Chapter 4

Study 1

Chapter 4

Study 1

4.1 Chapter organisation

This chapter provides a description of the methods used in this study. Following the introduction will be: the research design in a tabulated format, a description of the participants, the teachers involved in the study, the prettests, the posttests, the stimuli, description of the teaching procedure, the lesson format and a description of the statistical analyses used to analyse the data collected.

4.2 Introduction

This study was designed to evaluate the addition of two educational components to a phonemic awareness programme designed by Byrne & Fielding-Barnsley (1991a). The two components which were added were explicit instruction in alphabet knowledge and shared book reading.

In Byrne & Fielding-Barnsley's (1991a) study it was reported that the programme that was used was successful in teaching the principle of phoneme identity to four-year old children. Phoneme identity was taught by showing 64 children that words could begin or end with the same sound, (see Stimulus section, page 143, for a full description of the programme). The control group was taught with the same materials but was not instructed in phoneme identity. Only a minority of the control children understood the concept of phoneme identity at the conclusion of the 12 week programme.

Both groups were administered a 12-item decoding test at posttesting. Words whose letters were those which were part of the intervention programme were used to test the children's ability to decode. The word *sat* was displayed and the child was asked whether it said "*sat*" or "*mat*," or *pal*, with "*pal*" and "*pam*" as the choices. The experimental children scored 8.1/12, significantly ahead of the controls' score of 6.1, not significantly above the chance score of 6. However, of the 64 experimental children only 30 passed the decoding task with 34 failing the same task. The aim of the present study was to increase the percentage of children who passed the decoding task. The results of Byrne & Fielding-Barnsley's (1991a) study point to alphabet knowledge as being the additional critical factor in determining whether children passed or failed the decoding task. Only two children passed the decoding task without first having passed the alphabet knowledge task which entailed recognition of the 6 critical letters. The case was therefore made to include alphabet knowledge instruction in the present study. A multi-sensory approach was selected as the instructional method for this study. A full description of the Montessori multi-sensory approach is given in the stimuli section, **page 76.**

The review of literature in Chapter 3 cites other studies in which phonemic awareness has been necessary but not sufficient for understanding the alphabetic principle (see Bradley & Bryant, 1983; Byrne & Fielding-Barnsley, 1991a,1993, in press; and Tunmer, Herriman & Nesdale,1988).

The inclusion of shared book reading in the present study was also motivated by the findings of the Byrne & Fielding-Barnsley (1991a) study. It was found that letter knowledge and phonemic awareness accounted for 54% of the variance in the decoding task, with both making separate and substantial contributions. The fact that

the variance accounted for only 54% signified that there was a need for a further component of instruction. It was hypothesised that shared book reading could make a valuable contribution in addition to phonemic awareness and alphabet knowledge.

Shared book reading, or dialogic reading as it is sometimes referred to, involves reading with children as opposed to reading to children. This method of reading with children also encompasses the use of questioning techniques and recall of the material read. Further details of shared book reading are included in the Stimuli section 3.3. It was also hypothesised that shared book reading would increase the children's understanding of the conventions of print and the function of books. Studies by Whitehurst et al. cited in the literature review, **page114,** have shown positive flow on effects, in measures of emergent literacy skills for children who have been included in shared book reading programmes. Vocabulary scores have also been increased by involvement in shared book reading programmes (Robbins & Ehri, 1994). However other studies have shown only weak effects of shared book reading on language and literacy skills.(Scarborough & Dobrich, 1994).

4.3 Design

Design of the Experiment

Research design, see Table 4.1, where O indicates measurement, X^1 the Sound Foundations (phonemic awareness) treatment, X^2 the alphabet instruction treatment and X^3 the shared book reading treatment.

The rationale for the design of this study was influenced by the results of the Byrne & Fielding-Barnsley (1991a) study in which it was found that phonemic awareness was necessary but not sufficient for understanding of the alphabetic

principle. The inclusion of phonemic awareness for all three groups was therefore seen as imperative. The results of the Byrne & Fielding-Barnsley (1991a) study also pointed to the inclusion of training alphabet knowledge as being crucial to passing on a simple decoding task. These findings indicated that both experimental groups should be instructed in alphabet knowledge. The rationale for including shared book reading was that it might fulfil one of the missing requirements for an understanding of the alphabetic principle and how it relates specifically to reading. The hypothesis is that the experimental group which had shared book reading, in addition to phonemic awareness and alphabet knowledge, will perform at a significantly higher level on a simple decoding task than either of the groups which did not include shared book reading.

Table 4.1 Design of the experiment

Group	n	Prettest	Treatment	Posttest	16 Month Follow-Up
E1	38	O^1	$X^1+X^2+X^3$	O^2	O^3
E2	36	O^1	X^1+X^2	O^2	O^3
C1	64	O^1	X^1	O^2	O^3

4.3.1 Participants

Participants consisted of three groups which were matched for age and sex. Group E1 was made up of 38 children, 15 girls and 23 boys with a mean age of 55.6 months (range 47-60 months). Group E2 was made up of 36 children, 17 girls and 19 boys with a mean age of 53.6 months (range 48-60 months). The control group (C1) was made up of 64 children, 29 girls and 35 boys with a mean age of 55.6 months (range 48-63 months).

The 64 participants in the control group (C1) were obtained from 4 preschools, 3 from a small city, population 21,000, and 1 from a small rural town, population 1,000. The participants in the experimental groups (E1 & E2) were also drawn from 4 preschools. One preschool in the experimental study differed from that used in the control study because other studies were taking place at St. Peter's which necessitated using a different preschool for the present study. See Table 4.2

Table 4.2 Preschools attended by group

Preschool	Groups	
1. Hobbit	E1	C1
2. Uralla	E1	C1
3. Community	E2	C1
4. Adventure Land	E2	
5. St. Peters		C1

The control group (C1) data was taken from a previous study conducted by Byrne & Fielding-Barnsley in 1990, see Byrne & Fielding-Barnsley (1991). The experimental group in the 1991 study became the control group in the present study (see Table 4.3).

Table 4.3 Time Line of Experiment 1

Control Preschools	Study 1 Preschools
Researchers	Researcher
Byrne & Fielding-Barnsley	Fielding-Barnsley
1990 July - October	1994 July - October
	E1 n38
	E2 n36
E n64 becomes C1 1994 →	C1 n64

Participants were assigned to the experimental groups by preschool attended. This was necessary because the preschool director was involved in the shared book reading component of the study. It would have been impractical to have two groups of children within each preschool with one group listening to a story and the other group being denied a story. The control group (C1) was evenly distributed between the 4 preschools in Byrne & Fielding-Barnsley's 1990 study (see Table 4.2).

4.3.2 Teachers

The only direct input that the two teachers had was with the two experimental groups. The two teachers, in the preschools involved in shared book reading, were equally qualified with 21 and 19 years teaching experience respectively. Both teachers were instructed, by the researcher, on how to read the selected books with the children involved in the study. A printed handout (See Appendix B) of shared book reading ideas was given to both teachers. All other teaching was conducted by the writer and may be viewed in the accompanying video (see Appendix E).

4.3.3 Ethical Considerations.

Firstly, permission was requested to conduct the reported study from The Deputy Vice Chancellor's Advisory Committee on Ethics in Experimentation on Human Participants. This permission was granted which allowed for the next stage of permission to be requested.

The director and the board of the four preschools were approached for permission to conduct research with the children. A letter was sent to the parents of each child outlining the principles of the research. A tear off section was included, at the bottom of the letter for the parent to approve of their child being part of the study. Permission was also requested for the child to be included in the second part of the study which would be carried out in kindergarten. Parents were given the option of withdrawing their child from the study at any time. See Appendix A.

A follow up letter was sent to the parents of each child at the beginning of the teaching programme. An outline of the components of the study was given and an appeal for the parents to assist their children with their homework. See Appendix A

At the conclusion of the programme the results for each child were given to the director at the preschool. The parents were able to see the scores for their child and contact the researcher if they had any queries.

4.4 Prettests

All participants were administered the Peabody Picture Vocabulary Test (P.P.V.T.), to assess verbal intelligence. The children's knowledge of books and print conventions was measured with Marie Clay's (1975) Concepts About Print test, Sand version (CAP). The rationale for using these two tests was to assess the value of

including shared book reading as an independent variable in the design of the present study. Knowledge of the names of the letters of the alphabet was assessed by a "recognition" test. Names were pronounced, with the child required to point to 1 of 5/6 letters displayed on a card. This was done to reduce failure when searching for one letter in the whole alphabet. Recognition of the letters is an easier task and usually generates a higher score than a "recall' task, eg. "Find the one that says s" rather than " What does this one say?" (Byrne & Fielding-Barnsley, 1993)

Phoneme identity was measured using a test devised by Byrne and Fielding-Barnsley (1991). The test consists of 3 practice items and 12 test items for recognition of initial sounds and a similar test of 15 items for recognition of final sounds. The practice items consisted of a picture of a football, and the child was asked which of three pictures (**war**drobe, **tele**phone, **foot**path) started the same as **foot**ball. The first syllable was emphasised by the writer. The next practice item also emphasised the first syllable; target word, **pen**cil, followed by, **pen**guin, **carr**ot, **kitt**en. The third practice item concentrated on the phoneme which was emphasised; target, **v**an, followed by; **s**nail, **t**ie, **v**ase. The twelve test items followed, one of which was, lamp: shoe, lock, heart. The initial sound was not emphasised in the test items. The same format was used for ending sounds, e.g., snow**man**: traffic**light**, beach**ball**, post**man**. was the first practice item. Drum: horse, swim, kite was an example of a test item. The sounds tested were a sample of those taught in the Sound Foundations programme; *s, m, t, l.* (see procedure).

The rationale for using this test was that it was necessary to use the same measure as used for the control group in the Byrne & Fielding-Barnsley (1990) study. This test of phoneme awareness was designed by Stanovich, Cunningham & Cramer,

(1984). The reliability for Initial Consonant same was .83 and for Final Consonant same was .72. The validity of this test can also be demonstrated by the findings of the Stanovich et al. study (1990). Phonological tasks were assessed as a function of reader skill. The *t* value for Initial Consonant same was 3.43 and for Final Consonant same was 3.62, both significant at $p < .01$. In Byrne & Fielding-Barnsley's 1993 study it was also shown that this test of phonemic awareness correlated with a posttest of simple decoding one year later, .44 with preschool measures of phonemic awareness and .58 with kindergarten measures of phonemic awareness.

A measure of attitude to reading was also administered to each child in the experimental groups. A shortened version of The Elementary Reading Attitude Survey (McKenna & Kerr, 1990) was used which was better suited to a preschool population. Questions such as " How do you feel when it's time for reading class?" were omitted. The survey constituted 10 questions and used a Likert scale of 4 Garfield faces as a response. The use of four points was based on a substantial body of research suggesting that young children typically can discriminate among no more than five discrete bits of information simultaneously (McKenna & Kear, 1990). The range, which was explained to children thus, was; Garfield "very happy", "a little bit happy", "a bit sad", and "very sad". Some examples of the questions asked were; "How do you feel when someone reads a book to you at preschool?", "How do you feel about someone reading to you instead of playing?" (See Appendix C for full test details). The teachers at the 4 preschools were also given a reading attitude question to answer for each child in the study. The question was, "How much do you think this child enjoys being read to?" As the teachers were involved in the shared book reading they would be aware of how the children in the study reacted to story books.

An adapted version of The Stony Brook Family Reading Survey (Whitehurst, 1993) was completed by a parent of each child in the experimental groups. The literacy environment, as measured by this survey, accounted for 18.5% of the variance on a measure of children's language scores in the Whitehurst (1994) study. This survey constituted 6 questions relating to the child's reading habits and 2 questions appertaining to the educational levels of the parents (see Appendix C). The full questionnaire, of 55 questions, was not administered because of length and some questions related only to American ethnic groups. The questions giving the highest correlations with child language scores in Whitehurst's 1994 study, were selected. The correlations for seven of the eight questions were all significant at $p < 0.001$. Question number 4, *"How often does your child ask to be read to?"*, was not significant but was included as a measure of a child initiated response. The rationale for this was that child initiated responses to reading books have shown high correlations with progress in reading (Scarborough, 1992).

4.5 Posttests

All prettests, excepting The Stony Brook Family Reading Survey, were readministered. Two additional tests were also administered. These were; a critical letter test and a forced word choice test. The critical letter test involved the participant recognising the grapheme corresponding to the sound spoken by the writer. The 6 letters, in lower case and 7cm height, were presented on a large card. The critical letters were those which had been taught in the Sound Foundations programme, (see Stimuli section, page 143). The forced word choice test involved the participant choosing whether the presented word *sat* said either *sat* or *mat*. Note that

the participant was not actually asked to read the word but to make a choice. For the above example the participant could give the correct response by noting that the displayed word began with an *s* and not an *m*. The test constituted 12 items incorporating the following words; *sat, mat, pam, lam, tap, sap, map, pat, lap* and *pal.* The critical letter was in initial position for 6 items and final position for the other 6. The children were alerted to the fact that they needed to attend to something different for ending sound items by being told, "This is a bit trickier, look at the word very carefully before you decide." An example of a final item was; *pat* displayed, "Does this say *pal* or *pat*?" Order of presentation, within beginning and ending sound, was randomised. The validity of these tests has been demonstrated in Byrne & Fielding-Barnsley's 1991 study. The forced word choice test is sensitive to the teaching of phonemic awareness and letter knowledge which account for 54% of the variance in this test.

All pre and post tests were administered over two, 20 minute sessions. The writer and one assistant administered the tests.

4.6 Stimuli

The main stimulus for all 3 groups was a pre-reading programme, Sound Foundations, designed by Byrne and Fielding-Barnsley (1991b). This programme focuses on phonemic awareness, the sound components of language. The aim of the programme is to teach preliterate children that spoken, and ultimately written, words are made up of individual sounds. A novel approach of the programme is that it concentrates on only 7 consonants in initial and final position of a word and 2 vowels in initial position only. Previous research by this team (Byrne and Fielding-Barnsley,

1990) has shown that once a child has grasped the concept of sound sharing amongst words he/she can then transfer this knowledge to other letters of the alphabet. The programme was refined even further for the purposes of this study by only teaching 5 consonants; *s, m, p, l, t* in initial and final position, and one vowel, *a*, in initial position.

Sound Foundations consists of large posters, 100x50 cms, depicting many items which either begin or end with the taught sound. The poster for teaching *s* in initial position depicts a seaside scene including; seals, sailboats, sailors, sandwiches and approximately 40 other items beginning with *s*. Other objects are included which do not begin with the target sound. There are posters for each of the critical letters taught. The programme also incorporates work sheets which are used to reinforce the taught sound. Each sound has three accompanying work sheets, the first consists of a target picture, e.g. sun, and four other pictures, two which start with the same sound e.g,. soldier and spoon and two foils; ball and mouse. The second work sheet is of a more complex design and is presented in a matrix of 9 pictures, 5 pictures begin or end with the critical sound and 4 do not. The 5 target pictures always produce 2 lines, one horizontal and one vertical. The third worksheet is an outline of the large coloured poster. Two card games are also part of the kit, one a sound snap game and the other a sound dominoes game. The last component of the kit is a cassette tape with accompanying rhymes, jingles and stories for each target sound.

The two experimental groups were taught to recognise the grapheme corresponding to the taught sound. The Montessori multi sensory method and stimuli were used to teach this concept. The letters are made up of sandpaper glued onto chipboard. The letters are in N.S.W. Foundation Style 7 cms high on boards 12.5

cms high x 14 cms wide. In addition to the sandpaper letters the children were also given mnemonic aids to help in memorising the taught graphemes. Each grapheme was incorporated into a picture of a common object, e.g., the *s* into a snake and the *m* into a mountain. These pictures were then incorporated into a larger picture, see Appendix B. The children took these pictures home with them in weeks ten and eleven respectively.

The last stimulus used for the two experimental groups was a collection of story books for shared book reading. The books were selected on differing criteria. These criteria were: rhyme, repetition, alliteration, vocabulary, large print, etc. A full list of the books used can be found in Appendix B.

A leaflet was also distributed to the preschool teachers who were involved with the children in the study entitled, Shared Book Reading. Book Guide (see Appendix B). These ideas were taken from Grover Whitehurst's (1994) paper. An example is the use of the acronym; CROWD... C= Completion, R= Recall, O = Open ended prompts, W= Wh... questions, D= Distancing. Examples were given to the teacher relating to the particular text for the week (for more detail see Appendix B).

Last, but not least, a frog puppet was used to assist with the teaching.

4.7 Teaching Procedure

4.7.1 Experimental Groups 1 & 2

All the teaching took place at the respective preschools that the children attended. A separate room was made available for the writer and the small group of

children. The teaching procedure may be viewed on the accompanying video (see Appendix E).

Children were taught in small groups of 5- 6 by the writer. There were 11 weeks of teaching and one week of card games at the end to reinforce the sounds learned. Each session lasted for 30 minutes, making a total of six hours instruction per child. The total instruction by the writer amounted to 78 hours spread over four mornings per week for 12 weeks. One sound per week was introduced, in initial position the first week and the same sound in final position the next week. A total of five consonants in initial and final position were taught and one vowel in initial position only. The sounds taught were; *s, m, t, l,* and *p* and the vowel *a.*

4.7.2 Lesson example.

Each lesson began with the introduction of the sound for the week. The writer pronounced the sound and then asked the children to repeat the sound. The children were asked to notice the position of their teeth, tongue and lips while pronouncing the sound. Games were also played to reinforce the sound, "Let's feel the wind on our hands when we say *p.*" "Let's hold our noses and try to say *m.*" The sandpaper letter was then displayed. This is how we write *s.* The children were encouraged to trace the shape of the letter in the air. Each child then traced the sandpaper letter with two or three fingers and pronounced the sound at the same time. Each child traced the letter twice. On the second occasion the children were asked to close their eyes and then asked if they could see the image of the letter, after tracing, with their eyes shut. Attention was drawn to the 'tickly' feeling of the sandpaper letters and it was explained by the writer that this 'tickly' feeling helped to send the shape of the letter

all the way to their brain. This method generated a lot of excitement and interest in the children and they were very keen to trace the letter every week to see if the 'magic tickly' feeling worked again.

The next component of the lesson was the introduction of the Sound Foundations programme. A short jingle was read to the children, emphasising the taught sound. Sometimes the rhyme accompanied the poster depicting the sound for the week. e.g.,. Munch, munch the muffins, muffins and marmalade. Mix the mighty mixture, muffins and marmalade. The poster for *m* included a monster figure sitting at a table making muffins in a microwave.

Each child was then asked to find something in the poster that began or ended with the special sound for the week If the child had difficulty finding an object, then the child was assisted by the writer pointing to something and asking the child to name it. Most posters allowed for each child to have at least two turns. The frog puppet, Froggy, was then asked to find something either starting or ending with the correct sound. Froggy was sometimes wrong so the children were urged to call out " No Froggy!" in loud voices if he was wrong or "Yes Froggy !" if he was right. It was seen as important for negative examples to be given, firstly to indicate that not every word began with the taught sound and secondly, to have contrasting sounds so that the child could hear the difference between the taught sound and other sounds. If Froggy selected 'tummy' for something beginning with *m* the writer would point out, " No Froggy, it's not a mmmummy , it's a tummy."

Next the work sheets were introduced (see Appendix B). The first worksheet required the child to find two of four items which began or ended with the same sound as the first item in the line. The pictures were all named for the children and the first

one always began with the target sound. e.g.,. pear, as the target and pig, sun, cricket, pencil as the choice items. The next worksheet required the child to find 5 items out of a total of 9 items which began or ended with the target sound. The last worksheet, the outline of the poster already introduced at the beginning of the lesson, was sent home with each child for homework. Most children, between 60-70%, completed their homework and returned it the following week.

4.7.3 Experimental Group 1.

This group completed all of the above and were then involved in Shared Book Reading. The writer read the selected book for the week to each small group of children. The books were sometimes selected to complement the sound for the week, e.g.,., for beginning *s,* "Spot's Baby Sister." The children were alerted to the fact that Spot's name started with *s* and the letter pointed out to the children. The children were involved in the reading of the book by being asked questions about the story. The meanings of unknown words were discussed and the children were invited to talk about how the story related to their own experiences. Three of the 11 books read to the children were "Big Books." The writer used these times to point to the print, to show direction, as she read the books. She also selected children to turn the pages. The full list of books is listed in Appendix B. The preschool teacher read the same book, on two different occasions, to the same children during the week. At preschool 1, see Table 4.2, the 14 children would be part of a larger group of 20. At preschool 2, see Table 4.2, all the children were involved in the study. The experimental children were therefore read the same book three times in one week. The preschool teachers were observed whilst reading to the children by the writer. These observations were

informal and occurred on three occasions at each of the preschools. As mentioned previously, both teachers were well experienced with 19 and 21 years teaching respectively. Both teachers included the new concepts as instructed by the writer and both indicated that they saw value in the ideas outlined in the shared book reading handout.

4.7.4 Experimental Group 2

Experimental Group 2 children received the same amount of time with the writer as Experimental Group 1. The time difference caused by Group 2 not being part of the shared book reading was reconciled by spending more time on the worksheet activity. Group 1 children were asked to put a spot on the correct items in the 2 worksheets, whereas the Group 2 children were asked to colour in their pictures. This brought the time to an equivalent 30 minutes per group.

4.7.5 Control Group 1.

This group was involved in the same Sound Foundations programme as both the experimental groups but they were not involved in the explicit alphabet instruction which began each session. The appropriate letter/grapheme was displayed alongside the poster and children were told that this was the letter that said the sound. This was the only reference to the letter made during each session. The control group therefore, had approximately 5 minutes less time per session than the 2 experimental groups.

In week 12 of the programme all 3 groups were introduced to the card games. The games were used as a form of reinforcement for 4 of the learned sounds, *s, p, l,* and *t*. Each group first played a form of snap where the object of the game was to say

snap when one player places a picture card starting or ending with the same sound as the card played previously. Each group also played a sound dominoes game where a card with a picture at either end has to be matched to one with the same beginning or ending sound.

4.8 Statistical analyses

Data analysis will entail analyses of means using analysis of variance (ANOVA) and correlational analyses.

Tukey's HSD (honestly significant difference) procedure for multiple comparisons will also be used, to analyse significant differences in Critical Letter knowledge and results of a forced Word Choice Test. Tukey's test is used to control for any familywise error in two-group comparisons.

Chapter 5

Study 1 Results and Discussion

5.1 Results

5.1.1 Stony Brook Family Reading Survey

5.1.2 Parental Education

5.1.3 Teacher Questionnaire

5.2 Discussion

Chapter 5

Study 1 Results and Discussion

5.1 Results

This chapter presents the results for the preschool component of the study, Study 1.

Three groups were used in Study 1 including: 38 children who were taught phonemic awareness, alphabet knowledge and participated in shared book reading (E1); 36 children who were taught phonemic awareness and alphabet knowledge (E2); and a control group of 64 children who were only taught phonemic awareness (C1).

The means, standard deviations and F values for each of the variables, at prettest, are presented in Table 5.1.

The three groups were initially well matched on all variables. None of the comparisons reached significance, see Table 5.1. The scores on the PPVT show that the three groups performed at an average level, with means and standard deviations close to the population values of 100 and 15, respectively. (E1 mean = 104.40, t (37) = 1.80, p>.05). It could be hypothesised that a preschool group, exposed to more books, would perform at a higher level, on a measure of verbal development, than a random sample from the total population, but the scores on the PPVT show this not to be the case in this study.

The Reading Attitude Questionnaire and The Stony Brook Family Reading Survey were not administered to the Control Group.

Table 5.1 Prettest Data

Group	E1(n=38)		E2(n=36)		C1(n=65)		
	M	SD	M	SD	M	SD	*F* Value[a]
Initial Identity	6.42	2.95	5.47	2.54	6.12	2.73	1.16
Final Identity	5.21	1.96	4.42	1.54	5.20	2.09	2.24
Total Identity	11.63	4.45	9.89	3.29	11.32	4.29	1.95
Alphabet	9.90	5.81	10.39	6.78	12.60	8.36	1.99
CAP	4.29	2.70	5.56	3.04	5.43	2.99	2.29
PPVT	104.40	11.48	103.14	10.15	99.89	12.42	2.07
Reading Attitude	32.30	4.26	30.89	4.26	_____	____	1.97
Family Reading S	30.23	2.70	28.97	3.87	_____	____	2.16
Parental Education	8.74	2.02	7.72	2.14	_____	____	_____

Note. CAP = Concepts About Print test, Sand version. PPVT = Peabody Picture Vocabulary Test- Revised Form M. Maximum possible scores were the following: Initial and Final Identity 12, Total Identity 24, CAP 24, Reading Attitude 40, Family Reading Survey 38.

a = All *ps* >.10

Table 5.1 shows that there were no significant differences among groups on any prettest variables.

The means and standard deviations for each of the variables, at pre and posttest, are presented in Table 5.2 & Table 5.3.

Table 5.2 and Figure 5.4 present the phoneme-identity data for pre and posttesting.

Table 5.2 Pre and Posttest Identity Scores

Group		E1 (n=38)		E2 (n=33)		C1 (n=64)	
		M	SD	M	SD	M	SD
Initial Id.	Prettest	6.42	2.95	5.47	2.54	6.12	2.73
	Posttest	11.47	1.35	11.18	1.47	11.03	1.58
Final Id.	Prettest	5.21	1.96	4.42	1.54	5.20	2.09
	Posttest	11.05	1.16	10.52	1.66	10.36	2.03
Total Id.	Prettest	11.63	4.45	9.89	3.29	11.32	4.29
	Posttest	22.53	2.35	21.70	2.63	21.39	3.42

The results of the ANOVA showed an overall effect, of Time (pre vs posttest), $F(1,132) = 800.65$, $p<.001$. However, the Group by Time interaction was not significant, $F(2, 132) = 1.67$, $p=.19$, indicating that the pre to post improvement was relatively uniform across the two treatment groups. These results reflect the success of training phoneme identity.

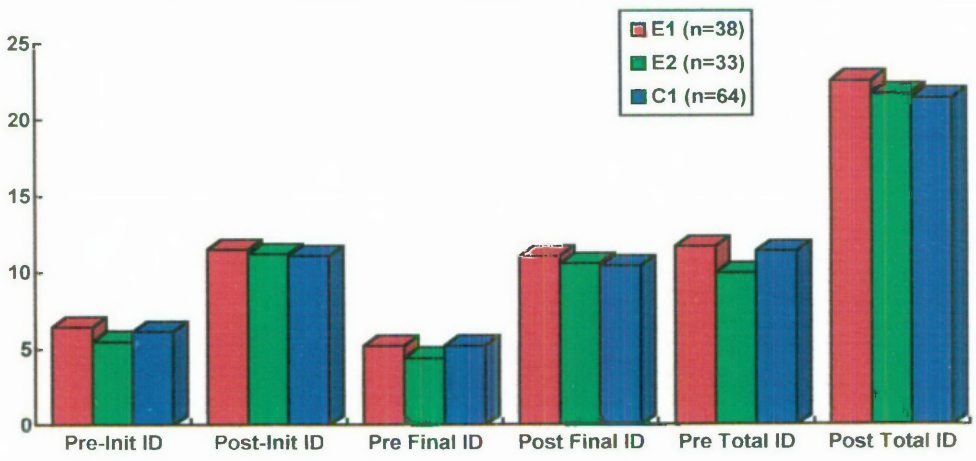

Figure 5.4 Mean Identity Scores. Pre and Posttest

There was an overall effect of Position (Initial vs Final consonant), $F(1, 132) = 42.23$ $p<.001$. Initial Identity was consistently higher than Final Identity, see Table 5.2 Pre and Posttest Identity Scores and Figure 5.4. However, there was no significant Group by Position interaction, $F(2,132) = 0.04$, $p = .96$. Nor was the interaction between Position and Time significant, $F(1,132) = 3.58$, $p = .06$.

Table 5.3 Pre and Posttest Pre-Reading Measures

Group		E1(n=38)		E2(n=33)	
		M	SD	M	SD
Alphabet					
	Prettest	9.90	5.81	10.39	6.78
	Posttest	16.24	5.83	16.06	6.26
CAP					
	Prettest	4.29	2.70	5.56	3.04
	Posttest	10.12	3.87	9.30	3.12
PPVT					
	Prettest	104.40	11.48	103.14	10.15
	Posttest	111.24	14.00	109.00	11.62
Reading Attitude					
	Prettest	32.30	4.26	30.89	4.26
	Posttest	32.11	5.05	32.03	4.81

Note. CAP = Concepts About Print test, Sand version. PPVT = Peabody Picture Vocabulary Test- Revised Form L.

The results of the ANOVA showed an overall effect, of Time (pre vs posttest), for alphabet knowledge, $F(1,69) = 139.34$, $p<.001$. However, the Group by Time interaction was not significant, $F(1,69) = 1.41$, $p= 0.24$. Both groups were taught six letters of the alphabet which could account for some of the improvement between pre

and posttesting. However, the inclusion of shared book reading did not increase scores of alphabet knowledge.

The results of the ANOVA analysis for Concepts About Print. showed an overall effect of Time, $F(1, 69) = 99.65$, $p < .001$. There was also a significant Group by Time interaction, $F(1, 69) = 5.48$, $p = < .05$. It was hypothesised that the shared book reading group would have an increased awareness of concepts about print. The children in the shared book reading group were made aware of the direction of print which was one of the measures included in the test of CAP. However the instruction was implicit rather than explicit. The writer traced the print with her finger whilst reading but no verbal explanation was given about the direction of the print.

The ANOVA results for the Peabody Picture Vocabulary Test showed an overall effect of Time, $F(1, 69) = 25.57$, $p < .001$. There was no significant Group by Time interaction, $F(1, 69) = 0.07$, $p = 0.79$. It was hypothesised that there would be a significant increase in PPVT scores for the shared book reading group. The shared book reading group was given repeated exposure to books which should have improved its vocabulary. However the PPVT does not necessarily include those words to which the children have been exposed.

The Reading Attitude survey showed neither an overall effect of Time, $F(1,67) = 0.75$, $p=0.39$ or a Group interaction over Time, $F(1,67) = 1.20$, $p=0.28$. Again it was hypothesised that the shared book reading group would show an improved attitude to reading books after a 12 week programme designed to foster an interest in reading.

In conclusion, for Alphabet Knowledge, CAP and PPVT shown in Table 5.3, there was a significant effect of Time (pre versus posttest) but only one significant Group by Time effect, for Concepts About Print. The inclusion of Shared Book Reading, for Experimental Group 1, has shown a positive effect on a test for awareness of print, (CAP).

Table 5.4 and Figure 5.5 present the post treatment measures of Critical Letter Knowledge and scores on a Word Choice task which measures early decoding ability.

Table 5.4 Posttest Critical Letter and Word Choice Scores

Group	E1(n=38)		E2(n=33)		C1(n=64)	
	M	SD	M	SD	M	SD
Critical Letters	5.71	0.69	5.58	0.87	3.89	2.18
Word Choice	10.40	1.53	10.12	2.04	8.13	2.78

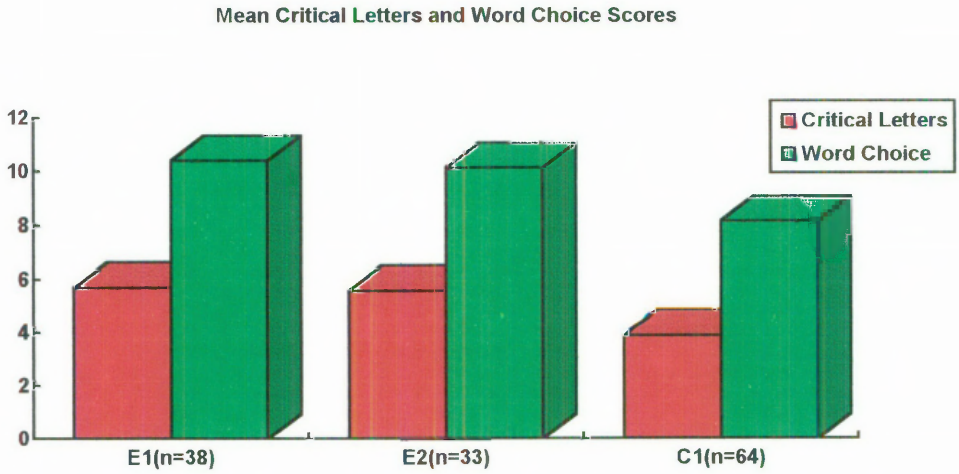

Figure 5.5 Mean critical letters and word choice scores

Table 5.4 and Figure 5.5 present the post treatment measures of Critical Letter Knowledge and scores on a Word Choice task which measures early decoding ability.

The results of the ANOVA analysis showed a main effect of Group for Critical Letters, $F(2,132) = 20.11$, $p<.001$. Tukey multiple comparisons showed that there was no significant difference in Critical Letter knowledge between the Experimental groups, E1 and E2, but that the Experimental Groups were both superior to the Control Group.

There was also a main effect of Group for the Word Choice Test, $F(2,132) = 14.58$, $p<.001$. Tukey multiple comparisons showed that there was no significant difference in the Word Choice Test scores between the Experimental groups, E1 and E2, but that the Experimental Groups were both superior to the Control Group.

To test the hypotheses that phonemic awareness and critical letter knowledge are needed in combination for decoding (Word Choice), the participants from the three groups were classified as passing or failing on Phoneme Identity, Critical Letter knowledge and Word Choice.

Following Byrne & Fielding-Barnsley's (1991) study, the criteria selected for passing and failing were; for Word Choice, 9 out of 12 (75%; chance = 50%); for Phoneme Identity, 16 out of 24 (67%; chance = 33%); and for Critical letter knowledge, 4 out of the 5 consonants. (Knowledge of the sound of *a* was disregarded because *a* was not a discriminating letter; *a* was present in all of the test words. Knowledge of 4 out of the 5 consonants would in principle permit perfect performance in a forced-choice situation.)

From the two experimental groups, E1 & E2, a total of 11 children failed the Word Choice Test, five from E1 and six from E2. Two children failed on Critical Letters, one from each group. Two children failed on the Total Identity score, one from each group. See Table 5.5

Table 5.5 Numbers of participants Passing and Failing on Word Choice, Phoneme Identity, and Critical Letter Knowledge

	CL+ PI+		CL+ PI-		CL- PI+		CL- PI-	
Group	WC+	WC-	WC+	WC-	WC+	WC-	WC+	WC-
E1	33	4	0	1	0	0	0	0
E2	27	4	0	0	1	1	0	0
C1	28	6	0	1	2	24	0	2
Total	88	15	0	2	3	24	0	2

Note. + = pass; - = fail; CL = critical letter knowledge; PI = phoneme identity; WC = word choice.

Table 5.5 indicates that even when children are secure in measures of Phoneme Identity and Critical Letters it is still possible for them to fail on the Word Choice task. There are 15 children who fall into this category. There are also children who don't conform to the plausible hypothesis that Critical Letter Knowledge and Phoneme Identity must be in place to pass on the forced Word Choice Test. There are three children who are in the WC+ cell who have failed on their CL knowledge. The two children from the Control Group who were in this cell can be explained by the fact that one was a native Japanese speaker and failed on the consonant *l* (she looked for an *r*). She knew 3 of the other 4 consonants. The other child knew the names but not the sounds of all the letters. The one child in the Experimental Group was more

difficult to explain, she knew *s, p* and *t* but was not secure on *m, l* and *a*, knowing 3 letters could be sufficient to score 10 out of 12, which this child did.

Sixty children from the total of 71 children in the two experimental groups passed the Word Choice Test. Thirty children from the total of 63 children in the control group passed the Word Choice test.

5.1.1 Stony Brook Family Reading Survey

This questionnaire consisted of eight questions, six of the questions related to the reading habits of the family and the other two questions related to the parents' education. The analysis is presented in two sections relating to the above classification. None of the questions relating to the family reading habits correlated with any of the measures in this study (see Table 5.6).

Table 5.6 Correlations Between Family Reading Habits and Prereading Measures

FRS	Q1	Q2	Q3	Q4	Q5	Q6	FRS TOT
IDI	-0.13	-0.01	0.05	0.06	-0.12	0.06	-0.03
IDF	-0.07	-0.17	0.15	0.06	-0.19	-0.01	-0.12
ALPH	0.24	0.09	0.25	0.16	-0.01	-0.12	0.17
CAP	0.11	0.04	0.04	0.05	-0.09	-0.05	0.04
PPVT	0.23	0.13	-0.11	0.25	0.10	0.07	0.24
RA	-0.10	-0.04	0.00	-0.02	-0.12	-0.11	-0.12
IDI2	-0.01	0.22	0.04	0.10	0.21	-0.22	0.15
IDF2	-0.12	0.05	0.20	-0.13	0.00	-0.02	-0.03
ALP2	0.11	-0.01	0.09	0.12	-0.02	-0.20	0.02
CAP2	0.34	-0.06	0.16	0.38	0.22	-0.01	0.29
PPVT2	0.32	-0.01	-0.04	0.31	-0.01	0.06	0.20
RA2	0.15	0.09	0.06	0.03	-0.03	0.10	0.13
CRITL	-0.09	0.04	-0.01	-0.09	-0.12	0.11	-0.04
WC	0.09	-0.01	0.09	0.25	0.22	-0.19	0.13

Note. FRS = Family Reading Survey(see Appendix C for Q1-Q6) IDI = Identity Initial, IDF = Identity Final, Alph = Alphabet knowledge, CAP = Concepts About Print test, Sand version. PPVT = Peabody Picture Vocabulary Test- Revised Form M, RA = Reading Attitude, CRITL = Critical Letters, WC = Word Choice.
After Bonferroni adjustment, none of these correlations is significantly greater than zero.

5.1.2 Parental Education

The parental education values in Table 5.6 were calculated from two questions in The Stony Brook Family Reading Survey. One question related to the primary caregiver and the other to their spouse. A ranking of 1 was given for schooling to less than 10^{th} grade to a maximum of 6 for a university degree. Parental education

correlated with the child's score on the Peabody Picture Vocabulary Test, $r = .40$, $p < .01$.

5.1.3 Teacher Questionnaire

The results of the teacher questionnaire have not been included as all the four preschool teachers ranked most of the children in the upper quartile of the 4 item Likert scale. Only four children were given a score of 3. The question was, "How do you think this child feels when you are reading to him/her?"

5.2 Discussion

The data clearly show that the instruction in phonemic awareness was successful with increased scores in both initial and final identity at posttesting. There were higher overall scores for initial consonant identity over final consonant identity. It is interesting that the identity scores were in the same direction at prettest, attesting to the difficulty of noticing final sounds versus beginning sounds. It is also noteworthy that the implementation of the Sound Foundations programme was successful in training the concept of final sounds as effectively as training initial sounds. It can be seen in Table 5.3 and Figure 5.4, that the scores for final identity were lower at prettest than scores for initial identity, but that the increase was comparatively greater for final identity at posttest. The main effect of phoneme position was also significant in Byrne & Fielding-Barnsley's 1991 study , $F(1,22) = 34.43, p<.01$.

In Byrne & Fielding-Barnsley's 1991 study, it was found that knowledge of phoneme identity for some sounds had a 'flow on' effect to other sounds. In their

study they tested for untrained sounds as well as trained sounds and found that the children were able to transfer their knowledge and pass a test of phoneme identity for untrained sounds. It could be argued that the children in the present study would meet with the same success as they were trained in phonemic awareness using the same programme, Sound Foundations (1991b).

This study has added weight to claims made in previous studies (Byrne & Fielding-Barnsley 1991a, Bradley & Bryant, 1983) in that it is possible for preschool children to understand the concept of phonemic awareness during their final year at preschool. The claim may be made that preschool is not a time for formal instruction but the children do not seem to find the training arduous or formal in any sense, in fact most of the children were eager to take part.

Phonemic awareness is such a vital precursor to learning to read as has been shown by several researchers (e.g., Bradley & Bryant,1983; Bryant, Bradley, Maclean, & Crossland, 1989), that it seems negligent not to take this opportunity to teach children when they are obviously very capable of learning. Conditions may be more favourable at preschool as the teacher/child ratio is smaller than in infants/primary classes. A study by Byrne & Fielding-Barnsley (1995) has shown that a preschool programme involving the teachers, rather than a researcher, has been successful in teaching phonemic awareness. The results were not as impressive as their similar studies where the programme was implemented by a researcher, but it did conclude that the children showed greater progress in aspects of phonemic awareness than the control condition from a previous study.

There still remains the question as to whether more children would be successful if the training was left to a later stage in the child's schooling. Studies,

with successful results, by Ingvar Lundberg (1995) in Norway, where the children do not start official schooling until they are seven years old, could be part of the answer but it is difficult to compare these children with Australian children as the Norwegian language is more phonetically based than the English language.

The Steiner method of education also leaves the study of formal reading until children are much older. The Steiner philosophy recommends introducing the official study of reading at the emergence of the second teeth of the children, at about age seven years. At this age the child has developed the cognitive skill to deal with abstract symbols adequately (Steiner, 1981, p139). The Steiner theory is strongly influenced by Piagetian stages of development. (The writer is unaware of any studies evaluating this method of teaching reading).

However the evidence of recent research outweighs the theory put forward earlier by linguists, (e.g., Fromkin & Rodman, 1978) that the skill of identifying phonemes within words is not achieved before about seven years of age.

It has been noted by several researchers that phonemic awareness is necessary but not sufficient for early reading (Bradley & Bryant,1983, Byrne & Fielding-Barnsley, 1991). Apparently, there are aspects over and above phonemic awareness that contribute to success in early reading acquisition (Hoien, Lundberg, Stanovich & Bjaalid, 1995). In their study it was noted that the contribution from phonemic awareness was substantial and explained about one third of the variance in reading. The question of; 'What else is necessary for early reading acquisition?', was answered in part by the present study.

The question which Study 1 aimed to answer was: Will the addition of explicit instruction in alphabet knowledge and the inclusion of shared book reading result in a higher percentage of children passing a simple decoding test? The results of this study help to confirm that alphabet knowledge is necessary in addition to phonemic awareness for children to be able to decode.

The percentage of children that passed the Word Choice test in the control group was 46.9 % whereas 85.9 % passed on the same test in the two experimental groups. It could be hypothesised that this difference was a result of the explicit instruction in alphabet knowledge which both the experimental groups received. The control group received no explicit instruction in alphabet knowledge.

Two children, from a total of 71, failed on the test of six critical letters which were part of the programme. Both these children knew three of the six letters. The methods used to teach the six letters can be said to have been successful in this respect. The Montessori multi-sensory method was a simple and effective way of instilling both the sound and the form of the graphemes for most children. Although it was not a primary aim of this study to teach the children how to write the letters they were all keen to try and form the letters. Several children wrote the letter for the week on their work sheets (see Appendix B). The letters which the children found most difficult to learn were *t* and *l*. It is assumed that the similarity of the appearance of these two letters may be the cause of the confusion. In contrast, twenty-eight of the sixty four children in the control group, who received no explicit instruction in alphabet knowledge, failed on the critical letters test.

The shared book reading component does not show the same convincing results. Similar disappointing results were found by Scarborough and Dobrich (1994),

they concluded that the overall effect of reading to preschoolers can account for only about 8% of the variance in reading achievement in early school years.

It is difficult to deduce whether the shared book reading could have had a more promising long term effect. A longitudinal study similar to the Byrne & Fielding-Barnsley (1991) study may have shown more beneficial effects for the experimental children who were involved in the shared book reading. The effects of Shared Book Reading on the measures of verbal intelligence, (PPVT), and Reading Attitude could have been significant if this study had been extended over a longer period of time. As the children became more confident readers they would have been exposed to more books and thereby increased their vocabulary and positive attitudes to reading.

Another reason for the disappointing results for the shared book reading group could be the validity of the instruments used to measure the effects. It was hypothesised that the shared book reading group (E1) would have had increased its score on the Reading Attitude Test. If the children had become more involved in the reading and enjoyment of books, then answers to such questions as, "How do you feel when someone reads a book to you at preschool?" should generate a more favourable response from pre to posttest.

The Reading Attitude questionnaire also failed to tap the true responses from the children as some of the questions tended to be ambiguous and generated answers which were not related to the reading of books. eg. "How do you feel about going to a bookshop?" generated answers such as; "It makes me feel sad because Mum won't buy me a book." or " It makes me feel sad because I get tired feet."

The social desirability factor, described in more detail later in regard to the responses to The Family Reading Survey, could account for some of the high scores

on The Reading Attitude questionnaire. The children may have aimed to give the correct or, 'socially desirable' response to, "How do you feel when someone reads a book to you at preschool?"

Another factor explaining the disappointing results of shared book reading could have been that the programme was not implemented in the home. The follow up reading of the shared book in the preschool was not a good substitute for shared book reading in the home. Other studies have shown that effects on language were large, but only for those children whose primary caregivers had been actively involved in the at-home component of the program (Epstein, Whitehurst, Angell, Payne, Crone, & Fischel, 1994). The intentions of the proponents of shared book reading were that the book should be shared with the child in the home environment.

Nevertheless, the positive correlation between Shared Book Reading and the CAP test are very encouraging. If a child is armed with the knowledge that: the print tells the story, that print runs from left to right, and that words are separated by spaces etc.(See Appendix C for full test questions), then that child is off to a better start in early reading than the child who is unaware of these concepts.

Other favourable results have been reported for children in a study conducted in a Mexican day care centre " Large differences favouring the intervention group were found on all standardised language posttests, including a delayed posttest given 2 months after the intervention was completed." (Valdez-Menchaca & Whitehurst, 1994). The 20, two-year-old children in this study were from a low SES district. The important difference between the Mexican study and the present study was that the children were read to on an individual basis, whereas, in the present study the children

were read to either in groups of 5/6 or even larger groupings in the follow up readings at the preschool.

The Stony Brook Family Reading Survey was completed by most parents of the children in the study. The total possible score for the 8 questions in this survey was 38. The mean scores of 32.30 and 30.89 for E1 and E2 respectively are close to ceiling, with small standard deviations. This type of questionnaire may tend to elicit higher scores when there is a tendency to feel that, as a parent, you are doing the best for your child (Fitzgerald, Spiegel, & Cunningham, 1991). Questions such as; 'At what age did you or another family member begin to read your child?', or 'How often does your child look at books by himself or herself?' are examples of this type of question. Most parents answered that they began reading to their child at either 0-6 months or 7-12 months and that their four year old children asked to be read to almost daily. This phenomenon is well known in social psychology and termed, 'social desirability'. It would be worth noting, for future development of questionnaires in this area, the social desirability scales. The most widely used scale is the Marlowe-Crowne Scale (Crowne & Marlowe, 1960). Questions may relate to desirable but uncommon behaviours such as admitting mistakes or undesirable but common behaviours such as, gossiping. Respondents are asked to respond "True" or "False" to 18 items keyed in the true direction and 15 in the false direction. Scores range from 0-33, with higher scores representing higher need for approval. It is questionable whether this type of scale would tap the area of 'parental desire' specifically. Some scales typically use 'lie detector' type questions embedded in the body of the questionnaire. Other researchers, (Senechal, LeFevre, Hudson & Lawson, 1996) have incorporated instruments to assess book exposure which are free of social desirability

biases. Senecahl et al. measured parents' knowledge of story books as a proxy measure of frequency of reading. They used a checklist measure of children's book titles to control for social desirability. They assumed that parents who read more frequently to their child should know more about children's literature than those who read less frequently. Checklist measures of print exposure have been found to be better predictors of reading comprehension and word recognition than self-reports of frequency of reading (Stanovich & West, 1989).

The correlations in Table 5.6 do not show any evidence that reading to your child daily at an early age has any benefits for attaining prereading skills, as measured by this study. It could be hypothesised, that a child in such an ideal reading environment would have increased their score of verbal intelligence (PPVT) or have a higher awareness about the conventions of books and print (CAP) or even, a better attitude to reading books (R A), but this was not the case in this study.

Items from the Stony Brook Family Reading Survey (Whitehurst, 1992) have been shown to correlate strongly with children's language and emergent literacy skills (Payne, Whitehurst, & Angell, 1994). In responses to the writer's query on this issue, Whitehurst made the point that;

> There are likely to be very large differences between your subject population and mine. Poverty in the U.S., then and now, represents a very different context for developing children than a working class environment in Australia. It is not at all rare, for instance, for children in my sample to have no picture books in the home *(G.J. Whitehurst, personal communication, October 10, 1995).*

These are valid points and should be taken into consideration when deciding on measures for differing communities.

An interesting trend occurred in the measure of verbal intelligence (PPVT). As can be seen in Table 5.3 both experimental groups showed an overall effect of Time (pre - Posttest), $F(1,69) = 25.27$, $p < .001$. This cannot be explained by the inclusion of shared book reading as there was no significant Group by Time interaction. There could be several explanations for this trend; a preschool effect of increased exposure to books, exposure to new television programmes emphasising new vocabulary, e.g., Sesame Street, or the effect of the Sound Foundations instructional materials.

A check was carried out by the writer for words which appeared in the Sound Foundations posters and words which also appeared in the PPVT-R, Form L. There were nine words which fell into this category. It could be hypothesised that, even after one exposure to these words, the children would then recognise them in a subsequent test. This then seems a possible explanation for the increased vocabulary scores on the PPVT which were demonstrated in this study.

The question still remains 'What else is necessary, in addition to phonemic awareness, alphabet knowledge and shared book reading to fulfil the sufficiency requirement for successful early reading?' The second part of the study is discussed in Chapter 6 and attempts to answer this question.