage with the tips throughout the time they were being sent and, in some cases, even saved the tips to use again as the intervention went on. Most parents said that the tips were especially useful in lockdown and used the tips even more when schools were closed to most pupils:

> *During the lockdown we were using them [the tips] more.* (Parent 23)

One parent said the reason for this was that they were easy to add into normal activities around the house or whilst going for a walk. Other parents told us that they used the tips more during school closures because of what was, or was not, provided by their school. One mum found them easier to engage with than the work her child was set by their school:

> *The homework that they were getting (during lockdown), I mean, she's only five, but I was thinking I cannot do a five-year-old's homework?...In the end, she wouldn't do it. She was more just wanting to play and things like that. The texts were short, they were quick, sharp and easy. Like you could just do it with her and it was fun to do, instead of sitting doing homework. But she was learning at the same time.* (Parent 8)

Whilst for other parents, they used the tips more because of an absence of other work from school:

The tips were useful during lockdown as the school sent a limited amount of homework so the tips gave us more things to do. (Parent 9)

During the lockdown it came in really handy. Because like when we finished all of the work and stuff, we had the rest of the day, we could sit and play with the games to do with the texts and stuff like that. And [my daughter] found it really good. (Parent 10)

For other parents, the specific focus of some of the tips on emotional regulation were handy during the Covid-19 pandemic, as their young children were struggling with the impact of the Covid-19 pandemic. For example, one parent told us that the tips around emotional regulation were particularly relevant to her child during lockdown:

They were really good, especially I think during lockdown…there was a couple about emotions and feelings and I found that they were appropriate at the time. (Parent 5)

RQ8 Is the intervention a worthwhile investment from the perspective of management?

As the main investment from schools participating in the trial was staff time, we asked school staff whether parents asked them for help and advice with the tips. In the survey of school staff, most staff members said that they were not asked to provide help and advice by parents with just two staff members (3%) surveyed answering yes to this question. These staff members were also asked the extent to which the advice they gave to parents or parents about the tips took time and resource away from the school. On a 5-point scale ranging from 'not at all' to 'a lot', both staff members indicated that the advice 'somewhat' took time and resource away from the school. This again indicates that the assumption in the logic model that there were no school- or teacher-based requirements once parents' details were passed on to the intervention team, with the vast majority of schools indicating that they did not need to spend time or resources supporting the intervention. It is worth noting that if the model of delivery is changed to a school-based delivery model, this time and resource would likely be increased (as discussed in the 'Cost' chapter), which may change the perceptions towards taking part in the intervention.

Members of the SLT were asked in interviews whether they felt that Tips by Text was a worthwhile investment. Most SLT members could not comment on whether the intervention had met their expectations and anticipated outcomes as they had not seen concrete evidence of outcomes at the point of interview. When asked why they signed up for the programme, common reasons given by staff were that they hoped it would improve parental engagement as parents prefer communicating by texts, and that it would support home learning by providing easy and practical tips. A smaller number of schools said that they hoped it would improve child numeracy and literacy outcomes.

We are from quite a deprived area and it's very difficult to get parents through the door and a lot of our parents use their phones a lot, they like telephone mediums so we thought to get them, send them text messages might influence them to help their children a bit more. (School 1, SLT member)

We were really impressed with the Tips by Text, because we knew we had really good parental engagement already within our school community, but [were] looking for other ways to involve parents…to support them at home, and they had communication of things they could do around the house, or wherever they were, and that's what really appealed to us, that practical element of not needing a worksheet or a reading book at home for the child to learn, but actually giving them practical everyday tips that they could be doing with their child. So that was what was the most appealing thing for us. (School 2, SLT member and Reception year teachers)

It was always our policy and our working aim to have contact with our Reception families and the children all through school. And to have those messages and those simple ideas about how you could help your child, and reinforce what was happening in school…it just seemed to me that Tips by Text was just another enhancement of that for parents. (School 6, SLT member)

I thought it would just help to put in practice and strengthen basic skills, numeracy and literacy. And it would help parents, you know they would be getting … I would guess similar tips and ideas from Tips by Text to what a class teacher would be saying, and one reinforces the other. So, I would think it

would strengthen their confidence in supporting their child and knowing that things were being suggested by both would help the child's learning. (School 6, SLT member)

Despite being unclear of the texts and unsure of the outcomes, several staff members interviewed felt that the investment was worthwhile as it had required no time and resources. One staff member felt that it had met expectations in terms of supporting home learning:

Yes, we did feel that Tips by Text was worthwhile, but unfortunately we didn't see the end outcome, it would have been good for… [someone] to come in and assess the children in the summer term, it would have been good to see the end, but…I'm sure the parents really found it useful for their child learning at home, and like we said, if we were to do it again, I think I would suggest a member of staff getting the texts as well, and so we could implement that in the classroom, and then kind of know what they were doing at home. (School 2, SLT member and Reception year teachers)

RQ9 Would schools be able to deliver the intervention themselves in the future?

Qualitative interviews with school staff explored whether schools would be able to deliver the programme independently, and whether they would continue the intervention following the trial. A few members of staff said that they were unsure whether they would continue the intervention as they did not have sufficient awareness of the content of the texts to judge its quality.

Staff in several schools said that they would continue delivering the project as they liked the idea of the text-based intervention and were able to do so independently. Staff at one school said that this was because they prioritise relationships with parents and liked the idea of a text-based programme for Early Years.

I think we would [continue delivering] yes…we really pride ourselves on having such good links with parents, and I think it would be really good to carry on something similar and particularly now in Early Years, to have the three texts, and the third text being a follow up and ensuring that they understood what was the object from the first text, I think it would be great to carry it on independently. (School 2, SLT members and Reception year teachers)

Just one school was unable to deliver the tips independently, because they did not have a text messaging system. However, staff said that they would consider investing in this to continue delivering the project. A small number of staff said that they would not continue delivering as they already had systems in place for supporting home learning, using Tapestry and Class Dojo. Staff at these schools felt that also delivering Tips by Text risked overloading parents with information, and that it might be hard to synchronise this with their existing home learning support.

No, I think to be honest we're setup and running with Tapestry and we wouldn't want to add in something additional, because I think it would possibly be too much for the parents. I think because we've got our systems in place and we're sort of getting those rolling and parents are engaging, we're quite happy to just continue with those…especially if we were sending one thing home and then the Tips for Text system was asking them to do something different. I think it would possibly be a case of mixed messages. (School 5)

RQ10 How has Covid-19 impacted on schools' communication with parents and how has this affected how parents have used the tips messages?

This section describes implications of Covid-19, including lockdowns and school closures, on the intervention. Using data from the teacher baseline and endline surveys, school case studies, the parent survey, and parent interviews, this section reflects on changes in the frequency, forms, and content of communication used by schools, and use of the tips by parents due to Covid-19.

Parents

In the survey, parents were asked whether the Covid-19 pandemic and school closures changed how they used the tips with their child. Nearly half (46%) said yes—they used them more frequently, the same proportion said no—they used them the same amount as before and the remainder (8%) said they used them less frequently (678 parents).

Parents were also asked how the Covid-19 pandemic and school closures changed how they used the tips with their child (Table 27). Over two-fifths (44%) of parents repeated the activities they used with their child whilst one-third (32%) created new activities and games based on the tips. Another two-fifths (40%) did not change how they used the tips with their child. One in ten parents said they shared the tips with other parents (the issue of contamination is discussed in more detail in the 'Implementation' section).

Table 27: Changes in use of tips

Changes in use of tips	Number and % of Cases
I repeated some of the indoor activities	295 (44%)
I did not change how I used the tips with my child	274 (40%)
I came up with new activities/games for my child based on the tips	217 (32%)
I shared the tips with other parents	64 (10%)
I discussed the tips with my child's teacher	15 (2%)
Something else	12 (2%)
Total N=	678

Parents interviewed as part of the qualitative work were also asked whether their use of the tips changed due to school closures and disruption, and whether the tips were useful during this time. Parental responses confirm the results from the survey data. Parents either found they were using the tips the same or more during school closures, mostly to support or partly replace existing home learning, to occupy children during lockdowns when there were few activities outside of the home and/or because parents had more time to spend with their children. The tips were widely considered useful during school disruption, with participants relying on them during remote learning:

> *The text messages were my lifeline. It sounds bad but that's what worked for us during lockdown.* (Parent 8)

> *During the lockdown and everything like that, it came in really handy. Because when we finished all of the work and stuff, we had the rest of the day, we could sit and play with the games to do with the texts and stuff like that. And she found it really good.* (Parent 7)

Parents also found the tips to be helpful during lockdown in providing things to do for children when activities outside the home were not possible:

> *Yes, I used this because when it was closed all the time he was at home and we can't go anywhere, nobody can come to the house so we had to make him busy with sometimes drawing, writing or use these tips on how to help him.* (Parent 13)

Parents also perceived the tips relating to behaviour to be useful during lockdowns and school closures as they helped parents to support their child during emotionally challenging circumstances:

> *I found them quite useful especially the emotional and behaviour ones, that really helped during the lockdown. So even when we were describing stuff or talking about her feelings and her behaviour which really helped during the lockdown. There was a lot of emotional stuff going on, so like there was this one thing that they used … I can't remember, exactly but it was like, I have noticed that you are upset, it is because such and such said this to you. So, just talking to my child helped me, because we were going crazy in the house.* (Parent 15)

Parents were also asked whether they used the tips to come up with activities to do at home following school closures. Just under half of parents interviewed did use the tips to come up with activities. In fact, one parent felt the tips were more effective and engaging than the work set by their child's school:

> *During lockdown, the school were just sending packs after packs after packs out, and it was boring, and it wasn't even in colour. It was just plain. She wasn't going to sit and read it. She wasn't going to do it...she was getting stressed because I was trying to read it to her to teach her and she was going, 'Well, that's not what we do' And it just wasn't working, where the texts were just so much easier for everybody.* (Parent 6)

In contrast, for one parent the tips complemented work being set by their child's school:

> *Some of them actually were similar or on the same theme to the things that they were being set [by the school].* (Parent 3)

Some parents used the tips to come up with new activities. For one parent, this process happened with ease as new activities flowed 'naturally' from the tips. Whereas a couple of parents did not use the tips to come up with new activities as their child enjoyed the existing ones, and they felt confident in the existing tips' impact on their ability.

Staff

In the endline survey, teachers were asked whether the frequency of communication with parents changed following the Covid-19 pandemic and school disruption. The data shows that most teachers (n=68, 91%) reported that significant changes had occurred in teacher–parent communications following the Covid-19 pandemic and related disruption. Teachers were then asked to explain how communication changed in a free-text question. From these answers, it is clear communication changed significantly in terms of the mode, with a lot of communication happening through online platforms such as Class Dojo and Tapestry and via telephone and email instead of face-to-face. In addition, these platforms were used for various purposes, for example, posting learning resources and daily tasks, providing feedback, and generally 'keeping in touch' with parents. Further, the responses to open questions in the survey also show that teachers felt their communication with parents increased in response to the home learning context as families required further support. On the other hand, a few staff members expressed the difficulties in engaging parents in communication during school closures, regardless of the form of communication used.

Teachers were then asked whether these changes continued into the new academic year and four-fifths (n=62, 81%) responded that this was the case. When asked how this change had continued, teachers reported that they were continuing with some changes to communication made because of the Covid-19 pandemic, for example, sending emails rather than letters and writing reports on children's progress in place of parent's evenings. These changes were mainly explained by two reasons: first, that of ease; and second, due to further lockdowns and school closures.

Teachers that used text messages were asked whether their use of texts has changed following the Covid-19 pandemic and school disruption. Most (n=30, 83%) reported that their use of texts had not changed. Of those who said their use of texts had changed, four out of the five staff said that they were using texts more frequently, one answer suggested this to be in place of frequent face-to-face communication, whilst another response perceived parents to prefer communication via text.

In case study interviews, teachers and members of SLT were also asked whether the Covid-19 pandemic and school disruption changed *how* they communicated with parents and the frequency of that communication between March 2020 and August 2020, specifically. In terms of forms of communication, most schools seem to have increased their use of phone calls and emails as a means of directly speaking with parents. Furthermore, a few schools sought additional forms of communication enabling them to communicate more widely with parents, for example, setting up Facebook pages or utilising learning apps and the school website all in line with the survey findings.

On the other hand, the interviews found that the frequency of communication amongst schools varied. For some schools, direct communication with parents has been daily as the Covid-19 pandemic context can change swiftly:

> *Okay, at the moment it's daily because everything changes so quickly, so you're probably looking at two, three even four times a week, but now because we are, we have half of our children at home, learning at home and half in the school who are children of key workers and vulnerable children, we're communicating every single day with them because, so right now I've got my computer out and I'm monitoring who's doing what at home, I've just uploaded my lessons and then before that I was in a classroom teaching, but the children who don't log onto that I need to ring them, so I've got to ring all of their parents to make sure they're okay…* (School 4)

Whereas few schools felt their direct communication with parents lessened during the Covid-19 pandemic. For one school, this was due to a lack of information available to communicate:

> *There was nothing to communicate for some time.* (School 6, Headteacher)

Teachers and members of SLT were also asked whether the Covid-19 pandemic and school disruption changed *what* they communicated with parents about in March 2020–August 2020. Most schools now communicate much more about child well-being and provide parents with ideas, support, and resources to enhance home learning:

> *It's normally to do with activities that we've been doing in class that week. I'll give them an outline of what we've been learning in case they want to continue that learning at home, and then I'll set a little task, some homework so they can have a go. That's normally that we're communicating about.* (School 6, Reception year Teacher)

After discussing their perceived outcomes of the intervention, teachers and members of SLT were asked whether the Covid-19 pandemic and school disruptions changed the extent of the outcomes. It was clear during interviews that both teachers and SLT members had little involvement in the intervention and knew little about it, meaning they felt unable to comment extensively on whether the Covid-19 pandemic affected the outcomes of the interventions.

Perceived outcomes

This section assesses the findings of the programme based on the views of parents and school staff who were surveyed and interviewed on a range of outcomes. Specifically, we explored to what extent parents and school staff felt the intervention led to improvements in children's literacy, numeracy, and behaviour. The section also highlights the perceived outcomes of the programme in relation to parental engagement with the school, parent–child relationships, and the home learning environment.

RQ11 and RQ12 Does the intervention lead to higher literacy and numeracy outcomes and improved behavioural outcomes?

Overall, most of the parents surveyed and interviewed felt the programme led to higher outcomes in areas of literacy, numeracy, and behaviour/self-control. Table 28 below shows that over three-fifths (62%) of respondents thought that the programme has strengthened their child's literacy skills, answering that they 'somewhat agree' or 'strongly agree' that their child's literacy skills are better because of the tips activities. Nearly two-thirds (64%) of respondents answered that they 'somewhat agree' or 'strongly agree' that their child's maths skills are better because of the tips activities. When asked about the improvement to their child's behaviour because of the tips activities, parents were still mainly positive, with half (51%) 'somewhat agree' or 'strongly agree' with the statement. However, a higher percentage of parents were neutral about the impact on behaviour compared to literacy or maths (37% compared with 28% and 27%).

Table 28: Outcomes of Tips by Text (parents)

	My child's literacy skills are better because of the Tips activities	My child's maths skills are better because of the Tips activities	My child's behaviour has improved because of the Tips activities
	Number and percentage	Number and percentage	Number and percentage
Strongly agree	205 (32%)	214 (33%)	180 (28%)
Somewhat agree	198 (30%)	199 (31%)	149 (23%)
Neither agree nor disagree	184 (28%)	178 (27%)	241 (37%)
Somewhat disagree	30 (5%)	28 (4%)	40 (6%)
Strongly disagree	32 (5%)	30 (5%)	39 (6%)

Data collected throughout the telephone interviews with parents confirmed these perceived improvements in areas of literacy, numeracy, and behaviour. Most of the parents said the literacy tips provided engaging exercises that helped the child with reading and the spelling and writing of words. The beneficial impact of the intervention on literacy skills seems more evident to those parents aware of existing speech and language difficulties. For instance, one parent whose daughter had previously struggled with reading and spelling explained:

> *I think the texts have helped because I wouldn't have been spelling words to her, walking round the block when we were allowed out for our exercise I mean, since being back at school, she's been Reader of the Week five weeks running now.* (Parent 8)

A few parents had noticed an improvement in their child literacy's skills but found it difficult to link this directly to the tips activities. The reopening of schools to more pupils from June 2020 and the ongoing learning process, typical of the age group, were mentioned as possible factors facilitating better outcomes in literacy skills. As one parent explained:

> *I think it's quite difficult to say. I think the problem is because he is at an age where he is learning so much at school as well, it's hard to pinpoint and say, that's exactly what helped. I definitely think it helped doing stuff outside of school with him as well, I definitely think that it does help. But I couldn't necessarily pinpoint say that was something that helped him come along a lot, because it could also be school.* (Parent 16)

One parent clarified that the texts suggested activities he was already doing before taking part in the programme and in this case the lack of a perceived direct outcome from the intervention refers solely to this aspect.

When asked to reflect on their child's numerical skills and to discuss if and how the tips activities impacted on the improvements, most of the parents felt positive recognising that the tips were the main driver of the development of numerical skills. Typical examples provided during the interviews included improvement in number recognition (thanks to the activity involving looking for a chosen number whilst on a walk), improvements in counting, and more generally, children being more engaged with flashcards and other numerical activities. As already mentioned for the literacy tips, parents who found the tips especially beneficial were those who were aware of existing difficulties in that specific area. For instance, one parent explained:

> *Yes he is doing really, really well with his maths, he was always quite behind and I think this was something that worrying the school because he was behind in his maths skills until entering Year 1 and now they're absolutely thrilled with him.* (Parent 10)

Focusing on the area of behaviour and self-regulation, several parents felt positive about the support received in the texts, citing how the tips helped their child manage their behaviour effectively, feel more confident in communicating and be better equipped to manage their moods and express their emotions in a constructive way. The quotes below provide clear examples of how specific activities were perceived as effective:

> *I think that was really helpful, so now she expresses her emotions more freely and instead of just being grumpy she'll tell me why she's grumpy, and she remembers the breathing exercises and things, so that's definitely an improvement […] there was one about trying to label what you've seen and so instead of just being angry, tell me that you're angry and we'll talk about why and what we can do, to not be angry anymore. But I think just throughout the advice on talking them through it and letting them come to their own solutions instead of telling them what to do, I think that had a big impact.* (Parent 18)

> *I did find from March being off school, his behaviour did change and one of the tips that I did and actually he came to me on one occasion after we'd done it, I'm talking maybe a couple of weeks after as well, was about the being calm and about taking a breath. And how when you talk to me, or sometimes if I get a little bit upset or angry I'll just take some deep breaths and be calm. Why don't you try it and then do it with him, and then, as I say, a couple of weeks later something had happened and he said, mummy, I've got to take some deep breaths. That was nice. So the conversation from the text did actually help him.* (Parent 5)

Again, a few parents (but not the same as above) were unable to identify any specific impacts of the tips on their child's behaviours. Highlighting ongoing issues like problems taking turns, concentration, or socialising in a group, some parents felt the tips could not tackle such difficulties. It is worth mentioning that Covid-19 might have affected the outcomes of some of the reported issues as during the lockdown and school disruptions they could not practice such social skills, which they would normally learn at school.

RQ13 Does the intervention increase parental engagement with the school?

During the telephone interviews, parents were also asked about their engagement with the school and schoolwork and particularly whether, as a result of the intervention, they were keeping in touch with teachers and engaging with schoolwork more. Almost all parents said that the intervention had not changed the way they engage with teachers and the school. They did acknowledge how communication changed due to Covid-19 and explained the changes introduced by the school, including the introduction of different strategies and new apps to communicate with parents (see also 'RQ10' on Covid-19 impacts). Some parents saw an improvement in communication, others felt less in touch with teachers, but this has been explained as an outcome of Covid-19 and subsequent school disruptions rather than an outcome of the intervention.

RQ14 and RQ15 Does the intervention improve parent–child relationships and the home learning environment?

The intervention was seen by parents as beneficial in terms of improving the parent–child relationships. In the parent survey, three-quarters (74%) of parents strongly or somewhat agreed with the statement 'My child finds more enjoyment from activities we do together'. Only 7% either disagreed or strongly disagreed with the same statement and the remaining 19% neither agreed nor disagreed.

These findings were confirmed and elaborated on by parents during the interviews with most parents reporting increases in the level of enjoyment in shared learning activities since they started receiving the texts. These activities were not necessarily seen as learning, but rather as fun activities, which children were well engaged in and challenged by. A few parents said that thanks to the tips they had rediscovered a 'family time' to play together and this was particularly appreciated during the lockdown and the school closures. The tips helped parents to be more engaged with their children at home as the texts prompted them to interact with the children and gave them ideas for activities. As one parent said:

> *I think it [the texts] brings you back to reality to be a parent, and engage with your child…because in the world today, we're all on our iPads and phones and it's nice to bring you and your child together, to do something. It makes you stop and think, 'oh, this is a good activity to spend a bit of time doing'…It made me evaluate myself as a parent, maybe these are things I should be doing...it shows that there's learning in the house in everyday items and stuff, there are ways to learn.* (Parent 17)

Tips by Text was reported to also have the potential to have a long-term impact on families as most parents stated that they now felt more confident in supporting their child's learning and find it easier to decide what activities to do with their child. Even for those parents already well engaged in the schoolwork activities, the tips offered new ideas for activities as most of the suggested learning activities were new for both the parent and the child. Some parents explained that they have kept all texts so that they can look through them to find activities to do with their child as the tips are easy to vary, to put into use and to repeat, without them having to invent activities. A typical comment was:

> *I think probably it is a little bit easier because if she's sat bored, I can go back through the tips and say oh well why don't we do this, why don't we do that and it means that I don't have to be thinking on the spot, I've got that there for reference, [yes] so it makes it easier sometimes to think of activities to do.'...'Yes, I've got them all, I've never deleted a single one, [yes] so I've literally got months' worth of them on my phone so.* (Parent 18)

A few parents said the tips have made them more aware as to what their child likes as well as where more support is needed. For instance, a parent whose son had a speech and language difficulty said:

> *Yeah, I would say again the letters, the reading and the sounds [have been really useful] because he does have difficulty with his speech and his pronunciation. So we play I spy all the time and I know it was one of the suggestions, it started with the letters and reading and sounds but we play it indoors, we play it outdoors. We're stood in a queue, whether it be waiting for fish and chips or whatever, we'll play I spy.* (Parent 5)

Amongst those less enthusiastic about the intervention, a few parents explained that the tips made little difference in terms of how to decide what activities to do as they were already doing similar activities with their children.

RQ16 Did parents prefer one area of support (for example, literacy) over another (for example, social development or numeracy)?

Whilst most parents said that tips across all three areas were interesting and useful, a few parents said that the tips worked best when they related to an area their child was struggling with. These areas were diverse and specific to individual children, but included numeracy, literacy, and behavioural needs. These parents reported that the tips helped their children engage in challenging subject areas as they involved fun activities and gave parents new ideas for how to help their children with subjects they found difficult. For example, one parent said that they found tips around speech and language the most useful as their son struggles in this area, and the tips gave them prompts for questions to help work on his speech development:

> *I think for me and the way my son is…it's [difficulties] with his speech…the letters, the sounds and the reading [tips] were definitely [useful] ones and I think…questions was a good one because [they were]…giving you ideas and suggestions of the questions, things to ask him.* (Parent 5)

Another parent said that numeracy tips were especially useful as they were less confident in helping their child in this area:

> *'The…maths-based ones were a bit more useful, because I think I tend to go more towards literacy side…rather than the numeracy stuff.* (Parent 14)

A few parents highlighted tips relating to behaviour and emotions as particularly useful, because their children were experiencing emotional or behavioural issues. These parents had used the tips to address diverse issues including anxiety, shyness, and emotional regulation, reporting that the tips helped them to better engage with their children and ask questions to help them deal with their emotions. For example, one parent told us that they used the tips to help her son deal with his anxiety:

> *The emotional ones on how to deal with like emotions and stress and worry, with them, I think they were really good, better than the others because my son in general has quite bad anxiety, so to receive a text message to say oh you can help deal with child anxiety by doing this, I thought that was brilliant, it worked really well for me.* (Parent 25)

Another said that they helped them to deal with their son's anger:

> *He's going through a phase right now, where he gets really bad tempered, if, say his brother does something to tease him…but in one of the tips, I'll always remember, is to just sit down, be calm and sort it, understand, his emotions and say 'I know you're upset', and try and understand, and it really does work. Where in the past, I'd be like 'Wipe that thing off!' and 'Stop it!', and but it's sort of recognising that he is upset, and it tends to, that's one of the things that actually stuck in my head, to understand your child's emotions, that he is angry and frustrated.* (Parent 17)

School staff perspectives on outcomes

As already mentioned in the previous sections, Tips by Text was predominantly a parent-focused intervention with school staff having little if any involvement or awareness of the programme. However, in the survey carried out with Reception year teachers at the end of the intervention, staff were asked about the impact of the intervention on a range of areas including literacy, numeracy, behaviour, parent-school engagement, parent-teacher engagement, and the home learning environment (Table 29). The results indicated that school staff found it difficult to decide whether the intervention produced positive outcomes, especially in terms of improving parent–child relationships and child behavioural outcomes. These could be explained by the difficulties in expressing a view on outcomes not directly observable by teachers. Moreover, it is important to mention that these results might be related to the massive impact Covid-19 had on pupils educational and socio-emotional outcomes as well as the timing of the survey, which was completed in the 2020 autumn term when children had just come back to school but with some areas of the country still heavily affected by local outbreaks of Covid-19, school disruptions, and isolation rules.

Table 29: Tips by Text outcomes (endline survey with staff)

	Increased parental engagement with you	Increased parental engagement with literacy activities	Increased parental engagement with the school	Improved child literacy outcomes	Improved child numeracy outcomes	Improved child behavioural outcomes/self-regulation	Improved parent-child relationships	Improved Home Learning Environment
	Number and (%)	Number and (%)	Number and (%)	Number and (%)	Number and (%)	Number and (%)	Number and (%)	Number and (%)
Not at all	17 (28%)	11 (18%)	13 (21%)	12 (20%)	12 (20%)	15 (25%)	12 (20%)	11 (18%)
A little	11 (18%)	13 (21%)	13 (21%)	11 (18%)	12 (20%)	7 (11%)	9 (15%)	10 (17%)
Sometimes	6 (10%)	7 (11%)	7 (12%)	5 (8%)	4 (6%)	4 (7%)	4 (6%)	5 (8%)
A lot	1 (2%)	1 (2%)	2 (3%)	0 (0%)	0 (0%)	1 (1%)	2 (3%)	2 (3%)
Don't know	26 (42%)	29 (48%)	26 (43%)	33 (54%)	33 (54%)	34 (56%)	34 (56%)	32 (54%)

Telephone interviews conducted with Reception year teachers and members of the SLT confirmed the survey data, as in most of the cases teachers were unable to express a view on the improvement of parental engagement either with them, with literacy activities or more generally with the school. Due to the Covid-19 pandemic, school staff have had limited interactions with parents, and as mentioned this made difficult for teachers to assess any improvement of parent–child relationships and learning environment. Similarly, when asked about the improvement of literacy, numeracy, and behavioural outcomes teachers were unsure or negative about any clear outcome, mentioning Covid-19 as the main obstacle to have a better picture. A typical comment was:

...it's not that I don't think it's been helpful, I think it's just I haven't seen it. (School 1)

Usual practice and changes over time

The usual practice section describes teachers' and schools' practices around communication before the intervention and towards the end of the intervention, primarily using data from the baseline and endline surveys of teachers, but also includes findings from the interviews with school staff where relevant. Since randomisation was carried out at the individual level, within classes, the findings are based on what happened in the classes involved in the intervention and at an individual level. This was to establish what usual practice in communication methods in schools looks like and to see if there were any changes that school staff could attribute to being involved in the intervention.

The section begins with an analysis of changes in the use of text messages in schools, before reporting on changes in other forms of communication over the course of the intervention. It should be noted that, with the impact of Covid-19, it is difficult to attribute any changes over time to the intervention rather than the disruption caused by the Covid-19 pandemic.

Teachers' communication with parents—methods

Teachers were asked in the surveys what methods they use to communicate with parents (Table 30). At baseline, the most common modes of communication were in person with Parents Evenings (93%) and face-to-face meetings (89%) however, at the time of the endline survey, this had dropped (to 72% and 66%, respectively). The use of text messages by teachers dropped slightly (from 47% to 44%), which can possibly be explained by the increase in other forms of, more personal communication, such as phone calls and emails. The use of other forms of communication such as the school website and social media platforms also increased during the period (for example, Facebook and Twitter). These changes could be a result of disruptions caused by lockdowns and school closures as schools will have been looking to alternative modes of communication to face-to-face forms, which were more common at baseline (the impact of Covid-19 is explored in more detail in 'RQ10').

Table 30: Teacher's methods of communication

Form of communication	Baseline (% of Cases)	Endline (% of Cases)
Parent's evenings	121 (93%)	49 (72%)
Face-to-face meetings	116 (89%)	45 (66%)
Letters	111 (85%)	48 (71%)
Phone calls	81 (62%)	55 (81%)
School website	69 (53%)	40 (59%)
Text	61 (47%)	30 (44%)
Facebook	32 (25%)	25 (37%)
Email	24 (19%)	33 (49%)
Twitter	24 (19%)	14 (21%)
Other	58 (45%)	25 (37%)
Total N =	130	68

Data from the endline survey also indicated the use of other communication means, such as Tapestry (50%), Marvellous Me (12%), and Seesaw (10%). Free-text answers in the baseline survey indicate that 'Class Dojo' is commonly used by teachers (N=10) and the endline survey showed a slight increase (N=14).

In the case study interviews, members of the SLT and teachers at intervention schools were asked how they would usually communicate with parents. Many teachers noted the significance of informal face-to-face communication with parents, usually situated before or at the end of the school day. Further, other forms of communication were also common such as phone calls, website use, parents' evenings, newsletters, texts, the SeeSaw app, Class Dojo, and Tapestry.

Teachers' communication with parents—frequency

The baseline data showed that when teachers used the following methods of communication with parents, they were most commonly used on a weekly basis:

- Facebook (68%);
- Letters (64%);

- Twitter (54%);

- Email (50%);

- School website (46%);

- Text (42%); and

- Phone call (32%).

By the time of the endline survey, weekly emails and texts went up to 55%, as did the use of Facebook (to 72%), whilst Twitter remained the same. Letters were used less often at endline than at baseline (with weekly letters dropping from 50%) and this declining trend was also seen in the use of the school website (down to 42%).

Whilst at the baseline, face-to-face meetings were most frequently cited on a daily basis (55%), this fell to 48% by endline. Parent's evenings were most frequently used termly (80% at baseline rising slightly to 86% at endline). At endline, additional forms of communication cited by teachers were most used daily, for example, Tapestry (59%), the Seesaw app (57%), and Marvellous Me (50%).

Interestingly, the use of weekly phone calls declined from 32% at baseline to 19% in the endline survey. It might have been expected that phone calls would increase during the treatment period due to lockdown measures and school closures. However, the increase in the weekly use of texts (up by 13%) might explain this.

Contrastingly, out of teachers who were asked how often they communicate with parents in the case study interviews, four schools noted they had daily communication with parents, either face-to-face, over the phone or via reminders/notifications. One school noted their encouragement of parents to communicate with them regularly:

> *So, we are pretty approachable, we've got a good relationship with our parents so they can ring any time and have conversations and engage in things.* (School 7)

Teachers' use of text messages

Teachers who indicated that they used text messages to communicate to parents, were also asked a follow up question about the sort of content they sent by text (Table 31). The following responses all registered increases between baseline and endline; 'Ask parents or carers to help their child with specific projects, homework, or other learning activities at home', 'Suggestions for how parents or carers can facilitate their child's learning', 'General information about learning and development for that age group', and 'Suggest parents or carers do specific activities with their children, for example, practise phonic sounds, recognise numbers, use mathematical language like biggest/tallest'. 'General announcements for your class', 'General school announcements', and 'Information to a parent/carer relating specifically to their child' have seen decreases in use since the intervention. Increases in learning-specific information may be attributed to the home learning context, in that teachers will have had to provide further information and support to parents during school closures. Further, declines in general announcements could coincide with increased use of other communication platforms (see the section below 'Schools Use of Text Messages').

Table 31: Content of text communication—teachers' messages

Content of communication	Baseline (% of Cases)	Endline (% of Cases)
General announcements for your class	50 (85%)	23 (77%)
General school announcements	43 (73%)	18 (60%)
Information to a parent/carer relating specifically to their child	20 (34%)	7 (23%)
Ask parents or carers to help their child with specific projects, homework, or other learning activities at home	10 (17%)	8 (27%)
Suggestions for how parents or carers can facilitate their child's learning	5 (9%)	3 (10%)
General information about learning and development for that age group	4 (7%)	5 (17%)
Suggest parents or carers do specific activities with their children, for example, practise phonic sounds, recognise numbers, use mathematical language like biggest/tallest	4 (7%)	4 (13%)

Information about the Early Years curriculum	3 (5%)	Not collected
Total N=	59	30

Schools' use of text messages

Teachers were also asked about the use of text messages by the school generally and the results showed that the vast majority of schools use texts and that the proportion had increased by the endline (from 83% to 86%). This concurs with case study data, in that more than half of the schools had used texts to communicate, as they feel parents are more responsive with this method. The remaining schools did not use text messages, mainly due to concerns around parents having multiple phone numbers and whether they will be able to keep track but also due to previous attempts at using text messaging not working as expected (for similar reasons):

> *We also found that a lot of our parents aren't very good at updating us with their new mobiles. And they changed their mobile numbers quite often, we weren't actually getting through to them.* (School 7)

Teachers were then asked how often parents receive texts from school (on average) and the data showed the frequency of texts increased during the period. At baseline, texts were most commonly sent on a weekly basis (56%) or monthly (32%) basis, with daily at only 8% (and half-termly and termly both less than 5%). By the time of the endline survey, the frequency of texts to parents increased to 17% daily and 64% on a weekly basis, whilst the percentage of parents receiving texts monthly dropped to 15% (half-termly and termly remained very low).

Teachers were also asked what sort of content their school includes in their text messages to parents (Table 32). Interestingly, the proportions of all cases (of comparable categories) increased from baseline to endline. This may be a result of lockdown restrictions and school closures as schools may have used text messages more, as a more direct form of personal and general communication to parents during times when face-to-face communication was not possible.

Table 32: Content of text communication—messages from school

Content of communication	Baseline (% of Cases)	Endline (% of Cases)
General school announcements	101 (96%)	52 (98%)
General announcements for a specific class	79 (75%)	44 (83%)
Information to a parent or carer relating specifically to their child	23 (22%)	18 (34%)
Ask parents or carers to help their child with specific projects, homework, or other learning activities at home	8 (8%)	14 (26%)
General information about learning and development for that age group	3 (3%)	6 (11%)
Suggestions for how parents/carers can facilitate their child's learning	Not collected[29]	5 (10%)
Information about the curriculum for a child's key stage	Not collected	4 (8%)
Suggest parents/carers do specific activities with their children, for example, practise phonic sounds, recognise numbers, and use mathematical language like biggest/tallest	Not collected	2 (4%)
Total N=	105	53

In the case study interviews, both teachers and SLT members were asked whether their school is more likely to use text messages as a means of communication with parents following their involvement in the intervention. Most teachers did not think the school would begin to use texts, for varied reasons. A couple of teachers felt their existing messaging systems through apps such as Tapestry and Class Dojo were more than suitable for communicating with parents:

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[29] This information was not collected in the baseline survey.

No, we probably won't (continue with Tips by Text] because Tapestry allows parents to reply, whereas we wouldn't have that facility if we use the text system. So, if we set a task on there the parents can upload what the children have done and then to reply, so it's a lot more sort of a two-way system rather than I think if we sent a text, we wouldn't get anything back from the parents. (School 5, Reception year teacher)

One respondent noted that resources are not in place for this to happen currently:

No, just because I don't have a work phone and it would mean parents having my mobile number, which isn't allowed, so I wouldn't be using texts…I don't think they have any plans to at the moment, I know some schools do have a text system, but we don't have that, and I haven't heard for a couple of us having any plans to do that. (School 1, Early Years Lead)

Both groups were also asked if the programme had made a difference to teachers and members of the SLT were also asked whether the intervention had made a difference to any other staff members, for example, teaching assistants or support staff. Teachers had little involvement in the intervention so felt unable to provide feedback. However, one respondent perceived the programme to be positive and gave them confidence in text messaging parents:

*I didn't get the full experience of it, but what I've taken from it is I believe this can work, I believe this will help and I believe it's something, I would have the confidence now to use text systems to send regular, little updates to parents on things they could do, I would just like to learn more about how you guys did it. (*School 4)

Sharing information about learning and the curriculum with parents

Teachers were also asked what methods they use to communicate information about learning and the curriculum to parents. The results in Figure 6 below show that by the time of the endline survey, meetings with parents had noticeably decreased (from 71% to 42%), as did the use of letters (from 65% to 58%), and the use of texts (from 7 to 4.5%). The use of email increased substantially (from 5% to 27%), as did the use of phone calls (from 4% to 18%). Other forms of communication, identified by teachers at baseline, were also common in the endline and these included the Tapestry app (50%), Marvellous Me (12%), and Seesaw App (10%).

Figure 6: Sharing information about learning and the curriculum: baseline and endline
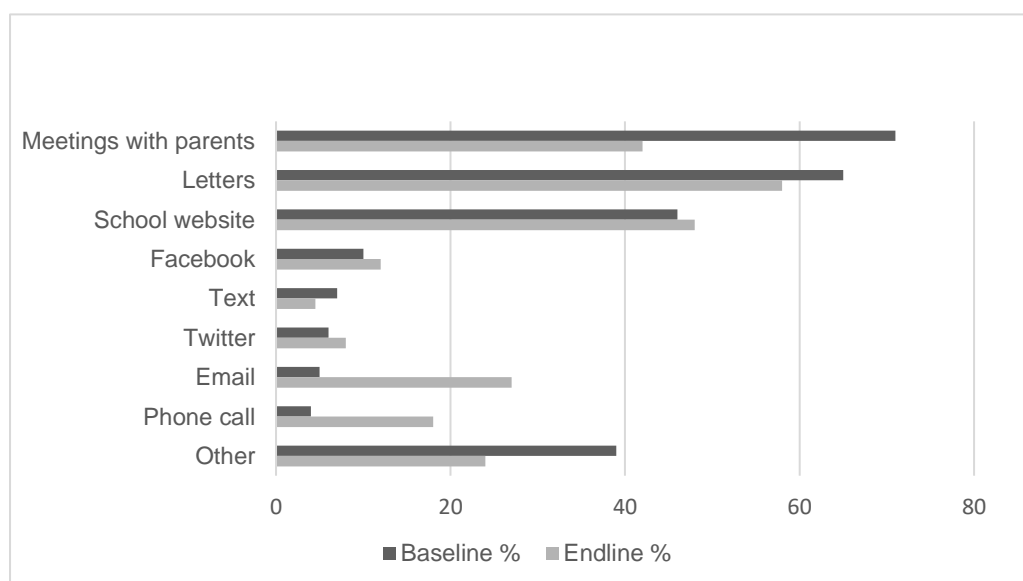
Changes such as the increase in uses of email, phone calls, and the decrease in meeting with parents may be due to school closures as a result of Covid-19—teachers will have sought means of direct communication other than meeting with parents such as email and phone calls due to restrictions on in-person communication.

Teachers were then asked how often they use the above methods to communicate information about learning and the curriculum to parents. The main results at the two time points are summarised here:

- email on a weekly basis (slight decrease from 67% at baseline to 65% at endline);
- Facebook on a weekly basis (large drop from 54% at baseline to 9% at endline);
- text message on a weekly basis (decrease from 43% at baseline to 33% at endline); and
- letters on a weekly basis (slight decrease from 35% at baseline to 29% at endline)

Other keys changes occurring during the intervention included:

- the use of text messages on a monthly basis increased (from 43% to 67%);
- phone calls at baseline were more likely to be on a monthly or half-termly (40%), whereas by the endline, this had decreased, and the use of weekly phone calls increased to 25% (from 20%);
- the use of school websites on a half-termly basis (from 32% to 39%);
- termly meetings with parents termly decreased from (54% to 50%); and
- the daily use of Twitter decreased (from 71% to 60%).

Additional answers (at endline) included the weekly use of the Seesaw app (67%), daily and weekly use of Tapestry (41%), and daily use of Marvellous Me (50%).

Encouraging parental engagement in children's learning

Teachers were also asked what they currently do to encourage parents or carers to engage with their children's learning (Table 33). The increase between the two time points in the response 'Provide suggestions for how parents or carers can facilitate their child's learning' is notable as children would have been learning remotely during the treatment period, therefore, teachers may have advised parents on how to support their child's learning whilst at home. Further, the decrease in 'Arrange meetings with parents or carers to discuss areas of learning' is also notable as due to lockdown restrictions and school closures, teachers may not have been able to arrange individual meetings with parents, potentially as a result of reduced in-person communication or higher workloads to facilitate remote learning. The decrease in 'Share general information about learning and development stages for this age group' is perhaps explained by the increase in homework and more specific suggestions for facilitating learning.

Table 33: Teacher's reason for communication

Reason for communication	Baseline (% of Cases)	Endline (% of Cases)
Provide homework/home learning activities to facilitate their child's learning	112 (92%)	61 (94%)
Provide suggestions for how parents or carers can facilitate their child's learning	93 (77%)	54 (83%)
Share general information about learning and development stages for this age group	86 (71%)	42 (65%)
Arrange meetings with parents or carers to discuss areas of learning	80 (66%)	35 (54%)
Share information about the curriculum for their key stage	75 (62%)	42 (65%)
Refer to other places for support, for example, libraries and specialist EAL/SEND provision	39 (32%)	25 (39%)
Other	3 (3%)	2 (3%)
Total N=	121	65

Teachers were then asked how often they carry out these strategies. The findings across the two time points are summarised below. Many of the changes reflect the changes in practices during Covid-19 lockdown measures and school closures and teachers' actions to provide further support to parents, either in undertaking home learning or in other areas that there may be a need, for example, referrals to other services.

- Share general information about learning and development stages for this age group—most common frequency at baseline was termly (at 31%) but by endline the frequency had increased and half-termly was more common (at 43%).
- Share information about the curriculum for their key stage—mostly used on a half-termly basis at baseline (43%) and that had increased by endline (49%).

- Provide suggestions for how parents or carers can facilitate their child's learning—used mostly on a weekly basis at both time points and increased (from 39% to 46%).
- Provide homework/home learning activities to facilitate their child's learning—most common answer was weekly but decreased slightly between baseline and endline (from 84% to 78%).
- Arrange meetings with parents or carers to discuss areas of learning—mostly used on a termly basis but this also decreased (from 58% to 47% at endline).
- Refer to other places for support, for example, libraries and specialist EAL/SEND provision—most common answer at baseline was termly (39%) however, this became more frequent with the common answer being half-termly by endline (at 42%).

Other methods or programmes to engage parents

In the baseline survey, teachers were asked an open survey question about whether they use other methods for engaging with parents or carers. The responses indicate that teachers use class meetings and learning workshops with parents, occasion events such as Christmas, Mother's Day, Father's Day, and Garden Parties, Tapestry, and Class Dojo. Teachers also indicated they provide resources to parents to support home learning. Data from the endline survey had fewer open-text responses, however, teachers reported providing similar methods, for example, Class Dojo, Tapestry and home learning resources. In the interviews with parents, a few mentioned that they were using the school-led apps such as Tapestry and DoJo, alongside what was contained in the texts.

Further, teachers at baseline were asked an open survey question about whether their school was taking part in any programmes focusing on literacy or numeracy. Teachers' answers ranged from Times Tables Rockstars, White Rose Maths, Read Write Inc., Power of Reading, Power of Pictures, and Talk for Writing. In the endline survey, nearly two-fifths of teachers (38%, 23 staff) reported that their school was taking part in other programmes focusing on literacy and numeracy and responses included Launchpad for Literacy, Boosting Reading Potential, and the Nuffield Early Language Intervention, whilst the Read Write Inc. programme was still a common response at endline.

Cost

In line with the EEF guidance, in producing estimates of costs we focus primarily on the perspective of a participating school. We consider costs in terms of pre-requisites, start-up costs, and recurring costs. Note that we provide the costs for the extended 12-month intervention as delivered in the trial, some of which would not be incurred in the nine-month Tips by Text programme as originally designed.

There are no pre-requisites from the perspective of a participating school. For a parent, there is a pre-requisite of having a mobile phone in order to receive the text messages, but it is considered a fair assumption that the vast majority of parents would already have this (this was not generally raised as an issue during the evaluation, but it was noted by one teacher during the qualitative interviews that not all parents would necessarily have access to a mobile phone).

Start-up costs relate mainly to any cost associated with purchasing the package of Tips by Text messages (we discuss this further below); these costs were effectively covered by the EEF for this trial. As costs are considered over a three-year period, it is considered reasonable that the same curriculum of messages could be re-used with each new cohort of Reception year children, and it should not be necessary to update the messages over this time frame.

Recurring costs are the costs of sending the text messages to parents. There is also the cost of collecting parent mobile numbers and setting these up in the text messaging system (which would need to be conducted for each new cohort of children) and updating these in response to any changes in parent details over the course of the year. Records from the delivery team indicate that a total of around 330 mobile numbers were updated over the course of the trial, with approximately one-third of these occurring within the first two months of the programme starting. There are also costs incurred as a result of the need to monitor delivery and any responses received.

The key costs of the programme, as incurred in the trial, are summarised in Table 34. These are converted to per school and per pupil costs based on the number of schools and pupils involved in the trial (that is, on the basis of 109 schools and an average of 33 pupils per school in Reception year).[30]

Table 34: Cost of delivering Tips by Text

Item	Type of cost	Cost	Total cost over three years	Total cost per pupil per year over three years
Sending text messages	Total cost of sending programme of messages, per school	£76	£229	£2
Set up and monitoring costs	Cost of setting up system and monitoring messages across year, per school	£1,482	£4,446	£44
Purchase of Tips by Text messages	Cost of purchasing, per school	Unknown	-	-
Total			£4,675	£47

Note: Figures are rounded to the nearest £.

For the purposes of the trial, text messages were obtained by the BIT as a package, and may therefore, underestimate the usual cost to schools. If a rate of 3p per text message for schools is assumed instead, and on the basis that schools

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[30] This is the average number of pupils per Reception year in the schools participating in the trial; this will slightly underestimate the total number of pupils as it will not include any pupils who were withdrawn from participating in the evaluation.

would send three messages per week over a school year (counted as 39 weeks), this would equate to a slightly higher cost of around £3.50 per pupil (rather than the figure of £2 per pupil incurred in the trial, and as shown in Table 34).

Set-up and monitoring costs are also counted based on the costs incurred by the delivery team in the trial (information on total costs incurred in relation to set-up and monitoring during the trial was provided by the delivery team; we converted this to a per school cost by dividing this by the number of participating schools; this equated to the cost of £1,482 per school shown in Table 34). In practice (and depending on the eventual form in which the programme was delivered to schools) these may instead form a time cost for schools. In the trial, the initial data collection was conducted by the evaluation team, but the inputting of numbers into the text messaging system, and subsequent updating of mobile numbers, was conducted by the delivery team. It could be considered that this would be an activity that schools would be undertaking anyway, to obtain parent numbers and keep those up-to-date, and particularly if schools are able to incorporate the Tips by Text messages into any existing text messaging system they use. However, it is possible that the programme may require them to carry out updates more frequently than they would otherwise normally do.

At this stage, it is unclear how the programme would ultimately be provided to schools if outside of a trial. The package of messages could be supplied to schools for the schools to send out to parents, along with a 'how-to' guide. The delivery team estimated that this would require three to four hours per term to upload all the messages, ensure all the contact details are properly formatted and programmed as well as time to monitor the platform for 15–30 minutes a day for the duration of the programme to check for updated numbers and responses from parents that could be safeguarding concerns (Table 35). Alternatively, the programme could also be provided as a package whereby the delivery team still send out the messages (and therefore, continue to conduct updating of numbers and monitoring of messages); in the scenario of an effectiveness trial, it is more likely that the latter approach would be adopted. Even in this latter scenario, it is worth acknowledging that there are still time costs for schools in relation to liaising with the delivery team regarding updating of mobile numbers or parent/pupil details.

Table 35: Estimated time costs in delivering Tips by Text (in scenario where school sends messages)

	Time required for a participating school
Initial set up (upload messages, program in contact details)	three to four hours per term
Ongoing monitoring (checking for any responses, updating numbers)	15–30 minutes per school day

Costs of initial programme development are excluded from the estimates but stood at just under £80,000.

In terms of recurring costs, once schools had the programme of messages, this could effectively be rolled out with each new cohort of Reception year pupils. Thus, once excluding any start-up cost for purchasing the package of messages, other costs remain the same across a three-year period, as presented in Table 36. We do not make any adjustment for inflation here, given there is already a fair amount of uncertainty around the cost estimates given these per pupil costs do not factor in any initial cost for purchasing the programme of messages.

Table 36: Cumulative costs of Tips by Text (assuming delivery over three years), per pupil

	Year 1	Year 2	Year 3
Tips by Text	£47	£47	£47

School staff were asked about time and costs of the programme in the interviews that formed part of the implementation and process evaluation. Staff overall thought that the intervention was a worthwhile investment. Members of the SLT reported that the intervention did not create any extra costs for them, although one teacher did feedback that sorting out the phone numbers and updating them if they changed was time-consuming for them. We asked teachers if parents and carers asked for advice or help with the tips and just two teachers (out of 62) said this happened, both of which said it sometimes took time and resource away from staff or the school.

Whilst the analysis of costs focuses on the perspective of the school, the intervention has time implications for parents as well; this was also explored as part of the IPE. Parents were asked about barriers to using the tips and particularly if the activities could not be fitted into a normal day, as well as if they had spent time talking to teachers about the tips. We asked parents about any associated costs with completing the activities from the messages and in all but one case, they said there was no cost to them. One parent did say they had bought art and craft materials to do some of the activities but that they were not extensive costs. We also asked parents how long completing the activities took on average in a week. Responses were varied, partly depending on the activities, but sometimes varying with how their children were feeling and how receptive they were to the tasks; the average was around 20 minutes, but estimates ranged from 45 minutes per week to just a few minutes.

Finally, it is also worth noting that the trial involved additional costs relating to the extension of the programme as a result of the Covid-19 pandemic that would not otherwise have been incurred. The extended delivery period incurred costs in sending the additional messages and time required for continuing to update mobile numbers and monitoring messages and delivery (this was the most substantive element of the additional costs). In line with the EEF cost evaluation guidance, these costs are included within our headline estimate in order to reflect the intervention as it was evaluated. If these additional costs are excluded, the estimated cost stands at £34 per pupil. The changes made to the programme in response to the Covid-19 pandemic also required further development costs, in order to: develop and pilot further text messages to cover the extended period of delivery; to ensure the activities suggested in the messages were compliant with Covid-19 circumstances; and also to check the messages were developmentally appropriate when children had missed time in school (estimated cost of around £24,000). These additional development costs are not included within our estimate of costs, in line with the approach for initial development costs.

Conclusion

Table 37: Key conclusions

Key conclusions
1. Tips by Text took place in an unprecedented time, and the results of the evaluation need to be interpreted with this in mind. Not only did the trial experience significant attrition (approximately 70%), as far fewer post-tests could be completed due to Covid-19, but children experienced substantial disruption to their education and lives during this time, in a way that could not have been envisaged at the start of the evaluation
2. With this caveat in mind, children whose parents received the Tips by Text programme showed no additional progress on a measure of literacy skills compared with children whose parents had not received the programme. There was also no statistically significant impact of the programme on children's socio-emotional outcomes
3. Amongst pupils eligible for free school meals, the estimated effect size for literacy skills was equivalent to one month's additional progress. However, this was not statistically significant and should be interpreted with caution
4. Parents reported that the texts were useful, were delivered at the right frequency, and that they were pitched at the right level with appropriate content. Most parents were using the tips but were cautious when describing impacts due to it being hard to attribute change due to the Covid-19 pandemic. A small number of parents felt that the texts were similar to what they were already doing with their children and did not use them. Teachers were unable to comment on impacts as they were not involved in the delivery of the programme
5. Parents phone numbers changed regularly—this will need to be considered in any potential future roll-out, as this could be quite burdensome on schools to keep updated

Impact evaluation and IPE integration

Evidence to support the logic model

Changes to the logic model prior to data analysis were outlined in the 'Introduction' section. Due to Covid-19 disruption it is difficult to draw firm conclusions regarding the logic model as the main outcome testing and delivery were so affected. Although evidence on perceived outcomes was limited from teachers, parents were positive about the potential impacts on literacy, numeracy, social development, and behaviour. Any reporting of such impacts is always however, subject to the fact that children will naturally develop over time and thus, distinguishing any effect that may be a result of the programme itself, rather than development that would still have happened otherwise, is not really feasible. The impact evaluation does not provide evidence of overall impacts on literacy skills or socio-emotional outcomes, but as discussed below, these results need to bear in mind the significant attrition and context of Covid-19. The perceived impacts on parental engagement with schools would have been disrupted by the Covid-19 pandemic and are difficult to comment on. The intervention was found to be feasible and acceptable to parents. There is some tentative evidence for the logic model overall and further exploration would be ideal in more normal school circumstances and using a larger sample at post-test (due to less attrition) to identify areas of strength and weakness in the logic model.

Interpretation

Outcomes

The results of the impact evaluation do not provide evidence that the Tips by Text programme improved literacy outcomes for children in the Reception year, with the magnitude of the estimated effect small and not statistically significant. These results are robust to various alternative specifications. Exploration of the four component subscales of the literacy measure used show that any potential impact may be focused on letter sound knowledge; here we observe an effect equivalent to one month's additional progress, but which is not statistically significant. For the three other subscales (early word recognition, sound isolation, and sound deletion), results indicated no additional months of progress. In addition to the significant caution that should be placed around these results due to the Covid-19 context, it is also important to acknowledge potential issues with floor effects in the literacy measure (discussed below). The IPE also suggested there may have been some contamination, through parents in the trial group sharing texts or speaking to other parents about the tips. In the presence of any such contamination, the impact of the programme may be underestimated; however, whilst the extent of any contamination cannot be systematically captured in our study, the IPE evidence did not indicate that this was a widespread occurrence.

Analysis of impacts on the measures of socio-emotional outcomes considered in the evaluation, again showed the magnitude of effects to be small, and if anything, pointed to less favourable outcomes for those in the treatment group, although there is considerable uncertainty around the estimates and results are still compatible with there being no impact.

Analysis of subgroups showed an effect size equivalent in magnitude to one month of additional progress for literacy skills for pupils eligible for FSM. It also appeared that any poorer outcomes in terms of socio-emotional development were concentrated amongst pupils not eligible for FSM. All of these findings need to be considered with significant caution.

Findings from the IPE showed that most parents felt the programme led to higher outcomes in areas of literacy, numeracy, and behaviour/self-control. Many said the tips provided engaging exercises that helped their child with reading, spelling, and writing and were a driver in the development of numerical skills. Parents also recognised the behaviour and self-regulation tips helped their child manage their behaviour effectively, feel more confident in communicating, and be better equipped to manage their moods and express their emotions in a constructive way.

The tips were seen by parents as beneficial in terms of improving parent–child relationships, with most parents reporting increases in the level of engagement and enjoyment in shared learning activities since they started receiving the texts. The intervention was reported to have the potential to have a long-term impact on families as most parents stated that they now felt more confident in supporting their child's learning and find it easier to decide what activities to do with their child.

Parents did not think the tips had changed the way they engage with teachers and the school. They did acknowledge how communication changed due to Covid-19 and some saw an improvement in communication, whilst others felt less in touch with teachers, but this has been explained as an outcome of Covid-19 and subsequent school disruptions rather than an outcome of the intervention.

School staff found it difficult to comment on whether the intervention was a worthwhile investment as they have not seen the results of the impact evaluation; however, several felt that the investment was worthwhile as it had required no additional costs to the school in terms of time and resources.

Fidelity

The research found that the intervention was delivered as intended, with parents receiving texts three times per week, as outlined in the intervention model. Although the intervention was extended by three months due to the Covid-19 pandemic, this did not alter the fundamental design of the intervention, because additional texts were designed and delivered during the extended period. The intervention was seen as feasible for parents. The vast majority thought the amount of texts was right for them, and the timing of the texts (on Tuesday, Thursdays, and Saturdays) worked well. The early Saturday text worked especially well for some, as it came at a time when they had more time and were planning activities for the day.

Parents also thought it was realistic to achieve the objectives of the intervention, by implementing some or most of the texts in practice. Many said it helped with organising activities and getting new ideas, especially to include learning into everyday activities. For some parents, the tips were not very different from their existing practices, but they still got reassurance and confirmation that they were doing the right thing, and it was useful as a reminder. For some parents, the school disruption during Covid-19 made the texts even more important, as they were looking for activities for their child to do whilst not in school and/or lockdown.

Implementation

No problems were reported around receiving texts and most parents put the tips into use immediately after receiving them, and carrying out activities with their children on a weekly basis. Parents found that the tips were easy to put into practice as they were concise and easy for parents to understand, they also fitted easily into daily routines and did not require any additional resources or costs (meaning the intervention was accessible to parents regardless of income). The main reasons given for some tips not being implemented was that parents had already done the activities suggested in the texts or they were too busy to do them.

Almost all parents said that the tips were pitched correctly to their child's age and ability but whilst parents reported that tips across the three subject areas were useful and interesting, there was some evidence that tips were most relevant where they addressed areas children found challenging. In a small number of cases, parents had not used certain tips because they were viewed as pitched at the wrong level for their child and, as such, were too easy or too difficult for them.

As assumed in the theory of change, there were no school- or teacher-based requirements once parents' details were passed on to the intervention team and teachers had little awareness of the intervention, either in terms of who was receiving the texts, or the content of the tips.

The main changes to the project that school staff would like to see related to the trial conditions. This included issues with the initial assessment, the fact that not all children participated in the project, and the lack of knowledge schools had about the texts and who was receiving them. As all of these suggested changes related to the trial they do not act as significant barriers to schools participating in the intervention.

Changes to usual practice

The most common mode of communication for teachers at baseline was face-to-face, in the form of either parent's evenings or face-to-face meetings. However, by the time of the endline survey, these had decreased and other forms of communication had increased, in particular emails, phone calls, and social media, most likely due to the Covid-19 pandemic and school closures.

Most forms of communication were used on a weekly basis at baseline whilst face-to-face were most likely used daily. In the endline survey, most forms of communication had stayed at weekly, whilst the weekly use of texts and emails both increased.

Regarding communication about learning and information about the curriculum, the endline survey indicated increases in email, social media use, and school websites, but decreases in letters and face-to-face communication.

On strategies to encourage parents to engage with learning, there were increases in strategies associated with improving the home learning environment—concurring with schools' closures and children learning remotely. Additionally, this mirrors decreases in arranging meetings with parents.

The baseline data showed that most teachers and schools already used texts although the use of texts overall decreased slightly by the endline. Texts were most used for general school and class announcements or information. The case study research found that most teachers or schools did not think the intervention influenced them to begin using texts.

Covid-19

In addition to the significant impact of Covid-19 on the trial in terms of attrition, it is also possible that this changed the way in which parents used the programme. This could either be through having more time at home and more chance to use the tips, or less time if parents were also trying to juggle work. In addition, some of the messages may have been harder to implement if the activities parents were doing with their children were limited to the home during lockdowns. The endline survey of parents found that whilst half said the Covid-19 pandemic changed how they used the tips, the other half said it did not. Half of parents whose use of the tips did change said that they repeated indoor activities. The majority of parents found the tips fun and engaging for their children and felt they supported their learning, particularly during school closures. A few parents came up with new activities inspired by the tips. The interviews also showed that Covid-19 had been both a facilitator or a barrier to different families with some families having more time to engage in activities from the tips as they were all at home together more and others found it difficult without their set routines.

The data from the endline survey of staff show that most reported significant changes in teacher–parent communications due to the Covid-19 pandemic, with many teachers relying on learning platforms and apps amid reduced face-to-face contact with parents. Most teachers noted these changes continued into the following academic year (2020–2021). The case study research showed variations in how the Covid-19 pandemic had changed the frequency of communication with some schools communicating daily with parents, whilst others faced many difficulties in keeping in contact with parents.

Existing evidence

Tips by Text was in large part inspired by York and Loeb's (2018) READY4K! trial in the United States, which showed positive impacts on literacy skills for preschool children, with even greater impacts for those with lower literacy skills at baseline. Whilst we do not observe the same magnitude of impacts in the Tips by Text evaluation, given the unprecedented times in which the Tips by Text evaluation took place, a comparison with this study, or other text messaging programmes, is unlikely to be valid. There are of course also other differences between the studies, as highlighted earlier in the report, such as use of different outcome measures, and the use of placebo, rather than no messages, amongst the control group in the York and Loeb (2018) study. Our study remains however, to the best of our knowledge, the first evaluation of a text messaging programme for parents of children in Reception year in the UK. Findings from the IPE do lend support to the previous research by Cortes *et al.* (2018) and Fricke *et al.* (2018) that three messages per week was an optimal amount of messages. The study also supported other existing research in finding that text messages were an easy way of delivering support to parents that was generally well received.

Limitations and lessons learned

The Covid-19 pandemic caused massive disruption to this trial and the lives of families and the everyday running of schools. There is no way of separating these changes from the evaluation and therefore, considerable caution must be taken when interpreting the results, especially given the large attrition from the study. There is no reason to speculate that Covid-19 would have affected children and their families in one group of the study more than the other, and so we assume that the impacts have been shared across intervention and control groups.

Whilst attrition was relatively even across treatment and control groups, the analysis sample was far smaller than anticipated, reducing the ability to detect an effect. Exploratory analysis using Bayesian methods point to substantively similar results to those obtained from the main analyses using frequentist methods, but the significant attrition remains a critical issue.

It is also important to acknowledge that our analysis effectively assumes missingness is random, which arguably is a strong assumption, especially in the context of Covid-19. We found limited statistically significant associations between observable characteristics and a missing post-test score; however, this does not mean that there are factors that we do not observe in our data that may be associated with missingness. In addition, our main analysis is based on a complete case analysis, as pre-test scores are missing for less than 5% of the sample with post-test scores; however, we do see that amongst the full sample with post-tests, those in the intervention group were more likely to be missing a pre-test score (in the full randomised sample there was no statistically significant association between treatment arm and missing a pre-test score). Sensitivity analyses imputing missing pre-test scores did not however, make any substantive difference to the main results.

Throughout, it is important to bear in mind the fact that the evaluation cannot be considered a fair representation of what may have happened in the absence of Covid-19. There remain some elements of the original model that are untested, and we cannot be sure if, for example, nine months rather than 12 months of delivery would have had a larger or smaller impact on children's outcomes. There were also some differences in the composition of the sample between randomisation and analysis.

We were nimble and flexible in our approach to adapting the evaluation (including options for remote testing of the YARC and remote delivery of the SDQ) and the BIT were equally responsive to creating new messages for an additional three months of delivery, so we do not believe that anything could have changed in the circumstances to improve the evaluation in response to the onset of the Covid-19 pandemic. For any future evaluation, it may be worth re-considering whether there are any alternative suitable measures for the assessment of literacy outcomes, given the indication of floor effects at pre-test, despite the fact that the chosen assessment is generally thought to be suitable for use with this age group. The IPE suggested that there may have been some scope for contamination, as some parents did share text messages, which may also reduce the chances of observing an impact. To control for that in future, using a cluster randomised trial would ensure that the risk of any contamination was greatly reduced (although it would still be possible for intervention parents to share messages with other parents from schools in the control group). It would also mean that there was no risk of parents feeling like their child had been selected due to low performance, which was mentioned by a small number of parents.

The Covid-19 disruption does mean that results are less generalisable to other situations and we would suggest significant caution in the applicability of results to other cohorts and contexts.

Future research and publications

Given the significant disruption faced by the trial, it would be valuable to re-consider the original research questions in a time that is less acutely affected by the Covid-19 pandemic. Furthermore, changes to the data available as a result of the Covid-19 pandemic, including the stopping of national assessments, meant that it was not possible to explore all intended outcomes and research questions in this evaluation. It would be valuable, for example, to consider whether there may have been impacts on numeracy outcomes. It would also be of interest to explore further any impacts for pupils eligible for FSM in future research. There may also be value, data permitting, in conducting longitudinal analysis of this cohort of pupils in future years, to consider whether there may be any longer term impacts of the programme.

An examination of different delivery models would enable an exploration of whether increased involvement from schools and teachers would raise engagement and parental involvement with schools (that is, if in future the text messages were sent by schools themselves). However, any potential positive boost could be offset by the negative impact of burden on schools' time that delivering it themselves and monitoring the messages and updating numbers could bring.

It would also be of interest to explore whether tailored packages to children struggling with a particular subject could be of use. In addition, an examination of whether the different types of 'GROWTH' or 'TIPS' messages were more useful and how they were used could help instruct the development of further messages.

It is the intention of the project and evaluation teams to seek to publish these findings. No further analysis by the evaluation team is anticipated at this stage.

References

Bergman, P. and Chan, E. (2017) 'Leveraging Technology to Engage Parents at Scale: Evidence From a Randomized Controlled Trial'. *CESifo Working Paper Series No. 6493,* [e-journal]. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2989472 (accessed 18 August 2021).

Cortes, K. Fricke, H. Loeb, S. and Song, DS. (2018) 'Too Little or Too Much? Actionable Advice in an Early-Childhood Text Messaging Experiment'. *CEPA Working Paper 18–16,* [pdf]. Available at: https://cepa.stanford.edu/sites/default/files/wp18-16-v201808.pdf (accessed 18 August 2021).

Department for Education (2019) Schools, Pupils and their Characteristics: January 2019. *Department for Education.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812539/Schools_Pupils_and_their_Characteristics_2019_Main_Text.pdf (accessed 18 August 2021).

Doss, C. Fahle, E. Loeb, S. and York, BN. (2017) 'Supporting Parenting Through Differentiated and Personalized Text-Messaging: Testing Effects on Learning During Kindergarten'. *CEPA Working Paper 18–16,* [pdf]. Available at: http://cepa.stanford.edu/sites/default/files/wp16-18-v201705.pdf (accessed 18 August 2021).

Doss, E. Fahle, M. Loeb, S. and York, BN. (2018) 'More Than Just a Nudge: Supporting Kindergarten Parents With Differentiated and Personalized Text-Messages'. *NBER Working Paper 24450* [online]. Available at: http://www.nber.org/papers/w24450 (accessed 18 August 2021).

EEF (2018) Statistical Analysis Guidance for EEF Evaluations: March 2018. EEF, London. Available at: https://educationendowmentfoundation.org.uk/public/files/Grantee_guide_and_EEF_policies/Evaluation/Writing_a_Protocol_or_SAP/EEF_statistical_analysis_guidance_2018.pdf (accessed ??).

Fricke, H. Kalogrides, D. and Loeb, S. (2018) 'Who Drops Out of Educational Text Messaging Programmes and Why'. *Economics Letters,* 173: 39–43.

Goodman, R. (1997) 'The Strengths and Difficulties Questionnaire: A Research Note'. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 38: 5, 581–6. doi: 10.1111/j.1469-7610.1997.tb01545.x**.**

Goodman, A. Lamping, DL. and Ploubidis, GB. (2010) 'When to Use Broader Internalising and Externalising Subscales Instead of the Hypothesised Five Subscales on the Strengths and Difficulties Questionnaire (SDQ): Data From British Parents, Teachers and Children. *Journal of Abnormal Child Psychology*, 38, 1179–91.

Higgins, SE. and Katsipataki, M. (2015) 'Evidence From Meta-Analysis About Parental Involvement in Education Which Supports Their Children's Learning'. *Journal of Children's Services*, 10: 3, 280–90. doi: 10.1108/JCS-02-2015-0009

Hoffmann, TC. Glasziou, PP. Boutron, I. Milne, R. Perera, R. Moher, D. et al. (2014) Better Reporting of Interventions: Template for Intervention Description and Replication (TIDieR) Checklist and Guide'. *BMJ,* 348: g1687. doi:10.1136/bmj.g1687.

Hulme, C. Stothard, SE. Clarke, P. Bowyer-Crane, C. Harrington, A. Truelove, E. and Snowling, M. (2011) YARC York Assessment of Reading for Comprehension. Early Reading. Test Manual, Second Edition. GL Publishers, London.

Humphrey, N. Lendrum, A. Ashworth, E. Frearson, K. Buck, R. and Kerr, K. (2016) Implementation and Process Evaluation (IPE) for Interventions in Education Settings: An Introductory Handbook. EEF, London. Available at: https://educationendowmentfoundation.org.uk/public/files/Evaluation/Setting_up_an_Evaluation/IPE_Handbook.pdf (accessed 18 August 2021).

Invernizzi, M. Meier, J. and Juel, C. (2015) Pals™: Phonological Awareness Literacy Screening–Technical Reference. University of Virginia. Available at: https://pals.virginia.edu/public/pdfs/rd/tech/1-3_Tech_Ref_2015.pdf (accessed ???).

Jakobsen, JC. Gluud, C. Wetterslev, J. and Winkel, P. (2017) 'When and How Should Multiple Imputation be Used For Handling Missing Data in Randomised Clinical Trials – A Practical Guide With Flowcharts.' *BMC Medical Research Methodology,* 17: 162. doi: 10.1186/s12874-017-0442-1.

Jeynes, WH. (2005) 'A Meta-Analysis of the Relation of Parental Involvement to Urban Elementary School Student Academic Achievement'. *Urban Education*, 40: 3, 237–69.

Jeynes, WH. (2007) 'The Relation Between Parental Involvement and Urban Secondary School Student Academic Achievement: A Meta-Analysis'. *Urban Education,* 42: 1, 82–110.

Jeynes, WH. (2015) 'A Meta-Analysis of the Relationship Between Father Involvement and Student Academic Achievement'. *Urban Education*, 50: 4, 387–423.

Kraft, MA. and Rogers, T. (2015) 'The Underutilized Potential of Teacher-To-Parent Communication: Evidence From a Field Experiment'. *Economics of Education Review,* 47, 49–63.

Lord, P. Rennie, C. Smith, R. Gildea, A. Tang, S. Miani, G. Styles, B. and Bradley, C. (2021) Randomised Controlled Trial Evaluation of Families Connect. National Foundation for Educational Research (NFER) with Queen's University Belfast and Save the Children (UK). NFER, Slough. Available at: https://www.savethechildren.org.uk/content/dam/gb/reports/families-connect/nfer-final-report.pdf (accessed 27 April 2022).

McNeish, D. (2016) 'On Using Bayesian Methods to Address Small Sample Problems'. *Structural Equation Modeling: A Multidisciplinary Journal*, 23: 5, 750–73. doi: 10.1080/10705511.2016.1186549.

Miller, S. Davison, J. Yohanis, J. Sloan, S. Gildea, A. and Thurston, A. (2016) Texting Parents Evaluation Report. EEF, London. Available at: https://educationendowmentfoundation.org.uk/public/files/Projects/Evaluation_Reports/EEF_Project_Report_Texting_Parents.pdf (accessed 18 August 2021).

Nuzzo, R. (2014) 'Statistical Errors: P Values, the 'Gold Standard' of Statistical Validity, Are Not as Reliable as Many Scientists Assume'. *Nature*, 506: 7487, 150–2. doi: 10.1038/506150a.

Pomerantz, EM. Moorman, EA. and Litwack, SD. (2007) 'The How, Whom and Why of Parents' Involvement in Children's Academic Lives: More is Not Always Better'. *Review of Educational Research,* 77: 3, 373–410.

Ritchie, J. and Lewis, J. (2003) Qualitative Research Practice: A Guide for Social Science Students and Researchers. Sage, London.

Sibieta, L. (2016) Nuffield Early Language Intervention: Evaluation Report and Summary. EEF and Nuffield Foundation, London. Available at: https://www.nuffieldfoundation.org/wp-content/uploads/2016/02/EEF-Evaluation-report-Nuffield-Early-Language-Intervention.pdf (accessed ???).

Smith, N. Wishart, R. Scandone, B. and Burridge, H. (2020) Texting Students and Study Supporters: Evaluation Report and Summary. EEF, London. Available at: https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/texting-students-and-study-supporters (accessed ??).

Stone, LL. Otten, R. Engels, RCME. Vermulst, AA. and Janssens, JMAM. (2010) 'Psychometric Properties of the Parent and Teacher Versions of the Strengths and Difficulties Questionnaire for 4- to 12-Year-Olds: A Review'. *Clinical Child and Family Psychology Review*, 13: 254.

Uwimpuhwe, G. Singh, A. Higgins, S. and Kasim, A. (2020) 'Application of Bayesian Posterior Probabilistic Inference in Educational Trials'. *International Journal of Research & Method in Education*, 44: 5, 533–54. doi: 10.1080/1743727X.2020.1856067.

Vallis, D. Singh, A. Uwimpuhwe, G. Higgins, S. Xiao, Z. De Troyer, E. and Kasim, A. (2021) 'EEFANALYTICS: Stata module for Evaluating Educational Interventions using Randomised Controlled Trial Designs.' Statistical Software Components S458904, Boston College Department of Economics, Revised 04 April 2021. *Research Papers in Economics.*

Wilkinson, D. Bryson, A. and Stokes, L. (2018) 'Assessing the Variance in Pupil Attainment: How Important is the School Attended?'. *National Institute Economic Review*, 243: 1, R4–R16.

Wright, H. Carr, D. Wiese, J. Stokes, L. Runge, J. Dorsett, R. Heal, J. and Anders, J. (2020) URLEY Evaluation Report. EEF, London.

York, BN. and Loeb. S. (2018) 'One Step at a Time: The Effects of an Early Literacy Text Messaging Program for Parents of Preschoolers'. *NBER Working Paper 20659* [online]. Available at: http://www.nber.org/papers/w20659 (accessed 18 August 2021).

Appendix A: EEF cost rating

Figure A.1: Cost rating

Cost rating	Description
£ £ £ £ £	*Very low:* less than £80 per pupil per year.
£ £ £ £ £	*Low:* up to about £200 per pupil per year.
£ £ £ £ £	*Moderate:* up to about £700 per pupil per year.
£ £ £ £ £	*High:* up to £1,200 per pupil per year.
£ £ £ £ £	*Very high:* over £1,200 per pupil per year.

Appendix B: Security classification of trial findings

OUTCOME: York Assessment of Reading for Comprehension (YARC)

Rating	Criteria for rating			Initial score		Adjust		Final score
	Design	MDES	Attrition					
5 🔒	**Randomised design**	**<= 0.2**	0-10%					
4 🔒	Design for comparison that considers some type of selection on unobservable characteristics (e.g. RDD, Diff-in-Diffs, Matched Diff-in-Diffs)	0.21 - 0.29	11-20%					
3 🔒	Design for comparison that considers selection on all relevant observable confounders (e.g. Matching or Regression Analysis with variables descriptive of the selection mechanism)	0.30 - 0.39	21-30%			Adjustment for threats to internal validity **[0]**		
2 🔒	Design for comparison that considers selection only on some relevant confounders	0.40 - 0.49	31-40%					
1 🔒	Design for comparison that does not consider selection on any relevant confounders	0.50 - 0.59	41-50%					
0 🔒	No comparator	>=0.6	**>50%**	0				**0**

Threats to validity	Risk rating	Comments
Threat 1: Confounding	Low	Minimal imbalance observed at baseline and analysis adjusts for pre-test scores, although floor effects were found in baseline YARC scores. Analyses that exclude pre-test scores yield a larger effect size (0.6 compared to 0.2) but confidence intervals remain wide and cross zero. Randomisation procedure was straightforward so unlikely to have led to errors.
Threat 2: Concurrent Interventions	Low	Unlikely to be a correlation between group allocation and any other programme
Threat 3: Experimental effects	Moderate	One-fifth (21%) of parents reported sharing texts with other parents in the same year group and school, and in total one-third (31%) said they shared texts with other parents. This may have weakened experimental contrast via direct and indirect contamination.
Threat 4: Implementation fidelity	Moderate	Some evidence of non-compliance – e.g., due to time pressure or feeling that the intervention was not relevant – but only 2% of parents of responded to surveys reported not applying the texts at all. Twenty percent of parents received fewer than 150 of the 165 messages due to programme withdrawal, invalid phone numbers or delivery failure.
Threat 5: Missing Data	Moderate	High levels of attrition (72%), balanced across intervention and control groups. Analyses accounting for characteristics associated with missingness show no substantive differences with the main results.
Threat 6: Measurement of Outcomes	Low	Floor effects observed in YARC scores at pre-test, which limited ability to distinguish variation in baseline literacy skills. Floor effects not found at post-test. Test administrators were blind to which condition pupils were in.
Threat 7: Selective reporting	Low	Study is registered and a comprehensive SAP has been followed.

- **Initial padlock score:** [0] Padlocks – This was a well-conducted multi-site trial with MDES at randomisation of 0.1; however, significant attrition (72%) due to Covid has led to this low score.
- **Reason for adjustment for threats to validity**: N/A
- **Final padlock score:** [0] Padlocks

Appendix C: Memorandum of Understanding with schools—Addendum version from August 2020, which includes extension due to Covid-19

Addendum to the Memorandum of Understanding in relation to participation in the Tips by Text Study

This is an addendum to the Memorandum of Understanding (MOU) [school name] signed in 2019 to confirm your participation in the Tips by Text study (see Appendix 1 for the original MOU).

Due to the Coronavirus pandemic, the study has been extended by approximately 6 months to account for school closures to most pupils in spring/summer 2020. There are three changes to the project timeline for your consideration. Other than these changes, everything else in the original MOU remains the same.

1. **Parents will continue to receive text messages until October 31st, 2020**

In the original project timeframe, the text messages were due to finish at the end of July 2020. This has now been extended to the end of October 2020, which means that parents randomly allocated to the 'treatment' group[31] will continue to receive weekly text messages to support their children's language, literacy and socioemotional development until the end of October 2020. BIT will update parents, via text message, on this change.

If at any point a parent no longer wishes to receive the text messages, they may opt out by replying 'STOP' to any of the text messages. If parents would like to opt out of the study entirely (i.e. from having their child's data processed), they should email tipsbytext@bi.team. We will also share an information sheet for parents with you shortly and would appreciate it if you could forward this to all parents in September 2020.

2. **Pupil assessments will take place in November and December 2020**

To understand the impact of the text messages on pupil outcomes, short literacy assessments which were originally planned for June-July 2020 will now take place in November- December 2020 instead. The researchers will work with [school name] to ensure all necessary safety procedures (handwashing, social distancing, the wearing of personal protective equipment etc.) to protect pupils and staff are adhered to.

3. **Activities with teachers will take place in October-November 2020**

Activities with teachers which were originally scheduled for June-July 2020 will now take place in October-December 2020. The evaluation team will work with [school name] to ensure these activities take place at a time that best suits teachers. Teachers will be asked to complete:

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[31] Parents of Reception pupils were randomly chosen to either receive or not receive the text messages (roughly a 50:50 split). Using randomly assigned groups is the best way of evaluating if a programme has an impact on pupil outcomes, as the two groups can then be assumed to be the same, therefore any differences in outcomes found can be attributed to the text messages.

- An online survey focusing on their experiences of the programme and any perceived impacts on parents, pupils and the wider school;
- A short questionnaire examining socio-emotional development of pupils who participated in the study (now in Year 1); and
- A telephone interview (only relevant for staff in a small number of schools; 8 staff members in total).

A small number of parents will also be contacted by the evaluation team to partake in short telephone interviews in October-December 2020 (schools will not need to facilitate this).

If you have questions about the above changes to the timetable, please do not hesitate to contact us at tipsbytext@bi.team. If we do not hear from you by August 31st 2020, we will assume that you are happy to go ahead with the changes outlined above.

Appendix 1

Memorandum of Understanding in relation to participation in the Tips by Text Study

Please sign both copies, retaining one for your own records and returning the second copy to tipsbytext@bi.team or post to Fionnuala O'Reilly at: The Behavioural Insights Team, 4 Matthew Parker Street, London, SW1H 9NP.

School Name: _____

School Address: _____

This *Memorandum of Understanding* (MOU) sets out the roles and responsibilities of schools participating in, and the parties involved in delivering and evaluating, the Tips by Text curriculum.

This document is being sent to your school because you have indicated interest in participating in the project.

1. The project team and their roles

The Tips by Text project is a collaboration between the Education Endowment Foundation (EEF), the Behavioural Insights Team (BIT), *the* National Institute of Economic and Social Research (NIESR), the Institute for Employment Studies (IES), and the University of Oxford. Together, these parties are referred to as the '**project team**' in this MOU. This MOU will also refer to the Tips by Text curriculum to be sent to parents via text messages as the '**Intervention**'.

The EEF are the funders of the project.

BIT will be responsible for designing the curriculum of text messages (in collaboration with trusted academics) and sending text messages to a selection of parents/carers of pupils in Reception year.

NIESR and IES (the evaluation team) will evaluate the programme's impact on pupil outcomes. They will also explore parent's perceived impact on outcomes and whether there is evidence of impact on the home learning environment, parental engagement and parent-child relationships. They will also assess whether the programme could be implemented at a larger scale.

The University of Oxford will have access to the data after the project has been completed to conduct further analyses. This study will form part of Fionnuala O'Reilly's PhD research on what works to improve early learning outcomes for children. If you would like to know more about this research, you can contact Fionnuala directly at: fionnuala.oreilly@psy.ox.ac.uk

2. Communication with parents

All participating schools will be required to distribute an information letter and adjoining privacy notice (downloadable at https://rebrand.ly/tipsbytext) to parents of pupils entering Reception year in September 2019. This letter will be provided by the project team and shared with schools shortly.

The letter and privacy notice will inform parents of the nature of the project, the personal data that will be collected about them and their child and how this data will be processed. It will also give them the opportunity to withdraw from the project if they wish. Providing parents/carers with the opportunity to withdraw their data and the data of their child from the project if they so wish will provide due consideration for their privacy and rights in relation to their data.

Schools should allow parents an initial two weeks to respond if they wish to withdraw from the study. In cases where parents inform the school that they do not wish to participate in the project, schools should remove data of these pupils and parents from the data they share with the project team.

Beyond the initial two-week period, parents/carers will be able to withdraw from receiving the text messages at any point during the project by responding 'STOP' to any text message, or withdraw from the entire study by contacting the project team directly at tipsbytext@bi.team

Parents/carers will be provided with full details on their rights under data protection laws and contact details for the project team in the information letter (which BIT will provide to schools).

3. The evaluation

The evaluation of the programme is being conducted by NIESR and the IES (together, the '**evaluation team**'). The project involves the evaluation of the Tips by Text curriculum through a randomised controlled trial (RCT), along with an implementation and process evaluation. Parents of Reception year pupils will be randomly chosen to either receive or not receive the curriculum (roughly a 50:50 split). Using randomly assigned groups is the best way of evaluating if a programme has an impact on pupil outcomes, as the two groups can then be assumed to be the same, therefore any differences in outcomes found can be attributed to the programme.

As part of the evaluation, Reception year teachers will be asked to:

- Complete a short, online survey prior to the text messages being sent out, covering existing practices of using text messages with parents, the purposes of these and any other parental engagement activities done by the school
- Complete a short online survey towards the end of the programme, focusing on teachers' experiences of the programme and any perceived impacts on parents, pupils and the wider school
- Provide selected information about participating pupils and parents (a template will be provided by the evaluation team)
- Facilitate the assessments of pupils prior to the programme (September-October 2019) and towards the end of the programme (June-July 2019)
- Complete a short questionnaire examining socio-emotional development at the end of the programme (June-July 2019) (for pupils whose parents have not withdrawn)
- Participate in brief, telephone interviews at the end of the programme. Staff will be selected from a small number of schools (eight in total from across the region) to participate in this stage of the research

4. Data sharing and data protection

- For the purposes of conducting the evaluation to assess the impact of Tips by Text, NIESR, IES, BIT and the University of Oxford will all become data controllers of personal data of parents, school staff and pupils obtained from schools and other sources such as the National Pupil Database. They may share personal data with trusted processors such as academics, test administrators, transcribers and research assistants solely for the purposes of proper delivery, management and evaluation of the project. At the end of the project, data will be submitted to the EEF's data archive which is managed by the Fischer Family Trust (FFT). At this point, EEF will become a data controller and FFT will be a data processor
- The legal basis for processing data for this project is legitimate interests (NIESR, IES and BIT) and public task (University of Oxford)
- NIESR, IES and BIT will securely delete all personal data within six months of the project finishing. The University of Oxford will retain the data from this project until Spring 2025 to permit further analysis
- The Privacy Notice for this project is available to download here
- Pupils will be asked to complete short assessments in September-October 2019 and June-July 2020. In addition, teachers will be asked to complete a short questionnaire on each pupil in June-July 2020. The responses will be collected by an independent test administrator and accessed by NIESR, IES, the University of Oxford, the Department for Education, the EEF's archive manager and, in an anonymised form, with the Office for National Statistics and potentially other research teams
- Further matching to NPD and other administrative data may take place during subsequent research
- Your school's data will be treated with the strictest confidence and will be transferred securely and saved in secure locations only accessible by the project team in line with GDPR and the Data Protection Act 2018
- We will not use names or the name of your school in any report arising from this project

5. *Responsibilities*

a. **The project team** as a whole will:

- Produce an information sheet and privacy notice for parents which schools will distribute to parents. This will set out the full details of the project and the anticipated personal data processing
- Ensure that any parental withdrawals (once the programme is live) are attended to as quickly as possible

b. **BIT will:**

- Implement the Tips by Text curriculum to parents that have been selected at random to receive the text messages as part of the RCT
- Keep a log of parents who withdraw from the study (either by texting 'STOP' or by emailing the project email address), and share this log with the evaluation team
- Act as the main point of contact for schools and parents for anything to do with the text messages
- Monitor text responses from parents and follow up with parents where appropriate

c. **The evaluation team** will:

- Share a data collection template with schools and assist schools with data collection where necessary
- Conduct the randomisation of parents to the treatment (receiving texts) and control groups (not receiving texts)
- Act as the main point of contact for schools regarding data collection
- Facilitate data sharing with other members of the project team as necessary for the implementation and evaluation of the project
- Coordinate with the independent test administrator and schools to help arrange testing in September-October 2019 and June-July 2020
- Carry out online surveys of school staff in autumn 2019 and summer 2020
- Carry out online surveys of parents in summer 2020

- Provide an information letter for school staff regarding the project, explaining what will be required of them, providing information on data security and specifying a main point of contact for any questions
- Visit a sample of schools and carry out case study interviews with staff
- Visit a sample of schools and carry out focus groups with parents
- Send out questionnaires for teachers to complete about each pupil, which will be collected by the independent test administrators
- Collect and analyse the data from the project and write up the findings
- Disseminate findings from the study - the final summary report for this project will be shared with all participating schools and will be available online on the EEF's website

d. **The schools** will:

- Name a 'Project Champion' to serve as the main point of contact for the school with the project team
- Send parents of pupils entering Reception year in September 2019 the parent information letter and privacy notice
- Provide the evaluation team with the data required to evaluate the project (ensuring accuracy of the data and removal of all parents and pupils who have withdrawn from the study)
- Allow time for staff to complete the online surveys in September-October 2019 and June-July 2020 and the short questionnaire about their pupils in June-July 2020
- Allow time for each assessment phase and liaise with the independent test administrator to find appropriate dates and times for assessments to take place
- Liaise with the evaluation team and assist in the arrangement of case study and focus group visits, if selected to take part, enabling short telephone interviews with relevant staff and providing a suitable space for a focus group with parents
- Ensure staff are briefed about the programme and their role in it and support them to complete the surveys at the beginning and end of the project
- Inform BIT if the school is taking part in another EEF funded project
- Ensure the shared understanding and support of all staff for the project and personnel involved

e. **All parties will:**

- Provide such assistance to each other as is reasonably required to enable all parties to comply with requests from parents and pupils who are involved in the project to exercise their rights under data protection legislation
- Comply with EU data protection laws including the General Data Protection Regulation and the data protection laws of the UK including the Data Protection Act 2018
- Use all reasonable endeavours to work together collaboratively and productively, in particular in relation to meeting key dates and timeframes set out in the School Information sheet

6. *Funding and costs*

As set out in the information sheet provided to schools, participation in this project is free and it is not anticipated that there will be any significant implementation costs for schools, although there may be minor administrative costs at certain stages of the project. However, for the avoidance of doubt, any funding provided by the EEF for this research will cover the project team's staff costs and implementation costs only, and it cannot be used for any administrative costs that may incurred by schools.

7. *No partnership or agency*

Nothing in this agreement is intended to, or shall be deemed to, establish any legal partnership or joint venture between any of the parties, constitute any party the agent of another party, or authorise any party to make or enter into any commitments for or on behalf of any other party.

8. *Binding Terms*

Nothing in this document will constitute or evidence a legally binding contract to create legal relations between the Parties.

We commit to participating in the Tips by Text study as detailed above

Signature of authorised officer of the School: _____

Date: _____

Full name: _____

Position: _____

Contact email: _____

Project Champion(s) (if different to authorised officer named above):

Name: _____

Job title/role: _____

Email address: _____

Name: _____

Job title/role: _____

Email address: _____

Appendix D: School information letter

Tips by Text: Engaging Parents in Early Learning

This project is a collaboration between the Education Endowment Foundation (EEF), the Behavioural Insights Team (BIT), the National Institute of Economic and Social Research (NIESR), the Institute for Employment Studies (IES) and the University of Oxford.

We are seeking state-funded primary schools (Reception year classes) to take part in an innovative project testing a digital curriculum to improve language, literacy, numeracy and socio-emotional skills at home (parents/carers[32] will receive 3 text messages per week). A version of the curriculum has already been tested in the US and has been shown to **improve literacy by the equivalent of 2 additional months' progress**.

What, how and when?

Tips by Text is a nine-month curriculum adapted in line with the Early Years Foundation Stage Profile (EYFSP). Tips are delivered to parents in text message format. An example of a text message is outlined below:
> *'As you put the dishes away, count the plates 1-by-1 with your child. Try again with the bowls.'*

In this project, we are testing the impact of Tips by Text on pupil outcomes using a randomised controlled trial. This means that the curriculum will be delivered to half of the parents in all of your Reception year classes. These parents will be chosen at random in October 2019. Those who are allocated to receive the curriculum will be sent 3 text messages per week from November 2019 to July 2020. Each week, the messages will centre on a particular topic like letter recognition, counting or managing emotions.

We will prepare an information sheet for participating schools to send to parents. Parents will also have the opportunity to withdraw from receiving the text messages at any point by simply texting 'STOP'. We won't start sending text messages until **November 2019** but the number of school places is limited so sign up today!

What are the benefits to my school?
By participating in this study your school will receive:

- **Free** tips for parents to build their child's language, literacy, numeracy, and social-emotional skills at home;
- **Potential improvements in EYFSP results:** the curriculum has the potential to improve pupils' attainment; and
- The opportunity for your school to **work with the EEF to build groundbreaking evidence** on what works to improve educational outcomes for all children.

What will it cost my school?
Participation is **free**. All costs will be covered by the EEF.

How much time will it take my school?

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[32] The term 'parents' is inclusive of all parents, guardians and carers throughout this note.

The curriculum itself will be implemented entirely by BIT; school staff will not be required to undergo any training, send any text messages or provide ongoing support to parents regarding the text messages. Schools will be required to:

- Send out a parent information letter;
- Provide pupil and parent level data;
- Facilitate pre and post testing in schools, delivered by trained researchers; and
- Participate in a short online survey. The evaluation team may also visit your school to better understand your experience.

How will data sharing work?

Participating schools will be required to provide pupil data (including pupil name, date of birth, unique pupil number) in order to facilitate the evaluation and enable linkage to the National Pupil Database. Schools will also need to provide parent data (parent name, mobile telephone number and email address) in order to send the text messages.

All personal data collected as part of the study will be treated with the strictest confidence by the project team and processed only in accordance with the requirements of the GDPR and the Data Protection Act 2018. BIT has run research studies in more than 100 schools nationwide since the introduction of GDPR in May 2018. Further details about the precise roles of each member of the project team in relation to the processing of personal data will be included in a Memorandum of Understanding and information sheet for parents which we will share in due course.

Project team

- **Behavioural Insights Team (BIT)**: Starting life inside 10 Downing Street, the Behavioural Insights Team (BIT) has evolved to become a world-leading social purpose company with offices in New York, Sydney, Singapore, Manchester and London. We generate and apply behavioural insights to inform policy, improve public services and deliver positive results for people and communities.
- **The National Institute of Economic and Social Research (NIESR)**: NIESR is a charity and Britain's longest established independent research institute. Together with the Institute for Employment Studies, they will act as an independent evaluator to determine whether Tips by Text is successful.
- **The Institute for Employment Studies (IES):** IES is an independent, international centre of research and consultancy in education, public employment policy and organisational human resource management. Together with NIESR, they will independently evaluate the impact of Tips by Text.
- **Education Endowment Foundation (EEF):** The EEF is an independent charity dedicated to breaking the link between family income and educational achievement. They run projects which test the efficacy of education interventions to generate new evidence of what works.

How will the curriculum be evaluated?

We will use a mix of short assessment tests, results from the EYFSP and qualitative feedback from teachers and parents to evaluate impact. At least one of your Reception year classes will receive a pre and post test (a standard reading assessment which will take no longer than 20 minutes per child). You will be informed of which class(es) have been chosen for testing in June/July 2019. External researchers will come into your school to deliver these assessments.

Key dates/timeline

Month	Activity
Feb - Jun 2019	Schools sign up to the project (first come, first served!)
Sept 2019	Schools send the information sheet to parents and submit pupil and parent

	data
Sept/Oct 2019	In school pre-testing of chosen classes (NIESR and IES)
Nov 2019	Delivery of texts to half of your Reception year parents begins (BIT)
Jul 2020	Delivery of texts to half of your Reception year parents ends (BIT)
Jun/Jul 2020	In school post-testing of chosen classes (NIESR and IES)
Summer 2021	Results of RCT published (EEF)

Next steps

We have limited spots for this project. If you are interested in participating or finding out more, please email: **tipsbytext@bi.team**

We look forward to hearing from you soon!

Appendix E: Parent information sheet

Tips by Text

Information for Parents/Guardians

Dear parent/guardian,

[School Name] is taking part in a project called 'Tips by Text'. As part of the project, parents/guardians of children in Reception year will receive 3 text messages per week with tips and ideas for activities to improve their child's **language, literacy, numeracy, and socio-emotional skills**.

In this project, we will test the effectiveness of the text messages using a randomised controlled trial (RCT). All this means is that some parents/guardians will receive text messages and some won't. Who gets the text messages will be decided at random. Using random selection is the best way to see if a programme has made a difference to pupil outcomes.

The project is a collaboration between the Education Endowment Foundation (EEF), the Behavioural Insights Team (BIT), the National Institute of Economic and Social Research (NIESR), the Institute for Employment Studies (IES) and the University of Oxford (i.e. the Research Team).

What is involved?

- Text messages will be sent to those randomly selected to receive them in November 2019 and they will run until July 2020. If you are <u>not</u> randomly selected to receive the text messages, you may still be included in some of the research activities below
- Your child may be asked to complete a short literacy assessment, carried out by trained researchers, in September-October 2019 and June-July 2020. The assessment is designed to be fun and engaging, and we expect that your child will enjoy taking part
- Your child's teacher may be asked to complete a questionnaire about your child's social development
- You will be asked to complete a short survey in June-July 2020 and you may be asked to participate in interviews or focus groups

What will happen to your data?

- In order to run the programme and evaluate its impact, [School Name] will share data on you and your child with the Research Team
- We take your and your child's data security very seriously and will be working closely with [School Name] to ensure that data is handled appropriately and securely
- Data will be shared and processed in accordance with GDPR and the Data Protection Act 2018
- For the purpose of research, the data provided by schools along with the data from the assessments will be linked with pupil information from the National Pupil Database (NPD), and shared with the Department for Education, the EEF's archive manager and, in an anonymized form, with the Office for National Statistics and potentially other research teams. Further matching to NPD and other administrative data may take place during subsequent research
- If you have any questions about [School Name] sharing data with the Research Team, please contact [Relevant person at school]
- A final report is expected to be published in Summer 2021. No individual pupil, parent or school will be identifiable in this report - all details will be fully anonymised
- Please read the attached Privacy Notice for full details

Would you like to participate?

You are under no obligation to take part if you do not want to. If you do not want you or your child to participate in the project, please return the form below.

You can text 'STOP' in response to any text message you receive as part of this project and you will no longer receive the text messages. However, you and your child would remain part of the study. To withdraw completely from the study, at any time, please email tipsbytext@bi.team

If you would like any further information about the project, you can call the Tips by Text hotline on +44 20 3626 9664 or email **tipsbytext@bi.team**

If you DO NOT want to take part, or you DO NOT want your child to take part, please tick the box below, sign and return the attached form to [School Name] by [Date].

If you are happy for your child to participate, you do not need to do anything but please keep this form for your information.

✂ _

I confirm that I DO NOT want to participate in this project.

Signature: _____

Name: _____

Name of your child: _____

School: [School/College Name]

Date: _____

Appendix F: Privacy notice

Privacy notice

Tips by Text

Introduction

Your child's school is participating in a research project testing the impact of an early learning programme called 'Tips by Text'.

The Tips by Text project is a collaboration between the Education Endowment Foundation (EEF), the Behavioural Insights Team (BIT), the National Institute of Economic and Social Research (NIESR), the Institute for Employment Studies (IES), and the University of Oxford. Together, these parties (with the exception of the EEF) are referred to as the 'Research Team' in this Privacy Notice. The roles of each party named above are as follows:

- The EEF are the funders of the project
- BIT will be responsible for designing the programme (in collaboration with trusted academics) and for sending text messages to parents/guardians randomly selected to receive them
- NIESR/IES will evaluate the impact of the programme on pupil outcomes. They will also explore parents/guardians' perceived impact on pupil outcomes, explore their experiences of the programme and assess whether the programme could be implemented at a larger scale
- The University of Oxford will have access to the data after the project has been completed to conduct further analyses.

This privacy notice sets out how the Research Team will collect and use your personal data.

After your child's school has shared personal data of pupils and parents/guardians taking part in the project with the Research Team, each member of the Research Team will become a separate data controller of this personal data in order to perform the roles set out above.

If you have any questions about this privacy notice, including any requests to exercise your legal rights in relation to your personal data, please contact NIESR/IES in the first instance.

NIESR

- **Post:** NIESR, 2 Dean Trench Street, Smith Square, London, SW1P 3HE
- **Email: dataprotectionofficer@niesr.ac.uk**

OR

IES

- **Post:** Institute for Employment Studies, City Gate, 185 Dyke Road, Brighton, BN3 1TL
- **Email: suzanne.anderson@employment-studies.co.uk**

You also have the right to make a complaint at any time to the Information Commissioner's Office (ICO), the UK supervisory authority for data protection issues (**www.ico.org.uk**). We would, however, appreciate the chance to deal with your concerns before you approach the ICO, so please contact NIESR/IES in the first instance.

We promise to respect any of your personal information which is under our control and to keep it safe. We aim to be clear when we collect your information about what we will do with it and let you know of any material changes to this notice.

The Research Team deals with and shares your personal data pursuant to a data sharing agreement between the Research Team members. The agreement sets out the purposes for which we may process and share your personal data and our agreement to cooperate to protect your personal data and deal with any requests you may have.

What kind of information do we collect?

Your child's school will share the following information with NIESR/IES (who will then share it with other members of the Research team as necessary for them to fulfill their roles):

Pupils:

- Name
- Date of birth
- Gender
- Unique Pupil Number (UPN)
- Class name
- School name

NIESR/IES will access and link this pupil data to background and school data held on the National Pupil Database (NPD). The NPD data to be requested will include whether or not the pupil is eligible for Free School Meals (FSM) as well as their gender. Specifically, we are processing data on FSM eligibility to determine if the programme has a different impact on this group of pupils. EEF was established with a remit to break the link between family background and educational attainment, and analysis of impact for FSM pupils is carried out as part of all EEF evaluations. We are processing data on gender in order to account for gender in the evaluation, given anticipated relationships between gender and outcomes.

BIT will process data on pupil's gender to ensure the correct pronouns are used in the text messages to parents.

The University of Oxford will also process data on FSM eligibility and gender to determine if either of these variables have a differential impact on pupil outcomes. This processing is in line with current research in the Department of Experimental Psychology into what works to improve developmental outcomes for young children and is deemed to be in the public interest.

NIESR/IES will match all of the above pupil data (both the data collected directly from schools and the data requested from the NPD) to data on pupil outcomes. This will include data from questionnaires and assessments administered as part of the project including a standard assessment of literacy skills and a measure of social development as well as further data on outcomes available through the NPD.

Parents/guardians

- Name
- Email address
- Mobile telephone number
- Responses to text messages
- Responses to interviews, surveys and focus groups

What do we do with information we collect?

Each organisation will use the data for different purposes.

BIT

- To deliver the programme to parents/guardians (i.e. to send the text messages),
- To manage communications with parents/guardians
- To act as the main point of contact for schools and parents/guardians for anything to do with the text messages

NIESR/IES

- To conduct the randomisation (i.e. to randomly allocate parents/guardians to receive or not receive the messages)
- To match data received from schools to NPD data and outcome data
- To contact parents/guardians about participating in interviews, focus groups and surveys
- To instruct and liaise with independent test administrators
- To evaluate the impact and effectiveness of the programme and prepare a report about the project

The University of Oxford

- To build on existing work by the Department of Experimental Psychology on what works to foster an effective home learning environment for early years pupils

EEF

- At the end of the project, data will be submitted to the EEF's data archive which is managed by the Fischer Family Trust (FFT). At this point, EEF will become a data controller and FFT will be a data processor

What is the lawful basis for processing your personal data?

We will only use your personal data where we have a lawful basis for doing so.

- BIT's legal basis for processing personal data is 'legitimate interests'. BIT considers that processing of personal data is necessary to conduct the delivery of the Tips by Text programme. This project fulfils BIT's core business aims, including undertaking research and delivering low cost interventions that will deliver social impact. BIT's basis for processing special category (gender) is that it is necessary for scientific research purposes and is in the public interest.[33]
- NIESR and IES' legal basis for processing personal data is also 'legitimate interests'. The evaluation of Tips by Text fulfils one of NIESR and IES' core business purposes (undertaking research, evaluation and information activities) and is therefore in our legitimate interest, that processing personal information is necessary for the conduct of the evaluation. Our condition for processing special category personal data (gender) is that this is necessary for scientific research purposes and is in the public interest.
- The University of Oxford's lawful basis for processing data is 'public interest task.' This research will build on existing work by the Department of Experimental Psychology on what works to foster an effective home learning environment. The lawful basis for processing special category personal data (i.e. gender) is to conduct scientific research into approaches/interventions to improve developmental outcomes for children. This research aligns with the objectives of the Department of Experimental Psychology and is in the public interest.[34]

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[33] DfE considers gender to be sensitive data captured as special category under GDPR.
[34] https://researchsupport.admin.ox.ac.uk/files/dataprotectionandresearchpdf

- When the EEF becomes data controller at the end of the project as the data is submitted to the data archive, the legal basis for processing personal data is 'legitimate interests'. These legitimate interests include gather data about what educational interventions work best, under what conditions, for which pupils, with a view to increasing attainment and reducing educational disadvantage. Special category data is processed for the purpose of scientific research and archiving as permitted under GDPR Article 9 (j).

Who else has access to your information?

The Research Team may disclose your information to third parties in connection with the purposes of processing your personal data set out in this notice. These third parties may include suppliers, research assistants, trusted academic partners and subcontractors who may process information on behalf of the Research Team to carry out such work as sending text messages, administering tests, undertaking interviews, transcribing interviews and archiving data. In all cases, the Research Team will ensure that these third parties enter into appropriate data processing agreements with us and that they keep your personal data secure and confidential.

We may also disclose your personal information if required by law, or to protect or defend ourselves or others against illegal or harmful activities, or as part of a reorganisation or restructuring of our organisations.

International Transfers

Your personal information will not be transferred outside of the EEA.

Security

We take all reasonable steps to protect your personal information and follow procedures designed to minimise unauthorised access, alteration, loss or disclosure of your information.

We have put in place procedures to deal with any suspected personal data breach and will notify you and any applicable regulator of a breach where we are legally required to do so.

Data Retention

We will only retain your personal data for as long as necessary to fulfil the purposes we collected it for, including for the purposes of satisfying any legal, accounting, or reporting requirements. When it is no longer necessary to retain your personal data, it will be securely deleted.

To determine the appropriate retention period for personal data, we consider the amount, nature, and sensitivity of the personal data, the potential risk of harm from unauthorised use or disclosure of your personal data, the purposes for which we process your personal data and whether we can achieve those purposes through other means, and the applicable legal requirements.

- BIT, NIESR and IES will delete any personal data six months after the completion of the project
- The University of Oxford will retain the personal data until March 2025 to permit further analysis
- NIESR/IES will send the data to the EEF archive hosted by the Office for National Statistics (ONS) Secure Research Service within three months of project completion. The Fischer Family Trust will manage the data on behalf of EEF, at which point EEF take responsibility for Data Protection Compliance

  Please note that, under Data Protection legislation, and in compliance with the relevant data processing conditions, personal data can be kept for longer periods of time when processed purely for archiving purposes in the public interest, scientific or historical research, and statistical purposes. The EEF will archive data from this project with a view to tracking the long-term effect of the intervention on pupil outcomes, as well as to

support open science and methodological developments by facilitating lawful access to the data archive for secondary analysis by other researchers. This may include relinking the data to the NPD or other datasets.

Your legal rights

Under certain circumstances, you have rights under data protection laws in relation to your personal data, including rights:

- To request access to your personal data: this enables you to receive a copy of the personal data we hold about you and to check we are lawfully processing it
- To request correction of your personal data: this enables you to have any incomplete or inaccurate data we hold about you corrected
- To request erasure of your personal data: this enables you to ask us to delete or remove personal data where there is no good reason for us continuing to process it
- To object to processing of your personal data: you can object where we are relying on a legitimate interest (or those of a third party) and there is something about your particular situation which makes you want to object to processing on this ground as you feel it impacts on your fundamental rights and freedoms
- To request restriction of processing your personal data: This enables you to ask us to suspend the processing of your personal data
- To request transfer of your personal data
- To object to direct marketing (including profiling) and processing for the purposes of scientific/historical research and statistics
- Not to be subject to decisions based purely on automated processing where it produces a legal or similarly significant effect on you

If you wish to exercise any of the rights set out above in connection with this research project, please contact **Suzanne.anderson@employment-studies.co.uk** or **dataprotectionofficer@niesr.ac.uk**

You will not have to pay a fee to access your personal data (or to exercise any of the other rights). However, we may charge a reasonable fee if your request is clearly unfounded, repetitive or excessive. Alternatively, we may refuse to comply with your request in these circumstances.

We may need to request specific information from you to help us confirm your identity and ensure your right to access your personal data (or to exercise any of your other rights). This is a security measure to ensure that personal data is not disclosed to any person who has no right to receive it. We may also contact you to ask you for further information in relation to your request to speed up our response.

We try to respond to all legitimate requests within one month. Occasionally it may take us longer than a month if your request is particularly complex or you have made a number of requests. In this case, we will notify you and keep you updated.

Changes to this Notice

We may change this Privacy Notice from time to time. If we make any significant changes in the way we treat your personal information we will make this clear by contacting schools and ensuring they provide you with an updated version of this Privacy Notice.

Company details for the Research Team and Funder

- Behavioural Insights Ltd is a limited company registered in England and Wales.
  - Registration number: 08567792

- ○ Registered office: 4 Matthew Parker Street, London SW1H 9NP
- ○ Email: **dpo@bi.team**
- NIESR is a company listed by guarantee registered in England, and a registered charity.
  - ○ Company Number: 341010
  - ○ Charity registration number: 306083
  - ○ Registered office: NESR, 2 Dean Trench Street, Smith Square, London SW1P 3HE
  - ○ Email: **dataprotectionofficer@niesr.ac.uk**
- The Institute for Employment Studies is a charitable company limited by guarantee registered in England.
  - ○ Registration number: 931547
  - ○ Charity registration number: 258930
  - ○ Registered office: Institute for Employment Studies, City Gate, 185 Dyke Road, Brighton, BN3 1 TL
  - ○ Email: **suzanne.anderson@employment-studies.co.uk**
- The University of Oxford is a civil corporation. The University enjoys charitable status as one of the exempt charities listed in Schedule 3 to the Charities Act 2011
  - ○ Registered office: University Offices, Wellington Square, Oxford, OX1 2JD
  - ○ Email: **dataprotection@admin.ox.ac.uk**
- The Education Endowment Foundation is a charity registered in England
  - ○ Registered office: Millbank Tower, 21-24 Millbank, London SW1P 4QP
  - ○ Charity registration number: 1142111
  - ○ Company number: **07587909**
  - ○ Email: info@eefoundation.org.uk

Appendix G: Randomisation code

```
set seed 45672345

gen randSeq=uniform()

sort school_name classname randSeq

gen T=randSeq>.5

replace T=1-T[_n-1] if _n>1
lab def T 0 "Control" 1 "Treated"
lab val T T
lab var T "Treated"
```

Appendix H: Histograms of pre-test scores

Figure H.1: Histograms of YARC pre-test composite score, by trial arm, randomisation sample (pre-tested classes)
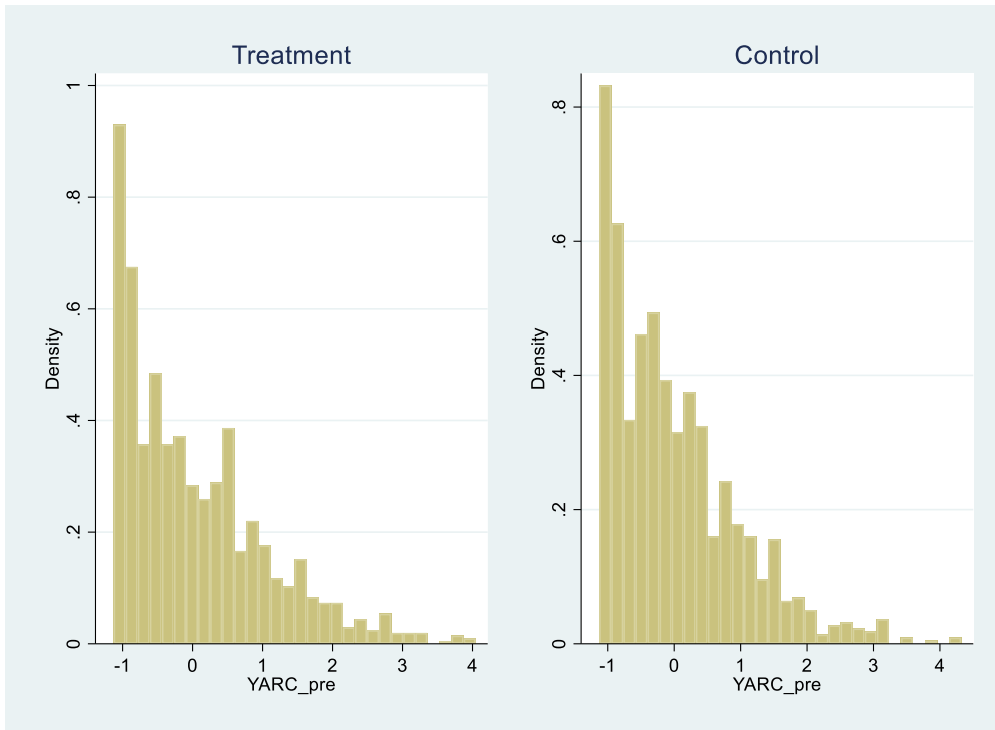
Figure H.2: Histograms of YARC pre-test composite score, by trial arm, primary analysis sample
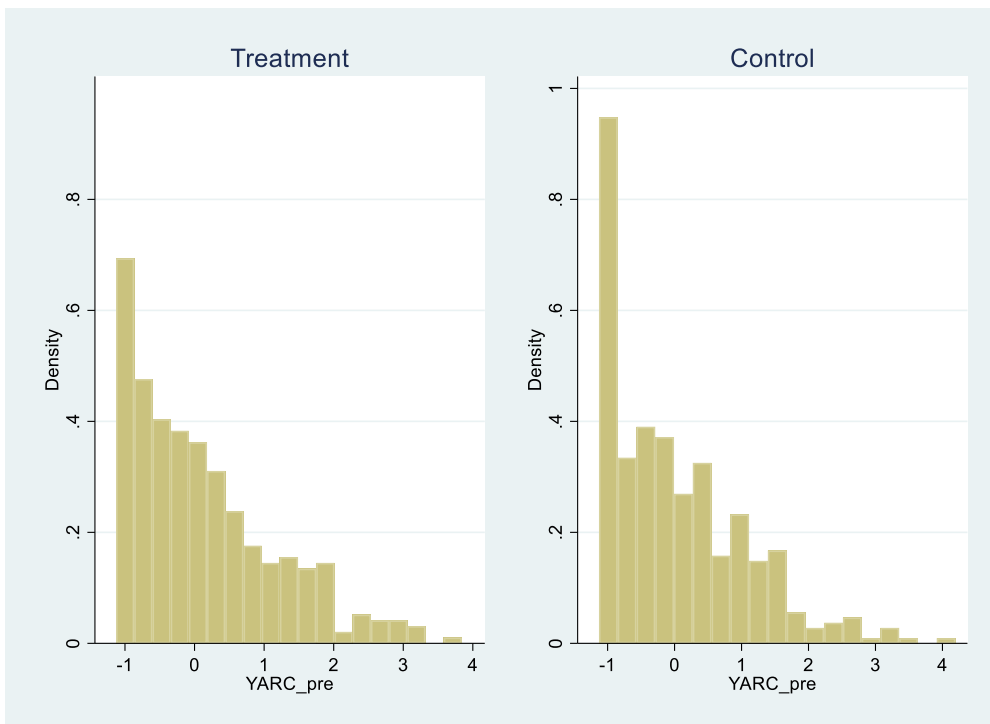
Figure H.3: Histograms of YARC pre-test sound isolation score, by trial arm, randomisation sample (pre-tested classes)
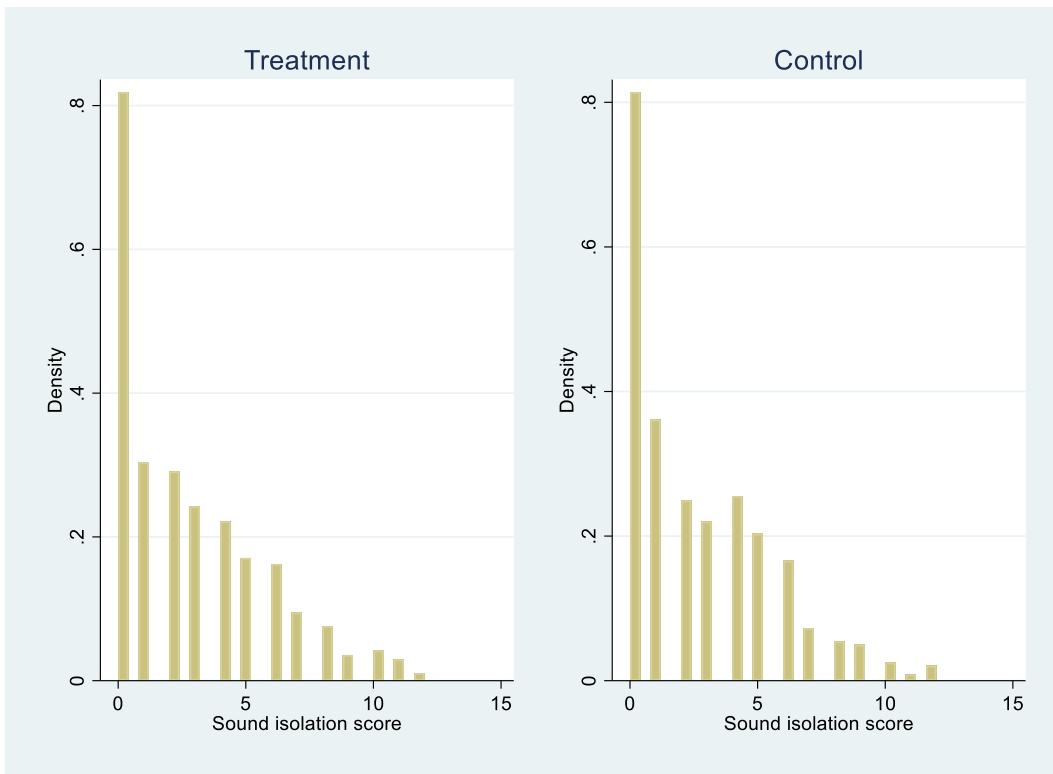
Figure H.4: Histograms of YARC pre-test sound deletion score, by trial arm, randomisation sample (pre-tested classes)
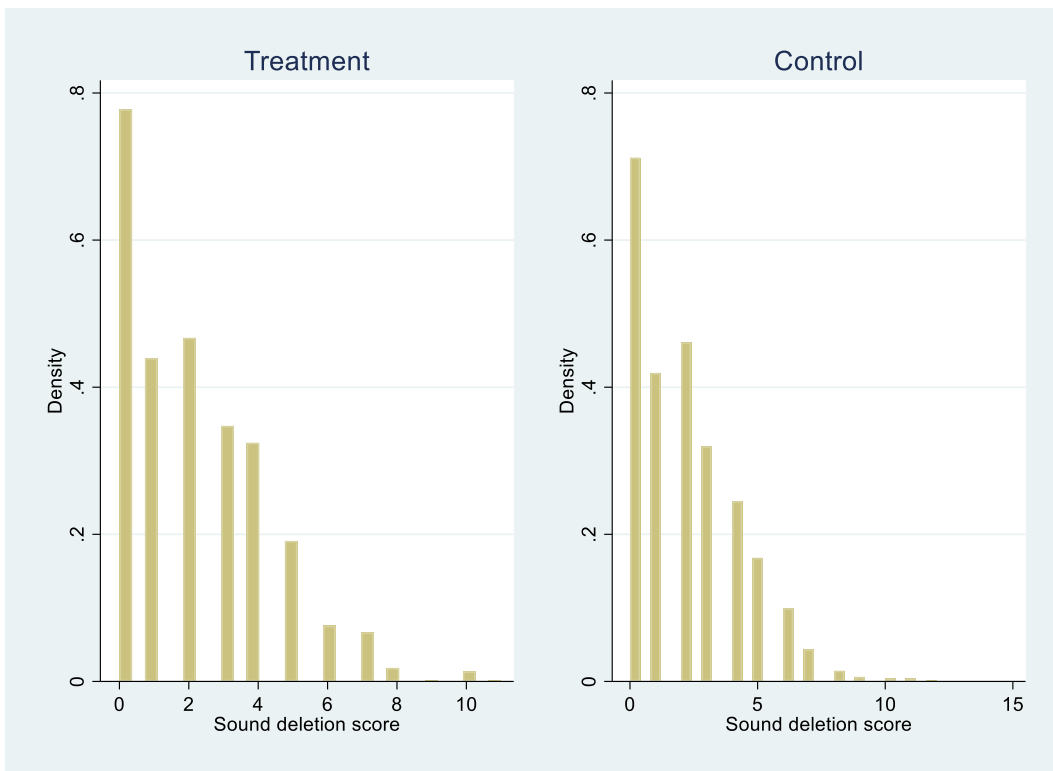
Appendix I: Histograms of post-test scores

Figure I.1: Histograms of total difficulties score, by trial arm
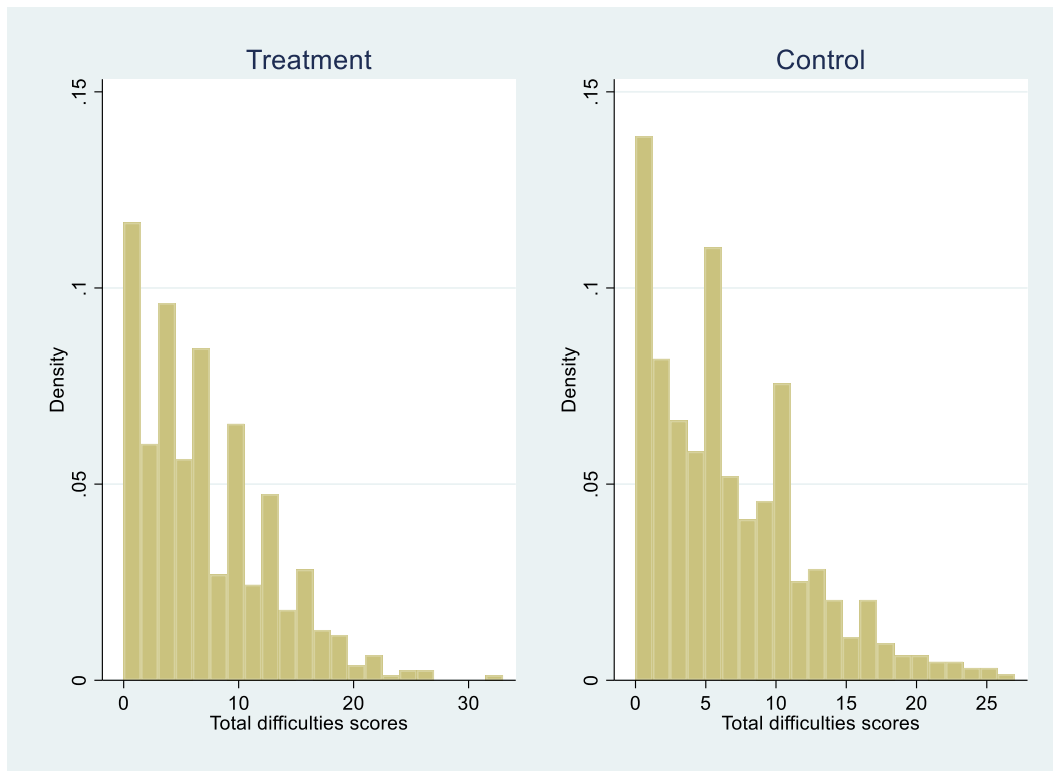
Figure I.2: Histograms of internalising problems score, by trial arm
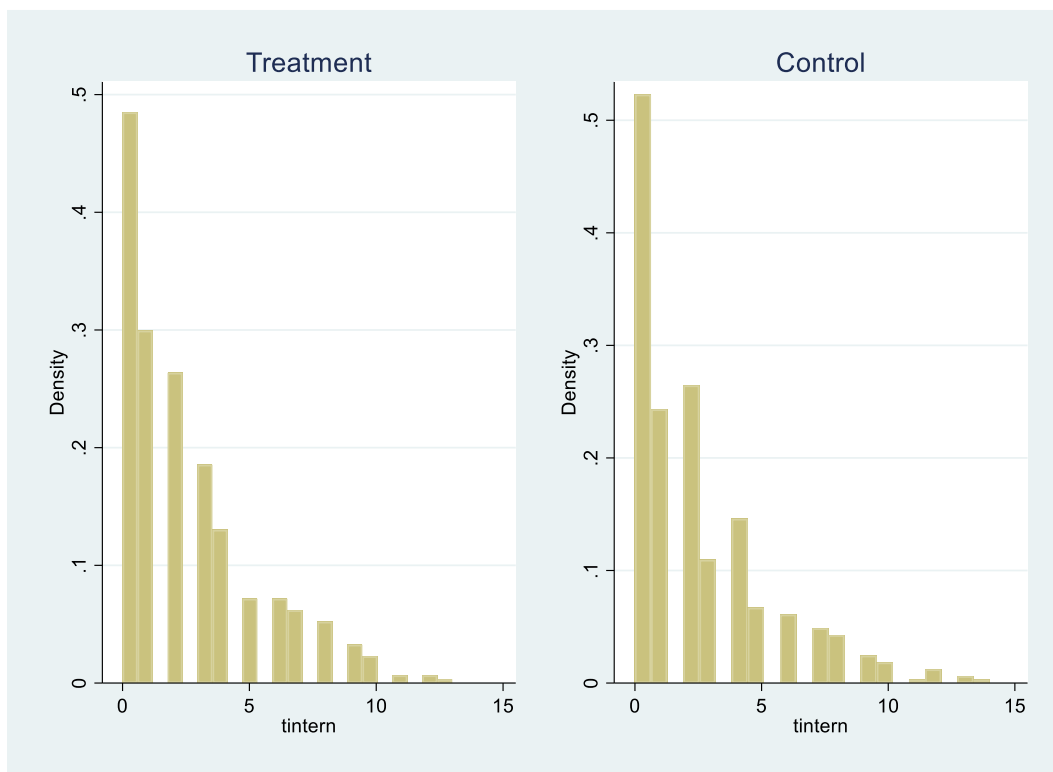
Figure I.3: Histograms of externalising problems score, by trial arm
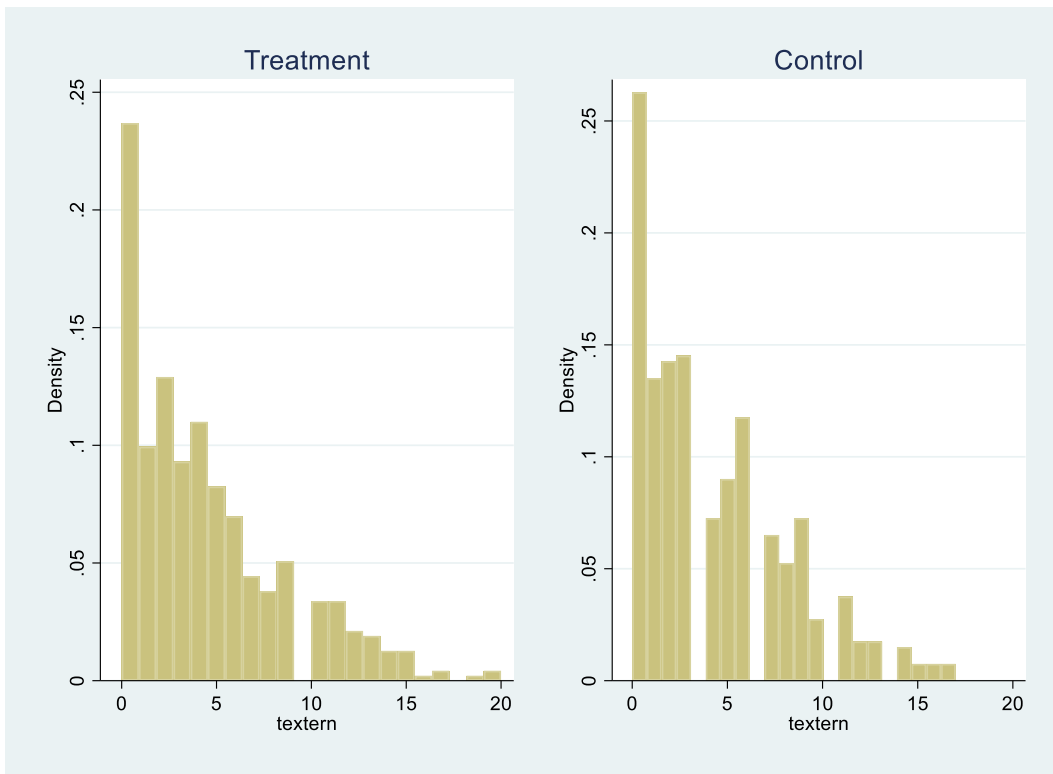
Figure I.4: Histograms pro-social score, by trial arm
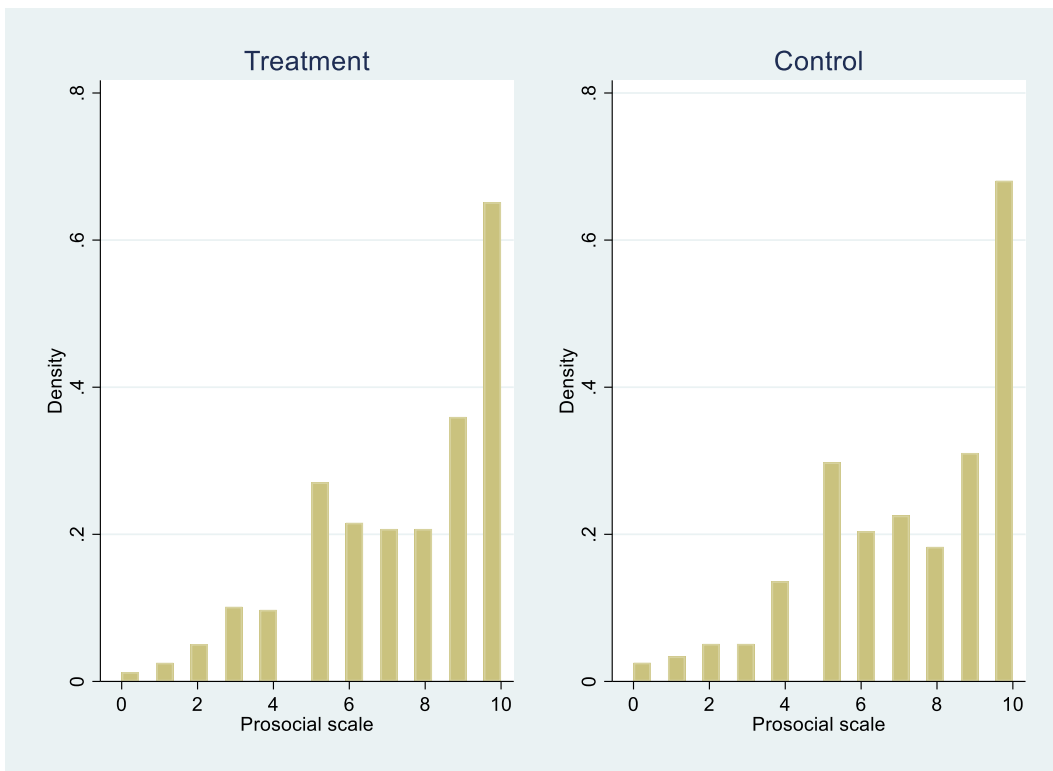
Figure I.5: Histograms of YARC letter sound knowledge, post-test, by trial arm
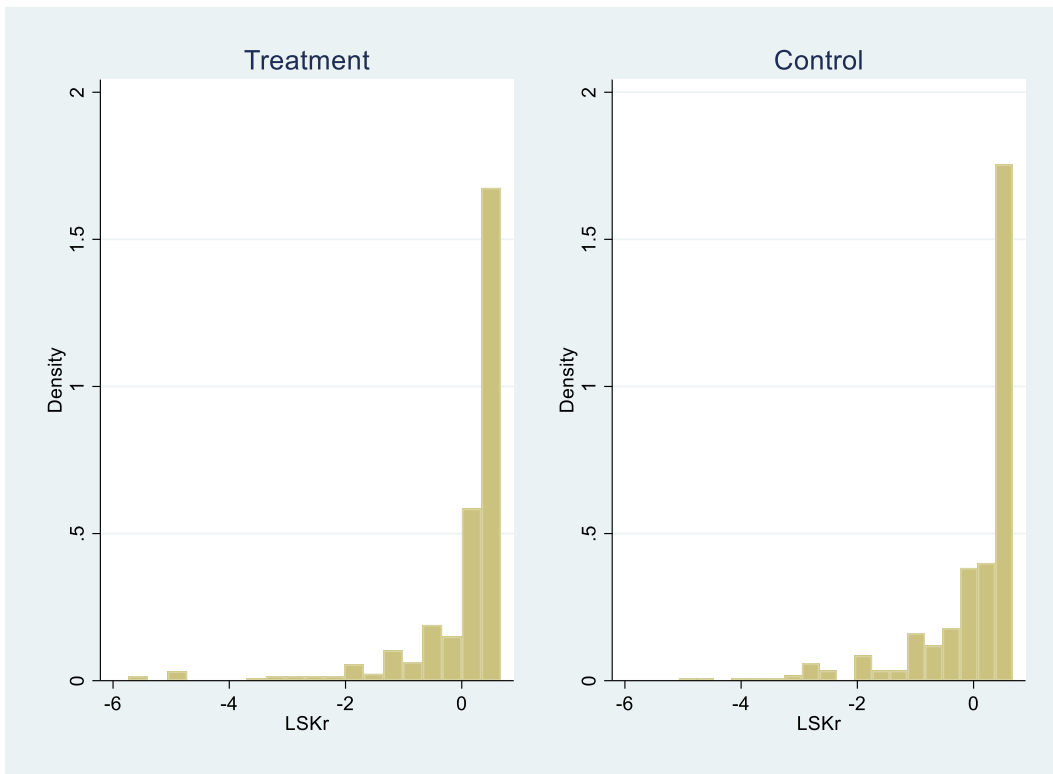
Figure I.6: Histograms of YARC early word recognition, post-test, by trial arm
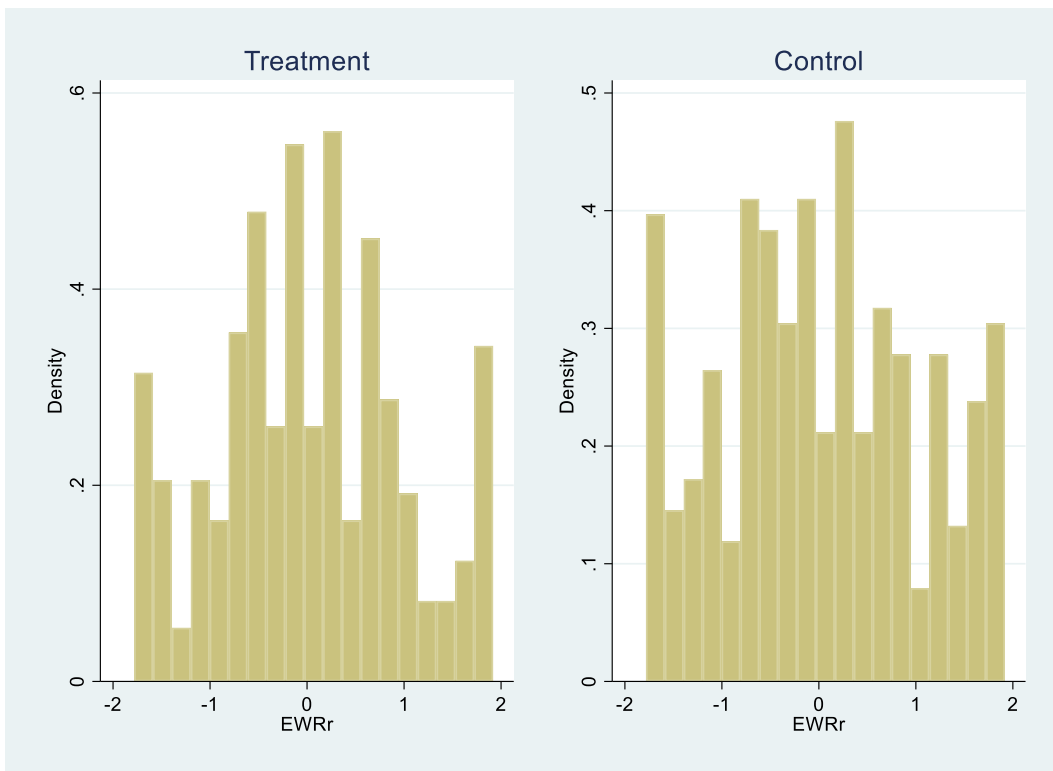
Figure I.7: Histograms of YARC sound isolation score, post-test, by trial arm
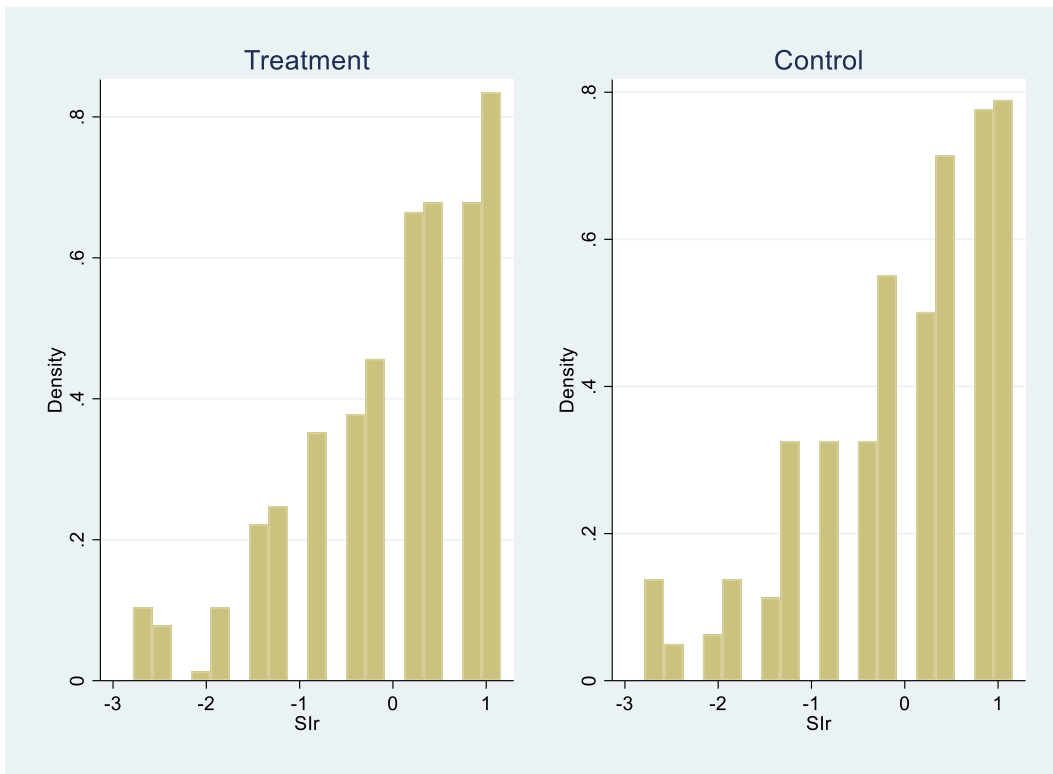
Figure I.8: Histograms of YARC sound deletion score, post-test, by trial arm
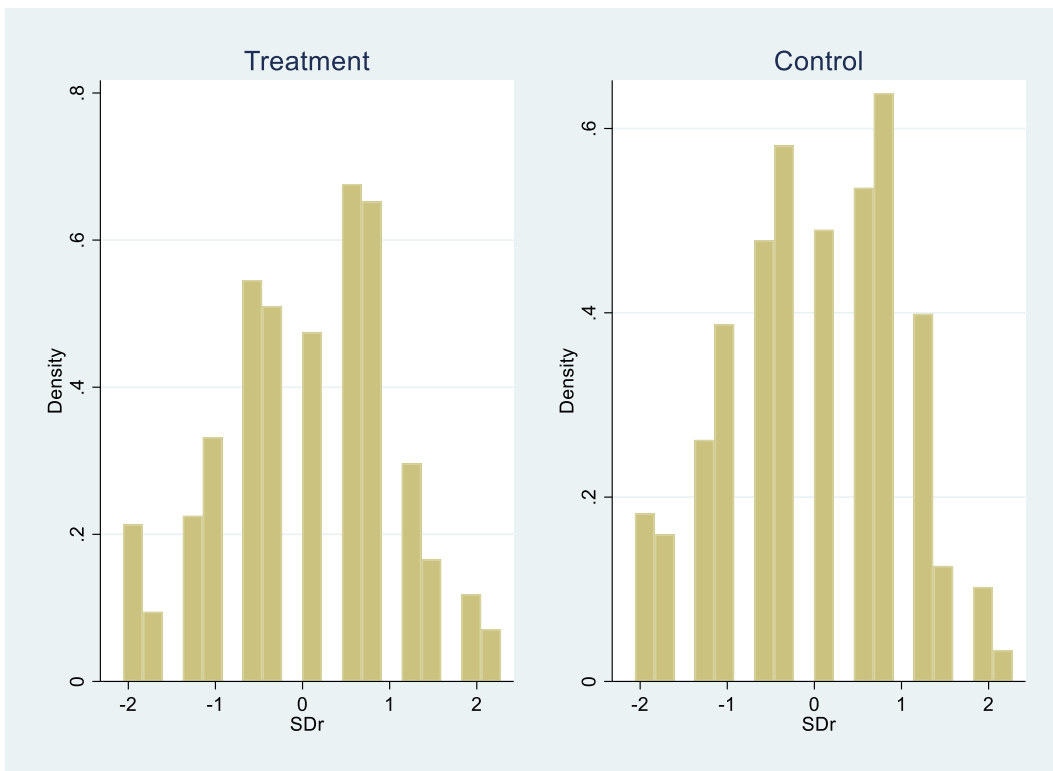
Appendix J: Effect size estimation

Appendix table J.1: Effect size estimation

Outcome	Unadjusted differences in means	Adjusted differences in means	Intervention group		Control group		Pooled variance	Population variance (if applicable)
			n (missing)	Variance of outcome	n (missing)	Variance of outcome		
YARC	0.053	0.020	369	0.947	384	1.001	0.975	-
Total difficulties score	0.200	0.456	520	31.43	517	29.60	30.52	-
Internalising problems	0.117	0.179	520	7.30	517	7.71	7.51	-
Externalising problems	0.083	0.277	520	17.26	517	15.47	16.37	-
Pro-social	0.061	-0.041	520	6.25	517	6.58	6.42	-

Appendix K: Compliance analysis

First stage regression results:

	Compliance
YARC pre-test score	0.011
	(0.013)
Randomisation batch	0.003
	(0.005)
Treatment	0.944**
	(0.009)
N	753

Note: Models also include school fixed effects. Standard errors in parentheses. Statistical significance is indicated as *significant at 0.05, **significant at 0.01

Results of F-test: $F_{(39, 713)} = 1885.68$, Prob>F=0.000

IV (2SLS) regression results:

	YARC
Compliance	0.021
	(0.059)
YARC pre-test score	0.544**
	(0.027)
Randomisation batch	0.209
	(0.330)
Treatment	0.944***
	(0.009)
N	753

Note: Models also include school fixed effects. Standard errors in parentheses. Statistical significance is indicated as *significant at 0.05, **significant at 0.01

Appendix L: Analysis code

Our primary analysis is run using the following code:

regress YARC T YARC_pre batch i.schoolid, robust

where:

YARC is our primary outcome (YARC composite score)

T indicates whether the pupil is in the treatment or control group

YARC_pre is the composite YARC score at pre-test

batch is a dummy variable indicating whether the pupil was in the first or second randomisation batch

i.schoolid captures the inclusion of school fixed effects

Stata analysis code is provided below:

```
************************************
*Set up additional derived variables
************************************
*Generate standardised outcome variables for YARC
*Post-test scores
destring LetterSoundKnowledgeRawScore,replace
summarize LetterSoundKnowledgeRawScore
generate LSKr= (LetterSoundKnowledgeRawScore- r(mean))/r(sd)

destring EarlyWordRecognitionRawScore,replace
summarize EarlyWordRecognitionRawScore
generate EWRr= (EarlyWordRecognitionRawScore- r(mean))/r(sd)

destring SoundIsolationRawScore,replace force
summarize SoundIsolationRawScore
generate SIr= (SoundIsolationRawScore- r(mean))/r(sd)

destring SoundDeletionRawScore,replace force
summarize SoundDeletionRawScore
generate SDr= (SoundDeletionRawScore- r(mean))/r(sd)

*Pre-tests
destring pre_soundisolationscore,replace
summarize pre_soundisolationscore
generate SI_pre= (pre_soundisolationscore- r(mean))/r(sd)

destring pre_sounddeletionscore,replace
summarize pre_sounddeletionscore
generate SD_pre= (pre_sounddeletionscore- r(mean))/r(sd)

gen temp2 = SI_pre + SD_pre
sum temp2
gen YARC_pre = (temp2- r(mean))/r(sd)

gen temp3 = LSKr + EWRr + SIr + SDr
sum temp3
gen YARC = (temp3- r(mean))/r(sd)

sum SI_pre SD_pre
```

```
sum LSKr EWRr SIr SDr YARC YARC_pre

drop temp2 temp3

*And create alternative to include also those missing on some subscales

egen temp5=rowtotal(LSKr EWRr SIr SDr)
replace temp5=. if source_score!="TBT_score"
sum temp5
gen YARC3 = (temp5- r(mean))/r(sd)
drop temp5

su YARC YARC3


*Identify final sample for analysis

gen finalsample=1 if YARC!=. & YARC_pre!=.
ta finalsample

***********************************
*Main models
***********************************

*Run analyses

recode batch (2=0)

global control "batch i.schoolid"

regress YARC T YARC_pre $control, robust

*We use complete cases for primary analysis

sum YARC if T==0 & YARC_pre!=.
     local n0 = r(N)
     local mean0 = r(mean)
     local sd0 = r(sd)

sum YARC if T==1 & YARC_pre!=.
     local n1 = r(N)
     local mean1 = r(mean)
     local sd1 = r(sd)

     local sstar = (((`n1'-1)*(`sd1'^2) + (`n0'-1)*(`sd0'^2))/(`n1' + `n0' - 2))^.5
     local J = exp(lngamma((`n1' + `n0' - 2)/2) - ln(((`n1' + `n0' - 2)/2)^.5) -
lngamma((`n1' + `n0' - 2 - 1)/2))

     local g   = `J' * _b[T] / `sstar'
     local lbg = `J' * (_b[T] - 1.96*_se[T]) / `sstar'
     local ubg = `J' * (_b[T] + 1.96*_se[T]) / `sstar'

       di `n0'
       di `n1'
       di `sd1'
       di `sd0'
       di `g'
       di `sstar'
di `lbg'
di `ubg'
```

```
*Now run for FSM subgroup

ta everfsm_6_p_spr20 if finalsample==1

regress YARC T YARC_pre $control if everfsm_6_p_spr20==1

preserve
keep if everfsm_6_p_spr20==1

sum YARC if T==0 & YARC_pre!=.
      local n0 = r(N)
      local mean0 = r(mean)
      local sd0 = r(sd)

sum YARC if T==1 & YARC_pre!=.
      local n1 = r(N)
      local mean1 = r(mean)
      local sd1 = r(sd)

      local sstar = (((`n1'-1)*(`sd1'^2) + (`n0'-1)*(`sd0'^2))/(`n1' + `n0' - 2))^.5
      local J = exp(lngamma((`n1' + `n0' - 2)/2) - ln(((`n1' + `n0' - 2)/2)^.5) -
lngamma((`n1' + `n0' - 2 - 1)/2))

      local g   = `J' * _b[T] / `sstar'
      local lbg = `J' * (_b[T] - 1.96*_se[T]) / `sstar'
      local ubg = `J' * (_b[T] + 1.96*_se[T]) / `sstar'

         di `n0'
         di `n1'
         di `sd1'
         di `sd0'
         di `g'
         di `sstar'
di `lbg'
di `ubg'

restore

mean YARC if T==0 & YARC_pre!=. & everfsm_6_p_spr20==1
mean YARC if T==1 & YARC_pre!=. & everfsm_6_p_spr20==1

regress YARC T YARC_pre $control if everfsm_6_p_spr20==0

preserve
keep if everfsm_6_p_spr20==0

sum YARC if T==0 & YARC_pre!=.
      local n0 = r(N)
      local mean0 = r(mean)
      local sd0 = r(sd)

sum YARC if T==1 & YARC_pre!=.
      local n1 = r(N)
      local mean1 = r(mean)
      local sd1 = r(sd)

      local sstar = (((`n1'-1)*(`sd1'^2) + (`n0'-1)*(`sd0'^2))/(`n1' + `n0' - 2))^.5
      local J = exp(lngamma((`n1' + `n0' - 2)/2) - ln(((`n1' + `n0' - 2)/2)^.5) -
lngamma((`n1' + `n0' - 2 - 1)/2))

      local g   = `J' * _b[T] / `sstar'
      local lbg = `J' * (_b[T] - 1.96*_se[T]) / `sstar'
```

```
        local ubg = `J' * (_b[T] + 1.96*_se[T]) / `sstar'

            di `n0'
            di `n1'
            di `sd1'
            di `sd0'
            di `g'
            di `sstar'
di `lbg'
di `ubg'

restore

mean YARC if T==0 & YARC_pre!=. & everfsm_6_p_spr20==0
mean YARC if T==1 & YARC_pre!=. & everfsm_6_p_spr20==0

*And then run with interactions

regress YARC T##everfsm_6_p_spr20 YARC_pre $control

***********************************
*Repeat for secondary outcomes
***********************************
*SDQ - total difficulties
*internalising, externalising and prosocial

gen tintern=temotion+tpeer
gen textern=tconduct+thyper

*SDQ - total difficulties score

regress tebdtot T YARC_pre $control

sum tebdtot if T==0
        local n0 = r(N)
        local mean0 = r(mean)
        local sd0 = r(sd)

sum tebdtot if T==1
        local n1 = r(N)
        local mean1 = r(mean)
        local sd1 = r(sd)

        local sstar = (((`n1'-1)*(`sd1'^2) + (`n0'-1)*(`sd0'^2))/(`n1' + `n0' - 2))^.5
        local J = exp(lngamma((`n1' + `n0' - 2)/2) - ln(((`n1' + `n0' - 2)/2)^.5) -
lngamma((`n1' + `n0' - 2 - 1)/2))

        local g   = `J' * _b[T] / `sstar'
        local lbg = `J' * (_b[T] - 1.96*_se[T]) / `sstar'
        local ubg = `J' * (_b[T] + 1.96*_se[T]) / `sstar'

            di `n0'
            di `n1'
            di `sd1'
            di `sd0'
            di `g'
            di `sstar'
di `lbg'
di `ubg'
```

```
*SDQ - run for FSM subgroup

eststo clear
local outcomes tebdtot tintern textern tprosoc
foreach measure of local outcomes {
      eststo est_`measure': regress `measure' T YARC_pre $control if
everfsm_6_p_spr20==1
}
esttab _all using "sdq_fsmgroups.csv", se replace

local outcomes tebdtot tintern textern tprosoc
foreach measure of local outcomes {
      eststo est_`measure': regress `measure' T YARC_pre $control if
everfsm_6_p_spr20==0
}
esttab _all using "sdq_nonfsmgroup.csv", se replace

*Repeat for all measures to get effect sizes

regress tebdtot T YARC_pre $control if everfsm_6_p_spr20==1

preserve
keep if everfsm_6_p_spr20==1

sum tebdtot if T==0 & YARC_pre!=.
     local n0 = r(N)
     local mean0 = r(mean)
     local sd0 = r(sd)

sum tebdtot if T==1 & YARC_pre!=.
     local n1 = r(N)
     local mean1 = r(mean)
     local sd1 = r(sd)

     local sstar = (((`n1'-1)*(`sd1'^2) + (`n0'-1)*(`sd0'^2))/(`n1' + `n0' - 2))^.5
     local J = exp(lngamma((`n1' + `n0' - 2)/2) - ln(((`n1' + `n0' - 2)/2)^.5) -
lngamma((`n1' + `n0' - 2 - 1)/2))

     local g   = `J' * _b[T] / `sstar'
     local lbg = `J' * (_b[T] - 1.96*_se[T]) / `sstar'
     local ubg = `J' * (_b[T] + 1.96*_se[T]) / `sstar'

       di `n0'
       di `n1'
       di `sd1'
       di `sd0'
       di `g'
       di `sstar'
di `lbg'
di `ubg'

restore

mean tebdtot if T==0 & YARC_pre!=. & everfsm_6_p_spr20==1
mean tebdtot if T==1 & YARC_pre!=. & everfsm_6_p_spr20==1

mean tebdtot if T==0 & YARC_pre!=. & everfsm_6_p_spr20==0
mean tebdtot if T==1 & YARC_pre!=. & everfsm_6_p_spr20==0

regress tebdtot T YARC_pre $control if everfsm_6_p_spr20==0

preserve
```

```
keep if everfsm_6_p_spr20==0

sum tebdtot if T==0 & YARC_pre!=.
     local n0 = r(N)
     local mean0 = r(mean)
     local sd0 = r(sd)

sum tebdtot if T==1 & YARC_pre!=.
     local n1 = r(N)
     local mean1 = r(mean)
     local sd1 = r(sd)

     local sstar = (((`n1'-1)*(`sd1'^2) + (`n0'-1)*(`sd0'^2))/(`n1' + `n0' - 2))^.5
     local J = exp(lngamma((`n1' + `n0' - 2)/2) - ln(((`n1' + `n0' - 2)/2)^.5) -
lngamma((`n1' + `n0' - 2 - 1)/2))

     local g   = `J' * _b[T] / `sstar'
     local lbg = `J' * (_b[T] - 1.96*_se[T]) / `sstar'
     local ubg = `J' * (_b[T] + 1.96*_se[T]) / `sstar'

        di `n0'
        di `n1'
        di `sd1'
        di `sd0'
        di `g'
        di `sstar'
di `lbg'
di `ubg'

restore


*With interactions

eststo clear

local outcomes tebdtot tintern textern tprosoc

foreach measure of local outcomes {
     eststo est_`measure': regress `measure' T##everfsm_6_p_spr20 YARC_pre $control
}

esttab _all using "sdqfsmresults.csv", se replace
```

Appendix M: Bayesian diagnostics

Figure M.1: Bayesian diagnostics, primary outcome (YARC)