Literacy Progress of Young Children from Poor Urban Settings: A Reading Recovery Comparison Study

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ABSTRACT

This naturalistic inquiry evaluated the impact of early literacy intervention on children in London schools. The progress, in the 2005–06 school year, was compared for 234 of the lowest-achieving children in 42 schools serving disadvantaged urban areas. The children, aged around 6 years who received Reading Recovery in their schools, were compared with those in schools which provided them with a range of other interventions. Both groups started the year with literacy levels below that of a 5-year-old. Comparison between the groups was made for reading and writing and phonic knowledge as well as oracy, work habits, social skills, and attitudes to learning.

Those children who received Reading Recovery achieved significant gains in all assessments compared with those who did not. At the end of the year the children who had received Reading Recovery had an average reading age of 6 years 7 months, in line with their chronological age. The comparison group was 14 months behind, with an average reading age of 5 years 5 months.

The study also evaluated classroom literacy. A word recognition and phonic skills measure was used with all children in the sample Year 1 (age 5–6) classroom in schools with Reading Recovery (605 children) and without Reading Recovery (566 children). Children in sample classrooms, with Reading Recovery available to the lowest group, ended the year with an average reading age 4 months above that of children in comparison classrooms.

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EARLY LITERACY INTERVENTION: WHAT CAN IT ACHIEVE?

Intervention for children experiencing difficulty in getting under way with literacy learning has become an established part of schools' provision and of national educational policy (Department for Education and Skills, [DfES], 2003; Earl, et al., 2003; National Institute of Child Health and Human Development/National Reading Panel, 2000). Research evidence on the effectiveness of literacy interventions with differing theoretical bases and various implementation characteristics has produced mixed conclusions (e.g., McIntyre et al., 2005; Vellutino, Fletcher, Snowling, & Scanlon, 2004). This confusing array of evidence claims causes difficulties for schools and systems in trying to evaluate what will be most successful for the particular demography and learning needs of their children.

With 6% of children (including nearly 1 in 10 boys) leaving primary/elementary schools in England without the most basic skills in reading (DfES, 2003), effective intervention is an urgent matter. Other national systems face similar challenges which seem to be particularly acute in poor urban areas.

There have been valuable reviews of evidence about the effectiveness of interventions with the intention of assisting schools and systems to make informed choices (e.g., Brooks, 2002; Brooks, Flanagan, Henkhuzens, & Hutchinson, 1998, in the United Kingdom; What Works Clearinghouse, 2007, in the United States). With one exception, however, the best performing of those interventions for low achievers only offer the possibility of doubling the rate of progress in children's literacy learning. For the proportion of children still unable to read and write by the end of their primary/elementary schooling, this degree of accelerated progress still leaves them falling further and further behind their peers.

There is more at stake than merely raising school standards. A review of research of social outcomes for children with literacy difficulties suggests that signs of wider difficulties begin to emerge early in the primary/elementary years (Wanzek, Vaughn, Kim, & Cavanaugh, 2006). The achievement gap, once in place, is highly resistant to change (Alakeson, 2005; Bynner & Parsons, 1997). Poor literacy that continues into adolescence and adulthood has many serious implications for society beyond those directly associated with education. The relationship between poor literacy and social exclusion are of concern to politicians (Feinstein & Sabates, 2006), and intergenerational persistence, particularly in urban areas, is even more alarming (Cooter, 2006).

Early intervention is perhaps better characterized as a preventative strategy when this longer-term impact is considered. For example, Boot and Riccomini, (2006) make a "novel" suggestion in that effective instruction can be used as "a conspicuous strategy for dropout prevention." The 2004 review by Vellutino et al., suggests that after high-quality (one-on-one) tutoring, it is possible to reduce the "incidence of reading difficulties to 1.5% of the population rather than 10–15% as is commonly maintained" (p. 28).

Responding to literacy difficulties early means the achievement gap is less and the potential for bridging it is increased (Pianta, 1990). The National Literacy Strategy in England recognized this important principle and introduced the concept of waves of teaching responses with their intensity matched to, and focused on, children's needs. Their Early Literacy Support intervention for small groups of children aged 6–7, has been variously evaluated (e.g., Soler & Paige-Smith, 2005) demonstrating some success with children who were experiencing mild difficulties in literacy learning. Other group teaching responses, focusing mainly on early phonic training, have also reported success with children with less-challenging problems, e.g., Hatcher et al.'s (2006) 'Reading Intervention;' and in Scotland, Clackmannanshire (Johnston & Watson, 2005). But none of these evaluations of group intervention report success with the very lowest-achieving children, and in some cases these were deliberately excluded from studies.

Vellutino et al.'s (2004) review of intervention studies over the last 40 years offered two positive outcomes for effective early intervention. Firstly, successful intervention can return children to a normal growth trajectory, and those studies that include follow up provide a check on maintenance of this trajectory. Secondly, the far fewer children who fail to benefit sufficiently from an otherwise effective intervention are securely identified for longer-term assistance.

Why another study to evaluate Reading Recovery? It has been shown to be highly successful with the low-achieving population which it serves (Hurry & Sylva, 1998, 2007). In the United Kingdom it is one of 19 interventions for which Brooks (2002) found evidence of substantial impact, with children making around four times the normal rate of progress over the program. There is follow-up research on the sustainability of gains made in Reading Recovery (Briggs & Young, 2003; Fraser et al., 2001; Moore & Wade, 1998; Schmitt & Gregory, 2001). However, Reading Recovery is less interested in reporting average gains and focuses attention on the proportion of children who reach the program goals of age-appropriate literacy achievement. This emphasis has greater merit for schools, children, their families and society. In the United Kingdom, Reading Recovery is typically available in schools serving the more-socially and economically deprived neighborhoods, where schools have found it very hard to raise expectations of what's possible for these children.

It is important, however, to establish that these reported gains would not have occurred naturally for these lowest-achieving children without the intensive intervention of Reading Recovery. Every year for more than a decade in the United Kingdom and more than 25 years in the United States, data on the literacy progress of all children who received Reading Recovery literacy support has been collected and reported publicly (e.g., Douëtil, 2006; Gómez-Bellengé & Thompson, 2004). But there have been few evaluations which included comparison groups since 1995 (Hurry & Sylva, 1998; Plewis, 2000, on the methodological issues; Sylva & Hurry, 1995), nor which has drawn from across

schools where Reading Recovery was and was not available, (e.g., Schwartz, 2005, used random assignment of low achieving children to receive Reading Recovery early or late in the year. Their design did not include comparisons with matched groups in similar schools, but receiving other school choices of provision).

METHOD

A comparison study was designed to evaluate the impact of Reading Recovery early literacy intervention on low-achieving children and their peers in London schools where the program has been partially supported by charitable foundations and government through *Every Child A Reader,* 2005–06. The literacy progress across one school year of the lowest-achieving 6-year-olds who had access to Reading Recovery in their schools was compared with children at similar low-achievement levels in similar schools who elected to provide interventions other than Reading Recovery.

Aims

The aims of this evaluation were to

- evaluate the effectiveness of Reading Recovery in raising the literacy achievements of young struggling readers (aged 6);
- explore the impact of Reading Recovery on other aspects of children's behavior and attitudes at school; and
- explore the impact of Reading Recovery on the literacy levels of 6-year-olds in classrooms, through their weakest peers having access to the program.

Design Summary

The design was an evaluation across one school year (2005–06) comparing the literacy attainments in schools where some children were identified and received Reading Recovery interventions, with attainment in schools where some children received a range of popular interventions other than Reading Recovery. Children selected for Reading Recovery in Year 1 (age 5–6) were assessed at the beginning and end of the year, and their progress compared to that of similar children in schools where Reading Recovery was not available and where they received the schools' other, preferred, interventions.

This design differs from many evaluation studies in that the researchers took no part in the work in schools, nor manipulated any features of the school provision to children. The study identified and selected already occurring circumstances and, after matching on important characteristics known to affect learning outcomes, compared children's literacy progress along lines relevant to addressing children's literacy difficulties. Equally, the assessment was not iso-

lated to the time frame of any particular program but merely focused on start and end of their second year in school, the key year for getting underway with literacy. This was felt to be a particularly sensitive design in that it allowed for short intensive, or more widely spaced, early interventions to impact according to the expectations of their design.

A word recognition and phonic skills classroom measure (Word Reading and Phonic Skills Form A & B, WRAPS, Mosely, 2003), was used for all children in the sample. The lowest-achieving subgroups were further assessed, individually, using *An Observation Survey of Early Literacy Achievement* (Observation Survey, Clay, 2002) and British Ability Scale Word Reading Test II (BAS, Elliott, 1996). At the end of the year a teacher report measure was used focusing on lowest achieving groups' attitudes to learning (Quay, Steele, Johnson, & Hortman, 2001).

Analysis of results was undertaken around four comparisons between beginning and end of year literacy measures. These comparisons were made using ANOVA (analysis of variance) throughout. Three groups of lowest-achieving children were compared:

- those who received Reading Recovery during the year;
- those who were in schools with Reading Recovery but did not receive Reading Recovery during the year; and
- those who were in schools without Reading Recovery and received other school interventions during the year.

The fourth comparison was made between children in entire Year 1 classrooms in schools with Reading Recovery and those without Reading Recovery.

The Sample

The sample was matched on characteristics at three levels, viz., boroughs (London's administrative divisions), schools, and children in classrooms.

The London boroughs

The London boroughs selected for the Reading Recovery and comparison samples are among the lowest achieving in England, and also with very high proportions of children whose home circumstances entitle them to free school meals. These schooling contexts have been shown to be among the hardest for raising the achievements of the very lowest groups (Wood & Caulier-Grice, 2006).

In 2005, five London boroughs had Reading Recovery provision in some of their schools. Five other London boroughs were selected to form the comparison group because they were similar in population characteristics and Key Stage 1 achievement levels in standardized national tests (see Table 1 for age/stage comparisons).

In the five boroughs with some schools with Reading Recovery, on average 8.2% of 11-year-old children, transferring to secondary/high schools, were achieving below the competency of a 7–8-year-old (National Curriculum Level 3), with a range from 6.6% to 9.5% of the cohort. The five boroughs with no schools with Reading Recovery averaged 8% of 11-year-old children with a competency below that of a 7–8-year-old, with a range of 7.2% to 9.8%. This shows that at the start of the study, the boroughs were well matched in terms of overall extent of underachievement at the end of primary/elementary schooling. Within both these borough groups were included some schools with much higher proportions of children achieving below that level. These were the schools that were recruited for the study.

The schools

In five London boroughs, 21 infant and primary/elementary schools were identified, who in 2005–06 had a Reading Recovery teacher providing literacy intervention to children in Year 1 (see Figure 1). In five other London boroughs where no schools had any Reading Recovery teaching, 21 schools were nominated by the borough education officers as of most concern for high numbers of children with poor performance in literacy. In each of these 42 schools,

Table 1. Ages and Grades Comparisons United Kingdom and North America

Phase	Age	Year Group England	Year Group U.S./Canada
Foundation	Below 5	Reception	
Key Stage 1 (KS1)	5–6 yrs	Year 1 (Y1)	Kindergarten
	6–7 yrs	Year 2 (Y2)	Grade 1
End of Key Stage national assessments			
Key Stage 2 (KS2)	7–8 yrs	Year 3 (Y3)	Grade 2
	8–9 yrs	Year 4 (Y4)	Grade 3
	9–10 yrs	Year 5 (Y5)	Grade 4
	10–11 yrs	Year 6 (Y6)	Grade 5
End of Key Stage national assessents			
Key Stage 3 (KS3)	11–12 yrs	Year 7 (Y7)	Grade 6
↓ ↓ ↓	↓ ↓	↓ ↓	↓ ↓

Table 2. Demographic Characteristics of Sample Schools with Reading Recovery (21) and Comparison (21)

	Free School Meals		English As Addtl. Language		Children on School Roll		Children in Year 1	
	With RR	No RR	With RR	No RR	With RR	No RR	With RR	No RR
Mean	39.6%	44.2%	49.2%	48.3%	353.4	356.1	45.1	48.9
SD	21.9	15.1	16.8	21.8	118.5	113.5	17.9	16.3

21 schools from 5 London boroughs in each sample group;
None of these differences reached statistical significance.

the eight children considered lowest in literacy formed one sample for comparison, and children in their entire classroom in Year 1 formed the other sample for this evaluation.

In the United Kingdom, children whose home language or mother tongue is not English are described as English as additional language (EAL) learners. This includes recent immigrants. In some London schools 30 or more differing languages may be spoken as a mother tongue; others serve areas almost monolingual in a language other than English.

Free school meals (FSM) are available for children whose families are eligible for this benefit on the basis of their low income status. Children in Year 1 classrooms in the Reading Recovery and comparison schools, as well as the lowest-achieving subgroups, did not differ significantly on these characteristics. Similarly, means for school size and number of children in Year 1 did not differ significantly for the two groups.

Year 1 classrooms and lowest-achieving children

A Year 1 classroom in each of the 42 schools was selected. Mixed age classrooms were excluded; where there were two or more Year 1 classrooms in schools, the lowest-attaining one, as nominated by the school, was selected for inclusion in the study.

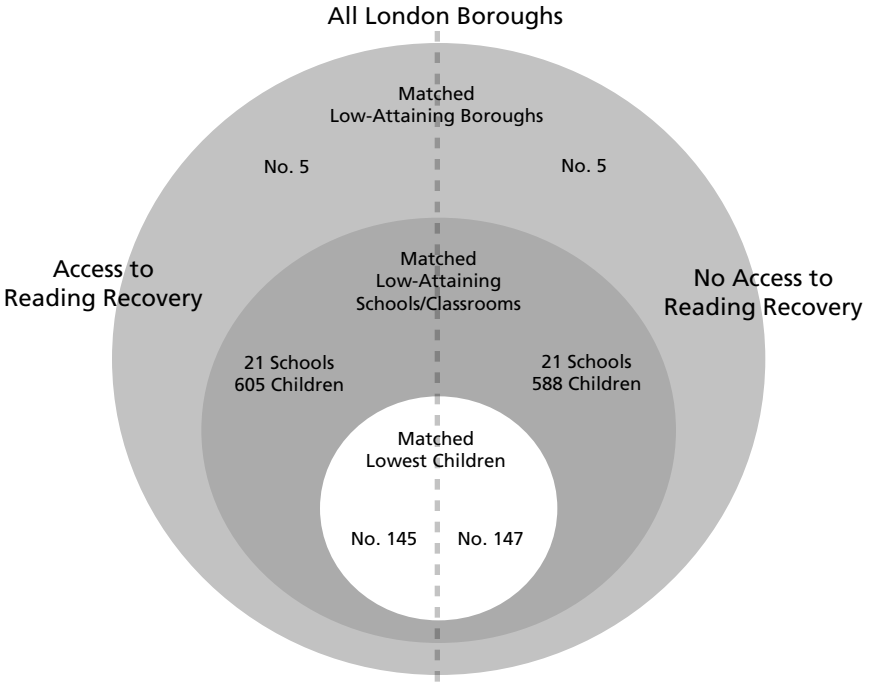
At the start of the year, means for the Year 1 classrooms and for the lowest-achieving groups within those classrooms were well matched on gender and age across schools with Reading Recovery and those without.

Table 3. Characteristics of Children in Sample Year 1 Classrooms and Lowest-Achieving Groups, September 2005

	Age				Gender			
	Year 1 Classroom		Lowest-Achieving Group		Year 1 Classroom		Lowest-Achieving Group	
	With RR *N* = 605	No RR *N* = 588	With RR *N* = 145	No RR *N* = 147	With RR *N* = 605	No RR *N* = 588	With RR *N* = 145	No RR *N* = 147
Mean	5 yrs 7 m	5 yrs 8 m	5 yrs 9 m	5 yrs 10 m	51.0% boys	50.5% boys	48.0% boys	52.0% boys
SD	3.7	3.5	3.3	2.4				

None of these differences reached statistical significance.

Figure 1. Purposive Sampling – London Boroughs



Literacy Assessment

Children in complete Year 1 classrooms and the lowest-achieving eight children within those classrooms were assessed in each of the 42 schools in September 2005 and again in July 2006. Alternate forms of assessment, where available, were used at retest.

Assessment in Year 1 classrooms

A word recognition and phonic skills measure (WRAPS, Moseley, 2003) was used with all children in the sample Year 1 classrooms—605 children in schools with Reading Recovery (mean reading age 61.7 months and *SD* 8.7) and 566 children in schools where there was no Reading Recovery (mean reading age 61.3 months and *SD* 8.6). Statistical analysis did not indicate any significant difference in word reading and phonic skills means at classroom level between the two sample groups at the beginning of the year. These children constituted the complete Year 1 classrooms and included the 292 lowest-achieving children who were also individually assessed on additional measures.

Lowest-achieving pupils

Classroom teachers from the previous year (2004–05, children age 4–5), current classroom teachers (2005–06, children age 5–6), and school records, were consulted to identify the eight children in each classroom whose progress in literacy learning was of most concern.

The assessment tools were selected to measure a range of early literacy skills in reading, writing and phonic skills. As well as WRAPS, the standard Reading Recovery diagnostic profile (Clay's Observation Survey) and the BAS Test were used to assess the eight lowest-achieving children in Year 1 classrooms (292 children; 145 in 21 schools with Reading Recovery, 147 in 21 comparison schools). This Observation Survey literacy profile assessed children's concepts about print (Concepts About Print), letter knowledge (Letter Identification), known words in writing (Writing Vocabulary), phonic analysis for writing (Hearing and Recording Sounds in Words), and continuous text reading in books (Text Reading). Books were selected from a gradient of difficulty developed from extensive data collected from use with young readers, and updated biannually by the Reading Recovery National Network (RRNN, 2005). These literacy profile measures have a ceiling effect around the level of an average 6–7-year-old. The BAS Test assesses word reading in isolation and provides a standardized reading age across the primary/elementary age range.

The Observation Survey and BAS Test were administered individually to each of the lowest-achieving eight children in a quiet space away from classroom distractions.

All research assistants were previously trained in Observation Survey assessment procedures including administering the BAS word reading test.

Literacy profiles of these lowest-achieving children are presented (see Table 4) at start of year for those attending schools without access to Reading Recovery and those at schools where the pupils had not yet been assigned and were potential candidates for Reading Recovery.

At the start of the year statistical analysis did not indicate significant difference in the literacy measures (WRAPS) between the two sample groups of children in Year 1 classrooms. Of the subsamples of lowest-achieving children, those in schools with Reading Recovery had slightly higher mean scores on one measure, book level (Text Reading). This significant difference was controlled in analyzing results at end of year. However, a mean book level below 1 for both groups indicates that on average, none of the children in either group could independently read a book of any kind. Level 1 books are very simple, repetitive, caption books with pictures carrying the message. On all measures

Table 4. Literacy Scores of Lowest-Achieving Year 1 Children in Reading Recovery and Comparison Schools at Sample Selection (September 2005)

Measure	Children in Schools With Reading Recovery *N* = 145	Children in Schools with No Reading Recovery *N* = 147
Book Level		
Mean	0.98*	0.56
Standard Deviation	1.64	0.07
Concepts About Print		
Mean	10.00	9.90
Standard Deviation	3.90	3.50
Letter Identification		
Mean	35.60	34.70
Standard Deviation	15.00	15.00
Hearing and Recording Sounds in Words		
Mean	12.00	12.60
Standard Deviation	10.50	9.70
Writing Vocabulary		
Mean	5.70	6.50
Standard Deviation	5.40	7.00
BAS Word Reading Age (in months)		
Mean	59.00	58.00
Standard Deviation	2.20	2.20
WRAPS Age (in months)		
Mean	57.00	58.00
Standard Deviation	5.80	5.50

* significant difference at $p < .05$ (controlled for in ANOVA at end-of-year analysis)

the literacy achievements of the children in both groups at the start of Year 1 were very similar.

Children's attitudes to learning and behavior. At the end of the year, a classroom teacher report was used to collect information on teachers' perceptions of changes in attitudes to learning and self-confidence (CAPSD, Quay et al., 2001) of the lowest-attaining children as they were about to move into Year 2 (age 6–7). While there are reservations about the reliability of teachers reflecting on change in individual children across a year in which they have taught them, there was no reason to believe that these effects would not be operating similarly in all the classrooms in the study.

Literacy interventions. Information was also collected on which, if any, literacy interventions had been provided to the 292 lowest-achieving children during the year. Schools in England are provided with resources and training in the Early Literacy Support (ELS) program through the National Curriculum. Schools may choose to implement this teaching assistant-delivered intervention, or select from a wide range of commercially available literacy support schemes, or develop their own. At the start of the year it was not known what, when, and if, these 292 children would receive additional literacy teaching.

RESULTS

Results are reported and discussed for children in Year 1 classrooms in 42 London schools. The comparisons center on the literacy achievements of children in those classrooms. More-detailed literacy profiles were analyzed for those children who started the year as the lowest achieving in their classroom, including changes in attitudes to and proficiency in learning, as reported by their teachers.

All data were entered onto spreadsheets and analyzed using Statistical Package for the Social Sciences (SPSS). Means and standard deviations were calculated for beginning and end-of-year scores for each sample group. Differences between means at these two times of assessment were tested for significance using ANOVA in all comparisons. Book level scores of the lowest-achieving group was the only measure where differences in means were significant at the start of the year. This was controlled for in testing significance of differences between group means at end of year.

Year 1 Classrooms: Change in Literacy Proficiency as Measured by WRAPS

The alternate form of WRAPS test B was used at the end of the year in the same Year 1 classrooms. If children had recently left the class, test booklets were sent to their new schools, where known, with administration instructions and request to assess.

At the end of the year, children in Year 1 in schools without access to Reading Recovery made 12 months' progress in word reading and phonic skills (mean 73.5 months and *SD* 11.5). They were 4 months behind those children in Year 1 classrooms where Reading Recovery was available (mean 77.5 months and *SD* 11.5) where children had made accelerated progress, i.e., 16 months' progress in the school year. Statistical analysis indicated no significant differences between the two groups at the start of the year. Differences between groups at the end of the year were significant at $p < .05$. Given that these were low-performing classrooms at the start of the year, accelerated progress will be required if they are not to fall further behind age norms.

This difference between Year 1 classrooms in schools with and without access to Reading Recovery demonstrates the effect of successfully raising the literacy level of the lowest-achieving group of children, but may also include some impact of Reading Recovery expertise being employed in the classroom and in other less-intensive interventions matched to differing children's needs, e.g., training, supporting, and monitoring group interventions led by teaching assistants and volunteer helpers.

Literacy Achievement of Lowest-Achieving Year 1 Children: Beginning and End of Year

In July 2006, the full Observation Survey and BAS Test were re-administered individually to all the lowest eight children remaining in the comparison schools and schools with Reading Recovery. Some children who had recently left their school were located at their new school and a research assistant was sent to re-assess them. All these lowest group of children were also included in the classroom assessment using WRAPS Form B.

Eighty seven of the lowest-achieving children in schools with Reading Recovery went on to receive the intervention during the year. Firstly, the progress of these children who received Reading Recovery during the year is compared with children in comparison schools. (See Table 5.)

Significant differences were found on all literacy-related measures used. The effect sizes are large, calculated on a 0–3 scale with univariate analysis (Coe, 2002). Children who received Reading Recovery were at age appropriate levels across all assessment measures at the end of the year. Comparison children were not.

Reading

At the beginning of the year the sample of children with the lowest literacy scores in their Year 1 classrooms could scarcely read any book, even one with a short repetitive text and picture support for meaning.

In reading age (BAS) children without access to Reading Recovery made 7 months' gain over the year, widening by 5 months the gap between them and

Table 5. Initial and Final Literacy Profiles of Lowest Groups

	Children in Comparison Schools with No Reading Recovery *N* = 147		Children Who Received Reading Recovery Teaching in the Year *N* = 87		
Measure	Initial Test	Final Test	Initial Test	Final Test	Effect Size: d
Book Level					2.10
Mean	0.56	4.40	0.98*	15.0*†	
SD	0.07	5.20	1.20	4.7	
Concepts About Print					1.4
Mean	9.80	14.81	10.10	19.4*	
SD	3.50	3.60	3.40	2.7	
Letter Identification					0.81
Mean	34.70	46.04	37.55	52.7*	
SD	15.00	10.00	12.30	2.5	
Hearing and Recording Sounds in Words					1.10
Mean	12.60	25.90	12.40	35.0*	
SD	9.70	9.90	10.20	0.4	
Written Vocabulary					1.60
Mean	6.50	20.60	6.20	45.4*	
SD	7.00	13.00	5.20	19.0	
BAS Age (in months)					1.50
Mean	58.00	65.00	59.00	79.0*†	
SD	2.20	7.00	2.10	9.1	
WRAPS Age (in months)					0.76
Mean	58.00	69.00	59.00	75.0*	
SD	5.50	8.60	5.80	8.2	

* mean significantly greater than that of corresponding comparison group's, $p < .05$
† analysis controlled for initial test scores

their average peers. Children who received Reading Recovery made 20 months' gain during the year and were comfortably within average levels for their age.

In text reading on a gradient of difficulty (RRNN, 2005), children who received Reading Recovery were on average more than 14 book levels higher than at the beginning of the year. Around book level 15 is considered to be appropriate reading competency to transfer to Year 2 and achieve nationally expected attainment at the end of Key Stage 1 (Douëtil, 2006). Children with-

out access to Reading Recovery on average made four book level gains. A level 4 book is a very simple text and this low level of competency does not enable children to access the Year 2 curriculum. They are very unlikely to achieve nationally expected attainment at the end of Key Stage 1.

Figures 2, 3, and 4 show that children in schools unable to access Reading Recovery during the year are at least a year behind the children who received Reading Recovery and also behind age expectations—whether text reading, word reading or phonic knowledge are used as indicators of reading achievement.

Figure 2 shows progress in text reading over the school year 2005–06 for the two groups, children who received Reading Recovery and those who did not have access to Reading Recovery.

The children were also assessed on reading single words on a standardized test. Figure 3 shows that standardized reading ages for ability to read words out of context (BAS) confirm the same achievement gap as in text reading (book levels), between the lowest-achieving groups who did and did not go on to receive Reading Recovery literacy intervention during the year.

Figure 2. Lowest-Achieving Groups – Text Reading: Book Level Means

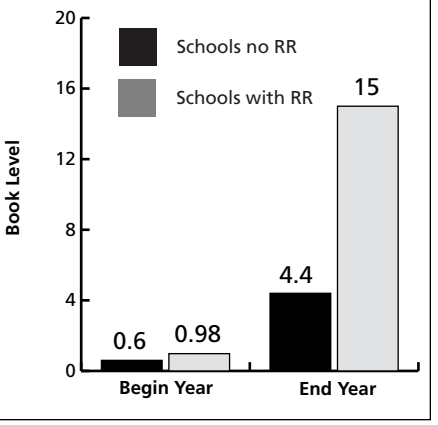
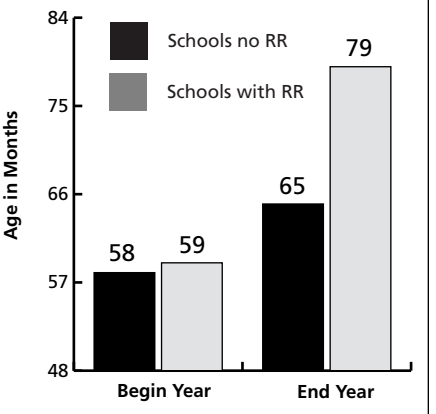


Figure 3. Lowest-Achieving Groups – Word Reading BAS II Ages



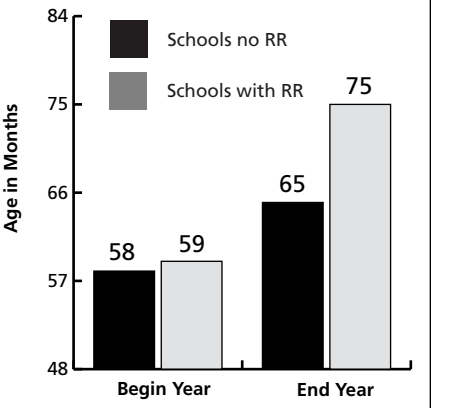
58m = 4y 10m; 59m = 4y 11m
65m = 5y 5m; 79m = 6y 7m

Word reading and phonic knowledge (WRAPS) were also assessed in their Year 1 classrooms. Figure 4 shows the WRAPS results for the lowest-achieving group only. This lowest group began the year on average, just 1 month ahead for children in schools with Reading Recovery. After receiving Reading Recovery during the year, the gap had widened to 10 months. Children who received Reading Recovery had made 16 months' progress on phonic knowledge and word reading ability during the school year.

Writing

Significant effects were also found for writing. Figure 5 shows that, in writing children who received Reading Recovery could, on average, write around 6 words correctly at the start of year and more than 45 words at the end, within a 10-minute time limit. Children without access to Reading Recovery during the year could write correctly fewer than half that number of words. Children able to write correctly around 45 frequently occurring words have become fluent writers for their age (6 years) (Douëtil, 2006).

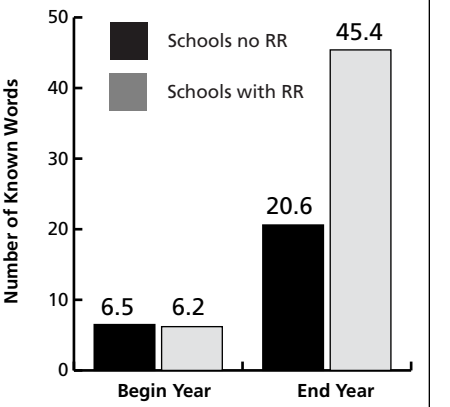
Figure 4. Lowest-Achieving Groups – Word Reading and Phonic Skills WRAPS Ages



Variability within groups

In the group who received Reading Recovery not only are the mean scores on all assessments significantly higher than in the comparison group, but the standard deviations in almost all cases are lower. This suggests that while Reading Recovery brought all children who received it to similar levels, in the comparison group some children may have improved but many others may have made very little progress.

Figure 5. Lowest-Achieving Groups – Writing Vocabulary Means



At the end of the year, there is little overlap on the literacy achievement levels between the two groups of children. Among this group of children, who all started the year at equally low levels of literacy, those children who were the lowest achieving at the end of the year but had received Reading Recovery, were ahead of the highest-achieving comparison children.

Gender differences

Given the higher numbers of boys failing to reach age-appropriate levels in reading and writing in national assessments, it was interesting to see the impact on boys' achievements in the schools with and without Reading Recovery (see

Table 6. Reading Age Outcomes and Effect Size for Boys and for Girls

Measure	Children in Comparison Schools With No Reading Recovery		Children in Schools Who Received Reading Recovery			
	Initial Score	Final Score		Initial Score	Final Score	Effect Size: d
BAS Score (in months)						
Boys	*N* = 92		*N* = 52			1.6
Mean	58.7	64.2		58.7	78.5	
SD	2.8	8.9		2.3	9.2	
BAS Score (in months)						
Girls	*N* = 50		*N* = 34			1.2
Mean	58.3	67.4		58.5	78.4	
SD	1.4	9.0		1.9	8.9	

Table 6). More boys than girls were assessed as very low achieving and in need of literacy support both in schools with Reading Recovery and schools with no Reading Recovery. Within the low-achieving groups in this study, however, boys and girls had similar low levels at the start of the year (differences possibly hidden by most being at the floor level of assessment measures). At the end of the year in schools without Reading Recovery, both boys and girls in these low groups were reading at well below age-expected levels, but the girls had overtaken the boys by on average 4 months. This was not the case for children who received Reading Recovery, where boys and girls attained similar age-appropriate reading levels at the end of the year.

The effect size for progress in boys' reading is very large because boys did so poorly in schools without Reading Recovery, only on average making 6 months' progress in the year compared to 20 months' progress for boys who received Reading Recovery.

Progress of children in schools with Reading Recovery who did not access the intervention

In all schools in our sample, the proportion of children who are low achieving is very high. Even in schools with a Reading Recovery teacher there may not be enough places for all those who need the intervention. The progress of these children is compared with that of children who received Reading Recovery in

their schools, and comparison children in schools without Reading Recovery (see Table 7).

The low-achieving children who missed out on a Reading Recovery place in their schools, on average, still doubled the book level gains compared with children in schools without Reading Recovery. A level 8 book (mean level for within Reading Recovery school comparison) is not at age-appropriate level, but national Reading Recovery data indicates that children reading at that level of complexity of text are able to continue to make average rates of progress in

Table 7. Initial and Final Literacy Profiles of Three Low-Achieving Groups

	Children in Schools with No Reading Recovery *N* = 147		Children in Schools with Reading Recovery Who Did Not Receive It *N* = 58		Children Who Received Reading Recovery in the Year *N* = 87	
Measure	Initial	Final	Initial	Final	Initial	Final
Book Level						
Mean	0.56	4.40	1.20	8.20	0.98	15.30*†
SD	0.07	5.20	2.20	7.10	1.20	4.70
C.A.P.						
Mean	9.80	14.80	9.90	15.70	10.10	19.40*
SD	3.50	3.60	4.50	4.50	3.40	2.70
LID						
Mean	34.70	46.00	32.60	45.40	37.60	52.70*
SD	15.00	10.00	18.00	13.30	12.30	2.50
HRSW						
Mean	12.60	25.90	11.15	26.80	12.40	35.00*
SD	9.70	9.90	11.00	11.80	10.20	0.40
WV						
Mean	6.50	20.60	5.00	28.40	6.20	45.40*
SD	7.00	13.00	5.50	22.00	5.20	19.00
BAS Age (in months)						
Mean	58.00	65.00	58.00	69.00	59.00	79.00*
SD	2.20	9.00	2.50	11.40	2.10	9.10
WRAPS Age (in months)						
Mean	58.00	69.00	59.00	71.10	59.00	75.00*
SD	5.50	8.60	6.00	11.00	5.80	8.20

* mean significantly greater on all measures than that of either comparison groups', $p < .05$

† analysis controlled for signifiant difference on initial test scores

Year 2. The assumption is that these children who missed out, although low achieving, were not the very lowest in their classroom at the point at which a place became available in Reading Recovery in their schools.

Sample attrition

Mobility of children in these disadvantaged urban areas is of concern to schools and also to studies seeking to compare groups of children within and across schools. Table 8 presents the initial literacy scores for the lowest-achieving children in their classrooms at start of the year but who had left school or were absent when final assessment took place. Their scores are similarly distributed across groups and therefore their 'loss' has not been deemed to have affected the differences between group means at final outcomes.

The group sizes are too small to draw any inferences from the difference between the number of lowest-achieving children who left or were absent at the end of the year from schools without Reading Recovery (20 left) and from schools with Reading Recovery (10 left), although it would be interesting to speculate whether the benefits of Reading Recovery at least reduce local mobility!

Impact of changes in literacy proficiency on children's attitudes to learning and classroom behavior

Year 1 classroom teachers were asked to complete a report on any observed change in attitudes to learning and self-confidence of the lowest-attaining children over the year. At the time of re-assessment in July 2006, they were asked to complete a report form for each child in the sample lowest groups. This reporting format was taken from Quay, et al., (2001), as a study of changes in children's classroom learning and social behaviors after experiencing success in literacy intervention. Class teachers were asked to indicate whether, and to what extent, there had been no growth, marginal growth, average growth, above-average growth, or exceptional growth for nine aspects of children's learning and behavior (see Table 8).

This measure depended on teachers' knowledge of the individual children in the lowest-achieving group from the start through to the end of the year. A few of the classrooms had a change of teacher during the year, and information on children from those classrooms could not therefore be collected.

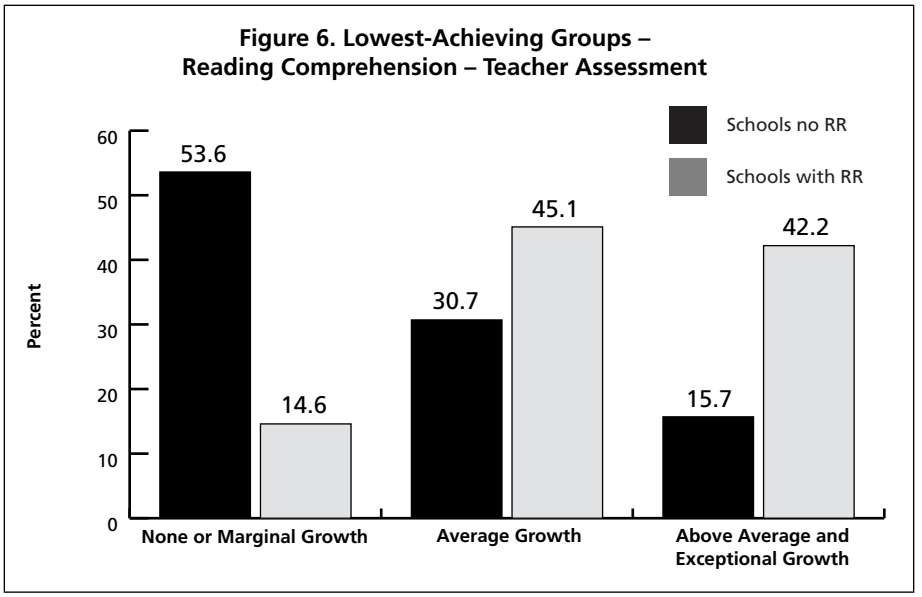
Classroom teacher estimates of change over the year for children in schools without Reading Recovery and for children who received Reading Recovery are shown in Figures 6–9 and Table 9. Results on the 5-point scale were summed into three categories of none or marginal growth, average growth and above-average and exceptional growth. Results are presented as histograms which show the percentage of children at each of these categories of teacher-reported change, in the areas of oral communication, reading comprehension, ability to follow directions, and self-confidence.

Table 8. Initial Test Scores for Lowest-Achieving Pupils Who Failed to Complete Final Tests

Measure	Children in Schools With No Reading Recovery *N* = 20	Children in Schools with Reading Recovery *N* = 10
Book Level		
Mean	0.86	1.10
Standard Deviation	1.00	1.20
C.A.P.		
Mean	11.0	8.70
Standard Deviation	4.00	4.90
LID		
Mean	32.0	26.0
Standard Deviation	17.0	17.0
HRSW		
Mean	11.0	9.40
Standard Deviation	11.0	13.0
WV		
Mean	5.40	8.00
Standard Deviation	5.00	13.0
BAS Age (in months)		
Mean	59.0	63.0
Standard Deviation	3.50	7.00
WRAPS Age (in months)		
Mean	58.0	57.0
Standard Deviation	5.00	7.00

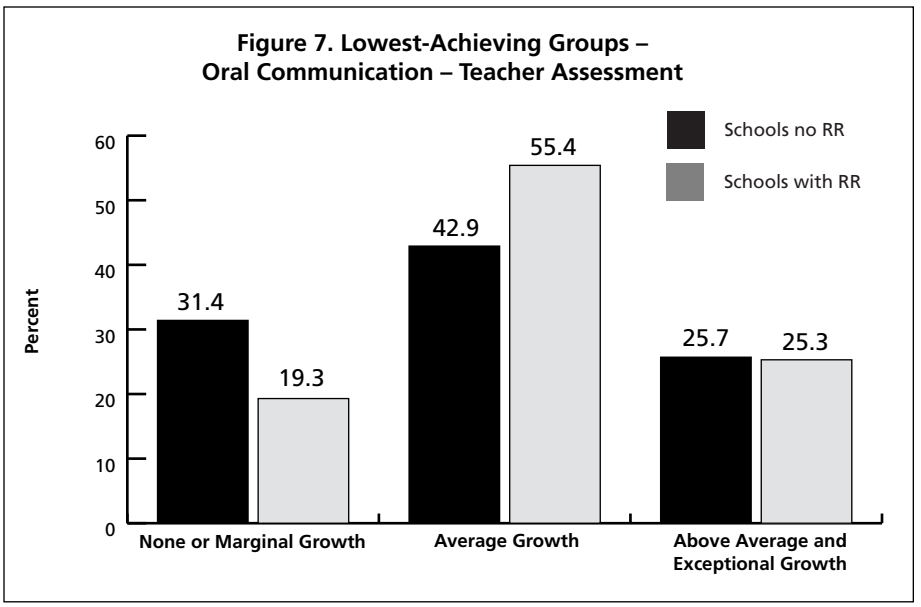
Figure 6 shows that more than half of these lowest children in schools without Reading Recovery were considered by their teachers to have made none or marginal growth across the year in reading comprehension, whereas 87% of children who had received Reading Recovery were considered to have made average to exceptional progress in reading comprehension. This is not unexpected given the measured gains in reading by the Reading Recovery group, but it also interesting in that Reading Recovery lessons do not include discrete teaching components or direct measures of comprehension.

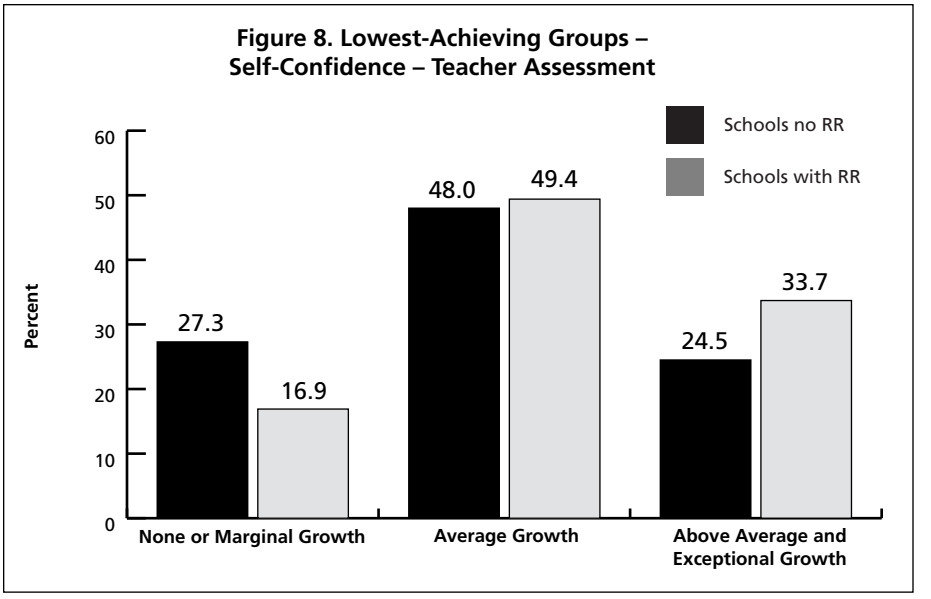
Figure 7 shows that more than 80% of children who had Reading Recovery in the year were considered by their teachers to have made average to exceptional progress in oral communication over the year. It would appear that learning how to read and write and talking about that learning with an adult each day has enhanced these children's oral skills. It cannot be determined which



learning opportunities promoted development; the likelihood is of a reciprocal learning relationship.

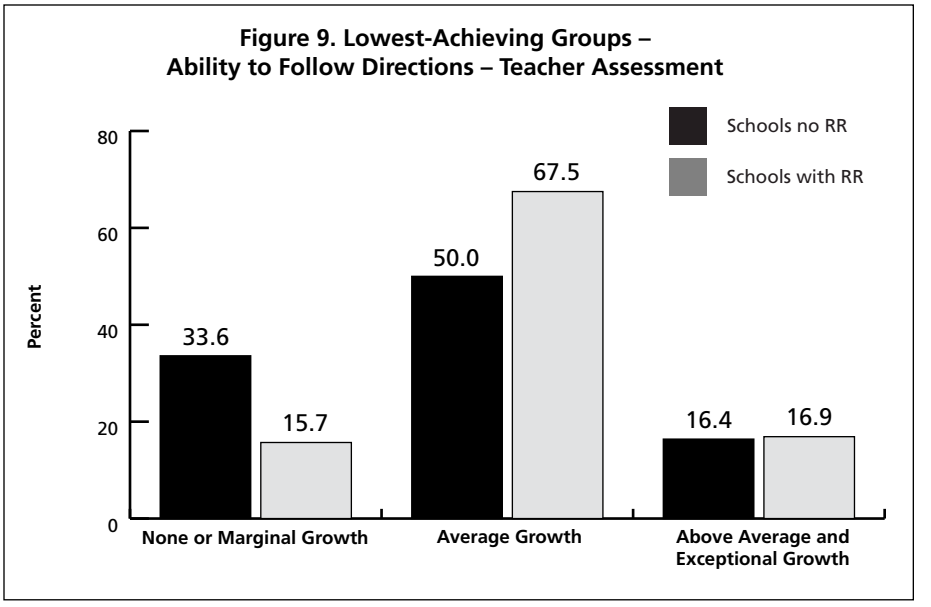
Figure 8 shows that almost half the children who began the year as the lowest achieving in their classroom were considered by their teachers to have made average growth in self-confidence, whereas a third of the children who received Reading Recovery were thought to have made above average and exceptional





growth. More than a quarter of the children in schools without Reading Recovery were described as making none or marginal growth in self-confidence.

Ability to follow directions (see Figure 9), a significant aspect of becoming an effective learner in the classroom, is reported by classroom teachers to have grown at average to exceptional rates for almost 85% of children who received Reading Recovery in the year.



Another way of analyzing the teacher-reported changes is to allocate scores to the teachers' judgments on a 5-point scale running from 0 (no growth) to 4 (exceptional growth). Table 9 presents mean scores for low-achieving children, (rated from 0–4), under each teacher-reported area of learning and behavior. We have not seen this summing reported before as this is a newly published tool. Therefore testing for significance of any differences is tentative, but this can provide an interesting overview of teachers' sense of their children's growth

Table 9. Attitudes to Learning: Change in Lowest Groups Over the Year

Teacher Report Measures	Children in Comparison Schools Without Reading Recovery *N* = 138	Children in Reading Recovery *N* = 83
Reading Comprehension		
Mean	1.50	2.30**
Standard Deviation	0.88	0.09
Written Expression		
Mean	1.50	2.30**
Standard Deviation	0.95	0.10
Oral Communication		
Mean	1.90	2.10*
Standard Deviation	0.81	0.09
Math Concepts		
Mean	1.90	1.90
Standard Deviation	0.78	0.09
Ability to Follow Directions		
Mean	1.80	2.00*
Standard Deviation	0.77	0.07
Work Habits		
Mean	1.80	2.10*
Standard Deviation	0.84	0.09
Social Interaction with Adults		
Mean	1.90	2.00*
Standard Deviation	0.67	0.08
Social Interaction with Peers		
Mean	1.90	2.00*
Standard Deviation	0.67	0.07
Self-Confidence		
Mean	1.90	2.20**
Standard Deviation	0.83	0.09

All measures on a 5-point scale from 0–4
* differences between means significant at $p < .05$
** differences between means significant at $p < .001$

in classrooms where many learning activities have been put in place by themselves and others in the normal course of schooling.

As can be seen from Table 9 there are significant differences between means on all aspects of literacy and learning behaviors reported by class teachers of children who received Reading Recovery compared with these who did not. Only change in math concepts score failed to reach significance at the $p < .05$ level. Interestingly, standard deviations in all aspects are much wider in the comparison groups than the groups who received Reading Recovery, suggesting a greater range of responses with implications for planning and managing classroom learning.

Interventions accessed by lowest-achieving children in Year 1

All schools try to respond to children's learning needs appropriately. In our London boroughs, these schools have high numbers of children underperforming compared with national norms. All children in this study identified at these low levels would be entitled to some extra literacy support or intervention. Data was collected on the additional teaching offered to the 'lowest eight' children during the year. Some of these interventions are recognized programs, but many are locally developed and therefore it is not clear from our data what learning was included in each. "Supported reading" for example was developed by Reading Recovery teachers to provide short (10 minutes) daily sessions of reading with an adult, and a number of Reading Recovery schools have adopted this, thus making greater use of the Reading Recovery teachers' expertise to manage these other interventions. For many children, support was only listed as "small reading group with TA[1]" or "SEN[2] support" or simply "differentiated planning" of normal classroom provision. The focus of additional support tended to be on teaching of phonics (31 children), additional reading practice (28 children), or speech and language work including support for children speaking English as an additional language (23 children). Only one child was reported as having additional help with writing, which may be surprising in the light of national concerns about attainment in this area.

Other than for the 87 children who received Reading Recovery teaching, almost all the provision for struggling readers was provided by teaching assistants rather than teachers. There were 80 instances of TA support, compared with only 10 children reported as being supported by the SEN teacher. However, some specialist support such as for EAL and speech therapy may have been through professionals qualified in that role, or teachers or TAs with additional training.

A surprising number of children were not reported to have received any form of support, even though at the start of the year they had been identified as the lowest attaining in their classroom. In the schools which had Reading

1 Teaching assistant (TA): unqualified, nonprofessional, classroom aide with varying degrees of on-the-job training

2 Special educational needs (SEN) teacher: qualified professional with varying degrees of specialist professional training

Recovery, 31 children (21% of the 145 identified as the lowest-attaining group at the beginning of the year) were not reported as receiving any additional help. In the comparison schools 93 children (63% of the147 identified as the lowest-achieving group) were not reported to have received any additional help.

The outcomes for children receiving alternative forms of support/intervention

All children in the lowest group were assessed at the end of the year and average scores calculated for intervention subgroups of 19 or more children. All of the subgroups remained at low levels of literacy at the end of the year, with particularly low growth in writing vocabulary. Other than for those who undertook Reading Recovery, there was little difference across these low outcomes for children, whatever support they were reported to have received.

SUMMARY AND CONCLUSIONS

This study adopted a naturalistic design. Across one school year it assessed literacy achievement of low-performing children in urban schools which overall had high percentages of their children falling below age norms in educational achievement and in literacy in particular. The researchers had no role in respect of these schools and therefore did not set up experimental conditions relating to the focus of the study. The goal was to assess outcomes of 'real' teaching activity, as it was occurring in these urban schools. The design did not elect to compare or report on the full range of intervention measures with their differing lengths, frequency, and delivery. It was anticipated that, in the normal way of schooling, children would be selected for various forms of support according to assessed level of need, that some children would receive interventions early and late in the year, and some interventions would still be incomplete at end-of-year assessment.

The setting was exceptionally challenging, identifying low-performing London boroughs, and within these boroughs low performing schools, and within these schools the lowest-attaining children in the age cohort. The lowest-attaining children identified for the most scrutiny were performing well below expectations for their age at the outset of the study.

The study set out to compare children's literacy progress across the year in which they reached their sixth birthday. At this time, "educators have their one and only chance to upset the correlation between intelligence measures and literacy progress, or between initial progress and later progress" (Clay, 2005, p. 16). More detailed data were collected on the lowest-achieving children than their peer group overall and showed that they made very little progress in literacy during the year. The exception was for children who received Reading Recovery intervention during the year. These children, who had entry levels similar to comparison children in schools without Reading Recovery, had

by the end of the year on average gained 14 book levels, gained 20 months on word reading age, and could write 45 words, spelled correctly. They were operating within average expectations for their age in reading and writing. Their classroom teachers assessed them as not only having made good progress during the year in literacy, but also in oracy, work habits, social skills, and all learning-related attitudes.

Children without access to Reading Recovery had made very little progress in learning. The gap between them and their age peers had widened considerably by the end of the year, and they were still operating well below the average for their age. This gap widened even more for boys than it did for girls in schools without Reading Recovery. In schools with Reading Recovery, boys and girls did equally well.

The potential for wider benefit of having a Reading Recovery teacher's expertise in a school was also of interest in this study. Children in Year 1 classrooms in schools with Reading Recovery ended the year 4 months ahead of classrooms without Reading Recovery on a group test of word recognition and phonic skills (WRAPS). This difference demonstrates some effect on norms of successfully raising the literacy level of the lowest achieving group of children, but may also show some impact of Reading Recovery expertise being employed in the classroom, and in other less-intensive interventions matched to differing children's needs. While further exploration would be necessary, there is a suggestion of some wider impact of the Reading Recovery teacher's influence, in that in schools with Reading Recovery, the lowest-achieving children who were unable to get a place in the intervention within the year of the study made greater progress in literacy than the lowest-achieving children in schools without a Reading Recovery teacher.

The consequences of failure to learn literacy efficiently and at an appropriate time make it imperative that effective early intervention is available for those at risk. This study provides strong evidence that schools could enable almost every child to read and write appropriately for their age, if those who were failing were given access to expert teaching in Reading Recovery. Even those children in deprived social and economic, inner-city environments who had made no start into literacy after a year or more in school can catch up if the right help comes early enough. This is demonstrably an attainable goal.

The second phase of this evaluation will track the progress of these children to the end of Year 2. The end of the 2006–07 school year will be the end of Key Stage 1 for these 7-year-old children. Results will be collected on WRAPS assessment again and a further whole-class measure of spelling and reading comprehension. The results of national Key Stage 1 standardized assessment of reading and writing of children in the sample will also be collected. This will further test out both whole-classroom impact and the sustainability of the significant gains made by the lowest-achieving children who received Reading Recovery as 6-year-olds.

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