Efficacy of small group reading intervention for beginning readers with reading-delay: a randomised controlled trial

Peter J. Hatcher,1 Charles Hulme,1 Jeremy N.V. Miles,1 Julia M. Carroll,2 Janet Hatcher,3 Simon Gibbs,4 Glynnis Smith,4 Claudine Bowyer-Crane,1 and Margaret J. Snowling1

1University of York, UK; 2University of Warwick, UK; 3Dyslexia Institute and University of York, UK; 4North Yorkshire Education Service, UK

Background: This study evaluated the effectiveness of an intervention for reading-delayed children in Year-1 classes. Methods: A sample (N = 77) of children drawn from 14 schools representing those with the weakest reading skills were randomly allocated to one of two groups. A 20-week intervention group received the intervention for two consecutive 10-week periods, while a 10-week intervention group only received the intervention for the second 10 weeks of the study. The programme was delivered in daily 20-minute sessions that alternated between small group (N = 3) and individual teaching. The programme combined phoneme awareness training, word and text reading, and phonological linkage exercises. Results: The children receiving the intervention during the first 10-week period made significantly more progress on measures of letter knowledge, single word reading, and phoneme awareness than children not receiving the intervention. However, the children who only received the intervention during the second 10-week period made rapid progress and appeared to catch up with the children who had been given the more prolonged intervention. Failure to respond to the intervention was predicted by poor initial literacy skills and being in receipt of free school meals. Conclusion: A reading intervention programme delivered on a daily basis by trained teaching assistants is an effective intervention for children who show reading delays at the end of their first year in school. However, around one-quarter of the children did not respond to this intervention and these children would appear to need more intensive or more prolonged help to improve their reading skills. Keywords: Reading intervention, remedial teaching, reading difficulties, randomised controlled trial.

One of the main obstacles to successful reading is poor phonological awareness (Stanovich & Siegel, 1994; Vellutino et al., 1996) and specifically the ability to manipulate the phonemic segments of spoken words (Muter, Hulme, Snowling, & Stevenson, 2004). Difficulties with phoneme awareness are common in children who enter school from socially disadvantaged backgrounds (Phillips & Lonigan, 2005), in those who have experienced difficulties with speech and language development (Catts & Kamhi, 2005), and in children at family risk of dyslexia (Pennington & Lefly, 2001). Such findings provide the theoretical motivation for reading intervention programmes that promote phoneme awareness and letter knowledge, the two key foundations of the alphabetic principle (Byrne & Fielding-Barnsley, 1995; Cunningham, 1990; Hatcher, Hulme, & Snowling, 2004).

There is now a large body of evidence showing that the most effective reading interventions are those that combine explicit teaching in phonological awareness with highly structured reading instruction using text, the difficulty of which is carefully matched to that of the learner (Hatcher, Hulme, Ellis, 1994; Hatcher et al., 2004; Iverson & Tunmer, 1993; but see Wise & Olson, 1995 for an alternative view). Such findings have in recent years led to policy recommendations for the teaching of reading to all children, both in the USA (National Reading Panel, 2000) and in the UK via the National Literacy Strategy (DFEE, 1998). Arguably, the implementation of such policies should provide all children with a good start to literacy development following school entry. However, there are still children who fail to respond well to such whole-class provision (Hatcher et al., 2004) and it has been argued that such children may require a more individualised approach (Torgesen, 2005).

One example of an approach that targets the reading skills of children in their second year in school who are developing reading slowly is the UK’s Early Literacy Support (ELS) programme (DfES, 2001). This programme is considered appropriate for children with reading skills below the 25th percentile who are expected, with additional help, to attain skills closer to the 50th percentile. The programme provides training in phonological and grapheme linkage skills and segmenting and blending words in reading and writing. Children also learn the sounds and names of letters, learn to read and write common words and are encouraged to use phonic and other strategies to check and self-correct words read or written in text. They also undertake guided text reading and writing exercises.
In a recent study (Hatcher et al., in press) we evaluated the efficacy of the ELS in comparison to a modified version of the ‘sound-linkage’ reading intervention (RI) programme that has been the subject of detailed research (Hatcher et al., 1994, 2004). The rationale for this approach was that the RI programme when delivered on an individual basis to reading-delayed 7-year-old children had proved highly effective. Our hope was that by modifying this individual approach for use with younger children, and by combining individual and small group teaching, we would obtain an intervention that was both highly effective and cost-effective for children struggling with the early stages of learning to read. The results of the study showed that at the end of the 12-week intervention, both groups of children had made significant gains in letter knowledge, phoneme awareness, reading and spelling skills that were maintained at follow-up 3 months later. There was no significant difference in the progress of the ELS and the RI groups. The average reading gains in the two programmes was 6.06 standard score points, which brought the children to the average level for their age.

A limitation of the above study was that there was no unseen control group. In addition, the allocation of children to treatments was not random. It is therefore not possible to be certain of the true effect of the intervention (Torgerson & Torgerson, 2001). It is also necessary to be cautious about generalising such findings to children with more severe reading difficulties who, some have argued, may require a more intensive approach (Torgesen, 2005). In the present study, therefore, we decided to conduct a randomised controlled trial (RCT) in which we evaluated the efficacy of the modified RI programme delivered by teaching assistants to groups of three children. RCTs potentially provide the best possible evidence for the effectiveness of an intervention and are particularly suitable in areas where there is well-developed theoretical and empirical support for a particular intervention (Harrington, Cartwright-Hatton, & Stein, 2002). Studies of reading disorders clearly meet these criteria, but to date RCTs have been uncommon and typically of low quality as in other areas of education (Torgerson & Torgerson, 2001).

The present study evaluated the efficacy of a modified RI programme delivered by teaching assistants to small groups of children, who were selected for being in roughly the bottom 8% of the population for reading development. Our principal aims were to evaluate the effectiveness of this theoretically motivated reading with phonological training intervention in an RCT and to investigate factors associated with variations in children’s response to the intervention. We compared the performance of children who received this intervention over a 20-week period of daily support (20-week intervention group) with that of children who received the intervention only for the second period of 10 weeks (10-week intervention group). A comparison of the two groups’ performance after the initial 10-week period allows us to evaluate the effects of the intervention against a no-intervention control group. A comparison at the end of the study allows us to assess if the intervention has equivalent (or increasing or decreasing effects) in the second 10-week period (data from the National Reading Panel suggest that there may be diminishing gains from phoneme awareness training after an initial period of around 12 weeks).

**Method**

We conducted an RCT in which children in both arms (20- or 10-week intervention) within each school received teaching from the same trained teaching assistant. The children were assessed prior to the intervention at the end of their fourth term in school (t1, mean age 5.61 years, end of Autumn term), 10 weeks after the start of the first intervention (t2, mean age 5.97 years, end of Spring term) and then 10 weeks after the start of the second intervention (t3, mean age 6.26 years, end of Summer term).

**Participants**

Details of the recruitment and allocation of participants are summarised in Figure 1 in line with the recommendations of the CONSORT statement for the reporting of RCTs (Moher, Schulz, & Altman, 2001). The study began with 16 of the larger primary schools from two regions of North Yorkshire Local Education Authority. The schools contained 685 Year-1 children of whom 635 were available for a whole-class screening measure of early spelling skills. All screening and follow-up testing was done by members of the research team who were not aware of which group the children had been allocated to.

Children were selected following screening if they were among the poorest spellers in their school year. In addition a further 17 children, who had been absent for the initial group spelling assessment, were nominated by their teachers for inclusion in the t1 assessment. Each of these identified children (N = 118) participated in the t1 assessment involving tests of receptive vocabulary, letter identification, phoneme completion, phoneme manipulation and word reading. After this assessment, two schools were dropped from the research as they had insufficient numbers of poor spellers. Excluding poor readers who exhibited severe problems of behaviour (3), very low general ability (4) or poor attendance (2), the 6 children with the weakest reading in each of the 14 schools (N = 84) were identified for the research using a composite measure of letter identification, early word reading and phoneme manipulation. The six selected children within each school were randomly allocated to one of two intervention groups (without regard to gender or initial pre-test score status). Following randomisation one school withdrew from the study, leaving 13 schools.
The 20-week intervention group received a 20-week period of small group and individual teaching, while the 10-week intervention group received no special help for the first 10 weeks, but then received the same small group and individual intervention for the second 10 weeks of the study. Descriptive statistics for the two groups of children are shown in Table 1. The groups were balanced on gender and they did not differ in the proportion that received free school meals (20-week intervention group 31%, 10-week intervention group 38%, \( \chi^2 = .37 \), or in the children’s attendance at school during the two terms of intervention (20-week intervention 90%, 10-week intervention 92%, \( p = .36 \)). It appears that there are differences between the two groups on measures of reading at t1, with the 10-week group having slightly better reading skills (EWR difference 2.21 (95% CI .54, 3.90, \( p < .009 \)) BAS difference .60 (95% CI .12, 1.08, \( p < .009 \)) than the 20-week group. In the analyses reported below we control for these differences by using t1 scores as covariates.

**Assessment battery**

**Screening test. Spelling.** Phonetic spelling ability at t1 was assessed by asking children to write eight words represented by pictures whose names were spoken by the examiner: ball, hut, star, fork, ten, jam, vest and crown. Children were encouraged to write down any sounds they heard within the word, even if they did not know the correct spelling. The spelling test was scored according to the phonetic accuracy of responses on a letter-by-letter basis (Caravolas, Hulme, & Snowling, 2001).

**Pre- and post-intervention measures. Language (t1 only).** The British Picture Vocabulary Test (BPVS II; Dunn, Dunn, Whetton, & Burley, 1997) was given to provide an estimate of verbal ability.

**Phoneme awareness (t1, t2, t3).** Phoneme awareness was measured using the Phoneme completion subtest from the Phonological Abilities Test (Muter, Hulme, & Snowling, 1997). In this test a child is shown a picture of a one-syllable word and told, for example, ‘Here is a gate. I’ll say the first part and you say the second part. Gay-.’ Children are expected to produce the final phoneme, /t/.

**Phoneme manipulation (t1, t2, t3).** Children’s ability to manipulate phonemes was measured using three subscales from the Sound Linkage Test of Phonological Awareness (Hatcher, 2000). The subscales require children to blend phonemes to form words and to segment and delete phonemes from words. Each subtest consists of six items preceded by two practice items. Testing is discontinued after eight consecutive errors.

**Letter-identification (t1, t2, t3).** Ability to identify letters by sound and name was assessed using the 26 lower-case letters of the alphabet (max = 52).
Table 1 Means (and standard deviations) for age, receptive vocabulary, phoneme completion, phoneme manipulation, letter identification, early word reading and BAS II word reading in the two groups (N = 77)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Group intervention</th>
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<tbody>
<tr>
<td></td>
<td>20-week (N = 39)</td>
<td>10-week (N = 38)</td>
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<tr>
<td>Age</td>
<td>t1</td>
<td>t1</td>
<td></td>
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<tr>
<td></td>
<td>5.61 (.26)</td>
<td>5.55 (.27)</td>
<td></td>
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<tr>
<td>Receptive Vocabulary</td>
<td>t1</td>
<td>t1</td>
<td></td>
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<tr>
<td></td>
<td>92.79 (7.01)</td>
<td>94.89 (12.08)</td>
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<tr>
<td>Phoneme Completion</td>
<td>t1</td>
<td>t1</td>
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<tr>
<td></td>
<td>2.33 (2.73)</td>
<td>3.11 (2.33)</td>
<td></td>
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<tr>
<td></td>
<td>t2</td>
<td>t2</td>
<td></td>
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<tr>
<td></td>
<td>5.26 (3.24)</td>
<td>4.87 (3.30)</td>
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<tr>
<td></td>
<td>t3</td>
<td>t3</td>
<td></td>
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<tr>
<td></td>
<td>5.33 (3.01)</td>
<td>6.13 (2.77)</td>
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<tr>
<td>Phoneme Manipulation</td>
<td>t2</td>
<td>t2</td>
<td></td>
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<tr>
<td></td>
<td>4.59 (3.42)</td>
<td>3.37 (3.53)</td>
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<td></td>
<td>t3</td>
<td>t3</td>
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<tr>
<td></td>
<td>7.05 (3.52)</td>
<td>6.95 (4.12)</td>
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<tr>
<td>Letter Identification</td>
<td>t1</td>
<td>t1</td>
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<td></td>
<td>15.44 (6.16)</td>
<td>17.63 (5.29)</td>
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<td></td>
<td>t2</td>
<td>t2</td>
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<tr>
<td></td>
<td>26.56 (10.05)</td>
<td>23.34 (6.73)</td>
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<td></td>
<td>t3</td>
<td>t3</td>
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<td></td>
<td>33.69 (11.35)</td>
<td>32.95 (10.95)</td>
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<tr>
<td>Early Word Reading</td>
<td>t1</td>
<td>t1</td>
<td></td>
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<tr>
<td></td>
<td>2.79 (3.47)</td>
<td>5.00 (5.41)</td>
<td></td>
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<tr>
<td></td>
<td>t2</td>
<td>t2</td>
<td></td>
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<tr>
<td></td>
<td>12.49 (7.40)</td>
<td>11.11 (7.82)</td>
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<td></td>
<td>t3</td>
<td>t3</td>
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<tr>
<td></td>
<td>17.90 (8.83)</td>
<td>18.61 (10.73)</td>
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<tr>
<td>BAS II Word Reading</td>
<td>t1</td>
<td>t1</td>
<td></td>
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<tr>
<td></td>
<td>79.49 (4.32)</td>
<td>82.11 (6.35)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>t2</td>
<td>t2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>84.08 (7.91)</td>
<td>82.97 (9.79)</td>
<td></td>
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<td></td>
<td>t3</td>
<td>t3</td>
<td></td>
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<tr>
<td></td>
<td>86.56 (9.58)</td>
<td>87.87 (10.67)</td>
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</table>

Notes: ¹Age is expressed in years.
²Scores for receptive vocabulary and for the BAS II word reading test are presented as standard scores (with a mean of 100 and a SD of 15).
³The maximum score for phoneme completion is 8.
⁴The maximum score for phoneme manipulation is 18.
⁵The maximum score for letter identification (lower case sounds and names) is 52.
⁶The maximum score for early word reading is 42.

Reading (t1, t2, t3). Progress in reading was assessed by two tests of single word reading ability; the Early Word Recognition Test (Hatcher et al., 1994) and The British Ability Scales (BAS II) Word Reading Test (Elliott, Smith, & McCulloch, 1997).

Teaching procedures

The modified RI programme required children to work on alternate days in groups of three, for a total of 25 × 20-minute sessions, and on the intervening days individually with the teaching assistant for a total of 25 × 20-minute sessions. The rationale for alternating small group and individual teaching sessions was that the reading of carefully graded text needed to be done in individual sessions, but the letter-sound and phoneme identification activities could be done effectively and pleasurably with children working together with the teaching assistants in small groups. Children in the 10-week intervention group (waiting control) received no additional help other than that available to them in their classes for the first 10-week period (Spring term). In the second 10-week period (Summer term) both groups received 25 × 20-minute group and 25 × 20-minute individual sessions of RI in the same format as for the first 10-week phase (amounting to 33 hours and 16.5 hours of individual and small group teaching for the two groups).

In the group sessions, the children spend approximately six minutes on letter identification, 8 minutes on phoneme awareness/linkage exercises, and 6 minutes on writing. The sequence of letter learning is modelled on the Jolly Phonics (Lloyd, 1994) programme and the words selected for quick identification are the most common words taken from the first 30 books in the selection of 97 graded books given to teaching assistants for the research. The phoneme activities are those from Sound Linkage but excluding the rhyme activities (Hatcher, 2000).

During the individual sessions each child spends approximately 4 minutes reading an ‘easy’ book (read with >94% reading accuracy). Five minutes are then spent reading the book that was introduced at the end of the previous individual session. During this time the teaching assistant takes a ‘running record’ of the child’s reading behaviour to monitor the appropriateness of the text for instructional reading (90 to 94% reading accuracy) and the child’s use of reading strategies for decoding difficult words (see Hatcher, 2005, for more details). Two minutes are spent reassembling the words from the story written in the previous group session. Finally 9 minutes are spent on shared reading of a new book at the instructional level when the child reads the text aloud independently and then together with the teaching assistant.

In the RI framework the teaching assistant selects the content to be included based upon the profile of the child’s skills. A teaching manual includes a table that links areas of reading/writing weakness to a range of appropriate teaching strategies such as how to establish letter identification, teaching a sight vocabulary using multi-sensory approaches and text reading skills through guided reading. The manual also contains appendices that include a structure for learning phonics decodability, examples of words that fit the various letters and phonics rules, and the list of 200 words that children are expected to be able to read by the end of Year 2 (DfEE, 1998). The teaching assistants received four days of training in how to deliver the programme and during the period of intervention were supported by 10 tutorials conducted fortnightly by one of the investigators.

Results

Descriptive statistics for all measures at t1, t2 and t3 are presented in Table 1.

The effectiveness of intervention

Children were randomised to the 20-week or 10-week intervention groups within each school. Because of this grouping the intra-class correlations (ICCs) were substantial for some of the outcome measures (ranging from .08 to .59). Failure to take this into account can lead to highly inflated type I error rates (Murray, 1998; Bland, 2004). To take account of this, all data were analysed using the Huber–White sandwich estimator (Rogers, 1993) to provide robust standard errors and p-values, as implemented in Stata 8.0 (StataCorp., 2003).

For each outcome variable, three regression analyses were run, which were equivalent to analyses of covariance in which the effects of a number of
covariates were controlled, prior to evaluating group differences in outcome measures. The first analysis predicted the t2 outcome measure from the baseline t1 measure, along with the covariates age, sex, group, receptive vocabulary, and phoneme completion. Since between t1 and t2 only the 20-week group received the intervention, if the intervention is effective, there should be significant effects of group on the literacy outcome measures at t2.

The second analysis predicted the t3 outcome from the same predictors as above. Since between t2 and t3 both groups received the same intervention an effect of group in such analysis would show that 20 weeks of intervention is better than 10 weeks.

The final analysis examined the effect of group on t3 measures after controlling for the same predictors as above, but also including the t2 outcome measure as a covariate. Such an analysis establishes whether the 10 weeks of teaching between t2 and t3 were equally effective for both groups.

**Letter knowledge.** At t2 the regression analysis revealed that the 20-week intervention group had better letter knowledge (difference 5.61 (95% CI 1.79, 13.2; p < .001) after controlling for starting levels and the other covariates at t1. This advantage in letter knowledge for the 20-week intervention group was not maintained at t3 (difference 3.07, 95% CI −1.10, 7.23; p = .14). Finally, there was no difference in letter knowledge at t3, after controlling for group differences in letter knowledge at t2 (difference 2.29, 95% CI −2.23, 6.81; p = .32), suggesting that the effects of the intervention on letter knowledge had reached some kind of plateau after the first 10 weeks of teaching.

**BAS II Word Reading.** At t2 the 20-week intervention group had better word reading skills than the children who had not yet received the intervention (difference 3.93 standard score points (95% CI .70, 7.16; p = .016) after controlling for starting levels and the other covariates at t1. However, this advantage in word reading skills for the 20-week intervention group was not maintained at t3 (difference 1.69 standard score points, 95% CI −2.27, 5.65; p = .40). This suggests that the 20-week intervention group made relatively less progress in the second 10-week period than the 10-week intervention group, and this difference in progress, after controlling for group differences in word reading at t2, was significant (difference −2.29, 95% CI .32, −4.25; p = .022).

**Early Word Reading.** At t2 the 20-week intervention group had better scores on the Early Word Reading test than the children who had not yet received the intervention (difference 4.14 (95% CI 1.86, 6.43; p < .001)) after controlling for starting levels and the other covariates at t1. However, this advantage in word reading skills for the 20-week intervention group was not maintained at t3 (difference 1.91, 95% CI −.61, 4.44; p = .19. This suggests that the 20-week intervention group made relatively less progress in the second 10-week period than the 10-week intervention group, but this difference in progress, after controlling for group differences in word reading at t2, was not quite significant (difference −2.12, 95% CI −4.27, .04; p = .054).

**Phoneme awareness.** At t2 the 20-week intervention group gained higher scores on a composite measure of phoneme awareness after controlling for starting scores in phoneme completion and other covariates (difference of 1.56, 95% CI .04, 3.08; p = .044). At t3 this difference was no longer statistically significant (the 20-week intervention group scored .19 higher, 95% CI −1.46, 1.85, p = .82) and when t2 phoneme awareness was also entered as a covariate there was actually a non-significant trend for the 10-week intervention group to score more highly than the 20-week intervention group (difference = .84, 95% CI = −.37, 2.07, p = .17).

In summary, for all measures there were significant gains in the first 10 weeks for children receiving the intervention compared to those not receiving the intervention. During the second 10 weeks, however, these children’s rates of progress decreased and the 10-week intervention group effectively caught up.

**Effect sizes for the intervention**

We calculated effect sizes for the intervention by computing the difference in progress between groups at t2 (when the 20-week intervention group had received 10 weeks’ intervention but the 10-week intervention group had not yet received the intervention) divided by the pooled t1 standard deviation for each measure. This showed that the intervention produced medium to large effect sizes on measures of reading, letter knowledge and phoneme awareness (Cohen’s d: BAS reading = .69, EWR reading = .79; letter knowledge = .94; phoneme completion = .46).

**Are reading gains maintained in the long term?**

An important question is whether any effects produced by the intervention are maintained after it ceases. In order to assess this we retested 69 out of 76 (34/38 of the 20-week group, and 35/38 of the 10-week group) children in this study on the BAS II single word reading test some 11 months after the intervention had been completed (t4). The results showed that the mean standard scores for each group at t4 were identical to their scores at t3 (standard score of 86 for the 20-week group, and 87 for the 10-week group). This is a very encouraging result, since it suggests that gains were maintained 11 months after the completion of the intervention. However, we had no control over the teaching that these children were receiving in school after the intervention had ceased and it is likely that some
children were continuing to receive help from the same teaching assistants who continued to work in the schools after the study finished. In the light of this limitation no strong claims about the potential durability of the intervention can be made.

Variations in the response to intervention

As the analyses presented above show, overall children receiving this intervention showed gains in reading skills relative to their peers, and there is evidence of diminishing returns from the intervention in the second 10-week period. However, this picture of average gains conceals wide variations in the amount of progress made by different children. Between t1 and t3 9/39 children in the 20-week group and 12/38 children in the 10-week group showed declines in reading standard scores. We explored the predictors of who responded to the intervention (across both groups) by simply classifying children as responders (standard score gains on the BAS single word reading test between t1 and t3) or non-responders (declines on this measure between t1 and t3).

Bivariate correlations between plausible predictors of progress and this dichotomous grouping variable showed that the phonetic plausibility of spellings at t1 (r = .36, p = .003), letter-sound knowledge at t1 (r = .42, p < .001), Early Word Reading scores at t1 (r = .32, p = .005), a composite measure of phoneme manipulation at t2 (r = .26, p = .031) and whether the child was in receipt of free school meals (r = -.29, p = .012) were significant predictors of the responder/non-responder distinction. (Nonsignificant correlations were obtained for BPVS standard scores at t1, phoneme completion scores at t1, and rates of school absence.) Overall, therefore, it appears that children with severe reading problems at the beginning of the study (indexed by low scores on word recognition, letter knowledge and phoneme manipulation) and children in receipt of free school meals tended to respond less strongly to the programme.

Interestingly, a logistic regression predicting the responder/nonresponder outcome from these significant bivariate predictors (free school meals, plausibility of spellings at screening, letter-sound knowledge at t1, Early Word Reading scores at t1, and the composite measure of phoneme manipulation at t2), again using the Huber–White sandwich estimator, showed that free school meals (OR = 1.3, 95% CI, 0.3, .65, p = .012), letter-sound knowledge (OR = 1.17, 95% CI, 1.01, 1.35, p = .036) and the phoneme composite (OR = 1.80, 95% CI, 1.05, 3.06, p = .032) were all statistically significant predictors. Hence, the severity of the initial reading problem (as indexed by initial letter-sound knowledge and phoneme awareness) and a measure of social deprivation (being in receipt of free school meals) are independent predictors of children’s responsiveness to the reading intervention provided here.

Discussion

In this RCT we evaluated the efficacy of a modified programme of reading intervention (Hatcher et al., 1994) for 5½-year-old children with significant delays in learning to read. The results of the study are very encouraging. After just 10 weeks of teaching the children receiving the intervention had made gains of nearly 4 standard score points on a test of single word reading ability, compared to controls in a ‘waiting list’ control group. While these effects of the intervention might conceivably be mediated by some general effect of increased attention given to the children in the 20-week group, the patterns in the correlational analyses (with initial levels of letter-sound knowledge and phoneme manipulation ability being predictors of response to the intervention) certainly argue against such an interpretation. In the subsequent 10 weeks of the study when both groups of children received the intervention, the progress of the children who had received the first phase of intervention slowed down and the 10-week intervention group effectively caught up with them, once they were given the intervention.

A secondary aim of the intervention was to improve phoneme awareness as this is considered to be an important mediator of gains in reading skill. The findings of these analyses paralleled those for reading skills. Thus, the 20-week intervention group made significant gains in the first 10 weeks of intervention but their progress in phoneme awareness slowed in the second 10-week period when the ‘waiting’ control group began to catch up.

The reasons for this apparent slowing in the rates of improvement of both reading and phoneme awareness are not clear. It is possible that the teaching assistants simply gave more attention to the ‘waiting’ control group in the second 10-week period. In line with this idea, the progress of the 20-week intervention group over the first 10 weeks of their training was smaller than the progress of the 10-week intervention group over the same time period but delivered later. A theoretically more interesting hypothesis is that there is a causal connection between the poorer gains in reading during the second 10-week period and a ‘plateauing’ of phoneme skills. In line with this view, the National Reading Panel reported that there are diminishing gains from phoneme awareness training after an initial period of around 12 weeks, though it should be noted that in the present study there were no ceiling effects evident on the phoneme awareness tasks.

Although the average gain in reading skills in this intervention was impressive, it is important to stress that it should not be considered a ‘quick fix’. Twenty-eight per cent of the 20-week intervention group and 21% of the 10-week intervention group had standard scores below 80 at the end of the intervention. Such children clearly require ongoing support if their literacy skills are to be brought to within the average range. Moreover, children varied in their
responsiveness to the teaching they received and a small number of children ‘resisted’ treatment. Such children will need to be given ongoing support to help improve their literacy skills.

The present findings have important educational implications. The teaching these children received was all delivered by teaching assistants following training and support in group tutorials. This shows, in line with other recent findings (Savage & Carless, 2005; Savage, Carless, & Stuart, 2003), that such programmes are educationally realistic and can be successfully delivered by teaching assistants. The gains made by the children (approximately .27 standard score points per hour of teaching during the first 10-week period) compare favourably with those reported by Torgesen (2005) following a review of reading intervention studies.

The present study also represents a methodological improvement over much applied research in educational settings (Torgerson & Torgerson, 2001). The employment of an RCT allowed a non-biased evaluation of the efficacy of the teaching programme and demonstrates that children who are significantly delayed in reading after the first year in school do on average benefit from small group reading intervention. We recommend that such an approach be adopted as a first-line (Wave 3) strategy for facilitating the literacy skills of such children, but we would emphasise that those children who do not respond may require both more intensive and more prolonged intervention.

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Correspondence to

Charles Hulme, Department of Psychology, University of York, York, Y010 5DD, UK; Tel. 01904 433145; Fax 01904433181; Email: CH1@york.ac.uk

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