

Evaluating The Effectiveness of the Listening Training Program for children who are underachieving in a state school

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Abstract

The importance of the auditory skills in literacy development being established, all the various methods available to address such problems were discussed. The Listening Program (TLP) was chosen for implementation as it was suitable for use with a group of children and so could be a financially viable intervention for general use in school. 38 children aged between 7yrs 0mths and 11yrs 5mths were involved in the programme, which ran over a period of 2yrs. 33 children were tracked throughout the period. The defining criteria for participation in the programme was underachievement in the academic sphere as illustrated by the child's failure to achieve expected scores in the annual school NFER progress tests and group reading tests. The children involved had hearing tests prior to the program to ensure that their problem was not the result of hearing impairment. The intervention programme involved a group of up to 6 children each term, listening to acoustically modified music through headphones, at low volume, for a half hour period each day, for 8 weeks. Before and after intervention the auditory discrimination and memory of the children were tested using the Quest test of pre-reading skills and a standardised reading test was administered. The annual NFER test scores for English, mathematics and group reading were recorded and compared with scores for tests after the intervention, with the appropriate progress scores for each area recorded. All the children, without exception, improved their performance in the auditory discrimination and memory tests after intervention. 79% of the children showed progress well above average in at least one area of mathematics, language and reading.

The Study

The Aim of The Study

The aim of the study was to see if use of the Listening Program in school was effective, despite all the compromises made to accommodate it as an integral part of the curriculum. The effectiveness would be judged by whether the children improved progress in English, Mathematics and Reading, as demonstrated by results in the end of year school tests, without any other increase in special need resource.

Location

The school used was Chuter Ede County Primary School, Balderton, Newark, Nottinghamshire. The Head teacher was Mr John Noden at the start of the project in the summer term of 2000 and continued under the Headship Mr Robert Hattersley from 2001.

The last OFSTED inspection of this school was in 1999 when it was found that the school had a very good ethos, with the pupils having a very good attitude to work and their behaviour and relationships were excellent. The quality of teaching was good, particularly at key stage 2, as was leadership and management. Attendance was good and socio-economic circumstances were above average when compared to national data although the number of pupils identified as having special educational needs was in line with national average. This school was chosen in order to study the effect of the program on learning and the children, who act as their own controls, were selected because of underachievement or teacher recommendation.

Testing

The Quest test of Pre reading Skills was used to assess auditory discrimination and memory. The discrimination test involves the child telling whether two words are the same or different for 12 examples and a second 12 where they have to identify which of two words contains a particular sound, to give a score out of 24. Failure to complete this test indicates a difficulty with auditory perception but it does not highlight any specific frequency deficit, which may need attention.

The test for auditory memory involves correct recall of two lists of four words in the correct order and forward digit span from three to five digits giving a score out of 8. It follows that if auditory discrimination is uncertain then the image to recall may be confused leading to loss or confused recall of the spoken input.

A part of the testing administered was a reading test to determine the reading age of the child pre and immediately post program. This was sometimes Schonell or Salford Sentence. The same test in different form, where applicable, was used at start and end of the Listening Program and I was responsible for this testing. Reading age changes in results tables use the school tests at the end of each school year as an objective assessment of reading progress over the school year.

Tests involving visual skills and perceptual motor skills were carried out in order to try and establish whether there was only an auditory problem present, where time allowed. (All but one child over the period had indications of other problems in

addition to the auditory difficulties.) Later additional tests were added for naming speed and spelling.

Initially testing took place in an area where there were some noises off because of circumstances but it later continued in this way as it was thought that this gave a better indication of the child's likely ability in the classroom.

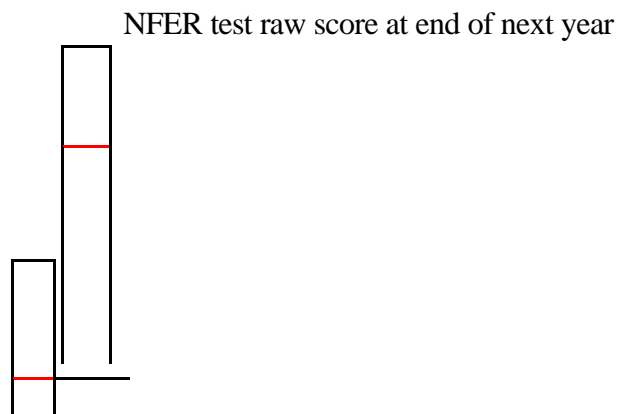
Results of the school National foundation for Educational research (NFER) progress tests in English and Mathematics and the group reading test, administered by the class teacher at the end of each school year, were recorded for the year prior to and, at the end of the year including the Listening Program, to establish progress made over that period. (NFER tests are used by the county to track the progress of pupils over the years. They have been used for an extensive period of time, are standardised and tested for reliability, with reliability scores varying with tests considered but, being above 0.9 as computed by Kuder-Richardson 20(K-R 20) formula. The same tests are used for the same age group of children each year. The progress scores are calculated by the increase in raw score on tests for successive years using a chart showing the overlap of raw scores for the different year tests (Figure a). Progress scores for each year can be graded as below average, average, above average is labelled excellent and exceptional is for results, which exceed the upper limit of the range. These progress scores and grades have been deduced by NFER from study of data from many years of these tests.)

Figure a

Diagrammatic explanation

Post Listening, indicated by red line
Of the source of progress scores

NFER test raw score
year before listening
indicated by red line



Raw test scores from first year can be compared with raw scores at the end of the next year, after Listening. The increase in raw score, points between the 2 lines, is the progress score.

A standardised group-reading test was administered by the class teacher to ascertain each child's reading age. The reading tests gives a standardised reading age and this can be compared with the result of the previous year to give the gain in months over the year.

For some first junior classes who are doing the NFER tests for the first time there are no progress scores so standardised scores from the NFER test results for that year, post Listening are given. Some year 6 children did only the government SATs Key Stage 2 tests at the end of the year and so those results are given.

The Implementation In A Real School

Up to six children, between the ages of seven and eleven, went through the program each term. I oversaw the program, which was run under the daily supervision of a classroom assistant. Children listened to the program through headphones at low volume. The CD tracks are divided into sets of three, the first and last being full spectrum sound and the middle one having the lower frequencies gradually removed and interruptions of sounds of a different frequency either by instrument or nature sounds to awaken attention. The first group listened to a set of three tracks in the morning and three at the end of the afternoon. Staff were happy for the program to continue after the initial group and results but they found the morning session too disruptive as any delay with one child delayed all and, fifteen minutes could become an hour as a result. It was decided to run a condensed version of the program in the last session of the afternoon. This session was exactly half an hour and six tracks overrun that time. To combat that, only one full spectrum sound track was used to separate the two treated tracks. Parents and staff paid particular attention to observation of these children, during the program run, to ensure that any signs of overloading were picked up immediately but, none were found.

The program is run at low volume and it has been found that those children who seem sound sensitive can cope with that. Initially the children were allowed to do other activities during the program but this was discontinued as the children were giving all their attention to the drawing or other activity, rather than the program. Now they try to count the number of times they hear birds, water or other sounds, as appropriate. Hyperactive children are treated the same as the other children but they generally fidget more in the early sessions.

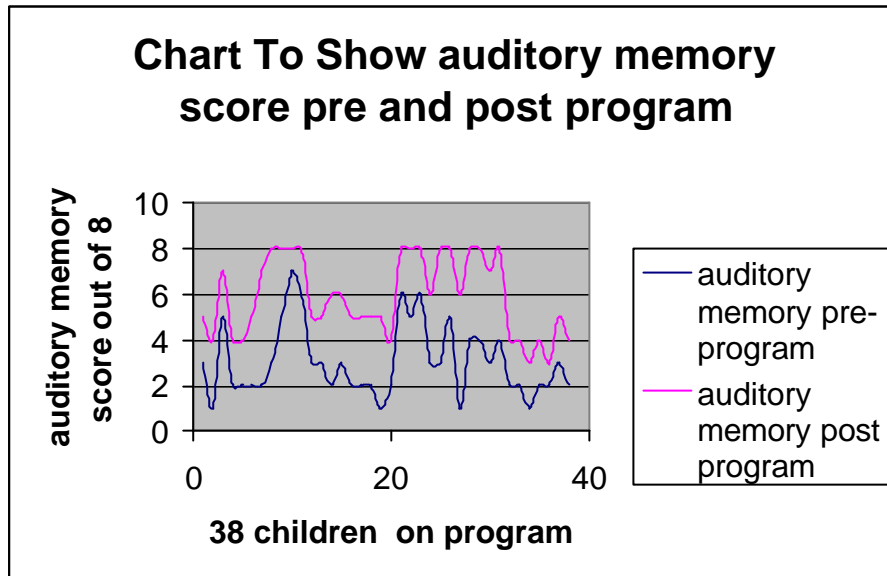
Since the program is delivered to a group and goes on daily there are occasional days missed when a child goes out on a school trip with their class, or has a day off for sickness. If this is an isolated event it is ignored. If absence can be measured in weeks rather than the odd day the child discontinues the program. (This has only happened once.) The eight-week program runs over a term, with half term holiday in the middle. The program continues after the holiday as though there has been no interruption.

Results

Results discussed will focus on my findings in tests for auditory skills but academic progress will be based solely on the independent school tests, so that they are an objective assessment of progress, whether or not the children have other problems or labels in addition to the auditory.

Parents and staff furnished comments on any change they observed with the children.

Key Blue = pre program red= post program



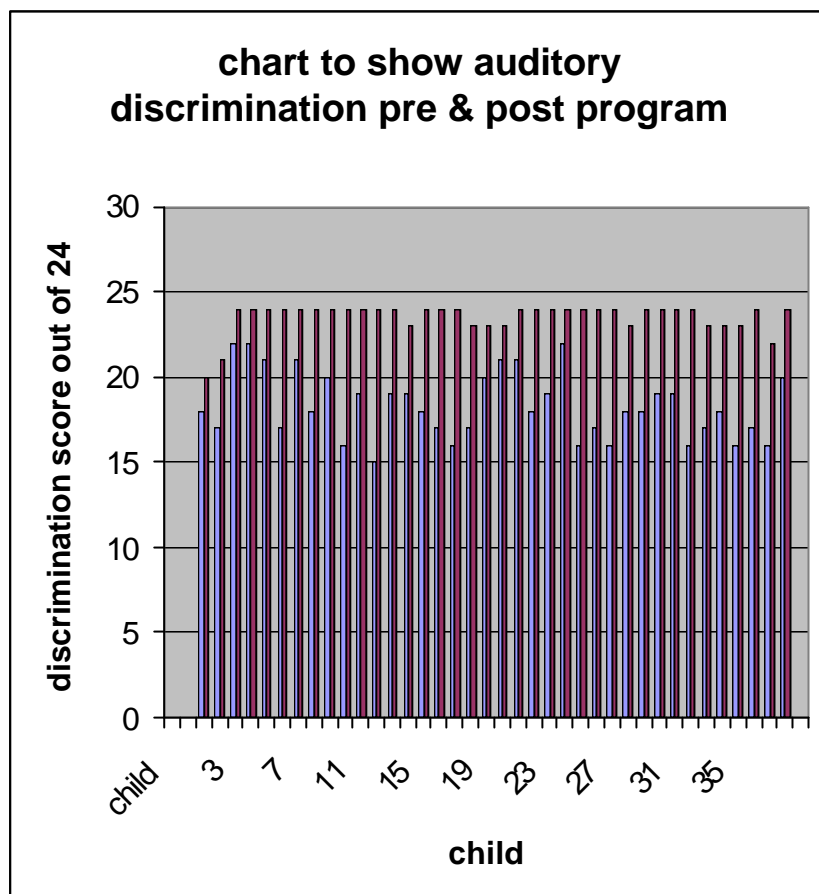


TABLE 1

Levels of progress on NFER tests highlighted :

Exceptional Excellent Average below average

GOVERNMENT SATs TEST Results Key Stage 2 Yr 6

child	Non-verbal Score NV	Auditory discrimination		Auditory memory		Chronological Age Yrs mths	NFER Progress score		Reading Gain in months
		Pre Prog.	Post prog.	Pre Prog.	Post prog.		english	maths	
1	82	18	20	3	5	10y6m	SAT3/3	abs	21
2	109	17	21	1	4	9y4m	15	3	14
3	112	22	24	5	7	8y8m	8	13	7
4	97	22	24	2	4	9y	11	11	7
5	107	21	24	2	4	9y10m	18	10	11
6	94	17	24	2	5	9y6m	10	14	18
7	76-95*	21	24	2	7	10y6m	SAT4/3	SAT3	-
8	112	18	24	3	8	10y6m	9	7	57
9	91	20	24	5	8	10y7m	SAT4/3	SAT4	-
10	91	16	24	7	8	9y4m	33	22	12
11	108	19	24	6	8	10y6m	10	-1	0
12	89	15	24	3	5	9y10m	6	5	8
13	93	19	24	3	5	10y4m	11	6	0

14	111	19	23	2	6	9y10m	3	7	9
15	100	18	24	3	6	8y9m	14	13	14
16	96	17	24	2	5	8y6m	6	13	7
17	101	16	24	2	5	9y8m	-2	3	21
18	86	17	23	2	5	9y9m	4	4	4
19	96	20	23	1	5	8y9m	19	2	18
20	82	21	23	2	4	8y8m	9	6	4
21	99	21	24	6	8	9y5m	-1	9	-5
22	104	18	24	5	8	10y5m	10	14	-
23	102	19	24	6	8	8y11m	3	11	6
24	99	22	24	3	6	10y4m	8	6	18
25	90	16	24	3	8	10y5m	SAT3/3	SAT2	-
26	112	17	24	5	8	9y2m	18	7	6
27	-	16	24	1	6	7y4m	7	29	-
28	104	18	23	4	8	8y3m	-	-	-
29	105	18	24	4	8	11y5m	9	22	-
30	85	19	24	3	7	11y4m	12	12	-
31	89	19	24	4	8	8y8m	11	10	22

TABLE 2

Year 3 NFER standardised scores only as this is the first year of this test for that year group

Standardised Scores in line with Non verbal scores at end of TLP from NFER test, where no progress scores available because this is the first year of this test, highlighted

							Standardised scores only	
							english	maths
32	104	16	24	2	4	6y10m	95	104
33	101	17	23	2	4	7y6m	98	104
34	86	18	23	1	3	6y10m	86	90
35	111	16	23	2	4	7y	85	82
36	98	17	24	2	3	7y2m	85	73
37	90	16	22	3	5	6y10m	96	101
38	85	20	24	2	4	7y6m	94	97

Subject number 7, Table 1, is one of identical twins who had all the symptoms of dyspraxia, whilst his twin did not. The twin with difficulties had the Listening Program at the beginning of year 6. His twin did not. * The non-verbal score for subject 7 Table 1 changed dramatically after intervention and was then in line with that of his twin.

TABLE3

Comparing the results of Identical twin boys in the Key Stage 1 & 2 SATS tests

X and W in results indicate that the subject did not reach the level for grading

	<u>Reading K S1 Task &Comprehension</u>		<u>Reading KS2</u>	<u>Writing KS1</u>	<u>Writing KS2</u>	<u>Maths KS1 KS2</u>	
<u>Twin with intervention Child number 7</u>	1	X	4	1	3	W	3
<u>Twin brother without</u>	2c	2c	3	2c	3	2a	3

TABLE 4

Tracking Child number 8, Table 1, the child who had a sole difficulty in auditory skills.

	Non verbal	English Progress score	Mathematics Progress score	Reading gain in months
Year of intervention Yr5	112	9	7	57
Year 6		15 standardised score 111	11 standardised score 110	
Year 6		SATs English 5 reading 4writing	SATs Maths. 4	SATs Science 5

Exceptional progress scores highlighted

TABLE 5

To show progress and SATs Key Stage 2 results for those doing intervention in year 6

child	Non verbal	Progress English	Progress maths	Reading gain in months	SATs English Reading/writing	SATs Maths	SATS Science
11	108	10	-1	0	3/3	3	5
25	90	-	-	-	3/3	2	2
5	107	18	10	11	3/N	4	4
24	99	8	6	18	4/3	3	4
7	76-95				4/3	3	
9	91				4/3	4	
30	85	12	12		4/4	4	5
29	105	9	22		5/4	4	5

Tracking scores for younger children are not included as the majority have gone on to have input from other interventions and so would not give a result exemplifying the effect of Listening Training alone.

Child number 2, Table 1, was labelled a phonic dyslexic, had very poor expressive language and was unable to sequence words in a sentence or events. He had been under the supervision of the speech therapist for many years. Towards the end of this intervention his parents came in to report that although he was previously unable to sit through even a Disney cartoon, he had sat and watched an adult spy drama with the family to the end, the previous evening. They were amazed by this and questioned him on the content to find that he had understood not only the main plot but also the sub plots. He was signed off by the speech therapist because his expressive language had improved so much and he was able to sequence words and events.

Child number 4, Table 1, was unable to filter out extraneous noise and initially was unable to hear the program because of the hum of the fridge in the same room. Over time this improved.

All the individuals have their own story but from the comments from parents and staff, even where there is no improvement in academic progress, they report a change in the child's attitude to school and schoolwork. Hyperactivity is reduced along with any adverse behaviours and the children are calmer. Children are happier and willing to have a go. They can concentrate for longer and are willing to get on with and do homework. They will pick up a book from choice and have more interest in things going on around them. Communication in the home is easier.

Similarly staff report on the improved ability to follow instructions and both listen and contribute in class discussions. One member of staff described the children as 'becoming more rounded people'.

Discussion

This study has taken place in a real school with all the different activities and curricular demands. Whilst I would not wish to compromise the program it has been adapted such that it can accommodate the school trip and the occasional absence. Whilst the program has been lost on those few days, colleagues have inconvenienced themselves to make other alternative arrangements for children who may miss practice before a concert or game because of attending Listening. There has to be some flexibility to maintain good will and accommodate the needs of the program alongside the other demands on resources and the pupils.

Although every attempt is made to provide the best situation for the program to run there are occasions when there are intrusive noises coming from the other activities, beyond control. This cannot be avoided in a working, real school. Workmen do come in to school to do maintenance or building work but they do their best to limit disturbance. This has to be accepted unless there is some space shielded from such intrusions. The problems are acknowledged and when new buildings are completed there will be space, free from disturbance, to be used for the program.

The number of pupils included in the study is 38. There were 4 in the first group, 5 in the second and six per group thereafter. One child in the third group did not continue at that point as due to illness they had missed all but one day of the first 3 weeks. There is a capital outlay in providing this program of about £900. The recommended headphones were used and these are expensive however there is no necessity for further capital outlay as the program progresses.

Working with a group of children means that individual differences cannot be accommodated. Individual absences of the occasional day are ignored as the program runs on. The program is run at low volume so it avoids difficulty for those who may be sound sensitive and so far that has posed no problem. Initially activities suggested for listening time were included but the activity became the focus and a distraction for some, so they ceased. The children just sit and listen and within a few sessions even the most fidgety child is happy to listen and count the instruments used or the nature sounds heard.

The children act as their own controls as in one school it is not possible to find perfect matches for the children. However the identical twins at the school can be seen as an example of test and control and it can be seen that the test subject pulled up his scores in SATs tests at Key Stage 2 to match his brother and even exceed his result for reading. Table 3. A placebo subject would have been useful but is not possible with twins.

The children do not make uniform improvement but the majority of the children make better than average progress in at least one, area Tables 1 & 2, which indicates they are not only making progress as expected for that year but, are also beginning to make up their deficit in attainment.

The universal comment 'They suddenly grow up.' comes from both staff and parents with regards all the children who have been on the program. If this were an isolated incident it could be thought to be just natural development but when it coincides with

going through the intervention in each case, it has to be more than coincidence. This benefit was seen even when the academic acceleration has not been recorded. This is evidenced by the fact that when new parents are invited to come in to discuss the intervention for their child, they are encouraged to try it by both other parents and children who have experienced the program because they feel that it has helped them.

This approach to raising achievement addresses the issue of increasing the effectiveness of the learner. It was a very new approach at the school for which there was limited evidence of efficacy. I would therefore like to acknowledge the trust and support I had in implementing this program from Mr John Noden Head Teacher (retired), Mr Robert Hattersley (present Head Teacher) colleagues and parents who, though sceptical initially, were open minded enough to let this trial proceed. It was the first primary school in the country to implement the program but its continuation is due to results and feedback from those who benefited from it.

Conclusions

The Listening Program has been adapted to fit in with the general school life. It accommodates and can be accommodated by the other activities and general curriculum demands.

It is not a miracle cure and it does not bring a universal result but when the accelerated progress in many areas, as illustrated by the red and blue on Table 1, is so obvious, then it must be concluded that the programme is an effective intervention and can be used in a real school to raise levels of achievement.