

Statistical Analysis Plan for FAST: Families and Schools Together

Evaluating Institution: NFER



For some evaluation teams, the trial manager and statistician may be the same person and for others not. In all cases, the SAP should be written for a statistician or analyst to be able to carry out the analysis without prior knowledge of the trial. This is important in order to avoid bias. Describing the analyses in sufficient detail for someone else to carry it out with certainty avoids conscious or sub-conscious decisions being made on the basis of results seen. The SAP, if written sufficiently early, also provides continuity should key members of the evaluation team leave their institution during the course of the trial.

Depending on the level of detail within the trial protocol, some sections of the SAP can be cut and pasted from it. Others will require further detail. The SAP should be written at least three months before the analysis is conducted and will be reviewed by one of a panel of EEF SAP reviewers and then published online. For new EEF projects, a SAP should be written within three months of randomisation. Any changes to the SAP that occur before analysis starts must be logged in the same way as protocol changes. This template should be used in conjunction with the [EEF Analysis Policy](#) and [EEF Report Template](#).

INTERVENTION	Families and Schools Together (FAST) programme
DEVELOPER	Save the Children UK (SCUK)
EVALUATOR	National Foundation for Educational Research (NFER)
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Protocol and SAP changes

To avoid bias, an approach to independently mark KS1 assessment papers was specified in the protocol. From the information available at the time about KS1 assessments in 2017, we anticipated using Reading Paper 1 and Mathematics Arithmetic Paper to create an aggregate overall score for the primary outcome for the trial. With the latest information about KS1 2017 assessments now available, we have revised our approach to obtaining this data. Reading Paper 1 will be independently marked by trained markers; Mathematics Arithmetic will be independently scored using data capture and syntax. It is not possible to

use NPD filed records as an alternative outcome measure for the trial as a) teachers only submit a standard ('towards', 'at', 'greater depth') to NPD, and b) NPD records will not be available within the analysis and reporting timeframe for this trial.

During the first year of the trial, several additional sources of data were identified by SCUK and NFER as being useful for capturing aspects of delivery in the real world – not specified in the protocol. These were not considered to constitute protocol changes as they would not affect the primary or secondary outcomes. However, they will provide additional information that will be summarised in the form of frequency tables. These included:

1. A record from SCUK of any schools that run a 'repeat cycle' of FAST, including a record of the number of families involved in that repeat cycle who also took part in the 8-week FAST programme during the trial. Note – running repeat cycles is part of real world delivery. A family can take part in a repeat cycle, but the same child does not take part as the FAST target child (known as the child involved in 'special play') again – another child in the family will take part in special play.
2. A record from SCUK of the number of families taking part in each cycle, not just the number of Year 1s (this year group is the focus of the trial) – as a record of the number of families recruited to the FAST programme.

In addition, a change was made to the way in which FASTworks data would be collected during the course of the trial. The plan for parent leads to complete attendance registers for FASTworks had a very low response rate – in part because engagement in FASTworks activity itself was low (and hence 'nothing to report' transpired as a nil response), and also because parent leads per FASTworks group who were happy to take on this role were not forthcoming. Instead, FASTworks data will be collected as a retrospective record from the FAST school coordinator in intervention schools as part of the end-point pro-forma. This will mean data about FASTworks meetings will be at a school level (i.e. whether the group continued to meet, how many times, how frequently, and some examples of what they did), rather than at an individual family level. As take up of FASTworks has generally been low (and either the group has or hasn't met), this school level record (rather than individual record) will be used for non-compliance analysis.

Finally, it was not possible to agree ethical procedures to obtain consent to access Middlesex University (MU) FAST SDQ data at an individual level for the FAST target group. MU data is collated at a school level and schools receive a short school-level report from their parent and teacher completed pre- and post- programme SDQ data showing averages. It was not possible to obtain access to the identity key to allow NFER access to individual records. As this data is not part of the primary or secondary outcome measure for this trial, lack of access will not unduly affect the primary or secondary analysis for the trial.

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Introduction

The FAST trial is a school randomised effectiveness trial, with two main arms (intervention and control) and measurement involving the whole of Year 1. FAST is a parental engagement programme which aims to improve parents' engagement in their child's learning, their child's behaviour, and potentially their child's learning and attainment. SCUK's working logic model for FAST outlines three outcome areas: i) success at school; ii) strengthened families; and iii) community cohesion. The theory of change (ToC) for FAST states that all children in the year group/key stage may benefit from some of their peers taking part, for example, stronger relationships and improved behaviour of some in the class may mean teaching and learning for all children in the class is enhanced. This ToC is reflected in the trial design: whole-school randomised, and with the primary outcome analysis based on the whole year group (see Study Design).

The FAST programme is made up of three phases. Phase 1 involves recruiting and training local partners (trained by accredited FAST trainers), and recruiting parents to the programme. Phase 2 entails the 8-week programme, where parents and their children attend 8 structured 2.5-hour group sessions delivered by the local partners. One child from each family is designated for one-to-one activity (known as 'special play') with their parent(s). In normal FAST delivery, this child is from Reception, Y1 or Y2. For the trial, in order to measure attainment at the end of KS1, the protocol specified that this child (known as the FAST target child) should be in Y1 in the year of delivery (2015-16), and hence in Y2 for primary outcome measurement (2016-17). Phase 3 is known as *FASTworks*, and involves the group continuing to meet as a parent-led group. The trial design takes into account that parent recruitment is part of the programme itself – i.e. a whole-school randomised trial, randomised prior to Phase 1. It also takes account of the sub-group of FAST target children, through a quasi-experimental design (QED) in addition to the main whole-year-group primary and secondary outcome measures (see Study Design). Note that to take account of delivery capacity – recruitment, randomisation and delivery occurred in termly blocks (i.e. Autumn 2015, Spring 2016 and Summer 2016) with six recruitment windows and six randomisations (see Study Design and Randomisation).

The primary research question is: What is the impact of FAST on Year 1 children in FAST schools in terms of KS1 attainment? (see below and Section on Outcomes for the specific measures to be used)

The secondary research question is: What is the impact of FAST on Year 1 children in FAST schools in terms of behavioural and social outcomes?

To address the primary and secondary research questions, the trial will evaluate:

- i. outcomes on attainment for all Year 1 individuals in the trial (using end of KS1 assessments, with Early Years Foundation Stage (EYFS) scores as a prior attainment covariate) (excluding any whose parents have opted-out of such access to their child's data)
- ii. outcomes from anonymised Goodman's (1997) Strengths and Difficulties Questionnaire (SDQ), using aggregated averages at a whole-year-group level (at two time points – post-intervention and at the end of Year 2 – with a pre-randomisation baseline)

In addition, the trial will explore the impact of FAST on children who take part in the 8-week programme (i.e. the FAST target group) in terms of attainment, using a quasi-experimental design (QED).

Any links between delivery block and attainment, FAST graduation (completing 6 or more weeks of the 8-week programme) and attainment, and FASTworks participation and attainment, will be explored in the non-compliance analysis.

Study design

Description of population including eligibility criteria

The school population is maintained (including academy and free schools) primary schools in England, with Key Stage 1 pupils. The eligibility criteria were: schools must not have taken part in FAST in the past (SCUK checked this against their internal databases, and NFER checked this on a school baseline pro-forma prior to randomisation); and recruited schools should have 20% or more of pupils eligible for and in receipt of FSM.

SCUK was responsible for recruiting schools, as per their usual approach to schools but using revised School Agreements and information as needed for the trial. They aimed to achieve a national geographical spread.

Description of trial design

Overall design

This trial is designed as **a whole-school randomised effectiveness trial, with two main arms (intervention and control)**. It also contains **a quasi-experimental pupil-level analysis**. These two strands are outlined below.

1. **The school-level design** takes account of the theory of change that all children in the year group/key stage may benefit from some of their peers taking part. Indeed, this spill-over effect is intended by the programme, and so is part of the evaluation investigation. The school-level design also takes account of 'real-world' recruitment, whereby FAST recruits schools to the programme, not individual parents. Parents are then invited to join the programme by trained parent, school and community partners, but the programme does not expect all parents in a given year group to join. Hence, the reasonably large-scale nature of the design is necessary to account for 'dilution', i.e. from participating FAST children and parents to the whole year group.

The school-level design will evaluate i) outcomes on attainment for all Year 1 individuals in the trial (end of Key Stage 1 (KS1) assessments, with Early Years Foundation Stage (EYFS) scores as a covariate), (excluding any whose parents have opted-out of such access to their child's data). And ii) outcomes from the SDQ (immediate and longer-term) for all Year 1 children, anonymised and then aggregated at school level. Note, due to the sensitive nature of the SDQ, and higher attrition from opt-in consent procedures, the SDQ is being completed anonymously in this trial.

2. **The quasi-experimental design (QED)** will explore how the participating target FAST children (i.e. those involved in the 8-week programme) are impacted in terms of attainment, by creating a matched sub-sample from the control schools (using NPD-matched data from known individuals) (where consent has not been withdrawn).

In addition to school level population data, pupil level data was collected at baseline, prior to randomisation. This was for *all* Year 1 children (i.e. no eligibility criteria), and included:

- Unique Pupil Numbers, names and dates of birth for all Year 1 children for whom consent had not been withdrawn (to match to the NPD to obtain Early Years Foundation Stage scores from 2014/15; and to include in the QED analysis)
- a Goodman's Strengths and Difficulties Questionnaire (SDQ) completed for each Y1 pupil by the child's class teacher and then anonymised.

Sample size

An initial sample of 5,143 eligible schools was drawn up and the schools were approached by SCUK to join the trial. Approximately 575 schools replied to SCUK with Expressions of Interest to join the trial. SCUK recruited 158 schools in total over six blocks.

Description of trial arms

- **Intervention arm:** Schools received the FAST programme (see details described in the Introduction). Schools recruited local partners needed to run FAST (school, parent and community partners) and families to the programme. Local partners attended official FAST training. They then ran the FAST programme as an 8-week twilight programme on one evening per week. Families graduate if they attend 6 or more sessions of the 8-week programme. After this, families had the opportunity to continue the more informal parent led meetings known as FASTworks.
- **Control arm:** Control schools did not receive the FAST programme but instead continued with business as usual including any interventions in which they would normally take part.

Number and timing of measurement points:

There are three main data collection points in this trial, set out below.

Baseline data includes:

- Early Years Foundation Stage (EYFS) scores for all Year 1 children in the trial, to be used as the baseline covariate in the primary outcome analysis. This measurement is taken once as part of normal teacher assessment at the end of the Reception year (2014/15) and will be collected via our NPD request during 2016/17.
- The teacher completed Goodman's Strengths and Difficulties Questionnaire (SDQ) prior to randomisation, for each Year 1 pupil in the class. (Note, for Block 1, pupils were in Reception when this was completed; for Blocks 2 and 3, pupils were in Year 1 – see Randomisation).

Mid-point data collection includes:

The second stage of data collection was the mid-point stage which is at the end of the 8 week delivery period of the FAST programme and at this time point we collected the SDQ data again (this was in Year 1 for all pupils, but at different time points in the academic year for the different blocks; for full detail see protocol).

Follow-up data collection includes:

The third stage is follow-up. For the primary outcome measurement this will be taken once at Key Stage 1 in the summer term of year 2 as part of normal school testing. The SDQ will also be repeated as a follow up at this time i.e. at the same time point for all pupils, which

means that there will be different time-periods since completing the mid-point for the different blocks in the trial. The differences arise since the mid-point SDQ was completed at different times and the final follow-up was completed at the same time.

Randomisation

- Table 1 describes the blocking and stratification for the randomisation. Within each of 6 blocks, randomisation took place with one regional stratifier (north/south) to ensure a split of delivery for operational reasons.
- 79 schools were randomised to each arm (when combining all blocks).

Timing of randomisation relative to baseline testing

- Randomisation occurred after baseline testing. The timetable for randomisation took account of Save the Children's FAST recruitment processes and NFER's baseline data collection requirements with schools; and then subsequent FAST pre-programme activity that needs to take place before an 8-week cycle can begin (this includes recruiting local delivery partners, and running the 2-day training about 3–4 weeks before an 8-week cycle, which allows time for local partners to then engage parents in the programme, and sign them up in week 0). Randomisations took place in the term preceding a delivery cycle. The latest that implementation could start in schools was Summer term 2016. Table 1, below, presents the randomisation blocks.
- NFER notified schools of the outcome of randomisation (i.e. whether allocated to the intervention or the control group). NFER notified SCUK of the intervention schools.
- Midpoint data was collected at the end of the 8 week delivery point for each school.
- Some schools were randomised in one block but due to various circumstances they delivered the FAST programme in a later term, therefore their midpoint data was collected at a different time in the year to their counterparts who were randomised in the same block but still at the end of their own 8 week delivery point.

Table 1: Randomisation blocks (actual)

Randomisation block	No. of schools in each arm		Total no. of schools
	FAST	CONTROL	
Randomisation for Autumn 2015 delivery	FAST	CONTROL	
Early block (1a) North (June 2015)	8	8	48 schools
Early block (1a) South (June 2015)	6	5	
Later block (1b) North (July 2015)	6	6	
Later block (1b) South (July 2015)	4	5	
Randomisation for Spring 2016 delivery	FAST	CONTROL	
Early block (2a) North (Nov 2015)	11	11	65 schools
Early block (2a) South (Nov 2015)	13	12	
Later block (2b) North (Dec 2015)	4	3	
Later block (2b) South (Dec 2015)	5	6	
Randomisation for Summer 2016	FAST	CONTROL	

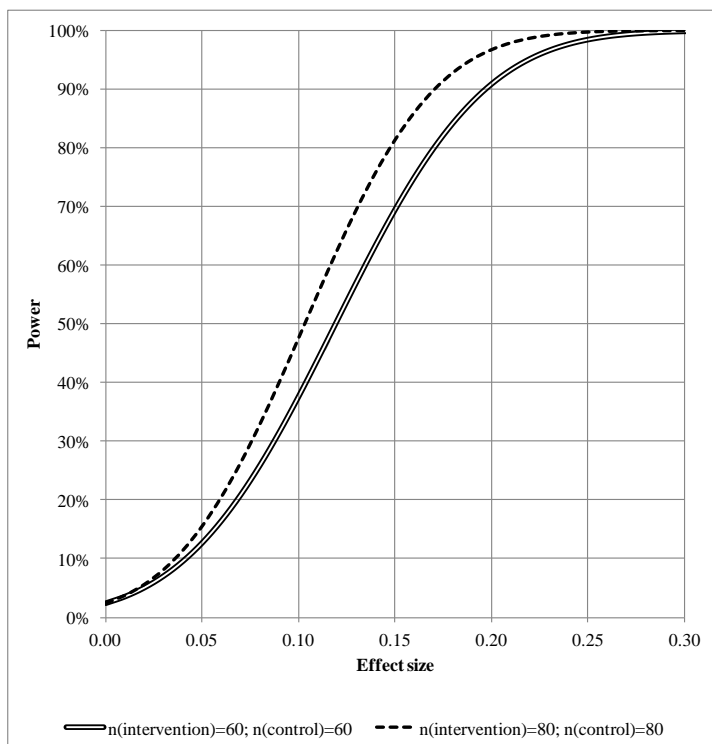
delivery			
Early block (3a) North (Jan 2016)	7	7	45 schools
Early block (3a) South (Jan 2016)	5	6	
Later block (3b) North (March 2016)	4	5	
Later block (3b) South (March 2016)	6	5	
Total no. of schools	79	79	158 schools

Calculation of sample size

As the design incorporates the real-world element of parents' being invited to join the intervention itself (within FAST-engaged schools), sample size calculations take account of the dilution of any FAST effect (as not every family in a FAST school will participate). Results of meta-analyses, summarised within the EEF toolkit, identify that the effect size of parental involvement on attainment could be as high as 0.6 (Jeynes, 2005 and 2007) (although a typical effect size is 0.26). If every family in Year 1 volunteered, the trial would be over powered to detect a 'typical' parental involvement intervention of effect size=0.26 with the proposed minimum number of 120 schools (60+60) and a maximum of 160 schools (80+80). However, FAST typically runs with 25 (and up to 40) families (8–12 per hub) in a school and these families are typically from Reception and Year 1. Assuming around 15 families volunteer from Year 1 this represents around 1/3 of families in an average primary school cohort.

Figure 1¹ shows that with 60+60 schools, this trial is powered to detect an overall (i.e. diluted) effect of 0.17 and with 80+80 schools, the corresponding effect size is 0.15. Assuming the extent of dilution described in the previous paragraph, FAST needs to have an effect of between 0.45 and 0.5 (calculated by dividing the overall effect size by the proportion of pupils that experience FAST) on families that volunteer assuming no spill-over effects on other children. I.e. FAST needs to have a large enough effect on the participating target children to be observed across the whole of Year 1.

¹ Assumptions: ICC=0.16 (from multi-level model of PiE 6 follow-up; EYFS baseline; data from Oxford literacy and numeracy trial) correlation between EYFS baseline and PiE/PiM 6 follow-up=0.62 (from Oxford literacy and numeracy trial). Expected number of pupils per school for eligible schools (top FSM quintile)=43.



Follow-up

Following randomisation we had 79 schools in the intervention arm and 79 in the control arm.

All schools completed the baseline SDQ, since this was a prerequisite for randomisation. However, one school's SDQs from the control group was lost by the courier so this left us with 79 intervention schools and 78 control schools with completed baseline SDQs (although note that due to the nature of the error, the 79th school was allowed to continue in the trial).

Since randomisation, 16 schools withdrew from the FAST programme: i.e. they 'cancelled' delivery (the term used by SCUK). 15 of these schools withdrew before the FAST programme began, and the remaining one stopped delivery after the first week of FAST.

Of the 16 intervention schools that have withdrawn from the programme – four returned midpoint SDQs, a further one completed mid-point SDQs but these were lost by the courier, and the remaining 11 did not return mid-point SDQs*. In terms of final data collection, nine of these 16 intervention schools are willing to have KS1 scripts remarked and to complete end point SDQs, three are unwilling to do these, and four have status unknown. 11 of these 16 schools will allow access to NPD.

In addition, one school from the control group has withdrawn from providing data from the trial. They did not complete mid-point SDQs. They are unwilling to allow access to KS1 scripts for remarking and to complete end point SDQs. They will allow access to NPD.

*In terms of mid-point data collection, 136 schools completed midpoint SDQs, 64 in the intervention group and 72 in the control group. However, mid-point SDQs were lost in transit for 6 of these 64 intervention schools. Of the 22 schools that did not complete mid-point SDQs, 15 were in the intervention group (11 of which had also withdrawn from the FAST

programme, see above) and 7 were in the control group. These attrition rates will be reported in the analysis and reporting for this project.

Outcome measures

Primary outcome

The primary outcome measure will be taken from KS1 outcomes for all children in the year 1 classes in the intervention schools (not just the FAST children) and in the control schools and will be independently marked by NFER. A weighted sum of Reading Paper 1 at 20 marks and Arithmetic at 25 marks will form the primary outcome:

$$KS1 = 45\left(\frac{R}{20} + \frac{A}{25}\right)$$

where *KS1* is the primary outcome for the trial; *R* is the raw score in Reading Paper 1 and *A* is the raw score in the Arithmetic Paper.

Secondary outcomes

The first two secondary outcomes will be the raw score in Reading Paper 1 and the raw score in the Arithmetic Paper.

The non-attainment secondary outcome measure is the Goodman's Strengths and Difficulties Questionnaire where the main measure used for this outcome will be the difficulties score Syntax for the calculation of this measure is available from the SDQ website². The SDQ will be completed by class teachers for all trial pupils at baseline (prior to randomisation), after the first eight weeks of FAST, and then in June-July 2017 alongside the end of Year 2 assessments (to aid maximising response rates). This will be completed in both intervention and control schools, for each Y1 child, and then anonymised, before being transferred to NFER by each school. The main secondary outcome here is the mid-point SDQ which will detect any change immediately following the 8 week programme for each school.

Analysis

The analysis will follow EEF guidelines.

Primary intention-to-treat (ITT) analysis

The primary analysis will be intention-to-treat. A multilevel random intercepts model with two levels (school and pupil) will be used for the analysis to account for cluster randomisation. The main analysis will determine whether some children in Year 1 attending FAST had an overall effect on the whole class for their Key Stage 1 attainment. This will be determined by fitting a model with the dependent variable as Key Stage 1 attainment as measured by the primary outcome described above.

One covariate will be prior attainment taken from the Early Years Foundation Stage (EYFS) scores from the NPD matched to the pupil lists collected before randomisation. A suitable continuous EYFS measure for this model will be the weighted sum of the following variables: CLL_TOTAL and PSRN_TOTAL. This represents the combined score of 'communication, language and literacy' and 'mathematical development' and will be calculated as follows:

² <http://www.sdqinfo.com/>

$$EYFS = 63\left(\frac{CLL}{36} + \frac{PSRN}{27}\right)$$

where EYFS is the covariate in the model, CLL is the variable CLL_TOTAL (marked out of 36) and PSRN is the variable PSRN_TOTAL (marked out of 27) from the NPD.

We will also include the following covariates: randomised group, randomisation block (1a, 1b, 2a, 2b, 3a, 3b) and region (north/south); all as dummy indicators. Note that randomisation block means more than it might in an 'un-phased' trial as it determines the length of time between intervention and measurement.

The model will be run in R using package 'nlme'.

Imbalance at baseline and missing data

To date, four randomised schools are unwilling to have their KS1 scripts remarked and four have unknown withdrawal status. If all these refuse, that yields at least 5% attrition since more may refuse when finally approached. It will therefore be important to explore imbalance for analysed groups on EYFS and FSM by comparing school-level means and through calculating a pre-test effect size using a multi-level model.

A two-level (pupil and school) logistic model of whether a pupil has a missing KS1 score will be constructed with the following covariates: EYFS, randomised group, block, region and everFSM eligibility.

Missing data generally presents a problem for analysis, whether a pupil is missing a value for an outcome variable (post-test score) or for covariates (e.g. pre-test score). If outcome data is 'missing at random' given a set of covariates then the analysis has reduced power to detect an effect. If data is 'missing not at random' (for example, differential dropout in the intervention and control groups for unobserved reasons) then omitting these pupils, as with the primary 'completers' analysis, could bias the results. Imputing missing data could improve the robustness of the analysis and examine how sensitive the results are to alternative assumptions. It can also signal missing not at random if the imputed result is much different from completers analysis. Likelihood based methods (e.g. nlme function in R) are usually consistent with the results from multiple imputation if the missingness mechanism is missing at random. If it is not, some sensitivity analysis, for example using extreme values, may be necessary.

Non-compliance with intervention

This trial has three measures of dosage; two at the school level and one at the pupil level:

School-level: Did the school take part in FAST, or cancel? There were 16 cancelled schools.

Pupil-level in the FAST target group: Did the pupil graduate (for which they needed to attend six sessions or more of the 8-week programme)?

School-level: to what extent did the group continue to meet during FASTworks? Probably 2-3 levels to indicate frequency of meetings.

As this trial has an intrinsic QED built into the design to discern any association between involvement in FAST and the primary outcome, this will serve as the main form of compliance analysis. However, as there is a potential 'halo' effect of the programme, a CACE analysis is planned for the experimental element using a combined school-level

dosage measure which will have value zero if a school cancelled before the 8-week programme started; value 1-8 according to how many FAST sessions the school as a whole ran and incrementing by one extra point if any FASTworks sessions were attended. Exploring compliance using this continuous measure assumes that the intensity of delivery is measured at the interval level i.e. difference is equivalent between 1-2 as between 8-9 on the scale. Although not testable, this seems a reasonable assumption and affords us the retention of all available information for the analysis.

QED

FAST is a universal intervention. Any family with a child in Year 1 was eligible to take part in the 8-week FAST programme. We will match data from the FAST Family Register to the trial UPN list and to the NPD to describe the sample that took part in terms of:

- total number
- proportion of target children compared with the whole of Year 1
- gender
- everFSM
- EYFS.

The QED analysis is observational rather than experimental as, whilst we could reasonably expect parents to engage in the programme in similar rates across experimental groups, we will not be able to measure the reasons why they participate and cannot reliably mimic participation in the control group³. That said, this approach provides a robust yet unidentified counterfactual in the set of parents who could have engaged had they been randomised to FAST.

Matching of pupils in control schools to FAST pupils will be done on the following variables: gender, everFSM, EYFS, SEN and EAL. These have been chosen as they may be predictors of FAST participation and are available on NPD. Our analysis will ensure 'common support' through propensity score matching followed by multi-level modelling using the following sequence of steps:

- A two-level (pupil and school) binomial logit model of intervention group will be fitted on the matching variables listed above
- Remove anyone in comparison group with probability lower than min in intervention group
- Remove anyone in intervention group with probability greater than max in comparison group

Run a two level (pupil and school) multilevel model of KS1 on the following covariates: EYFS, intervention group, gender, everFSM, EYFS, SEN and EAL The coefficient of the intervention group variable (and its standard error) will go forward to calculate a quasi-effect size (and its confidence interval) as per the below.

Secondary outcome analyses

For the secondary outcomes, we will use the standard scoring system to obtain SDQ results for the difficulties measures, the pro-social score, and the impact measures. We will use pre-

³ This scenario is unusual in that there is a robust counterfactual set of parents that would have volunteered had their school been randomised to FAST; we just don't know who they are. In a conventional quasi-experiment, comparison schools selected may themselves be systematically different so such a counterfactual doesn't exist.

specified SPSS syntax available from the SDQ website to derive these measures, which will be modelled separately.

Due to the anonymity of the data collection, the SDQ can only be linked between timepoints at the school level. This therefore means that there is no advantage of modelling at the pupil level. Indeed the most efficient solution is to include both follow-up timepoints in a school-level repeated measures model. Each model will have two levels⁴: school and time; the first timepoint being the first SDQ follow-up and the second being the post-FASTworks follow-up. Covariates will include:

- Baseline SDQ score (school mean)
- Randomised group
- Randomisation block
- Region.

Note that randomisation block means more than it might in an 'un-phased' trial as it determines the length of time between intervention and measurement (in the case of the second SDQ follow-up).

This model has the added advantage that, providing a school was followed-up at least once for the SDQ, it can be included in the model under the assumption of missing at random.

Subgroup analyses

The primary outcome model will be modified for the following subgroup analyses specified in the protocol: FSM-eligible pupils (we will use the everFSM indicator as per latest EEF guidance), randomisation 'block', prior attainment and baseline SDQ difficulty at school level. These analyses will be carried out through the use of interaction terms in the model (i.e. including the variable itself plus the product of the variable and randomised group). A separate model will be run for each interaction. Furthermore, a separate primary outcome model will be run on just the ever-FSM eligible pupils, as per EEF guidelines.

The termly randomisation blocks mean that some schools receive considerably more of *Fastworks* than others. For this reason, it will also be useful to include an interaction between block and treatment for the secondary outcomes too.

Effect size calculation

The numerator for the effect size calculation will be the coefficient of the intervention group from the multi-level model. All effect sizes will be calculated using total variance from a multilevel model, without covariates, as the denominator i.e. equivalent to Hedges' g . We favour calculating outcome standard deviation from a model without covariates as it is more comparable to other trials in a meta-analysis and is more generally meaningful, having not been artificially reduced. Confidence intervals for each effect size will be derived by multiplying the standard error of the intervention group model coefficient by 1.96. These will be converted to effect size confidence intervals using the same formula as the effect size itself.

⁴ Note the protocol states the model will be single-level; it is in the sense that it will be run on school means. One way of running a repeated measures model is to introduce a time level thus making the model multi-level.

Report tables

The EEF trial report template⁵ contains several tables whose structure is pre-specified.

⁵ <https://educationendowmentfoundation.org.uk/evaluation/resources-centre/writing-a-research-report/>