Does a combined dialogic and print referencing reading program improve the vocabulary and print knowledge of children aged 4-5?

Maria Blakemore

Major Project for MSc Research Methods in Psychology

Anglia Ruskin University

September, 2014

Abstract

Dialogic reading (Whitehurst et al., 1988) has a positive effect on the vocabulary of young children (Whitehurst et al., 1994). Knowledge of print is a strong predictor of later reading ability (McCardle et al., 2001). Adults using a print referencing style refer explicitly to aspects of the printed word (Justice & Ezell, 2004). Justice et al. (2009a) recommended coupling the reading styles to see if their simultaneous use could improve both the vocabulary and print knowledge of young children. This current study is the first assessment of a combined approach. Within the between-subjects design 55 children aged 4-5 were recruited from 2 schools. The children in the experimental condition read with the researcher using the print referencing/ dialogic reading program in small groups over a 5 week period. The children in the control condition were read to in a more didactic way. The children's receptive vocabulary was assessed, both before and after the program, using the PPVT-4 scale. They were also tested on their expressive and receptive vocabulary, and print knowledge using researcher-designed tests. A Quade's rank analysis of covariance indicated there was a significant improvement in children's print knowledge but no improvement in vocabulary. Correlational analysis suggested there were significant relationships between both receptive and expressive vocabulary, and print knowledge. Future studies of this program may be useful to determine whether a more long-term or intensive program might improve vocabulary and if the program could be adapted for use with pre-schoolers.

Introduction

Within early years education there is a need for research into educational systems which support the growth of young children's literacy skills (Shanahan & Lonigan, 2010). This includes research into educational programs which contribute to the improvement of children's skills as well as information on the skills and abilities of young children which can be used to predict later outcomes in literacy attainment (Shanahan & Lonigan, 2010).

There is agreement amongst researchers (Snow et al., 1998; Justice et al., 2009a) that preventative measures are the most effective interventions for reducing the number of children who have poor attainment in literacy in the early years of schooling. Preventative measures are most successful when delivered systematically and overtly within the very early years of a child's education so as to prevent early difficulties with literacy developing into serious disabilities later on that may need extensive and costly interventions (Torgesen, 1998). Shanahan and Lonigan (2010) maintain that future research should consider longitudinal studies of combined approaches which have been shown to have positive effects on literacy when used independently of one another. Two such approaches are dialogic reading (Whitehurst et al., 1988) and print referencing (Justice et al., 2009a).

Dialogic book reading is a form of shared reading where the adult and child take turns in a conversation about a book (Whitehurst et al., 1988). The child is encouraged to contribute, they receive feedback from the adult and the adult in turn adjusts their reading style to the child's aptitude and interest (D. H. Arnold, Lonigan, Whitehurst & Epstein, 1994). In dialogic reading the child is encouraged to be an active participant rather than a passive listener (D. S. Arnold & Whitehurst, 1994), primarily through careful questioning by the adult reader (Whitehurst et al., 1994). The method centres on open-ended prompts and the expansion of children's remarks and opinions in relation to the story being shared (Brannon & Dauksas, 2014).

The importance of vocabulary knowledge to academic achievement and reading ability, in particular, is widely recognized (Becker, 1977; Anderson & Nagy, 1991). The National Research Council (Snow, Burns & Griffin, 1998) maintains that vocabulary development is an essential objective for children in the first years of formal schooling. Baker, Simmons and Kame'enui, (1997) maintain that vocabulary knowledge is fundamental for language based learning and that children need exposure to the meanings of words that adults use so that they can gain new knowledge. Early childhood is a particularly important stage of life for acquiring new vocabulary with exposure to stories offering a significant method for increasing children's vocabulary (Justice & Sofka, 2010a). Dialogic reading exposes children to a variety of interactions which expands their vocabulary (Wilde & Sage, 2007) and encourages them to experiment with using the newly acquired words themselves in a supportive environment.

Vocabulary can be differentiated by the frequency with which it occurs in everyday language (Justice & Sofka, 2010a). A high frequency word is one which occurs regularly in daily speech, such as door or girl, whereas a low frequency word is one which occurs only occasionally, such as smudge or wish, but is very useful and can be used in a wide variety of contexts (Beck, McKeown & Kucan, 2002). Justice and Sofka (2010a) maintain that reading books with children creates the ideal environment for discussing these low frequency words but that often adults just carry on with the story leading to lost opportunities, as it may be some time before the child hears the word again.

Dialogic reading introduces openings for teaching the meanings of new words (Brannon & Dauksas, 2014). A recent review of studies on the vocabulary of children in their early years (Jalongo & Sobolak, 2011) outlined the necessity for the teaching of vocabulary to include questions, clarifications, reiteration, physically pointing to words, giving examples and providing definitions of words that young children can easily comprehend. Dialogic reading, with its focus on collaboration between the child and the adult, provides an ideal environment for adults to tease out children's ideas about the meanings of words, with the adult addressing misconceptions if necessary.

The vocabulary skills that children require for successful communication can be distinguished into receptive and expressive vocabulary (Justice & Sofka, 2010a). Receptive vocabulary refers to an individual's ability to understand words whilst expressive vocabulary refers to one's ability to produce words, usually through the spoken word (Justice & Sofka, 2010a). Listening to the same story on more than one occasion has a beneficial effect on receptive vocabulary, because the repetition means the child has multiple practice in hearing and therefore retrieving the word from memory, but less so on expressive vocabulary (Sénéchal, 1997). Discussing stories has a beneficial effect on both expressive and receptive vocabulary because the child has the opportunity to both retrieve words and to practise articulating them (Sénéchal, 1997). Whitehurst et al. (1994) demonstrated that dialogic reading had a positive effect on both the expressive and receptive vocabulary of 4 year old children with Atkinson (2013) maintaining that a variety of studies have shown that dialogic book reading improves both expressive and receptive language in pre-schoolers. For example, Scherer and Olswang (1984) demonstrated that a rise in mothers' expansions of children's responses during shared reading was associated with a rise in children's expressive language.

Print awareness is a multifaceted concept that refers to children's developing understanding of the organisation and purpose of the written word (Storch & Whitehurst, 2002; Whitehurst & Lonigan, 1998), which for many children begins before the advent of formal reading programs (Justice & Ezell, 2001). Print knowledge includes awareness of the way in which print is organised, such as reading from the top to the bottom of the page; the names, sounds and appearance of letters; and the way in which print conveys meaning to the reader (Justice et al., 2009a).

Knowledge of print is a critical area of children's early literacy development (Storch & Whitehurst, 2002) and is a strong predictor of later reading ability (McCardle, Scarborough & Catts, 2001). The National Early Literacy Panel (2004) found that print knowledge is consistently related to children's future attainment in word recognition and spelling, and print knowledge is routinely incorporated into preschool learning objectives (Justice et al., 2009a). This means that professionals who work with young children need access to techniques which can be shown to improve their understanding and awareness of print (Justice et al. 2009a).

Print awareness is an aspect of development that is influenced by both genes and the environment (Lemelin et al., 2007). Lemelin et al. (2007) found that letter knowledge was less hereditary, however, than other gauges of school readiness such as ability in numeracy leading researchers such as Justice et al. (2009a) to conclude that print knowledge is strongly influenced by children's environments. Research suggests that it is not just the frequency with which children share books with adults that matters most to the development of print knowledge, but the quality of these interactions (Roberts, Jergens & Burchinal, 2005; Skibbe, Justice, Zucker & McGinty, 2008). It is therefore an aspect of development that can be improved by changes in the environment (Justice et al. 2009a) such as by the use of educational programs.

One such program is the print referencing style of shared reading which aims to explicitly teach children about the forms and purposes of print. Adults using a print referencing style refer overtly to aspects of the printed word rather than expecting children to notice these things implicitly (Justice & Ezell, 2004). When reading with a print referencing style verbal and nonverbal methods are used to amplify children's attention to and interest in print within the stories (Justice et al., 2009a). These methods include asking children questions about print such as, "Can you see the letter *m* on this page?", making statements about print such as, "The title of this book is *Little Smudge*," and moving a finger along the text whilst reading to highlight the direction in which words are read (Justice et al., 2009a).

Use of a print referencing style has been shown to have encouraging effects on children's early literacy skills in a number of areas of print and word awareness (Justice et al., 2009a). Justice et al (2009a) maintain that adults do not naturally use print referencing when reading with children – they tend to read the stories and point to pictures but not refer to print. The evidence suggests however that the technique is relatively easy for parents to implement at home (Justice et al., 2009a). Justice et al. (2009a) studied the effects of a print referencing style on underprivileged pre-schoolers and found that those whose teachers used a print referencing style showed greater improvements on three standardised measures of print understanding.

Justice et al (2009a) were particularly interested in the effectiveness of a print referencing program in classroom settings; and in particular in the effects of teachers' use of print

referencing techniques during whole class story times as compared to their 'normal' style of reading aloud (Justice et al., 2009a). Shanahan and Lonigan (2010) maintain there is a need to translate research which is effective in small group settings into a more naturalistic setting such as the classroom.

Teaching which is explicit and systematic is considered highly important in the early years of a child's education (Connor, Morrison & Slominski, 2006). Justice and Sofka (2010a) recommend a cyclical approach to instruction whereby objectives are revisited several times so that if a child does not grasp the concept initially then they will have other opportunities to do so at a later stage. To address this Justice et al. (2009a) developed a manual detailing a rolling program of print knowledge targets over 30 weeks using 30 story books for teachers to implement a print referencing style. In this current research there is a rolling program of 10 books coupled with 10 print knowledge objectives (Appendix F) with each book/ print knowledge objective experienced twice.

Justice et al., (2009a) also conducted exploratory analyses on the effects of print referencing on children's language development and found that improvements in vocabulary were similar for those children whose teachers used print referencing and those whose teachers read in their normal style. Justice et al. (2009a) recommended, therefore, coupling the dialogic reading and print referencing styles to see if the simultaneous use of both could improve both the vocabulary and print knowledge of young children, thus leading to a single, more efficient, program. This would also be more cost effective.

This current study aims to investigate the impact of a combined program of a print referencing style and dialogic book reading on the vocabulary and print knowledge of children aged 4-5 and is the first assessment of a combined approach. In particular the aims are to see whether these reading styles can improve:

- Children's expressive vocabulary
- Children's receptive vocabulary
- Children's knowledge of print.

The main researcher is a qualified and experienced primary school teacher who has both devised and implemented the research. This means that this current research has some parallels with the previous research by Justice et al. (2009a). As this is a first assessment of the combined approach the current research is of a much shorter duration (5 weeks as compared to 30 weeks) and is conducted with small groups rather than a full class of 30.

Assessments of expressive and receptive vocabulary, and print knowledge were administered both before and after the program. All children were tested individually on their knowledge of print, both before and after the program using a researcher designed test based on the 15 print knowledge objectives identified by Justice and Sofka (2005) for

using print referencing in a methodical way over the course of an academic year. As this current study is necessarily short term and had a combined emphasis with vocabulary it was decided to focus on just 10 of these objectives so that each objective could be the focus of 2 reading sessions for the experimental groups over the 5 week run of the program. The 10 print knowledge objectives (Justice et al., 2009a) included in this study are:

1. page order – the knowledge that books are read from the front to the back
2. page organisation – awareness of how pages with several lines of writing are read from the top to the bottom
3. print direction – the knowledge that text in English moves from the left to the right
4. title of book – knowledge of where the title is positioned in a book and its purpose
5. metalinguistic concept of reading – knowledge of how we gain meaning through the act of reading and that this occurs in different contexts
6. metalinguistic concept of letter – the understanding that letters are symbols used in text
7. word identification – the ability to identify familiar words such as their own name or frequent words such as 'the'
8. short vs. long words – the knowledge that words are made up of different amounts of letters
9. letters vs. words – the knowledge of how words are different to letters
10. concept of word in print – the awareness that a written word corresponds to a spoken word

The omitted objectives were ones that seemed less relevant to the group reading style of the program such as environmental print or were less suitable for children in their first year of formal schooling, such as names of letters. Foundation children in England and Wales are taught to read using phonics based programs, such as Letters and Sounds (Department for Education and Skills, 2007), where they are taught the sound that each letter, or combination of letters, make. This instruction is so intensive that it was felt it would have been very difficult to tease out children's knowledge of letter names.

It is anticipated that these assessments will indicate that vocabulary and print knowledge in the experimental group have improved significantly more than those in the control group.

As outlined above an important focus of educational research is to gain information on the abilities of young children which can be used to predict future outcomes in literacy achievement (Shanahan & Lonigan, 2010). Previous research suggests there is a high

correlation between print knowledge and vocabulary (Cunningham & Stanovich, 1991). In their study Cunningham and Stanovich (1991) found that correlational analysis suggested that exposure to print was a significant predictor of vocabulary. Hemphill and Tivnan (2008) found that whilst both print knowledge and vocabulary were important predictors of reading comprehension in children aged 7, vocabulary remained a key predictor in children aged 9 whilst the predictive influence of early print knowledge scores weakened as children developed. The current study will therefore conduct analyses to investigate correlations between the measures of print knowledge and receptive/ expressive vocabulary. It is expected that these will show a significant relationship between vocabulary and print awareness.

Method

Design

This investigation used a between participants experimental design. The independent variable was assignation to an experimental condition which is participation in reading sessions using a combination of print referencing and dialogic reading; or a control group who will be read to in a more didactic way.

Participants

In total 55 children (33 girls and 22 boys) aged 4-5 participated in this study. Participants were recruited by the author from 2 schools and were all in Foundation Stage (the first year of formal schooling in England and Wales). Letters were sent out to all parents of children in Foundation Stage, via the schools, detailing the aims and procedures of the study. All children for whom parental consent was received were included in the study.

The participating schools are both in the same city in Essex. The first school is an infant's school (School A) with a yearly intake of 50 children from which 36 children (22 girls and 14 boys) were recruited with an average age of 59.64 months. The school receives the pupil premium (additional funding from the government for children who are eligible for free school meals or are in local authority care) for a small fraction of pupils whilst the number of pupils who speak English as an additional language is below average (Ofsted, 2013).

The second school is a one form entry Roman Catholic primary school (School B) from which 19 children (11 girls and 8 boys) were recruited with an average age of 60.47 months. The number of pupils for whom the school receives the pupil premium is average whilst the number of pupils who speak English as an additional language is well above average (Ofsted, 2013).

Class teachers were asked to put participating children into groups of either 4 or 5 children and were also instructed to number the groups. They were asked to ensure groups were mixed by both ability and the amount of reading they did at home. Groups were quasi-

randomly assigned to condition by the number of the group; even numbered groups were assigned to the experimental condition and odd numbered groups to the control condition. In school A there were 8 groups in total. 4 groups were assigned to the control condition and 4 groups were assigned to the experimental condition. In school B there were 4 groups in total. 2 groups were assigned to the control condition and 2 groups were assigned to the experimental condition.

One of the children at School B has been diagnosed with Autistic Spectrum Disorder (ASD) however as this child's scores in the pre-test assessments were above average the individual was included in the program. None of the other participating children have been diagnosed with a learning disorder.

Measures

The children were tested on their receptive vocabulary, both before and after the program, using a researcher designed test and the Peabody Picture Vocabulary Test (PPVT-4) (Dunn & Dunn, 2007a), which was used by Whitehurst et al. (1988) in their research into the benefits of dialogic reading on pre-schoolers. In School A the tests took place in and around the children's classrooms, whilst in School B the tests took place in a quiet side room.

The PPVT-4 has been chosen as a complement to the researcher designed test. The PPVT-4 is an age standardised test which should give results which are reliable and easy to interpret whilst the inclusion of a researcher designed test should give more fine-tuned results as these include vocabulary from the books used in the program.

The PPVT-4 was used to obtain age standardised scores (M = 100, SD = 15) of receptive vocabulary for each child and was included as a complement to the test of receptive vocabulary designed by the student researcher, as outlined below. Examinees begin the test at a starting point which is determined by the individual's age. On average each examinee will be asked to identify 60 words; these start off being quite easy but get progressively harder until they are working at chance levels only. It takes about 12 minutes to administer. In the PPVT-4 children are shown 4 full-colour pictures each time, which includes a picture of the target word and 3 distractor pictures. Children are asked to choose the picture which best exhibits the stimulus word named by the examiner. The PPVT-4 has two parallel test forms, Form A and Form B. Form A was used to obtain children's pre-test scores and Form B to obtain post-test scores.

Children were also assessed on their receptive vocabulary using a researcher designed test. The vocabulary was selected from the books used in the program and were words that occur once or twice only in at least one of the stories. The target words were a mix of low-frequency words such as film star and high-frequency words such as sandwich (Justice & Sofka, 2010a). Appendix A lists the target words and indicates from which book they were taken. Children were shown 4 full-colour pictures for each stimulus word and were asked to

point to the picture they thought best illustrated that word. Each set of 4 pictures included a picture of the target word and 3 distractor pictures. The distractor pictures were chosen carefully to ensure the target word was not too easy to identify and that the distractor pictures were not too close to the correct picture. For example, for the target word *sandwich* children were also shown pictures of cheese and a cracker, a hot dog and a packet of hula hoops. Children scored 1 if they identified the correct word and 0 if they did not. The children were tested on their knowledge of 30 words in total, giving a score in the range of 0-30. Samples of the pictures used for the stimulus words are shown in Appendix B. The pictures were sourced from Google Images and were filtered to include only those images which were free to use, share or modify, even commercially.

Expressive vocabulary was also assessed using a researcher designed test. This used a word definition approach similar to the expressive language subtest of the Comprehensive Receptive and Expressive Vocabulary Test (CREVT) (Wallace & Hammill, 1994). In the CREVT individuals are asked to talk in detail about a stimulus word.

In the expressive vocabulary test designed by the researcher children were asked to say what they thought each word meant and the children's responses were recorded on a Dictaphone. The procedure was similar to the vocabulary sub-test of the Verbal IQ scale of the The Wechsler Preschool and Primary Scale of Intelligence (WPPSI-lll UK) (Wechsler, 2003). For each word the child was asked "What is a ……?" Children were given as long as they needed to reply, although if a child did not respond after about 30 seconds the examiner moved onto the next word. If a child's answer was unclear or vague they were asked, "Can you tell me anymore about it?" The children's responses were transcribed.

The vocabulary was selected from the books used in the program and were words that occur throughout one of the stories, rather than just once or twice. This is because the expressive language assessment requires children to both retrieve a word and articulate what it means (Sénéchal, 1997). Appendix A lists the target words for the expressive vocabulary test and indicates from which book they were taken. The researcher devised a marking scheme (Appendix C) based on the definitions of the stimulus words from the online Oxford Dictionaries website (http://www.oxforddictionaries.com/). For each word children received a score in the range 0-2. They scored 0 if they did not answer or just repeated the stimulus word, 1 if they gave an answer using basic descriptive language such as "white" for the stimulus word *snow* and 2 if their answer indicated they had a good understanding of the word such as "it's watery and falls from the sky". Appendix D shows sample responses given by participants and the scores given by the author.

There were 12 words giving a score in the range 0-24 to reflect differences in the quality of answers given. The test took approximately 5 minutes and took place in a quiet side room in both schools to allow for the effective recording of children's responses.

Appendix E shows the schedule of questions designed to test the 10 aspects of print knowledge and is based on sample print references recommended by Justice et al. (2009b). The implementation of this assessment is based on that of the Preschool Word and Print Awareness Measure (Justice & Ezell, 2001) where the examiner and child share a commercially available story book with a number of structured tasks included (e.g. the child is asked to point to a word on the page to show that they understand the difference between a letter and a word). Two books were used during the testing of print knowledge, *Tim Catchamouse* (McCullagh, 1986) and *You Choose* (Goodhart & Sharratt, 2004). *Tim Catchamouse* (McCullagh, 1986) was chosen because it has a straightforward layout with a clear demarcation between text and pictures which was felt to be important for tasks that required children to indicate that they knew about print conventions such as the direction in which words are read i.e. top to bottom, and left to right. This book also features print in a large font which is an important aspect when asking children to demonstrate their knowledge of print conventions (Justice & Ezell, 2001). *You Choose* (Goodhart & Sharratt, 2004) features numerous colourful pictures and encourages children to use their imagination, aspects which provide motivation during assessment tasks (Justice & Ezell, 2001). This book features many instances of print embedded within bright illustrations and was selected to assess just one of the print objectives, the concept of word in print. For this task children were shown a page which included the use of speech bubbles to indicate what characters were saying; they were told what the character said and then asked to point to the corresponding words.

As there are 10 print knowledge objectives included in the researcher designed test children received a score in the range 0-10 for print knowledge. All tests were administered with each child individually by the researcher and took approximately five minutes. In School A the tests took place in and around the children's classrooms, whilst in School B the tests took place in a quiet side room.

Reliability of tests

The age-standardised scores of the PPVT have a very high reliability with Cronbach's α = .97 for Form A and Cronbach's α = .96 for Form B (Dunn & Dunn, 2007b).

The receptive vocabulary assessment designed by the researcher was also tested for reliability using Cronbach's α. The receptive vocabulary assessment at pre-test appeared to have good internal consistency α = .74; a value of .70 or above for ability tests suggests a scale has good reliability (Field, 2009). Further investigation however suggested that some of the items used were not reliable measures. Ferketich (1991) recommended that corrected item-total correlations should be between .30 and .70 for a good measure. Some researchers however claim that corrected item-total correlations of 0.20 or greater are acceptable (Kline, 1993).

8 of the items (*caterpillar*, *chopping*, *shapes*, *triangle*, *film star*, *trampoline*, *hammock* and *toilet roll*) were either negatively correlated with the scale as a whole or correlated to a value $r < .15$. During the testing itself it was evident that some of these items were problematic. For example, it proved difficult to source a clear picture for the item *film star* and during the assessment it became clear that the children did not recognise the image as representing the word and seemed to be guessing; the few children who made a correct choice in the pre-test for this item tended to make an incorrect choice at the post-test stage with only one child correctly identifying the word during both tests. This observation was corroborated by the reliability statistics with the item *film star* negatively correlating with the total score from the scale. A decision was therefore made to remove these 8 items from the assessment leaving a total of 22 words in the receptive vocabulary test.

The receptive vocabulary test (revised) was again tested for reliability using Cronbach's alpha and once more appeared to have good internal consistency $\alpha = .80$. The remaining 22 words all correlate with the total score to a reasonable degree (lower $r = .19$).

The assessments were also tested to see if there was a correlation between scores on the receptive vocabulary tests. This showed there was a significant relationship between children's pre-test scores on the age-standardised PPVT (Form A) and the receptive vocabulary test designed by the author, $\tau = .49$, $p < .001$.

The expressive vocabulary assessment designed by the researcher was also tested for reliability using Cronbach's alpha. The expressive vocabulary assessment at pre-test appeared to have good internal consistency $\alpha = .80$, however 1 item, snow, did not correlate well with the total score from the scale, $\alpha = .15$ and a decision was made to remove this item from the assessment.

The expressive vocabulary test was again tested for reliability using Cronberg's alpha and once more appeared to have good internal consistency $\alpha = .81$. The remaining 11 words all correlate with the total score to a reasonable degree (lower $r = .23$).

The expressive vocabulary assessment was also tested for inter-rater reliability. Dr. Graeme Jenkinson (GJ), a Research Associate at Cambridge University, was asked to score the responses the children gave during the assessment using the marking scheme developed by the author (MB). Dr. Jenkinson was not given any indication of the scores given by the main researcher for children's responses. Appendix 3 shows the marking guidelines for each word. An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency between the two raters. The inter-rater reliability for the raters was found to be Kappa = 0.76, $p < 0.001$ which is a substantial agreement according to Landis and Koch (1977).

The print knowledge assessment designed by the researcher was also tested for reliability using Cronbach's alpha. The test appeared to have weak internal consistency $\alpha = .55$ with 2

items, the metalinguistic concept of reading and the metalinguistic concept of letters, correlating negatively with the total scale. A decision was therefore made to remove these items from the assessment.

The print knowledge assessment was again tested for reliability after the removal of these 2 items. The test appeared to have reasonable internal consistency α = .62 and is in line with what Kline (1993) maintains is to be expected in the social sciences.

Main Procedure

The reading program used a mix of a print referencing style (Justice & Ezell, 2004) and dialogic reading (Whitehurst et al., 1988) and was devised by the author. The program ran for 5 consecutive weeks in April/May 2014 with the researcher meeting with each group of 4-5 children twice a week for approximately 10-15 minutes, depending on the length of the books being read each time.

There was a rolling program of 10 books and each book was read twice. All children had the same books read to them in the same order. There was also a rolling program of 10 print knowledge objectives which was used in the experimental condition and each objective was a focus in 2 reading sessions. Children in the experimental conditions experienced both the 10 books and the 10 print knowledge objectives in the same order. Appendix F details how this rolling program of books and print objectives was structured.

The books used were selected to feature colourful pictures, different sizes and type of print, and included print embedded within the pictures so that children would be engaged with both the story and the use of print (Justice & Ezell, 2004). A number of the books used in this current study were recommended by Justice and Sofka (2010a): *There's a dragon at my school* (Tyler & Hawthorn, 1996)*, We're going on a bear hunt* (Rosen, Oxenbury, Gibson, Blessed & Staunton, 1989)*, Little Smudge* (Le Néouanic, 2006) and *The very sleepy sloth* (Murray, 2004). Other books were chosen from the local library or from the author's own collection and were selected because the text was suitable for pointing out particular print knowledge objectives or contained appropriate vocabulary. For example *Here comes the rain* (Claybourne & Tarbett, 2009) contains lots of descriptive language about a storm which it was hoped would stimulate conversation about the experiences of the creatures in the story as well as discussion of the children's own memories/ knowledge of storms. It also features a clear lay out of print which was ideal for drawing attention to page order, print direction and page organisation; as well as featuring colourful and interactive 3D pictures.

Each experimental group session included researcher led verbal and non-verbal references to aspects of the printed word (Justice, 2009a) as well as encouraging conversations about the plot and pictures in the stories through the use of questions (Whitehurst, 1994). Each session used a mix of the five forms of questioning which were identified by Whitehurst et

al., 1994) as being particularly useful for facilitating conversations about the stories. These are:

- Completion prompts are fill-in-the-missing-word questions such as, “Two big goggly eyes! It’s a _____?”
- Recall prompts that require the child to remember what has happened in the story such as, “What fell on Maisy’s house?”
- Open ended prompts which require the child to explain in their own words what has happened in the story such as, “Can you say what has just happened in the story?”
- Wh-prompts are what, where and why questions such as, “Why does the dragon have to go home?”
- Distancing prompts that require the child to relate the story to their own experiences such as, “Have you ever played in the snow?” (Whitehurst et al., 1994).

Whitehurst et al. (1994) also recommend embedding these different types of questions into an interactional sequence whereby the adult prompts the child’s response to the narrative, evaluates the child’s answer and expands upon it by adding some extra detail; the child is then encouraged to repeat some of this new information. In such a sequence a child might be asked, “What would it be like if there was a dragon in your school?” to which the child might reply, “Scary.” The adult might then evaluate this answer as basically right but a bit too brief and lacking in detail, and could then provide some material designed to expand upon the child’s idea (Whitehurst et al., 1994) such as, “Yes, I suppose it would be scary if he was breathing fire and knocking books off the shelf with his tail.” At the end of the story the child might be asked a recall question (Whitehurst et al., 1994): “What did we say about what it would be like if there was a dragon in your school?” This technique was also employed within the reading sessions.

Justice and Sofka (2010a) recommend considering the best ways in which individual children or groups can be supported, or scaffolded, in their development of print awareness. Scaffolding refers to methods of instruction which consider the ways in which children increase their understanding by analysing how much support a child needs to be successful (O’Connor, Notari-Syverson & Vadasy, 1998). Scaffolding can be either high or low support, depending on the needs of the individual (Justice & Sofka, 2010a). High-support strategies are required when introducing a new topic or children are experiencing difficulties (Justice & Sofka. 2010a) and include:

- Modelling the answer – the instructor talks their way through the problem, shows how to get to the correct answer and finishes by asking a child to explain how to do it

- Eliciting the answer – the instructor draws attention to a particular feature such as locating the title of the book and then asks a child to indicate where the title would be in the book
- Coparticipation – the child is required to actively engage with the printed word such as by pointing to a short word or a particular letter
- Reducing choices - the adult suggests a small number of possible answers to enable the child to focus on a particular feature (Justice & Sofka, 2010a).

Low-support strategies are required when a child has been exposed to a particular objective and needs encouragement to become more proficient and independent with applying the skill (Justice & Sofka, 2010a). Low support strategies focus on the use of open-ended questioning (Justice & Sofka, 2010a) and include:

- Prediction – the child might be required to predict what the story is about by drawing on their knowledge of the role of the title of a book
- Explanation – the adult expands upon the child's answer by adding more information
- Relating to child's own experience – this could be through the letters in children's own names
- Encouragement – the use of language to remind children that they are familiar with specific concepts (Justice & Sofka, 2010a).

In this current study consideration was given to ways in which children could be supported in their learning of print conventions. The use of scaffolding (Justice & Sofka, 2010a) was employed to ensure children were given the appropriate amount of guidance to facilitate print awareness and discussion of the stories. In early sessions as children were introduced to new books and print concepts this tended to be high support, whereas in later sessions children were encouraged to explain in their own words what was happening in a story or demonstrate their knowledge of a particular print concept. Appendix G outlines the structure of two sample reading sessions, one from an early session (week 1) and one from a later session (week 3). The questions used to teach print knowledge are based on those recommended by Justice and Sofka (2010b).

The program aimed to improve vocabulary in general rather than just the words included in the vocabulary assessments and care was taken to ensure that the program did not teach to the test. Bias was an issue as the author was responsible for designing and administering both the program and the tests. The author tried to reduce bias as much as possible by not looking at the words chosen for the receptive and expressive vocabulary tests once the initial pre-tests had been completed. Pre-tests were completed during the last 2 weeks of the spring term in March/ April 2014. The reading program itself began after a 2 week

holiday period. The author did not mark the pre-test assessments until the program was completed; this was to help ensure, as much as possible, that the researcher did not inadvertently focus on vocabulary or print concepts which children had found more problematic.

The first session of each book/ print objective combination was timed and noted as some books were longer than others and would take longer to read. Each subsequent session for this combination was kept to the same timing to ensure that, as far as possible, all groups were with the researcher for the same amount of time.

The children in the control condition also read with the researcher; however the books were read in a more didactic way with the researcher reading and the children listening. Children in this group experienced the 10 books in exactly the same order and frequency as those in the experimental group, however there were no conversations about the stories and no references made by the researcher to aspects of the printed word. This took a shorter amount of time so for the remainder of the period they did visual tasks such as colouring, dot to dots, or mazes. These were carefully chosen to include no text. This is to ensure that any difference in the test scores between the two groups can be explained by their participation in the program rather than as a result of their receiving attention from the researcher for a different amount of time, as documented by the Hawthorne Effect (Franke & Kaul, 1978).

Results

Table 1 shows the descriptive statistics for the pre-test and post-test scores of the researcher designed tests of receptive and expressive vocabulary and print knowledge, as well as both the raw and age-standardised scores of the PPVT. This shows that on average children made small gains on the tests between the pre-test and the post-test stage. It also shows that on the researcher designed test of receptive vocabulary the mean scores at pre-test were extremely high (19.3 for the experimental group and 18.5 for the control group, out of a possible score of 22).

Table 1: *Means and Standard Deviations for the Scores from the Tests of Expressive and Receptive Vocabulary, Print Knowledge and the PPVT*

		Mean		Standard deviation	
		Pre-test	Post-test	Pre-test	Post-test
Print knowledge	Experimental (N= 27)	5.37	6.93	1.62	0.92
	Control (N= 27)	5.54	6.46	1.90	0.96
Receptive vocabulary	Experimental (N= 27)	19.30	20.56	2.83	1.87
	Control (N= 27)	18.50	19.64	3.56	2.47
Expressive vocabulary	Experimental (N= 27)	10.04	11.37	3.77	3.92
	Control (N=27)	9.26	10.07	4.65	3.81
PPVT (Age-standardised scores)	Experimental (N= 27)	110.81	110.67	13.39	14.85
	Control (N= 27)	108.11	106.04	14.90	15.31
PPVT (Raw scores)	Experimental (N= 27)	95.44	101.59	17.85	20.28
	Control (N= 27)	93.21	95.04	21.99	23.96

Note: Scores for print knowledge out of 8, receptive vocabulary out of 22 and expressive vocabulary out of 22.

It was intended that children's scores in the tests would be tested using an ANCOVA to see whether scores in the experimental group in print knowledge and vocabulary were statistically different to those in the control group and controlling for pre-test measures. An ANCOVA assumes that there are equal variances between the groups and that scores are distributed normally. The data was tested for equal variances using Levene's test (Field, 2009) which was non-significant for all tests.

The distribution of scores from the tests of receptive and expressive vocabulary and print knowledge were tested for normality using the Kolmogorov-Smirnov test (K-S test) (Field, 2009). The results of this are outlined in Table 2.

Table 2: *K-S Tests of Normality for the Tests of Receptive and Expressive Vocabulary, Print Knowledge and the PPVT.*

		Pre-test			Post-test		
		D	df	*p*	*D*	df	*p*
Print knowledge	Experimental	.22	27	.00**	.24	27	.00***
	Control	.24	27	.00***	.22	27	.00**
Receptive vocabulary	Experimental	.27	27	.00***	.30	27	.00***
	Control	.23	27	.00*	.23	27	.00*
Expressive vocabulary	Experimental	.20	27	.01**	.14	27	.20
	Control	.09	27	.20	.21	27	.01**
PPVT (stand. scores)	Experimental	.14	27	.20	.10	27	.20
	Control	.14	27	.16	.11	27	.20
PPVT (Raw scores)	Experimental	.15	27	.12	.15	27	.11
	Control	.12	27	.20	.09	27	.20

Note:*. *p*<.05. ***p* <.01. *** *p* <.001

The K-S test suggested that the distribution of scores on the researcher designed tests of receptive vocabulary and print knowledge for both the control group and experimental group, at both test periods were significantly non-normal. It also suggested that the distribution of scores for the expressive vocabulary assessment were significantly non-normal for the experimental group at pre-test and the control group at post-test. Indications are that all other tests had a normal distribution.

Numerical methods such as skew and kurtosis can also be employed to investigate distributions and are particularly useful for relatively small samples (Field, 2009) such as in this study (n= 55). In order to make sense of these skewness and kurtosis values it is necessary to turn them into *z*-scores which enable the comparison of data across different studies (Field, 2009). This was calculated using the equations *Z* skewness = S/ SE S and *Z* kurtosis = K/ SE K (Field, 2009). *Z*-scores greater than 1.96 are significant at $p < .05$, greater than 2.58 are significant at $p < .01$ and greater than 3.29 are significant at $p < .001$ (Field, 2009).

Table 3 shows therefore that the skew in the distribution of scores for the researcher designed tests of receptive vocabulary was highly significant for both the experimental and control groups at both pre and post-testing, and that the kurtosis was highly significant for the experimental group at both stages of testing. It also indicates that the skewness and kurtosis of the raw scores for the PPVT were highly significant for the experimental group at both pre and post-testing.

Table 3: *Z-scores of Skewness and Kurtosis for the Tests of Receptive and Expressive Vocabulary, Print Knowledge and the PPVT.*

		Z of skewness		Z of kurtosis	
		Pre-test	Post-test	Pre-test	Post-test
Print knowledge	Experimental	0.23	-1.10	0.50	-0.53
	Control	-1.49	-0.04	-1.05	-0.88
Receptive vocabulary	Experimental	-3.93***	-3.97***	4.02***	3.12***
	Control	-3.05***	-2.79***	1.87	1.08
Expressive vocabulary	Experimental	-1.77	0.27	-0.09	-0.83
	Control	0.43	0.34	-1.02	-0.63
PPVT (Standardised scores)	Experimental	-1.01	-1.49	1.90	1.63
	Control	<-0.00	-0.08	-0.38	0.51
PPVT (Raw scores)	Experimental	-1.21	-3.00***	1.49	5.12***
	Control	0.15	0.09	-0.21	-0.76

Note: *** p <.001.

The evidence from the K-S test and the tests of skewness and kurtosis suggest that a number of the tests, in particular the receptive vocabulary test designed by the researcher, had non-normal distributions. As one of the assumptions of an Analysis of Covariance (ANCOVA) is that the data is normally distributed it was decided to use Quade's rank analysis of covariance (Quade, 1967) which is a non-parametric test and therefore does not assume that the data is normally distributed. Bonate (2000) maintains that the Quade's rank transformation is robust when used to analyse data whose distribution is non-normal.

The data from the assessments of receptive and expressive vocabulary, and print knowledge were analysed using Quade's rank analysis of covariance (Quade, 1967). The IBM website advises that this can be produced in SPSS by first ranking the dependent variable (in this case the post-test scores) and the covariates (the pre-test scores) and then running a linear regression of the ranks of the dependent variable on the ranks of the covariates, and saving the non-standardised residuals (http://www-01.ibm.com/support/docview.wss?uid=swg21477497). The F statistic used in Quade's analysis of covariance was obtained by running a one-way ANOVA using the residuals from the regression as the dependent variable and the grouping variable (in this case condition) as the factor (http://www-01.ibm.com/support/docview.wss?uid=swg21477497).

Effect sizes were calculated from the output of the one-way ANOVA for each of the tests using the equation, $R^2 = SS_M/SS_T$ (Field, 2009). Cohen (1988, 1992) suggested that a value of

r = .10 indicates a small effect, *r* = .30 indicates a medium effect and *r* = .50 indicates a large effect.

There was a significant effect of condition on the post-test scores of print knowledge whilst controlling for pre-test measures. $F(1,53) = 5.91$, $p < .05$, $r = 0.32$. This value of *r* indicates a medium effect (Cohen, 1988, 1992).

Analysis of the vocabulary tests designed by the researcher indicated that there was no significant effect of condition on either the post-test scores of receptive vocabulary $F(1, 53) = 2.22$, $p = .14$, $r = .20$ or expressive vocabulary $F(1,52) = 0.59$, $p = .45$, $r = 0.11$, after controlling for pre-test measures. These values of *r* suggest a small effect (Cohen, 1988, 1992).

There was no significant effect of condition on either the raw scores $F(1,53) = 1.25$, $p = .27$, $r = 0.15$ or age-standardised scores $F(1,53) = 1.10$, $p = .30$, $r = 0.14$ of receptive vocabulary as measured by the PPVT, after controlling for pre-test measures. These values of *r* suggest a small effect (Cohen, 1988, 1992).

The relationship or correlation between the variables was also investigated. For the bivariate correlations Kendall's tau was used as this is non-parametric and is superior to Spearman's rho when the sample is small and there are a number of tied ranks (Field, 2009). In this current study the sample is small (n = 55) and the ranking of the scores for the Quade's rank analysis of covariance indicated there were a number of tied scores, particularly in the researcher designed assessments.

Table 4 shows the correlations between the pre-test assessments of vocabulary, the post-test assessment of print knowledge, and age at the pre-test stage. It indicates that there is a significant correlation between the post-test scores in print knowledge and the pre-test scores of both the expressive and receptive vocabulary tests designed by the researcher.

Table 4: *Bivariate Correlations for Pre-test Scores of Vocabulary and Post-test Scores of Print Knowledge*

	Expressive vocabulary	PPVT (standardised scores)	PPVT (raw scores)	Receptive vocabulary	Age (months)
Print knowledge	.24*	.16	.14	.32**	.05
Age (months)	.02	-.01	.19	-.01	1

Note: *. *p*<.05. ***p* <.01.

Table 5 shows the bivariate correlations between the pre-test assessment of print knowledge, the post-test assessments of vocabulary, and age. This indicates that there is a significant relationship between the post-test scores of expressive vocabulary and the pre-test scores of print knowledge.

Table 5: *Bivariate correlations for pre-test scores of print knowledge and post-test scores of vocabulary*

	Expressive vocabulary	PPVT (standardised scores)	PPVT (raw Scores)	Receptive vocabulary	Age (months)
Print knowledge	.22*	-.02	.04	.08	.07
Age (months)	.04	.03	.10	-.01	1

Note: *. *p* <.05.

Discussion

This study aimed to investigate the effect of a combined print referencing/ dialogic reading program on the literacy attainment of children aged 4-5. In particular it was expected that the vocabulary and print knowledge of children who experienced the program would improve significantly more than children who merely had the books read to them. The results suggest however that whilst the program did significantly improve the print knowledge of participating children it did not have a significant effect on their receptive or expressive vocabulary.

Teaching which is explicit and systematic is essential in the early years of formal schooling (Connor et al., 2006). During the 5 week run of the current program the print objectives were taught overtly and methodically on a rolling program, as recommended by Justice and Sofka (2010a), with each objective the focus of 2 sessions. This resulted in a significant increase in children's print knowledge.

This systematic focus on print conventions may help explain however why improvements in vocabulary did not match the significant gains in print awareness. Dialogic reading aims to improve vocabulary through the use of open-ended prompts and the expansion of children's remarks and opinions in relation to the story being shared, as well as vocabulary instruction (Brannon & Dauksas, 2014). The method is therefore flexible and, whilst it was possible to systematically read each book twice on the rolling program and have a broad idea of how conversation might proceed, it was not appropriate or possible to completely plan the flow of dialogue. It is possible that the focus on print diluted the opportunity to discuss the stories and expose the children to unfamiliar vocabulary. It may therefore have been more effective to focus on one print objective per session rather than two so that more time could have been spent discussing the stories.

In their study of the vocabulary used in reading material for children aged 5-7, Stuart, Dixon, Masterson and Gray (2003) found that the books contained nearly 10,000 different words with over half of these occurring just once or twice. Children's books typically contain words that are less frequent and less familiar to them than those which occur in

conversations between adults (Cain, 2010). This makes acquiring new vocabulary challenging with children encountering new words which may not be familiar to them through everyday speech and which also occur relatively infrequently in books written for children (Cain, 2010). Thus it is possible that this current reading program would have been more effective at improving vocabulary if it had run for a longer period of time. Running the program over the course of one academic year, such as in the previous research (Whitehurst et al., 1994; Justice et al., 2009a), would also have the benefit of making concentrating on one print knowledge objective per session more viable as each objective could be revisited on several occasions as part of a long term rolling program.

Hemphill (2008) found that whilst both print knowledge and vocabulary were important predictors of reading comprehension in children aged 7, vocabulary remained a key predictor in children aged 9 whilst the predictive influence of early print knowledge scores weakened as children developed. This suggests that future research on dialogic reading/ print referencing should focus on how the program could be improved so that it is more effective at improving vocabulary. Brannon and Dauksas (2014) maintain dialogic reading provides an ideal opportunity for explaining the meaning of unfamiliar, low –frequency vocabulary (Brannon & Dauksas, 2014). Again, this would be more viable in a more long term project with a focus of just one print objective per session.

The books selected for this program may also have contributed to the disappointing results in the vocabulary tests. These were either recommended by Justice et al. (2009a) as being suitable for use for print referencing for sharing with young children or were chosen by the author, using similar criteria. The child participants in the original research (Justice et al., 2009a) were aged 3-5, whereas in this current research they are aged 4-5. This may mean that the books used, and therefore the vocabulary selected from these books, were not challenging enough. The descriptive statistics for the researcher designed test of receptive vocabulary indicate that this may be the case. The mean score at pre-test for the assessment was extremely high (19.3 for the experimental group and 18.5 for the control group, out of a possible score of 22) which means that it would have been difficult for children to perform significantly better at the post-test stage. This also affected the normality of the data from the test which had a significantly negative value of skewness, signifying an accumulation of high scores (Field, 2009).

Vocabulary tests using a multiple choice format are extremely hard to design (Hughes, 1989) with the PPVT-4 test developed over a period of 5 years (Dunn & Dunn, 2007b). This would involve initial piloting of the vocabulary and pictures used in the test (including distractor items), testing the data for internal consistency and the removal of less reliable items (Field, 2009). This is clearly a limitation in this project, particularly for the researcher designed test of receptive vocabulary where tests of reliability led to just 22 items being included in the final analysis. It has also led to the assessment having fewer items than is usually considered necessary; Nation (2001) recommends a minimum of 30 items for a vocabulary

test to be reliable. In a project such as this extensive piloting was not possible and it is hoped that these results will be viewed as being exploratory in nature, rather like a pilot for a more extensive investigation into the effects of the combined program.

Both the dialogic reading and print ref programs by Whitehurst et al. (1994) and Justice et al. (2009a) were originally with pre-schoolers (children aged between 3 and 4) whereas the children in this study had been in full time education for nearly a full academic year. In light of this and the evidence that print awareness and vocabulary are both key predictors of later literacy attainment (Cunningham & Stanovich, 1991; Hemphill, 2008), this present program might be most beneficial for pre-schoolers or children just starting their formal education, so that they are exposed to aspects of print as well as lively discussion about stories in preparation for formal reading instruction. Torgesen (1998) maintains that preventative measures, such as this program, are most effective when delivered as early as possible so that difficulties with literacy do not develop into problems that may need comprehensive and expensive remediation later on.

Shanahan and Lonigan (2010) maintain that there is a need to translate research which is effective in small group settings into a more naturalistic setting such as the classroom. It might therefore be more effective if the program was implemented by the pre-school or school teachers themselves over the course of an academic year. Training could be through the use of video. D. H. Arnold et al. (1994) demonstrated that using video to train parents in the art of dialogic reading was more effective than direct tuition by a professional, and Whitehurst et al. (1994) used video to train both teachers and parents.

Learning requires children to be active and productively involved in their own learning (Vosoiadou, 2003). The dialogic reading /print knowledge program might also benefit from the inclusion of more interactive elements such as role play to enable children to benefit from being actively involved in their own learning, whilst having fun. During role play children could be encouraged to act out or voice the experiences and feelings of the characters in the story thereby giving them another opportunity to experiment with new vocabulary.

Previous research suggests there is a significant relationship between print knowledge and vocabulary (Cunningham & Stanovich, 1991). The results of the correlational analyses in this current study suggest that there is a strong relationship between children's pre-test scores in the researcher designed assessments of receptive and expressive vocabulary, and the post-test scores in print knowledge. The analyses also indicate that there is a significant relationship between the pre-test scores in print knowledge and the post-test scores in expressive vocabulary. This is in line with the correlational analysis carried out by Cunningham and Stanovich (1991) which suggested that exposure to print was a significant predictor of vocabulary. It is important to note however that the analyses carried out in this current study were correlational and cannot therefore be used to make predictions. This

was a short term research project and the first assessment of the combined dialogic reading /print referencing program. Future research, employing both correlational and regression analyses, may therefore be useful to fully tease out the relationship between vocabulary and print knowledge, and how this information might be utilised to improve the efficacy of the print referencing/ dialogic reading program, and therefore children's later attainment in literacy.

Conclusion

This current study was the first assessment of a combined approach and was necessarily small scale with the program running for 5 weeks only. Both the dialogic reading program run by Whitehurst et al. (1994) and the print referencing program by Justice et al. (2009a) had durations of one academic year and were shown to have positive effects on vocabulary and print knowledge respectively. It seems reasonable then to suppose that the combined approach, if carried out on a more comprehensive and long term scale, could improve both the vocabulary and print knowledge of young children.

The program was shown to improve children's print knowledge, however did not seem to improve either their expressive or receptive vocabulary. Future research on the combined program should focus on how the program could be adapted so that there would be significant improvements in vocabulary. This is particularly fundamental since research shows that vocabulary remains an important predictor of literacy attainment over time whereas the initial effect of print awareness diminishes over time (Hemphill, 2008).

The author would therefore recommend that the program be run over the course of an academic year in accordance with other research in the areas of dialogic reading and print referencing (Whitehurst et al., 1994; Justice et al., 2009a) with a focus of just one print knowledge objective per reading session. This would facilitate more in depth discussion about the books and greater opportunities for children to be exposed to and practise using unfamiliar vocabulary in a variety of dialogic exchanges. The use of interactive techniques, such as role play, could also help children actively experiment with the new vocabulary. A longer and more intensive program might also yield more comprehensive information on the relationship between print knowledge and vocabulary, and how this could be used to predict later outcomes in literacy attainment (Shanahan & Lonigan, 2010).

Research suggests that preventative measures are most effective at raising standards in literacy (Snow et al., 1998) and that these measures are most successful when begun as early as possible (Torgeson, 1998). The combined program might therefore be more effective if run with pre-schoolers or children just beginning full time education. It might also be more effective if the program was carried out by the children's own teacher as studies suggest there is a need for preventative measures to be translated into naturalistic settings (Shanahan & Lonigan, 2010).

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Appendix A

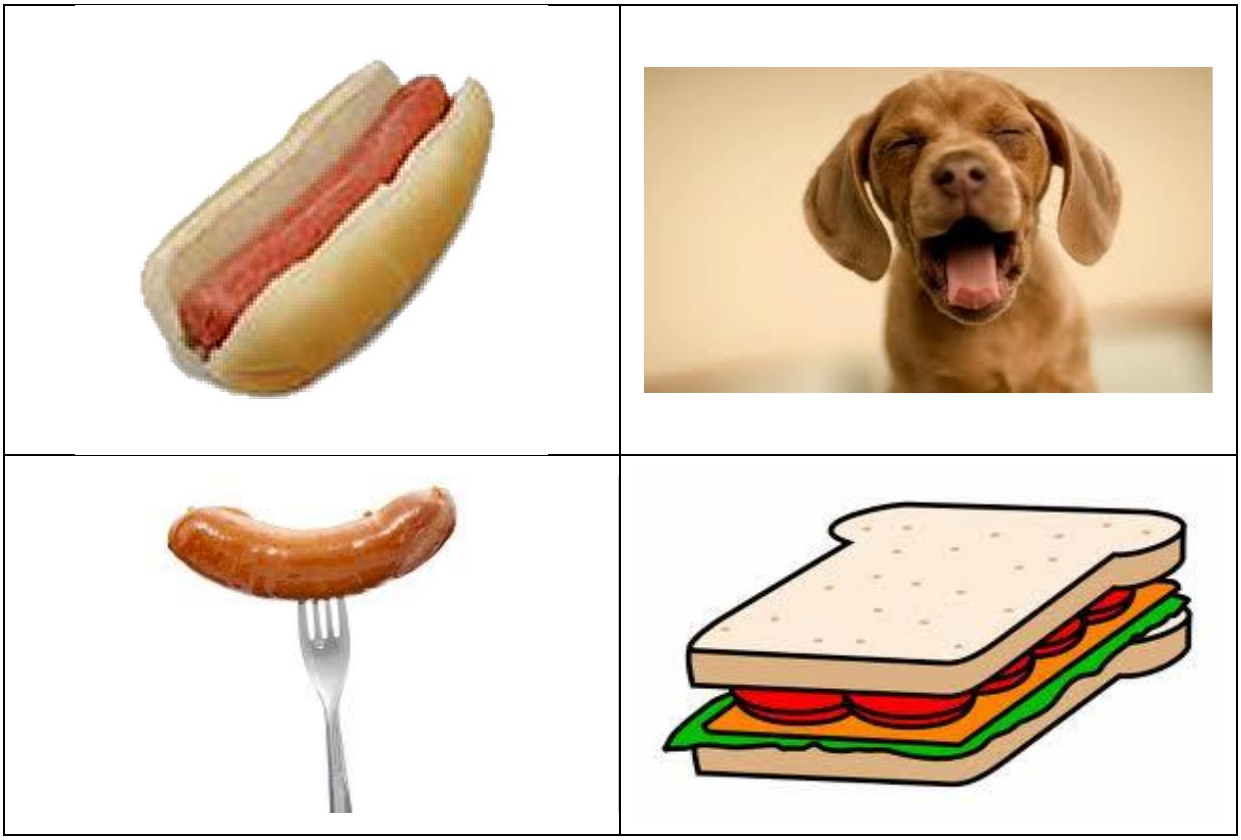
Target words for assessments of receptive and expressive vocabulary

Books	Receptive vocabulary	Expressive vocabulary
Ahlberg, A. & McNaughton, C. (1998). *What's in the shop?* London: Walker Books.	hot dog fog sandwich	shop
Claybourne, A & Tarbett, D. (2009). *Here comes the rain.* Caterpillar: London.	ladybird caterpillar rainbow dragonfly	storm
Cousins, L. (2003). *Maisy's Christmas Eve.* London: Walker Books.	sledge tractor push	snow
Donaldson, J. & Sharratt, N. (2009). *One mole digging a hole.* London: Macmillan Children's Books.	digging chopping garden rake	mole
Le Neouanic, L. (2007). *Little Smudge.* Sterling Publishing Company, Inc.	Shapes look triangle	smudge friends
Maris R. (1982). *Better move on, frog!* J. MacRae Books.	badger bee owls	hole move on
Monks, L. (1998). *I wish I were a dog.* Egmont.	film star dog lead fed up	wish
Murray, A. & Tickle, J. (2003). *The very sleepy sloth.* Scholastic Inc.	Snooze trampoline hammock	sloth
Rosen, M. & Oxenbury, H. (2009). *We're going on a bear hunt.* London: Walker	cave forest tip toe	bear hunt
Tyler, J., & Hawthorn, P. (1996). *There's a dragon at my school*. Tulsa, OK: EDC Publishing.	towel toilet roll	dragon

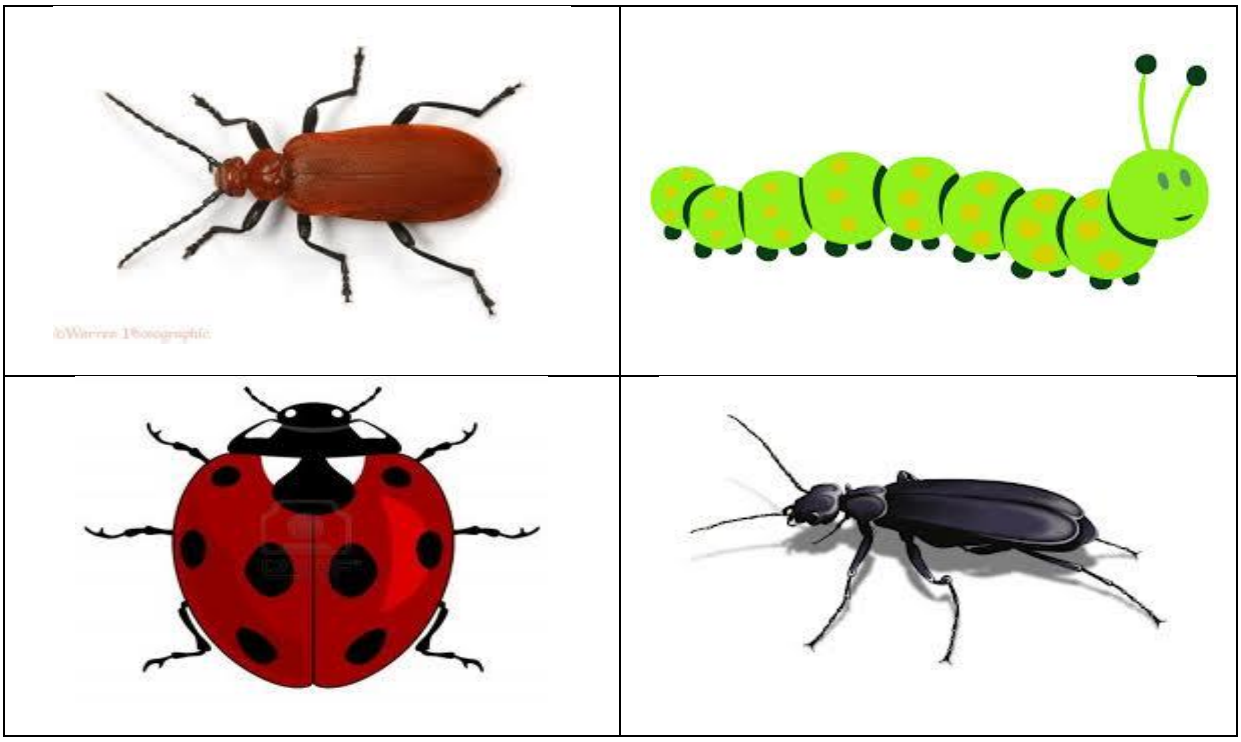
Appendix B

Sample picture stimuli for receptive vocabulary assessment

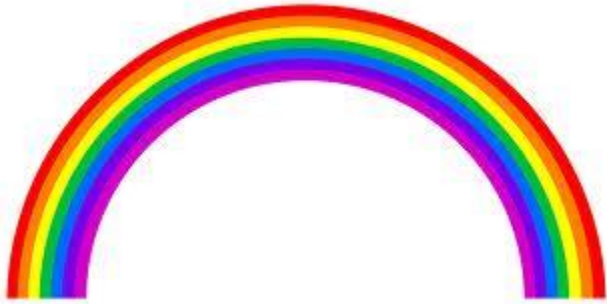
Target word: hot dog

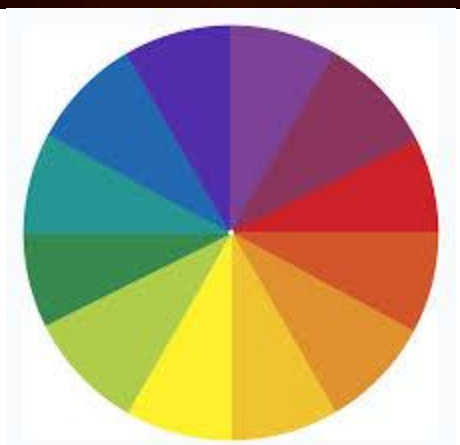


Target word: ladybird



Target word: rainbow





Target word: dragonfly

Appendix C

Marking Scheme for Expressive Test

	Possible Score		
	0	1	2
shop	Going shopping, lots of stuff there	Description of things such as food that would be in a shop, getting things.	Any mention of buying, paying, or selling things.
storm	It is stormy,	Raining, wet or other sort of weather thunder described as being loud, noisy or other sound word	Any mention of thunder or lightning
snow	It is snowing	Cold white anything about building snowmen or playing in the snow, type of weather	Any mention of it coming down or falling from clouds. Any link to water e.g. ice balls
mole	Any confusion with different animal such as hedgehog - spikes rolling in ball Mole on you	Description of what it does – digging or living in hole, black furry, living underground, making hills Mole on skin described as spot	Any mention of creature or animal
smudge	Anything about mud, smudging something, anything vague like have an accident without saying what it is on	Dirt, black or muck on clothes paper or skin, something that needs to be cleaned or is ruined, wet (or not dry) paint on paper or face paint	Any mention of how something gets smudged e.g. wet paint being messed or ruined by folding page in on itself or somebody touching wet paint, wet nail varnish, wet face paint
friends	Friends with somebody, making friends	Someone you know, play or have fun together, cuddle or kiss them, hold hands (but answer does not say like them), being nice to them or going up to someone who is lonely and asking to be friend	Someone you like or love, answer that distinguishes between family member and friend who lives at different house e.g. go round each other's houses

hole	Hole In ground or clothing	Digging, moles make them, circle on ground	Any suggestion of it being an empty space such as being able to go in it, put something inside or that it has some level of depth e.g. deep, shallow
Move on	Moving, move to	Suggestion of movement e.g. going, travelling, "move onto something different" – only score 1 as re-used move on but there is a sense of going somewhere else in answer	Answer which suggests leaving one place and travelling to another e.g. going somewhere different Telling someone to go somewhere or move out of the way, moving onto next thing e.g. turning to next page in book. Or to hurry up e.g. get on with it
wish	Wish you a merry Christmas, star or wishing well without any further context, wish for something	Things associated with wishing e.g. wishing in wishing well, or on a star, something coming true, wish could have, do or be something (use of verb is key rather than just wishing for something)	Answer which suggests people want something they don't already have
sloth	Any confusion with cloth/cleaning, or other adjective such as soft not normally associated with sloth. Any mixing up of sloth with other animals such as saying they fly	Being slow or sleeping/sleepy, climbing up or living in trees	Any mention of creature or animal
Bear hunt	Hunting for food for babies (implies it is bear doing hunting) Description of bear e.g. scary	finding or looking for bears, description of what might see during hunt e.g. caves looking for chocolate etc.	Travelling to look or search for bears. Any mention of killing or shooting bear once found it.
dragon	Just fire on own	Description of what can do, appearance or where might see one e.g. got or breathes fire, might see one in castle, scary	Mention of creature or type of animal/reptile/dinosaur/monster. Any suggestion that is not real e.g. see in dreams

Appendix D

Sample responses and scoring for expressive vocabulary test

Participant Number: 24

	Pre-test	Score 14	Post-test	Score 18
shop	Somebody can go and get food if they don't have enough lots of food	1	Have food if don't have enough could buy some from shops	2
storm	Very loud in air rain and clouds and lightning	2	Be loud cold and rainy	1
snow	Eat snow sometimes is white cold	1	Cold white wear lots of things ate snow before yummy	1
mole	Go underground live underground we saw mole holes on holiday and moles popping out	1	Live underground living animals	2
smudge	[No response]	0	Touch something wet gets all messy	2
friends	People who love each other and really nice to each other play with each other nicely	2	Best friends with other friends play with each sit next to each other	1
hole	Hole in ground people that make hole might go in it and might be mice or rats coming out	2	Digging hole for flower or something have space where can put some seeds in it	2
Move on	Need to move along a bit	1	Go somewhere else	2
wish	Making wish want something that you really wish you wanted	2	Really want something that never had fbefore	2
sloth	slithering	0	Sleepy sleep all day and all night boring	1
Bear hunt	Someone's gonna find a bear	1	Going on one tip toe into cave	1
dragon	Breathes fire	1	Breathe fire smoke comes out	1

Participant Number: 45

	Pre-test	Score 3	Post-test	Score 7
shop	[no response]	0	Fishes carrot tomatoes ice cream grapes	1
storm	Big	0	[no response]	0
snow	Big cold snowman	1	Cold comes down snow balls for catch sisters snowman	2
mole	big	0	[no response]	0
smudge	big	0	[no response]	0
friends	Big play together	1	Play together lots of fun smudge play with circle square looking round to find them	1
hole	big	0	[no response]	0
Move on	big	0	Move dancing	0
wish	big	0	[no response]	0
sloth	big	0	[no response]	0
Bear hunt	Big scary roaring	0	Scared catches somebody really scary claws	1
dragon	Big got fire dead	1	Got fire fly away catch if fly really high breathe fire to us really big run really fast found behind trees	2

Appendix E

Tasks for Print Knowledge Assessment

Print Objective*	Assessment Task*	Pre-test	Post-test
Title of book	The title of this book is ……. (Point to name of title on cover). What does title mean?		
Page order	Show me the page you would read first in this book. Which would you read next?		
Page organisation (top to bottom)	Show me with your finger where on the page you would start to read?		
Print direction (left to right)	Show me with your finger which way you would read.		
Metalinguistic concept of reading	What do you think these words will tell us? (Point to words on page)		
Metalinguistic concept of letter.	Can you see a letter which is in your own name?		
Word identification	This word says 'the'. Can you find me the word 'the' somewhere else in the book?		
Short vs. long words	Can you show me a short word? (Show page with a mix of short and long words)		
Letters vs. words	Can you show me a word?		
Concept of words in print	The cat says miaow. Point to the word miaow. (Show page with cat saying miaow in speech bubble)		
Total Score			

Note: Adapted from Justice et al. (2009b)

Appendix F

Rolling program of books and print objectives

		Books	Print Objectives*
Week1	Day 1	*There's a dragon at my school.* *We're going on a bear hunt*	Metalinguistic concept of reading Page organisation
	Day 2	*Little Smudge* *Better move on frog*	Title of book Print direction
Week 2	Day 1	*Maisy's Christmas Eve* *One mole digging a hole*	Short and long words Page order
	Day 2	*I wish I were a dog* *The very sleepy sloth*	Metalinguistic concept of letter Word Identification
Week 3	Day 1	*What's in the shop* *Here comes the rain*	Letters and words Concept of words in print
	Day 2	*We're going on a bear hunt* *Better move on frog*	Title of book Short and long words
Week 4	Day 1	*There's a dragon at my school.* *One mole digging a hole*	Page organisation Metalinguistic concept of letter
	Day 2	*Little Smudge* *I wish I were a dog*	Print direction Metalinguistic concept of reading
Week 5	Day 1	*Maisy's Christmas Eve* *The very sleepy sloth*	Page order Letters and words
	Day 2	*What's in the shop* *Here comes the rain*	Concept of words in print Word Identification

Note: * Adapted from Justice et al. (2009b).

Appendix G

Sample questions for reading sessions

	Book	Print knowledge objectives*	Questions for dialogic reading**
Week 1, Day 2	*Little Smudge Better move on frog*	<u>Title of book</u> Look, here is the name of the book. It says….. What is the name of the book? Can you point to the name of the book? Great you just pointed to the title. What are the words on the front of the book called? Name – great the words on the front tell us the title <u>Print direction</u> Where should we start/finish reading? We read the top line this way (left to right) then the next line all the way to the bottom of the page. (Show with finger) Can you show me which way I should read this page? Well done we start here and go this way to read just like [name of child] showed us.	What can you see on this page? What has happened so far? Can anyone tell me what a smudge is? Have you ever asked anyone to play with you? How do you think Smudge feels when the shapes won't play with him? Have you ever seen a hole? What is happening in the picture? How does the frog feel when he can't find a hole? Why is he looking for a hole? This hole is full of ……..
Week 3, Day 2	*We're going on a bear hunt Better move on frog*	<u>Title of book</u> Today we're going to read this book. Where will we find the title of the book? That's right - on the front cover! Which is the title this or this? (Point to picture on the cover) Yes and the title is ….. Who can show me the title? <u>Short and long words</u> Look at these two words. Which word is a short word? This or this? How can we tell if a word is short or long? That's right – we can count the no. of letters! Who can point to the longest word on this page? How do you know it is a long word?	Can you remember what happened in this story? Why do they run away? Two big goggly eyes – it's a …… Have you ever gone on a hunt for something? Can you remember what the frog is looking for in this story? What other animals did we see in the story last time? How does the frog feel when he can't find a hole? What sort of a hole does the frog need? Have you ever seen a frog or any tadpoles?

Note: *Adapted from Justice & Sofka (2010b). **Adapted from Whitehurst et al. (1994).