A randomised controlled trial of a literacy-based summer school to improve the reading and writing skills of children transitioning from primary to secondary school

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ABSTRACT

Introduction – Despite substantial investment in the provision of summer school programmes to ease pupils' transition from primary to secondary schools, rigorously designed United-Kingdom-based evaluations using randomised controlled trial designs to explore their effect on pupil attainment have not been undertaken. This may be particularly pertinent amongst children from disadvantaged backgrounds due to lower overall attainment and greater experiences of difficulties during this transition period. This randomised controlled trial aimed to address this gap in the literature by evaluating the effect of a literacy summer school on pupils' reading and writing skills.

Method – Pupils meeting the eligibility criteria for the study, and due to transition from year 6 to year 7 in 2013, were recruited through 29 primary schools in proximity to the Discover Children's Story Centre in Stratford, London. Consenting pupils were individually randomised to receive the summer school intervention or to a 'business as usual' control group. The intervention was implemented over a four week period during July and August 2013. At the end of the intervention period all trial pupils were asked to complete the Progress in English 11 (Long Form) test developed by GL Assessment.

Results – There was no evidence of a difference in outcome between the intervention and control group pupils; however, the conclusions that can be drawn from this study are limited due to the small sample size and problems with attrition.

Conclusion – Further research is needed to explore the feasibility of conducting this type of evaluation using a larger sample size, as issues with attrition from the summer school and from testing need to be resolved.

262 words

INTRODUCTION

Increasing focus is being placed on improving the 'transition' period for pupils moving from the final year of primary school (year 6) to the first year of secondary school (year 7). In a review exploring the effects of 'transition', McGee et al. (2004) highlighted a breadth of international literature demonstrating a decline in academic attainment following transition. Furthermore, research which surveyed children about their experiences of transition from primary to secondary schools suggests that children with low socioeconomic status may have less positive transitions (Evangelou et al, 2008). This is particularly pertinent amidst a background of persistent problems with attainment in English at key stage 2 (KS2) and weaker attainment in English amongst pupils who are eligible for free school meals (FSM) as highlighted in the *Moving English Forward* report (Ofsted, 2012).

Summer school programmes have been identified as a potential means to address difficulties pupils experience during this transition period. In 2011, the UK government provided £50m funding to support a summer schools programme for disadvantaged pupils, specifically those eligible for FSM and those cared for by the local authorities for periods of 6 months or more (Day et al, 2013). Literacy-focused summer schools for year 6 children have also been identified recently, alongside other activities, for English teachers to use to ease this transition (Ofsted, 2012).

Despite this investment in summer schools over recent years, there is a lack of evidence from rigorously designed evaluations to establish their effect on pupil attainment. Sainsbury et al (1998) and Day et al (2013) describe the findings of cohort studies which surveyed pupils before and after attending summer schools; however, no United-Kingdom-based randomised controlled trials currently exist in this field. In 2013, the University of York and Durham University were funded by the Education Endowment Foundation (EEF) to independently evaluate the *Discover Summer Writing Workshop* intervention as delivered by the intervention developers based at the Discover Children's Story Centre, a charitable organisation based in Stratford, London.

Objective

The objective of the independent evaluation was to test the effectiveness of the *Discover* summer writing workshop intervention compared with a 'business as usual' control group on the reading and writing abilities of participating children. A full report of this evaluation is available from the EEF website (http://educationendowmentfoundation.org.uk/projects/discover-summer-school/).

METHODS

Trial Design

This study employed an individually randomised controlled trial design to compare outcomes for pupils attending the *Discover Summer Writing Workshop* intervention with outcomes for pupils in a 'business as usual' control group who did not attend the summer school.

The trial was designed, conducted and reported to CONSORT standards (Altman et al, 2011) in order to minimise all potential threats to internal validity, such as selection bias and a range of post randomisation biases (Cook and Campbell, 1969; Shadish, Cook and Campbell, 2002; Torgerson and Torgerson, 2008). As a result, it would have been possible to observe unbiased estimates of the impact of the intervention (had we not experienced problems with attrition (see later).

Ethical approval was obtained for this study from Durham University School of Education Ethics Committee.

Recruitment

School recruitment took place during the development phase of the intervention (between March and May 2013), with primary schools identified which fed into local secondary schools with agreement to undertake outcome testing in the autumn

term of 2013. Schools were asked to sign an 'Agreement to Participate Form' to ensure they agreed to all trial related procedures. Parental information evenings were held by the implementation team (*Discover*) to raise awareness of the trial amongst parents of eligible children. Parents of eligible pupils were provided with information letters about the study, explaining the nature of randomisation to either control or intervention groups, use of outcome testing and pupil data. Written consent was obtained from parents who were willing for their child to take part in the study and primary schools were then asked to provide baseline data for these consenting pupils (including pupil name, unique pupil number (UPN), date of birth (DOB), free school meals status (FSM), predicted key stage 2 (KS2) English based on teacher assessment).

Eligibility

School inclusion criteria: Primary and secondary schools were eligible to take part in the trial if they agreed to all trial procedures, including: identifying pupils meeting the inclusion criteria for the study, informing parents, provision of pupil data and implementation of the outcome testing.

Pupil inclusion criteria: Pupils were eligible if they were going to be attending a participating secondary school, if they were predicted to achieve level 3c, level 3b, level 3a or level 4c in English by the end of key stage 2 (based on teacher assessment) and if their parent/guardian consented for them to take part.

School exclusion criteria: Schools were excluded from participating in the trial if they did not agree to all points listed in the 'Agreement to Participate Form' and primary schools were excluded if they did not feed into one of the secondary schools which had agreed to administer the outcome testing.

Pupil exclusion criteria: Pupils were excluded from individual randomisation if they were not attending a participating secondary school or were expected to achieve below level 3 or above level 4c. Those predicted to achieve below level 3 were excluded from testing as it was thought the post-testing could have caused undue anxiety.

Intervention

The *Discover Summer Writing Workshop* intervention was delivered through a four-week summer programme that took place during the transition from year 6 and the start of year 7. The intervention aimed to improve children's reading and writing skills, specifically of children who were less able writers. The programme included a variety of workshops, including poetry and literacy sessions, in which children had the opportunity to engage with professional poets and writers. A range of enrichment activities were also provided including: drama, sports activities and trips around London, such as West End performances and visits to the Olympic Park.

The control group consisted of 'business as usual,' with pupils undertaking usual activities over the summer period. It is possible that this may have involved attendance at another summer school in the area; for example, these may have been hosted by their receiving secondary school. As an incentive to increase recruitment and avoid disappointment, the control group was offered a secondary school-based reading and writing intervention delivered on one Saturday in the autumn term 2013. This secondary school-based intervention did not form part of the evaluation as it took place after the outcome testing.

Outcomes

The Progress in English (PiE) 11: Second Edition Long Form (LF) test, GL Assessment, was the main literacy outcome. The test included both narrative and non-narrative exercises and assessed both reading and writing skills including areas such as spelling, grammar and comprehension. The Progress in English test was the only test available to the evaluation team (in order to comply with EEF testing policy) which included a writing component. Tests were marked by GL Assessment blind to allocation (i.e. markers did not know whether test papers were from either the intervention or control pupils).

Primary outcome

The primary outcome was extended writing score which referred to the combined raw score on the two extended writing tasks (exercises 5 and 6) from the PiE 11 LF. Exercise 5 had a total possible 20 marks and involved writing a persuasive letter. Exercise 6 had a possible 12 marks and assessed informative writing. Overall, the extended writing task score could range from 0 to 32, with a higher score representing higher attainment.

Secondary outcome

Secondary outcomes were based on pupils' reading, spelling and grammar scores. Reading score was based on the combined raw score on the reading tasks 3, 4, 3x and 4x. Exercise 3 (comprising of exercises 3 and 3x) had a total possible 19 marks and assessed reading comprehension of a narrative. Exercise 4 (comprising of exercises 4 and 4x) had a total possible 13 marks and assessed non-narrative reading comprehension. Overall, reading score could range between 0 and 32, with a higher score representing better attainment.

Spelling and grammar score was based on the combined raw score on the spelling and grammar tasks (exercises 1 and 2). Exercise 1 had a total possible 10 marks and assessed spelling. Exercise 2 had a total possible 10 marks and assessed grammar. The spelling and grammar score could range from 0 to 20, with a higher score representing higher attainment.

Delivery of outcomes

Teachers were asked to deliver the outcome tests under 'exam' conditions. They were not informed of the group allocation of the children, although it is possible that children may have informed teachers if they attended the summer school or not.

Sample size

This trial aimed to recruit 250 pupils. To estimate the differences that we could estimate with 80% power (2p = 0.05), we used the assumption that there would be a pre- and post-test correlation of 0.70 (i.e., the outcome test would correlate with the key stage 2 English result with a correlation of 0.70). This means that there would

have been an effective sample size of 492 pupils. Allowing for a 10% attrition rate gave an effective sample size to 442 pupils. This gave 80% power to show a difference of 0.27 standard deviations in writing score between the intervention and control groups, should a difference of this magnitude exist.

Randomisation

Pupils were individually randomised to either the intervention or control group using an unequal allocation ratio of 3:2 (intervention: control). Randomisation was stratified by secondary school for practical reasons and a block size of 10 was employed. The trial statistician (HB), based at York Trials Unit, undertook the randomisation in Stata® version 12 (Stata Corporation, College Station, Texas, USA) after the pupil baseline data had been received. Twins included in the trial were randomised separately but allocated to the same intervention group by selecting the allocation assigned to the 'first' twin, as defined by the smallest trial ID.

The evaluation team provided allocation information to the implementation team, who subsequently provided this information to parents of pupils and disseminated further information about the summer school to those in the intervention arm.

In order to be pragmatic and reflect normal practice, pupils allocated to the intervention were divided into four summer school class groups by teachers for the following reasons: 1) several pupils fasting for Ramadan were grouped together, 2) pupils attending the same secondary schools in autumn term were grouped together, 3) pupils could be moved into different groups should disagreements arise between pupils in the same group.

Analysis

Analysis was conducted in Stata® version 13 (Stata Corporation, College Station, Texas, USA) using the principles of intention to treat, meaning that all pupils were analysed in the group to which they were randomised irrespective of whether or not they actually received the intervention and irrespective of implementation fidelity. Statistical significance was assessed at the 5% level, unless otherwise stated. Effect

sizes were calculated and are presented alongside 95% confidence intervals. Effect size was defined as:

$$\Delta = \frac{\beta_{intervention}}{\sigma_{\varepsilon}}$$

where $\beta_{intervention}$ is the difference in mean score between the intervention and control groups and σ_{ε} is the residual standard deviation.

Primary analysis

The difference between pupils receiving the *Discover* four-week summer programme intervention and those pupils in the 'business as usual' control group was compared using regression analysis with extended writing post-test result as the response variable. It was planned that group allocation, gender, FSM status, EAL status and predicted KS2 score would be included as covariates in the model. Adjustment was also planned for secondary school which was used as a stratification factor during randomisation. However, given the limited amount of data available for inclusion in this analysis and the low numbers of pupils per secondary school, it was not possible to include the stratification factor in the primary analysis (EMEA, 2003). Due to the small number of complete case observations, the fitted model only adjusted for predicted KS2 level.

Secondary analyses

An analogous method to the primary analysis was used to assess differences between the intervention and control groups in terms of the secondary outcome of spelling and grammar. In relation to the secondary outcome of reading there was not enough data to conduct any statistical analyses. A subgroup analysis to investigate the effect of the intervention on pupils who were eligible for FSM in terms of post-test scores was planned but was not conducted due to the lack of post-test data. A further subgroup analysis to assess the effect of the four teaching groups was also planned but not possible. Patterns of missingness in the post-test result data were explored. Multiple imputation was not deemed appropriate due to the large amounts of missing data. As it was not possible to adjust for all the

planned covariates FSM status, EAL status and gender were each included in a separate repetition of the primary analysis.

Fidelity

Summary statistics of number of sessions attended were produced to describe fidelity to the intervention.

RESULTS

Recruitment and follow-up of participants

Pupils from 29 primary schools were identified that met the inclusion criteria for the study and were due to be attending at participating secondary schools (N=14) in the autumn term of 2013. Participating primary and secondary schools were all within a similar geographic location within proximity to the *Discover* Children's Story Centre in Stratford, East London.

Consent was obtained from the parents or guardians of 186 pupils; however, due to changes in the secondary school for 62 pupils, a total of 124 pupils were eligible and randomised. For fairness, as these 62 pupils had already been informed of the study and offered the opportunity to take part in the summer school, these children were randomised (on a 3:2 basis reflecting trial participants' randomisation) to either the intervention or control group. No further data were collected or used for these pupils in this evaluation. The CONSORT diagram in Figure 1 describes the flow of participants through this study.

Figure 1: CONSORT flow diagram.

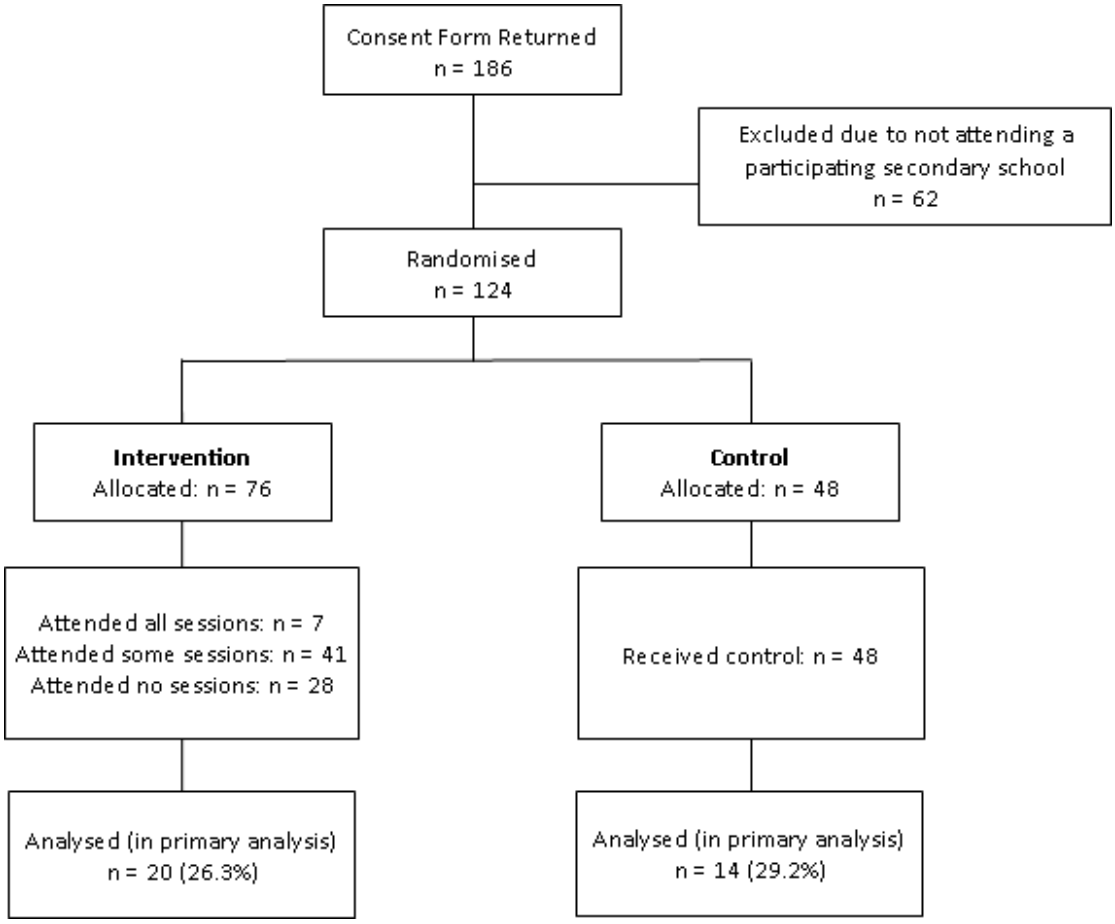

Table 1 shows characteristics of the 29 primary schools from which pupils were recruited to the trial. The mean school size was just under 600 pupils with a range between 250 and nearly 1000 pupils. Just over one third of pupils on roll were eligible for FSM, which is considerably higher than the national average of 19.2% for 2013 (Department for Education, 2013). Over two fifths had received FSM at some point in the last 6 years. The proportion of pupils with English as an additional language was high, with a mean of over 70%. There were large amounts of missing data relating to special measure status (approximately 70%).

Table 1: Characteristics of primary schools

	N = 29
Number of pupils on roll	
Mean (SD)	578.9 (188.24)
Med (Min, Max)	534 (250, 993)
Missing (%)	0 (0.0)
Percentage pupils eligible for FSM	
Mean (SD)	36.7 (12.4)
Med (Min, Max)	34.8 (17.6, 68.2)
Missing (%)	0 (0.0)
Percentage pupils receiving FSM in the last 6 years	
Mean (SD)	43.5 (12.6)
Med (Min, Max)	42.3 (24.8, 77)
Missing (%)	0 (0.0)
Percentage pupils with English as an additional language	
Mean (SD)	71.1 (16.6)
Med (Min, Max)	73.2 (28.5, 96)
Missing (%)	0 (0.0)
Percentage pupils with SEN statement or on School Action Plus	
Mean (SD)	7.4 (2.77)
Med (Min, Max)	6.2 (3.4, 11.8)
Missing (%)	0 (0.0)
Special measures	
Yes (%)	0 (0.0)
No (%)	9 (31.0)
Missing (%)	20 (69.0)

Table 2 shows baseline pupil level characteristics by allocated group (i.e., intervention and control), both as randomised and as analysed in the primary analysis. In relation to the demographic characteristics of age, FSM status, pupil premium (PP) status, and predicted KS2 writing level at baseline, proportions of pupils within each category were fairly similar between the intervention and control arms both as randomised and as analysed in the primary analysis, although numbers eligible for analysis were small due to missing data. The proportion of those eligible for inclusion in the primary analysis with English as an additional language was much higher in the control arm than in the intervention arm (92.9% compared with 65.0%).

Table 2: Baseline pupil level characteristics

	As randomised Frequency (%)		**As analysed (primary cluster analysis)** Frequency (%)	
	Intervention	**Control**	**Intervention**	**Control**
	n =76 (61.3)	**n** = 48 (38.7)	20 (58.8)	14 (41.2)
Age				
Mean (SD)	11.3 (0.32)	11.3 (0.38)	11.3 (0.30)	11.3 (0.33)
Median	11.3	11.4	11.3	11.4
Minimum and maximum	10.8, 12.4	10.0, 12.1	10.8, 11.7	10.9, 11.9
Gender				
Male	43 (56.6)	29 (60.4)	12 (60.0)	7 (50.0)
Female	33 (43.4)	19 (39.6)	8 (40.0)	7 (50.0)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
FSM				
Eligible	32 (42.1)	27 (56.3)	8 (40.0)	9 (64.3)
Not eligible	44 (57.9)	21 (43.8)	12 (60.0)	5 (35.7)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Pupil premium				
Eligible	31 (40.8)	23 (47.9)	10 (50.0)	8 (57.1)
Not eligible	45 (59.2)	25 (52.1)	10 (50.0)	6 (43.9)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
English as an additional language				
EAL	42 (56.0)	33 (68.8)	13 (65.0)	13 (92.9)
Non-EAL	33 (44.0)	15 (31.3)	6 (68.4)	1 (7.1)
Missing	1 (0.8)	0 (0.0)	1 (5.0)	0 (0.0)
Predicted KS2 writing level				
Level 3c	8 (10.5)	3 (6.3)	2 (10.0)	2 (14.3)
Level 3b	8 (10.5)	8 (16.7)	3 (15.0)	1 (7.1)
Level 3a	21 (27.6)	10 (20.8)	5 (25.0)	3 (21.4)
Level 4c	38 (50.0)	25 (52.1)	9 (45.0)	8 (57.1)
Level 4b	0 (0.0)	1 (2.1)	0 (0.0)	0 (0.0)
Level 4a	1 (1.3)	1 (2.1)	1 (5.0)	0 (0.0)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Outcomes and analysis

Raw, unadjusted mean post-test scores are presented in Table 3 by trial arm. Extended writing scores were fairly similar in both allocated groups at 18.3 out of 32 marks (SD 4.34) in the intervention group and 17.3 marks (SD 2.76) in the control group. Proportions of those completing the extended writing questions were low but similar in both allocated arms; overall only 27.4% of pupils completed the primary outcome. In relation to the secondary outcome of reading, only two pupils completed all relevant questions and hence no summary statistics are presented. Mean spelling and grammar score were also similar between the arms, as were proportions completing.

Table 3: Unadjusted average scores for the intervention and control groups

	Intervention	Control	Overall
	n = 76	**n =48**	**n = 124**
Primary outcome			
Extended writing score	**n** = 20	**n** =14	**n** = 34
Mean (SD)	18.3 (4.34)	17.3 (2.76)	17.9 (3.75)
Med (Min, Max)	17.5 (8, 27)	16.5 (13,23)	17 (8, 27)
Completely missing (%)	44 (57.9)	27 (56.3)	71 (57.3)
Partially missing (%)	12 (15.8)	7 (14.6)	19 (15.3)
Complete (%)	20 (26.3)	14 (29.2)	34 (27.4)
Secondary outcomes			
Reading score	**n** = 1	**n** = 1	**n** = 2
Mean (SD)	[a]	[a]	[a]
Med (Min, Max)	[a]	[a]	[a]
Completely missing (%)	26 (34.2)	20 (41.7)	46 (37.1)
Partially missing (%)	49 (64.5)	27 (56.3)	76 (61.3)
Complete (%)	1 (1.3)	1 (2.1)	2 (1.6)
Spelling and grammar score	**n** = 17	**n** = 6	**n** = 23
Mean (SD)	9.0 (4.42)	8.3 (3.78)	8.8 (4.12)
Med (Min, Max)	9 (0, 16)	8.5 (4, 13)	9 (0, 16)
Completely missing (%)	27 (35.5)	20 (41.7)	47 (37.9)
Partially missing (%)	32 (42.1)	22 (45.8)	54 (43.5)
Complete (%)	17 (22.4)	6 (12.5)	23 (18.6)

[a] **As only two pupils had a reading score no summary statistics are produced.**

Post-test data were missing for 45 pupils (36.3%) and no pupil completed the test in full. Just over two fifths (43.6%) of pupils did not complete any questions from the long form part of the paper. However, all schools attempted the long form part of the test with the exception of one school; however due to the small pupil numbers at this school, it is not possible to say with certainty that this school did not set pupils the long form of the test.

Only 27.4% of pupils completed the extended writing exercises in full. Of the 15.3% of individuals who partially completed the extended writing section of the paper, all were missing responses to exercise 6. Higher proportions of those with English as an additional language had an extended writing score than those with English as a first language. Proportions completing and not completing the test were similar irrespective of FSM status, gender or whether the pupil was predicted a level 3 or a level 4.

Only two individuals completed all reading exercises and hence had a reading score. Two of the reading exercises were part of the long form of the test and 41.9% of pupils completed the short form reading exercises but were missing scores relating to the extension questions. Just under a fifth of pupils completed both exercises 1 and 2 and hence had a spelling and grammar score. A further 16.1% of individuals missed one sub-question.

Primary analysis

The primary analysis adjusted for baseline predicted KS2 writing level (level 3/level 4). Analysis was conducted on 34 pupils (20 intervention pupils and 14 control pupils) who were tested in 7 secondary schools. There was no evidence of a difference in extended writing score between the allocated groups with a non-significant increase of 0.97 marks for those in the intervention group when compared with those in the control group (p=0.47, 95% CI: -1.76 to 3.71). This relates to an effect size of 0.25 (95% CI: -0.42 to 0.92).

Secondary analyses

Reading

Only two individuals completed all reading tasks on the post-test and hence had a reading score. As a result, no analyses or summary statistics are presented.

Spelling and grammar

A regression model was fitted with adjustment for baseline predicted KS2 level only (level 3/level 4). Analysis was conducted on 23 pupils (17 intervention pupils and 6 control pupils) tested in 9 secondary schools. There was no evidence of a difference in spelling and grammar score between the allocated groups with a non-significant increase of 0.45 marks for those in the intervention group when compared with those in the control group (p=0.82, 95% CI: -3.70 to 4.59). This relates to an effect size of 0.10 (95% CI: -0.80 to 1.00).

Subgroup analyses

A pre-specified subgroup analysis was planned to assess the impact of the intervention on those eligible for FSMs. Due to the low completion rate, it was not possible to conduct this analysis. It also was not possible to conduct a planned subgroup analysis to investigate the effect of the four teaching groups within the intervention arm.

Ancillary analyses

Due to the response rate, it was not possible to adjust for all the covariates stated in the statistical analysis plan. To explore the potential impact of FSM status, EAL status and gender, each was included in a separate repetition of the primary analysis. Results are presented in Table 4. There was no significant effect of the intervention on extended writing score in any of the analyses and neither gender, FSM status nor EAL status had a significant impact on the primary outcome (p=0.12, p=0.34 and p=0.83 respectively).

Table 4: Ancillary analysis results

	Change in extended writing score due to intervention (95% CI)	p-value	Effect size (95% CI)
Primary Analysis	0.97 (-1.76 to 3.71)	0.47	0.25 (-0.42 to 0.92)
Adjusting for gender	1.20 (-1.48 to 3.89)	0.37	0.31 (-0.36 to 0.98)
Adjusting for FSM status	0.65 (-2.17 to 3.48)	0.64	0.17 (-0.50 to 0.84)
Adjusting for EAL status	0.83 (-2.09 to 3.75)	0.57	0.21 (-0.46 to 0.88)

Fidelity

Attendance data were available for pupils allocated to attend the summer school. Over a third of pupils did not attend any sessions (28/76, 36.8%) and approximately 10% attended all sessions (7/76). The mean number of sessions attended was 9.8 out of 20 sessions (SD 8.73) and the median was 13.75 sessions (minimum 0, maximum 20).

CONCLUSIONS AND IMPLICATIONS

The conclusions that can be drawn from this study are limited due to the small sample size and problems with attrition. We found no evidence of an effect of the *Discover Summer Writing Workshop* intervention on English attainment; however, there is a need for further research to explore the effect of literacy summer schools such as this, for which key lessons from this feasibility study may prove useful.

Strengths

In the design and conduct of our study we used best practice as defined by the CONSORT guidelines for randomised controlled trials (Altman et al, 2011). Importantly, we used independent concealed allocation to ensure that the children were allocated without the possibility of bias. We used the principles of intention to treat by including all consenting eligible children in the final analysis. We pre-specified our main outcome and wrote a statistical analysis plan before we observed the data. We also used an independent company to mark the test papers, blind to the allocated group.

Limitations

Attrition was a key problem in this evaluation, which occurred both in terms of non-attendance to the summer school and in terms of non-completion of the test. This feasibility study has shown that it is not advisable to undertake a full trial of this intervention until issues associated with attrition from the intervention are resolved.

Further work needs to be done to investigate approaches that may overcome problems with low attendance, as 36.8% of the intervention group pupils never attended. This is despite steps that were taken by the implementation team to enable greater attendance, for example through the provision of free transport arrangements for pupils from multiple collection and drop-off points. Day et al (2013) have recently reported similar problems with attendance to a summer school, with 50% of disadvantaged pupils never attending, suggesting this is a common difficulty in undertaking summer schools with children from disadvantaged groups. A different format of summer school may be required as it is possible that parents or guardians may have been unwilling or unable to commit to their child to attend a four-week summer school. Day et al (2013) suggest that while literacy summer schools need to be sufficient in duration to improve pupils' literacy skills, summer schools over two weeks in length may not be feasible due to clashes with family holidays and other commitments, as well as reducing levels of interest amongst pupils.

In terms of attrition from testing, primary outcome data for fewer than 30% of trial pupils were available. To overcome this problem, researchers should explore the use of whole class testing or using routinely collected data for outcome assessment, such as the standard assessment tests (SATs). This may be useful as schools may have experienced difficulty in testing only a handful of students in some instances and finding adequate time for children to sit the tests, resulting in incomplete tests and missing data. Attrition from testing in this evaluation has also highlighted the important role that schools have in administering tests and emphasis should be placed on sufficient engagement with schools to ensure that their role is fully understood. This may be particularly necessary in trials that explore interventions taking place during the transition from primary to secondary school, where initial priority may be placed on liaison with primary schools to identify pupils and supply baseline data, but sufficient emphasis also needs to be placed on the involvement of secondary schools undertaking outcome assessment from the outset, so that both sets of schools are sufficiently engaged and aware of the requirements for their involvement. Transitions projects in their very nature also make the process of identifying schools and pupils difficult, with changes to eligible pupils' secondary schools in this trial resulting in 62 consenting pupils being excluded from this evaluation.

Generalisability of results

The generalisability of this study is limited by the relatively small geographic location in which the schools were based. Nonetheless, it is likely that the pupils sampled may be representative of other inner-city urban areas which have a high proportion of pupils belonging to minority ethnic groups or eligible for FSM. It is possible that attendance rates to the summer school may differ to areas in the UK with lower proportions of disadvantaged and ethnicity minority groups, for example children that were fasting for Ramadan during the summer school may have struggled with their attendance. This should be borne in mind when planning future summer schools.

Further research

The need for further research exploring the feasibility of conducting a larger RCT in this field has been highlighted. This work should also consider the potential effect that other activities over the summer holidays may have on children's attainment. This could be investigated through questionnaire methods and incorporated into statistical analyses.

Conclusion

This is the first randomised controlled trial which has explored the effect of a literacy-based summer school on the reading and writing abilities of pupils. Although the conclusions that can be drawn from this study are limited due to the small sample size and problems with attrition, the feasibility of undertaking such a study on a larger scale has been explored and useful points for consideration prior to undertaking a full trial are recommended.

REFERENCES

Altman DG, Moher D & Schulz KF (2012). Improving the reporting of randomised trials: the CONSORT Statement and beyond. Statist. Med., 31: 2985–2997.

Cook TD & Campbell D. (1969). Quasi-experimentation: Design and Analysis Issues for Field Settings. Boston: Houghton Mifflin.

Cottrell Boyce, F (2012). The unforgotten coat. London, Walker Books.

Day L, Martin L, Sharp C, Gardner R, Barham J (2013). Summer schools programme for disadvantaged pupils: key findings for schools, Department for Education.

Department of Education (2013). Schools, Pupils and their Characteristics: January 2013 (Reference IdL SFR21/2013). Statistical First Release.

European Agency for the Evaluation of Medicinal Products (EMEA) (2003). Points to consider on adjustment for baseline covariates, EMEA London. Available online at: http://www.ema.europa.eu/docs/en_GB/document_library/Scientific_guideline/2009/09/WC500003639.pdf

Evangelou, M., et al. (2008). What Makes a Successful Transition from Primary to Secondary School?: Findings from the Effective Pre-school, Primary and Secondary Education 3-14 (EPPSE) Project, Department for Children, Schools and Families.

McGee C, Ward R, Gibbons J & Harlow A, (2004). Transition to secondary school: a literature review. The University of Waikato for the Ministry of Education, New Zealand.

Ofsted (2012). Moving English forward: action to raise standards in English (110118).

Sainsbury M, Caspall L, McDonald A, Ravenscroft L & Schagen I (1998). Evaluation of the 1998 summer schools programme: full report. National Foundation for Educational Research (NFER), Berkshire.

Shadish WR, Cook TD & Campbell DT. (2002). Experimental and Quasi-Experimental Designs for Generalized Causal Inference. Boston, MA, US: Houghton, Mifflin and Company.

Torgerson DJ & Torgerson CJ. (2008). Designing Randomised Trials in Health, Education and the Social Sciences: An Introduction. Palgrave Macmillan.