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The Mangere Home and School Remedial Reading Procedures: Continuing Research on their Effectiveness

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In 1979, N.Z.C.E.R. published *Remedial reading at home: Helping you to help your child* (Glynn, McNaughton, Robinson & Quinn, 1979). This booklet contains a set of tutoring procedures, including Pausing, Prompting and Praising, to assist parents to provide remedial reading tutoring for their own children at home. The procedures were first evaluated in a small-scale intensive research study (McNaughton, Glynn & Robinson, 1981). Since then, these Remedial Reading Procedures have been systematically employed in another eight small-scale intra-subject studies and three inter-group comparison studies by independent researchers in different centres. These studies have been carried out in home, school and residential settings. This paper summarizes and integrates findings from the twelve studies. It is now clear that a wide range of tutors, parents, childcare workers, adolescents and peers have successfully implemented the procedures, resulting in substantial gains for children with reading difficulties.

In 1979, the New Zealand Council for Educational Research published *Remedial reading at home: Helping you to help your child* (Glynn, McNaughton, Robinson & Quinn, 1979). This booklet contains a set of remedial reading tutoring procedures designed to be used at home by parents of older children with reading difficulties. The procedures were derived from a theoretical perspective on reading developed by Clay (1979) and McNaughton (1978). This theoretical perspective views reading as a process of obtaining meaning from continuous written material as presented in books. Proficiency in reading is thus dependent upon learning to use all the sources of information available within a text to understand the particular message being conveyed. McNaughton et al. (1981) claimed that proficient reading involves the reader in acquiring three sets of skills. The first set of skills concerns the use of contextual information based on language patterns (syntactical information) and based on word patterns and combinations of words in larger units (semantic information). The second set of skills concerns the accurate discrimination of different features in letters and words and of letter-sound associations (grapho-phonic information). Paradoxically, this set of skills can be acquired within the context of reading continuous meaningful material and does not need to involve excessive practice in identifying letters and letter combinations isolated from their context (Clay, 1979; McNaughton, 1981a).

Differences between high-progress and low-progress readers may lie not so much in their success at identifying letters and letter-sound combinations, but in the flexibility and fluency with which they use this information in reading from text material. Paradoxically also, low-progress readers may be given fewer opportunities to read from text material than high-progress readers (Allington, 1983). This is likely to result in reduced opportunities for integrating contextual and grapho-phonic information in comparison with those available for high-progress readers.

The third set of skills involved in proficient reading concerns self-monitoring and self-correcting of errors so that the reader can become progressively independent of outside assistance. This set of skills, like the previous two sets, is most effectively acquired in the context of reading continuous meaningful text. For example, a reader may notice that a word generated on the basis of one source of information (grapho-phonic) may or may *not* match with a word generated on the basis of the other source of information (context).

If exposed to repeated opportunities to notice such matches and mismatches, the reader may learn both to correct more individual errors, and to use important problem-solving strategies for dealing with unknown words.

High rates of self-correction are associated with high progress during early reading (Clay, 1979). However, the reading contexts available to low-progress readers may be counterproductive for two reasons. First there may be fewer opportunities for reading meaningful text material, and second, teacher assistance to low-progress readers may prevent them from learning to self-monitor and self-correct. Such teacher assistance may be maintaining them in a state of "instructional dependence" (McNaughton, 1981b), by immediately supplying the correct word for the reader to imitate and then reinforcing the reader's imitation of that word. This learning interaction severely limits low-progress readers' opportunities to learn from all sources of information available in meaningful text, and limits their opportunities to learn to self-correct (McNaughton & Glynn, 1981; Singh, Winton & Singh, 1984).

The Mangere Home and School Procedures were designed for tutors to use in a one-to-one context, involving reading of meaningful texts. They were designed so that low-achieving readers could receive increased opportunities to self-correct errors, to practise problem-solving strategies that utilized not only grapho-phonic information but also contextual information, and to receive tutor praise contingent on their use of these specific strategies. Assisting readers to learn these strategies requires tutors to *delay* response to children's errors, to *prompt* children to utilize both contextual or grapho-phonic information (rather than supplying them a correct word), and to *praise* children's use of independent strategies such as self-correction and prompted correction. Typically, the tutoring procedures are introduced by means of the booklet containing written instructions (Glynn et al., 1979), and either demonstration (live or video) or role play of the correct use of the procedures, followed by individual feedback to the tutor on both correct and incorrect examples of use of the procedures. In the context of behavioural training, this can be viewed as an example of providing detailed specification of therapeutic skills to be implemented (Isaacs, Embry & Baer, 1982). McNaughton et al. (1981) evaluated eight parents' use of these procedures and their outcome on the reading of their own children who had reading deficits of two to five years. These parents readily implemented the tutoring procedures, and all children made major gains in their reading at home, though less impressive gains in reading at school.

Unfortunately, the generality of findings from small-scale intensive intra-subject research studies is often underestimated. However, a number of advocates for intra-subject research designs (Campbell & Stanley, 1966; Kratochwill, 1978; Robinson & Foster, 1979; Hersen & Barlow, 1977), following Sidman (1960), argue that detailed description and continuous measurement of changes in the behaviour of individuals under clearly specified conditions will lead to a greater confidence in the generality of findings than will merely employing large groups of subjects.

Subjects, Tutors, Settings and Research Design

Since the original project a further eleven studies have deployed the Mangere Home and School Procedures with 118 tutors, tutoring a total of 98 children aged between seven and twelve years, all experiencing reading difficulties. Nine studies employed intra-subject research designs. Three studies employed group-comparison designs, and one of these (O'Connor, 1984) employed both intra-subject and between-group comparisons.

In general, children who served as subjects in these studies were older (middle to upper primary and intermediate level) children with deficits in reading of between six months to two years in one study (McGovern, 1983), and two years four months to five years in the original study (McNaughton et al., 1981). In five studies the minimum reading deficit of any child participating was two years, and in one study this minimum was three years. Studies did not specify whether subjects had general deficits in academic skills, or whether they had deficits in reading alone. However, children in one study (Love & VanBiervliet, 1984) were members of a special class for mildly retarded children, while children in

another study (O'Connor, 1984) had all been referred for placement in a semi-residential programme because of behavioural and learning difficulties. It is likely that major deficits in reading would be related to poor performance in other areas of academic skill. Reading deficit was assessed in ten studies in terms of performance on a series of graded passages, selected from books specified by publishers for particular age levels. Eight studies also employed standardized measures of reading achievement to assess reading deficit (e.g. Neale Analysis of Reading Ability [Neale, 1966]; the Analytical Reading Inventoyr [Woods & Moe, 1977]; the Progressive Achievement Tests: Reading Comprehension [Elley & Reid, 1969]; and the GAP Reading Comprehension Test [McLeod, 1967]).

Of the 118 tutors, 62 were parents tutoring their own children; 31 were residential childcare workers, teachers, or parents tutoring children other than their own; and 15 were older children or adolescents tutoring younger children. McGovern (1983) employed underachieving 10-year-olds to tutor 7-year-old readers, Elliottyson (1982) employed high-achieving 10-year-olds to tutor 7-year-olds, and Wheldall and Mettem (1985) employed underachieving 16-year-olds to tutor 12-year-olds.

The Mangere Home and School Procedures were conducted at home in five studies, involving 46 children. Tutoring was conducted entirely at school in a further four studies, involving 22 children. In the remaining three studies tutoring was conducted both at home and at school (McNaughton et al., 1981; Scott & Ballard, 1983; O'Connor, 1984). However, in all studies tutoring was conducted in the context of one-to-one reading to a tutor who had been trained to implement the procedures.

In eleven of the twelve studies, repeated measurement of tutor behaviour and child behaviour was made from analyses of audio tapes. Data analysis was carried out according to the procedures specified in the original study. Children's reading was scored against a printed copy of texts being read. Following each oral reading error, observers recorded whether that error was one of substitution or omission, and whether that error was self-corrected by the reader, prompted correct (with tutor assistance), not corrected at all, or whether the correct word was supplied by the tutor. Observers also recorded whether tutor assistance was delayed or immediate, whether or not tutors prompted the reader, what type of prompts were used, and whether these were successful. Finally, observers recorded tutor rates of specific praise, contingent on reader self-corrections, on reader prompted corrections, and on correct reading. Seven studies report satisfactory levels of inter-observer agreement, between independent scorers working from the tapes of reader and tutor behaviour.

Tutor Application of Procedures

O'Dell's (1974) model of evaluating the effectiveness of parent training can be applied to the evaluation of training of remedial reading tutors. Following this model, the first requirement is to establish that tutors acquired and used the tutoring behaviours specified. Eleven of the twelve studies provide such evidence, obtained from the analysis of audio tapes of the interaction between tutor and tutee. In all eleven studies major changes in level of use of each tutoring behaviour occurred following its introduction, either across individual tutors or across intervention points with individual tutors. These changes are summarised in Table 1. Data in Table 1 are averaged across individual tutors to allow global comparison across studies. For some studies comments have been derived from inspection of individual graphs.

(a) *Pausing, Prompting, Praising*

Several conclusions can be drawn from Table 1. In the eleven studies which collected tutoring data, baseline (or untrained tutoring) rates of Delay (Pausing), Prompting, Prompted Corrections and Praise were universally low. Rate of tutor delay was below 33% in all but one study. Rate of prompting (rather than supplying the correct word) was below 47% in all studies. Rate of prompted correction was below 50%. Rate of praise was below eight per 15-minute session. Under conditions of trained Tutoring, major increases in rate were recorded on all four tutoring behaviours wherever these measures were taken. Table 1 shows just one exception to this. The gain in percentage of errors prompted correct from untrained to trained tutoring conditions was only slight in one study (Wheldall & Mettem,

Table 1

Occurence of Tutoring Behaviours under Untrained and Trained Tutoring Conditions from Eleven Independent Studies

		Delay %		Prompts %		Prompted Correct		Praise Rate		Errors Attended	
		Intra-Subject Research Designes									
		UT	TT	UT	TT	UT	TT	UT	TT	UT	TT
McNaughton et al.	P	16	50	28	69	22	55	1.5	11.2	89	86
Glynn	P	22	64	36	65	24	68	3.7	20.7	—	—
Scott/Ballard	P.T.	0	50	increase		increase		increase		—	—
McGovern	C	25	78	17	74	07	24	<1.0	>12.0	51	46
Love/VanB.	P	<20	>70	<25	>50	—	—	<5.0	>10.0	—	—
Ritchie	P	20	61	46	56	56	79	5.3	13.0	89	96
Elliottyson	C	20	80	25	80	—	—	0.0	20.0	—	—
Pickens	A	08	83	24	64	increase		7.0	17.0	—	—
		Comparison-Group Research Designs									
		UT	TT	UT	TT	UT	TT	UT	TT	UT	TT
Wheldall/M	C	<01	58	<01	27	<01	04	<1.0	8.8	78	77
Whitby	P	32	97	09	59	29	87	increase		79	94
O'Connor (a)	R	18	85	33	70	33	59	5.0	20.0	—	—
(b)	P	59	85	40	49	—	—	3.0	18.0	—	—
Biddulph/T.	P	—	—	no data on tutor behaviour				—	—	—	—

Notes

P	denotes parents tutoring their own children
P.T.	denotes parents and teachers tutoring the same children concurrently
C	denotes older children or adolescents tutoring younger children
A	denotes adults tutoring children other than their own
R	denotes residential childcare workers tutoring children
UT	Untrained Tutoring Conditions
TT	Trained Tutoring Conditions

1985). Whitby (1984) and O'Connor (1984) compared rates between independent groups, rather than between baseline and training conditions. Table 1 shows that gains from baseline to treatment are quite major, many of them being of the order of two or three times baseline levels, or more. It is clear that the specified tutoring procedures were acquired successfully by the wide range of tutors represented in these twelve studies.

(b) *Maintenance of Procedures*

It is important to establish that tutors maintain their use of the procedures without being dependent upon the presence of trainers. McNaughton et al. (1981) and Ritchie (1984) compared tutoring behaviours from tapes recorded with the experimenter present with those made with the experimenter absent. In both studies rates of all tutoring behaviours were similar across the two sets of tapes and remained well above baseline rates. Four studies (Scott & Ballard, 1983; McGovern, 1983; Love & VanBiervliet, 1984; Pickens, 1984) provide data on tutor implementation of procedures during a separate Maintenance condition, following the completion of tutor training. In all four studies, graphed data for individual tutors, extending from one month to three months after training, demonstrate that tutors continued to implement all procedures at high levels, often showing further increases beyond training levels. Taken together, data from these six studies provide evidence for temporal generalization of the Mangere Home and School Procedures beyond the inital period of tutor training. However, it is important to note that tutors were aware that their tutoring was still being analysed from tapes.

(c) *Total Attention to Errors*

Five studies presented data on the level of tutor attention to errors (McNaughton et al., 1981; McGovern, 1983; Ritchie, 1984; Pickens, 1984; Whitby, 1984). A consistent finding across these five studies is that while there were large increases in use of the Mangere Home and School Procedures from Untrained to Trained Tutoring conditions, there was in contrast relatively little change in the overall proportion of children's errors

attended to (baseline rates 51% to 89%, trained tutoring rates 46% to 94%). This suggests that implementation of the Mangere Home and School Procedures resulted in a qualitative shift in the pattern of attention to errors rather than a quantitative shift in the errors attended to. Further, Table 1 shows that in four of these studies where parents tutored their own children, they attended around 90% of reading errors following training. In contrast, in the one study which employed underachieving 10-year-olds as tutors of 7-year-old readers, these tutors attended only around 50% of reading errors (McGovern, 1983). This contrast may reflect the level of reading skill of the tutors, who may not have detected as many errors as tutors with more competence in reading. Interestingly, there was one parent tutor in the McNaughton et al. (1981) study who was extremely limited in reading competence. Nevertheless this tutor as well as those in the McGovern (1983) study was able to effect considerable improvements in her own child's reading.

Children's Reading Gains

Returning to the application of O'Dell's model to the evaluation of remedial reading tutoring, the next requirement is to establish that changes occurred in children's reading, as a result of implementing the Mangere Home and School Remedial Reading Procedures. Four qualifying comments must be made about data from Tables 2a, 2b and 2c. First, these data are based on different amounts and types of information available within each study. Second, data on reading changes in individual children are provided in all nine of the intra-subject design studies but in most cases mean data have been presented in Tables 2a, 2b and 2c to allow global comparisons across studies. Where the mean data would present a major distortion because of wide individual differences (e.g. McNaughton et al., 1981; Pickens, 1981), separate data are provided for subgroups of children. Third, most studies report data on the number of books read by individual children during untrained and trained tutoring conditions. Different children in different studies were starting at widely varying book levels. Since book level changes can by no means be regarded as an interval scale, data on number of books read to criterion did not seem to provide the most helpful comparison across studies. Hence, data in Tables 2a, 2b and 2c are in the form of gains in reading age as estimated from changes in the recommended age levels of books read to criterion during the period of trained tutoring. Fourth, since six of the studies used multiple baseline across subjects designs, the table entries for

Table 2a

Children's Reading Gains from Six Studies Implementing Tutoring at Home

Study	N	Age (Years)	Deficit (Months)	Duration (Months)	Gains (Months)	Rate per Month
			Studies evaluating progress through graded book levels			
McNaughton	8	8-11	28-60	2.25	6.5	2.8
Love & VanB	4	8-10*	30-50	1.25	6.0 to 12.0	4.8 to 9.6
Ritchie	4	7-8	19-27	2.40	19.0	7.9
			Studies evaluating progress through standardized tests			
Glynn	4	10	26-34	3.25	6.25 (Neale A)	1.92
Whitby						
Expmtl.	10	8-12	29	4.00	7.02 (Composite)	1.75
Contrast	10	8-12	24	4.00	3.92 (Composite)	0.98
Biddulph						
A) Expmtl.	11	9-10	12-24	4.00	7.90 (GAP)	1.97
Contrast	11	9-10	12-24	4.00	2.30 (GAP)	0.58
B) Expmtl.	13	9-10	12-24	4.00	8.50 (GAP)	2.12
Contrast	13	9-10	12-24	4.00	4.30 (GAP)	1.30

Notes

Neale A. denotes Neale Analysis of Reading Difficulty (Accuracy), Neale (1966)
Neale C. denotes Neale Analysis of Reading Difficulty (Comprehension), Neale (1966)
G.A.P. denotes GAP Reading Comprehension Test (McLeod, 1967)
* denotes Children from a special class for mildly retarded.

months of tutoring represent the maximum tutoring time for children in any given study. Some children would have received trained tutoring for a shorter time than this.

(a) *Studies Implementing Tutoring at Home*

Six studies reported the use of the Mangere Home and School Procedures solely in the home setting by parents. Three of these studies provide data in the form of reading ages estimated from progress through book levels. Children in the McNaughton et al. (1981) study gained approximately 6.50 months in reading at home over 2.25 months of trained tutoring. The four special class children in the Love and VanBiervliet (1984) study gained from 6.0 to 12.0 months in reading progress over 1.25 months of trained tutoring. Children in the Ritchie (1984) study gained approximately 19 months over 2.4 months of trained tutoring. Three other studies involving parents tutoring at home report gains on standardized measures. Glynn (1980) reports gains on the Neale Accuracy measure of 6.25 months over 3.25 months of trained tutoring. Whitby (1984) reports gains on a battery of standardized tests of 7.02 months for experimental subjects and 3.92 months for control subjects over 4.0 months of trained tutoring. Biddulph and Tuck (1983) introduced a parent-tutoring programme which included the Mangere Home and School Procedures to 24 matched pairs of 10-year-old readers. Parents of half of these children participated in the Parent Tutoring programme. Parent-tutored and control children were assessed at pretest, at a delayed posttest and at a 12-month follow-up point on the GAP Reading Comprehension Test (McLeod, 1967). Between the pretest and the delayed posttest (approximately 4 months), the GAP raw score gains of the parent-tutored group were between two and three times as great as those of the control group. Between the delayed posttest and the 12-month follow-up test, these gains had diminished, but the parent-trained group were still in advance of the control group. By the follow-up, 16 of the 21 parent-tutored children had attained a reading age of 9 years 6 months while only 2 of the 21 control group children had reached this criterion. While the later studies report higher rates of gain at home than the original study, it should be noted that the original study involved children with greatest reading

Table 2b

Children's Reading Gains from Four Studies Implementing Tutoring at School

Study	N	Age (Years)	Deficit (Months)	Duration (Months)	Gains (Months)	Rate per Month
			Studies evaluating progress through graded book levels			
Elliotyson	4	6-7	11-16	3.0	12.0	4.0
McGovern	3	7	6-24	3.0	6.0 to 9.0	2.0 to 3.0
Pickens a.	2	8-9	12-30	2.25	12.0	5.3
b.	4	8-9	12-30	2.25	6.0	2.6
Wheldall						
Expmtl	8	12	41-42	2.0	—	9.0 books
Control 1	8	12	41-42	2.0	—	7.2 books
Control 2	8	12	41-42	2.0	—	6.0 books
			Studies evaluating progress through standardized tests			
Wheldall						
Expmtl	8	12	41-42	2.0	6.0 Neale A.	3.0
					4.9 C. 2.45	
Control 1	8	12	41-42	2.0	2.4 Neale A.	1.2
					3.5 C. 1.75	
Control 2	8	12	41-42	2.0	0.9 Neale A.	0.42
					2.8 C. 1.4	
McGovern	3	7	6-24	6.0	8.0 A.R.I.	1.3
				6.0	10.0 Neale A.	1.6

Notes

Expmtl. = Pause, Prompt and Praise Tutoring
Control 1 = Untrained Tutoring
Control 2 = No Tutoring
Neale A (Accuracy) = Neale Analysis of Reading Difficulty, Neale, 1966
Neale C (Comprehension) = Neale Analysis of Reading Difficulty, Neale, 1966.
A.R.I. = Analytic Reading Inventory, Woods & Moe, 1977.

deficits (2.4 years to 5.0 years) and included one parent tutor with limited reading skills.

(b) *Studies Implementing Tutoring at School*

Four studies involved the implementation of the procedures solely in the school setting, with older children, adolescents or adults acting as tutors. Three of these studies provided data in the form of reading ages estimated from progress through book levels. These data are presented in Table 2b.

Six to 7-year-old children in the Elliottyson (1982) study gained 12 months over 3.0 months of trained tutoring, and 7-year-old children in the McGovern study gained between 6.0 and 9.0 months over 3.0 months of trained tutoring. Two 8 to 9-year-old children in the Pickens (1984) study made gains of 12.0 months or more, and four other children made gains of 6.0 months over 2.25 months of trained tutoring. Only one child gained less than 6.0 months. Wheldall and Mettem (1985) conducted a group comparison study. Children in the Trained Tutoring group made gains of 6.0 months over 2.0 months of trained tutoring, as measured by Neale Analysis (Accuracy) scores. Corresponding figures for the Untrained Tutoring and the No Tutoring control groups were 2.4 and 0.9 months respectively. On the Neale Analysis (Comprehension) measure, the Trained Tutoring group gained 4.9 months over 4.0 months of tutoring while corresponding figures for the two control groups were 3.8 and 2.8 months respectively.

(c) *Studies Implementing Tutoring at Home and School*

Three studies involved the use of the Mangere Home and School Procedures both at home and at school. These are summarized in Table 2c.

In the original McNaughton et al. (1981) study, six of the eight children who made clear gains in the level of their reading at home did not make appreciable gains at school, mainly due to the lack of suitable school reading programmes for these older low-progress children. For five of these six children, the tutoring procedures were introduced at school as well as at home. University students tutored at school for one month, concurrent with parent tutoring at home. The children made gains from 5 to 10 months over this 1-month period. Scott and Ballard (1983) trained both teachers and parents to implement the procedures, so that they were introduced concurrently at home

Table 2c

Children's Reading Gains from Three Studies Implementing Tutoring at Home and at School

Study	N	Age (Years)	Deficit (Months)	Duration (Months)	Gains (Months)	Rate per Month
		Studies evaluating progress through graded book levels				
McNaughton	(5 only)	9-12	30-60	1.0	5.0 to 10.0	5.0 to 10.0
Scott/Ballard	4	11-12	36-60	3.25	36.0 home	11.0
					33.0 school	10.2
O'Connor						
(a) expmtl.	18	6-12	35	1.50	9.0	6.0
contrast	49	6-12	—	—	1.0	0.7
(b) expmtl.	10	6-12	35	1.50	7.0	4.7
control	10	6-12	35	—	3.0	2.0
		Studies evaluating progress through standardized tests				
Scott/Ballard	4	11-12	36-60	3.25	32 to 36 DTI*	9.8 to 11.1
					32 to 36 ARI**	9.8 to 11.1
O'Connor						
(a) expmtl.	18	6-12	35	1.50	6.0 Neale A.	4.0
					5.0 Neale C.	3.3
contrast	49	6-12	—	—	1.0 Neale A.	0.7
					1.0 Neale C.	0.7
(b) expmtl.	10	6-12	35	1.50	7.0 Neale A.	4.7
					5.0 Neale C.	3.3
control	10	6-12	35	—	2.0 Neale A.	1.3
					3.0 Neale C.	2.0

Notes

*DTI = Informal Prose Reading Test, Dunedin Teachers College (1979)

**ARI = Analytical Reading Inventory, Woods & Moe, 1977.

and at school. Four 11 to 12-year-old children made gains of 36.0 months over 3.25 months of trained tutoring at home, and 33.0 months over the same period at school. The children made gains of 32.0 to 36.0 months on the Dunedin Teachers College Informal Prose Inventory (1979) and on the Analytical Reading Inventory (Woods & Moe, 1977). These gains were maintained at a 12-month follow-up assessment. O'Connor (1984) introduced the Mangere Home and School Procedures to childcare workers in a 6-week semi-residential programme for children with behavioural problems. Procedures were implemented in both classroom and cottage settings. A treatment group of 18 was selected from 67 children entering the programme in 1983, leaving a contrast group of 49, who received only routine reading instruction in the classroom. Over the 6-week period, the treatment group averaged gains of 6 months in terms of Neale Accuracy Scores, 5 months in terms of Neale Comprehension Scores and 9 months on the Glenburn Prose Inventory. Corresponding gains for the contrast group were 1 month on each of the three measures. O'Connor also conducted an ex post facto matched-pairs comparison of 10 experimental and 10 control children sampled from within the treatment and contrast groups. For the 6-week period the experimental group gained 7 months in terms of Neale Accuracy Scores, 5 months in terms of Neale Comprehension Scores, and 11 months on the Glenburn Prose Inventory. Corresponding gains for the control group were 2 months, 3 months and 2 months respectively.

Reported gains from the use of the Mangere Home and School Procedures varied from 1.5 to 2.0 months' gain in reading age per month to 10 to 11 months' gain per month of trained tutoring. Reading gains were evident not only in terms of day-to-day performance at home and at school, but also in terms of changes in scores on standardized achievement tests. Particularly powerful gains were reported in the three studies which introduced the procedures concurrently in two settings (Scott & Ballard, 1983; McNaughton et al., 1981 [five subjects only]; O'Connor, 1984).

(d) *Generalization from Tutor-Assisted to Non-Tutored Reading*

The third component of O'Dell's model applied to the evaluation of remedial reading tutoring requires demonstration that reading gains in the tutor-assisted setting generalized to other settings where children received less support. Four studies which involved parent tutoring in the home setting and concurrent measurement (but no tutor assistance) in the school setting allow an opportunity to test for generalization of tutor-assisted reading gains to non-tutored reading. McNaughton et al. (1981) reported such generalization for only two of the eight children who had shown progress during trained tutoring at home. For the remaining six children, McNaughton et al. concluded that proficiency in reading had not been established across a wide enough range of text levels. Tutor assistance was still required to cue children's use of error correction strategies, particularly with increases in text difficulty. Consequently, following Stokes and Baer (1977), it was thought necessary to "programme for" rather than "hope for" generalization for these children. With the provision of additional tutor assistance for the school reading of five of these six children, provided by students implementing the Mangere Home and School Procedures, children began to make rapid progress through book levels at school. However, three other studies provide firmer evidence of generalization of tutor-assisted reading gains to untutored reading. These gains were 6.25 months over a period of 3.0 months tutor-assisted reading at home (Glynn, 1980), 4.3 months over a period of 2.4 months tutor-assisted reading at home (Ritchie, 1984), and between 6.0 and 12.0 months over a period of 3.0 months tutor-assisted reading at home (Love & VanBiervliet, 1984). The rate of progress in this last study was sufficient for one of the special class children to be reassessed and placed in a regular classroom. Gains in the last two studies were measured in terms of changes in book levels read to criterion at school, while gains in the first study were measured in terms of scores on the Neale Analysis (Accuracy) measure. Children in these last three studies, in contrast to the older children in the McNaughton et al. study, were participating in school reading programmes which scheduled regular opportunities for one-to-one reading from text material. Further, as the tutor-assisted reading programme at home

resulted in rapid movement upwards through more difficult texts, it was likely that texts being read at school were now at lower levels of difficulty than those being read at home with tutor assistance. Hence independent reading without tutor assistance could be more readily maintained at school. Given access to a reading programme at school which affords regular opportunities for children to read meaningful text at a level appropriate to their current achievement, it is likely that any reading gains from tutor-assisted reading at home will generalize to untutored reading at school.

Control for Increased Time in One-to-One Tutoring

It is possible to argue that reported reading gains across the twelve studies reflect merely the additional amount of tutoring time given to each child, rather than gains resulting from implementing the Mangere Home and School Procedures. Five studies provide data which bear on this point. The McNaughton et al. (1981) study reported that during the baseline phase, when parents were providing their own untrained tutoring in regular schedule sessions, the rate of children's progress across book levels was about 0.9 levels per month at home and 0.4 per month at school. With the introduction of trained tutoring this rate increased to 1.4 book levels per month at home and 1.3 per month at school. Further, the books read during trained tutoring were more difficult than those read during untrained tutoring. In the Ritchie (1984) study the gain in reading age level across books read at home during untrained tutoring was approximately 0.4 months per month of tutoring. The corresponding gain in reading age level across books read at home during trained tutoring was 7.0 months per month of tutoring. In the same study, the rate of progress across book levels at school during untrained tutoring at home was 0.8 months per month of tutoring, while the corresponding rate of progress at school during trained tutoring at home was 1.7 months per month of tutoring. In the Elliottyson (1982) study, which employed older children as tutors, the rate of progress during the untrained tutoring phase was 1.1 and 1.4 book levels per month for the two subjects for whom there were sufficient data points. The corresponding rate for the same children during trained tutoring was 3.0 book levels per month.

O'Connor (1984) introduced children in a 6-week semi-residential programme first to a one-to-one remedial reading procedure involving only additional practice with noncontingent praise from a cottage staff tutor. For some children this resulted in a sufficient rate of progress to warrant no other intervention. For others, for whom the rate of progress was still low, the Mangere Home and School Procedures were then introduced. Data indicate that rate of progress through book levels was greater during the Trained Tutoring condition than during the noncontingent praise condition. Converting O'Connor's data to rates per month indicated children were completing graded books at the rate of 3.6 per month in the cottage setting and 5.0 per month in the school setting during the period of untrained tutoring with noncontingent praise. The corresponding rates for the Trained Tutoring period were approximately 9.2 per month in the cottage setting and 8.8 per month in the school setting.

Wheldall and Mettem (1985) employed a between-groups design. The rate of books completed for children in the Trained Tutoring group averaged 9.0 per month, while the rates for children in the Untrained Tutoring group and the No-Tutoring group were 7.2 and 6.0 per month respectively. Again, data from this comparison group study complement data from the three intra-subject design studies. There is quite consistent evidence for the additional effectiveness of the Mangere Home and School Procedures over and above that of the extra time spent in untrained tutoring, even where that tutoring involves additional practice with appropriate text reading material in a one-to-one context.

Amount of Tutor Time per Child

It is important to know how much time was involved in providing individual tutoring (Pickens, 1984). Tutoring time was estimated from information supplied in the various studies, working from two assumptions: first, that the number of tutoring sessions prescribed by the authors actually took place; and second, that all sessions were of approximately 15 minutes' duration. (It is not known how accurately the various child, adolescent and parent tutors kept to these time limits).

In addition, in intra-subject design studies the number of sessions per child varied according to the multiple baseline design. Tutoring time has been estimated on the basis of the *maximum* number of sessions scheduled by the design. Estimated tutor input per child varied from 4 to 6 hours in the McNaughton et al. (1981) study, to around 10 hours in the Pickens (1984) study, and up to 12 hours in the O'Connor (1984) study (in which some children were tutored by both staff and parents), and 14 hours in the Scott and Ballard (1983) study. A modal figure would be around 6 to 8 hours. Scott and Ballard (1983) and O'Connor (1984) provided trained tutoring for all children in two settings and also provided the greatest amount of trained tutoring time. These are the studies which reported the greatest gains in children's reading.

Amount of Time in Tutor Training

Pickens (1984) advocates assessing the amount of professional time spent in training tutors. Studies are not always clear in reporting this. Time spent in training tutors could be estimated in 8 of the 12 studies. A modal range (including the provision of regular feedback) was 6 to 9 hours per tutor. Studies which differ markedly from this modal time per tutor were those which trained the tutors entirely in group settings, apart from feedback which was given individually (Pickens, 1984; Wheldall & Mettem, 1985). Tutor training time in these studies was approximately 10.0 hours (Pickens, 1984), 6.0 hours (Wheldall & Mettem, 1985), 9.0 hours (O'Connor, 1984) and 7.0 hours (Whitby, 1984). These represent an investment of professional time per tutor of 2 hours 45 minutes, 1.0 hour, 30 minutes and 42 minutes respectively. Where tutors are available and can attend group training programmes, training in the use of the procedures can be effectively conducted in this way. However, individual training in the home setting continues to be seen to be a vital component of the programme for many parent tutors. This is especially important where parents are unable to attend training sessions out of school hours or where attending such sessions would be a culturally unfamiliar or threatening experience.

Conclusion

The twelve studies reviewed provide clear and consistent evidence that employment of the Mangere Home and School Remedial Reading Procedures by a wide range of different tutors resulted in major gains in children's reading. Eleven studies demonstrated that with the introduction of the procedures, tutors increased their use of specific praise for children's independent reading. Several studies demonstrated that tutors have maintained correct implementation of the procedures without the continued presence of trainers or experimenters. Follow-up measures in some studies indicate that tutors have continued to do so for several months following tutor training.

Reported gains in children's reading ranged from 1.5 to 2.0 months in reading age per month of tutoring to 10.0 to 11.0 months' gain in reading age per month of tutoring. Reading gains were evident both on standardized test measures and in session-by-session reading of text material. Substantial gains reported for individual children in intra-subject studies were complemented by gains reported in terms of between-group comparisons of larger numbers of children. Replication of findings on tutor acquisition of procedures and children's gains in reading permits a strong claim for the effectiveness of the procedures in overcoming children's reading deficits.

Several studies provide evidence that children generalized reading gains from the supportive context provided by a trained tutor to the context of reading without tutor support. Data from the original study suggest that children with severe reading deficits may need extended tutoring support across a wide range of levels of text difficulty before they will become fully proficient and independent readers in an untutored context. Achievement of proficient and independent reading in a school context to accompany increased progress from tutored reading at home is likely to be facilitated if the school programme provides regular access to individual reading from appropriately selected text material.

Both the intra-subject and between-group experimental designs in the studies reviewed demonstrate that the rate of gain in children's reading resulting from correct implementa-

tion of the procedures is greater than that resulting solely from increased opportunity to read meaningful texts in a one-to-one context. This information, taken together with information on the amount of time tutors spent in tutoring individual children and the amount of professional time spent in training tutors, suggests there is a worthwhile return on effort expended in implementing the Mangere Home and School Procedures.

Use of measures such as number of book levels read to criterion provides a degree of educational or social validity, particularly since standardized test measures may be insensitive to gains over short periods of time. However, reporting gains in terms of books read when the books are of increasing difficulty may understate the progress made by older readers who enter a remedial programme several steps above the bottom level in a series. In this paper, and in several other studies, book level changes have been reported in terms of changes in the recommended age level for each book, according to information available from publishers. This procedure, although it may be highly inaccurate, may still be the best available for describing short-term changes in reading achievement. Describing which particular book in a named series a child can read to a criterion level of accuracy, with or without tutor support, conveys objective verifiable information about the child's current achievement. Fortunately, data from studies reviewed suggest that increases in book levels read to criterion are frequently paralleled by gains on standardized tests.

In the main, studies reviewed were conducted by researchers independent of the present authors, and were carried out in different locations with readers of varying levels of reading deficit, and with a wide range of different tutors. The consistent replication of treatment effects across the twelve studies adds to the growing confidence in the effectiveness of the original Mangere Home and School Remedial Reading Procedures.

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