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The emergent literacy skills of four-year-old children receiving free kindergarten early
childhood education in New Zealand

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Abstract

This study investigated the emergent literacy and language skills of 4-year-old children in New Zealand during their kindergarten year prior to school-entry.

A total of 92 four-year-old children from a range of socio-economic areas were seen individually at their local kindergarten and were assessed on code-related measures (letter name knowledge, initial phoneme awareness, emergent name writing) and meaning-related measures (story comprehension and retelling ability). Approximately 60% of the parents completed a home literacy questionnaire.

Regression analyses showed no effect for age on any of the code-related measures. In contrast, significant effects for age were found on story comprehension and retelling ability.

There were no differences in performance based on gender with two exceptions: Girls performed better than boys on letter name knowledge and early name writing.

Questionnaire results suggested literacy activities were valued in the home environment with most parents reporting reading to their child each night, and the majority of parents reported owning more than 60 children's books.

Results from the current study suggest more explicit teaching may be necessary within the kindergarten curriculum to facilitate the code-related related skills linked to successful word recognition ability and early spelling development.

Keywords: Early Childhood Curriculum, Te Whāriki, emergent literacy, story retelling

Introduction

Children who show strong early literacy related skills at school entry are more likely to become successful readers (Tunmer, Chapman, and Prochnow 2006; National Early Literacy Panel 2008; Shanahan and Lonigan 2013). Often referred to as *emergent literacy abilities*, these skills develop prior to reading acquisition and serve as the foundation for accurate and fluent reading with comprehension. Emergent literacy skills include code-related skills (such as letter knowledge, print concepts, and early developing phonological awareness), as well as meaning-related skills including vocabulary, grammatical ability, and oral narrative ability (Pullen and Justice 2003; NICHD 2005). Code-related skills, particularly phonological awareness skills, are critical to the development of early reading success via their importance to word decoding and understanding the relationship between the spoken and written form of a word (see Gillon 2004; Ehri et al. 2001; Hulme et al. 2012, for reviews). In addition to the influence of word decoding on reading comprehension, meaning-related skills are also important for comprehending text, particularly once a child transitions from 'learning to read' to 'reading to learn' (Catts, Adlof, and Weismer 2006; Gough and Tunmer 1986; Nation and Snowling 2004).

Meaning related skills include vocabulary, grammatical skills, and oral narrative ability. Oral narrative ability in preschoolers, measured using a story retelling task, has been found to predict later reading comprehension (Bishop and Adams 1990). Furthermore, longitudinal studies of children from the south of England show the unique contribution of children's story structure knowledge at 7- 8 years on their reading comprehension performance three years later (Oakhill and Cain 2012). In addition, children with identified reading problems often show significant difficulties in story retelling and comprehension compared to their peers with typical reading development (Westerveld, Gillon, and Moran

2008). Therefore, collecting and analysing children's oral narrative skills prior to school entry may yield important information regarding oral language abilities needed for successful literacy development (see also Justice et al. 2010).

Both code-related and meaning-related emergent literacy skills may be fostered at home and/or in early childhood education facilities, by exposing children to a literacy-rich environment and through focused teaching activities and games (e.g., alphabet games, teaching nursery rhymes, drawing attention to print and word meaning when sharing a storybook). Sénéchal and colleagues (Sénéchal and LeFevre 2001, 2002; Sénéchal 2006) investigated story book exposure as well as focused teaching activities reported by parents of French-speaking Canadian preschool children. The researchers found that these are distinct and separable behaviours that make different contributions to children's subsequent literacy acquisition both in the short and medium term. Parent involvement in reading and writing teaching activities appeared to support children's early success when receiving formal literacy instruction; this success was sustained by the benefits of early story book exposure in the home.

In New Zealand (NZ), approximately 98% of children attend some form of preschool education, and 40% of the four-year-old population attend public (free) kindergarten. The kindergarten vision includes the creation of a positive family-friendly environment that is rich in language and literacy. Kindergarten staff include fully qualified teachers and follow Te Whāriki, the NZ Ministry of Education's bicultural curriculum framework (Ministry of Education 1996). Despite nearly 40,000 children attending kindergarten in NZ, little is known about the effectiveness of this education system on children's emergent literacy and language development (Nuttall 2005; McLachlan and Arrow 2011; Blaiklock 2010). Blaiklock (2010) expressed concerns about both the holistic nature of the curriculum and the 'non-

prescriptive nature of its guidelines' (p. 210), both of which might lead to inadequate attention to subject areas such as literacy, science, art, or music. Moreover, there is no requirement for individual kindergartens to focus on specific learning outcomes (Blaiklock 2013). As a first step in addressing this issue, this study assessed the emergent literacy skills of 92 four-year-old children attending kindergarten. It also investigated the children's home literacy environments through use of a parent questionnaire. Specifically the study addressed the following questions:

1. How do four-year-old children who are attending kindergarten perform on emergent literacy measures of letter knowledge, emergent name writing, phonological awareness, story comprehension, and story retelling?
2. Do children approaching school entry age of 5 years show better emergent literacy skills than younger children (aged 4;0- 4;3)?
3. What is the relationship between children's home literacy environment and their emergent literacy performance?

Methodology

Participants

The participants were recruited from seven kindergartens in suburban Christchurch, New Zealand (NZ). The kindergartens were based in low-mid to high socio-economic areas as indicated by the Ministry of Education school ranking system. Kindergarten teachers were asked to hand out information sheets to parents of children who met the following criteria: 1) age between 4;0 – 4;11 years (In New Zealand most children begin primary school on the day of their 5th birthday if their birthday falls on a school day, or as close to this day as practical), 2) spoke NZ English as their first language, 3) had no history of speech and language difficulties, and 4) were currently not receiving special education services

(including speech and language therapy). Parents of 92 children (54 girls, 38 boys) signed the consent form to indicate they were happy for their child to participate. These children were from NZ European (82.6%), Maori (12%), Pasifika (2.2%), and 'other' (3.3%) ethnic backgrounds. Based on the 2006 Census data, this ethnic distribution is representative of the Canterbury region (www.stats.govt.nz), except for an under-representation of Asian ethnicity (expected 5%).

To obtain an indication of the children's general receptive language skills, the *Peabody Picture Vocabulary Test – Fourth Edition* (PPVT-4; Dunn and Dunn 2007) was administered. The children showed a range of abilities, with the standard score ranging from 82 to 134 (M: 108; SD: 12.1). There was no significant difference ($p = .280$) in performance based on gender: girls (M: 107; SD: 12.74) and boys (M: 110; SD: 10.95). The PPVT-4 has been normed for children and adults from the age of 2 years, 6 months through 90 years and older. It has excellent reliability (test-retest = .93; split-half = .94). As reported in the manual, the PPVT-4 has an average concurrent correlation of .82 with the *Expressive Vocabulary Test, Second Edition* (EVT-2; Williams 2007).

Procedure

All children were seen individually by trained research assistants, who had completed at least a Bachelor degree in Education or Speech-Language Therapy. Assessments lasted approximately 50 minutes (including the PPVT-4, see above) and took place in a quiet room at the child's kindergarten. All sessions were recorded, using digital voice recorders (Phillips or Olympus). The sessions included the following tasks:

Story Retelling and Comprehension. For this task, the children were asked to listen twice to an audio-recording of an unfamiliar story, while looking at the pictures of the story book on a computer screen (using Microsoft Office Power Point™). The story was an English

translation of *Ko au Na Galo [Ana Gets Lost]* (Swan 1992). The story is about a Pasifika girl named Ana, who gets lost in the city while looking for her parents. The book is a 10-page reader of the kind that is typically used in NZ classrooms, with coloured pictures and Tokelauan text. Following the first exposure to the story, the children were asked eight questions, yielding a comprehension score. Following the second exposure to the story, the children were asked to retell the story without the use of pictures, using the prompt “*This time I would like you to tell the story into my digital recorder so that other children can listen to your story next time*”. For a full description of the task, including the prompts, the model story, and the comprehension questions, see Westerveld and Gillon (2010) and Westerveld, Gillon, and Boyd (2012).

Letter knowledge task (Carson, Gillon, and Boustead 2011). In this computer-based assessment children are presented with test items on the computer screen accompanied by oral instructions that are also administered via the computer. Six letters in a three-by-two grid were presented on the screen at a time. Participants were asked to click or point to the letter-name requested by the computer. A total of 26 letter-names were assessed. There is no significant difference between the computer-based and paper-based administration of this task (Carson, Gillon, and Boustead 2011). Further, there is a strong positive correlation ($r = 0.89$) between performance on this task and the letter-sound knowledge subtest of the *Preschool and Primary Inventory of Phonological Awareness* (PIPA) (Dodd et al. 2000).

Initial phoneme identification task (Carson, Gillon, and Boustead 2011). In this computer-based assessment participants were asked to select a word (represented by a picture) from a choice of three that started with the same initial phoneme as a target word. For example, the computer displayed a picture of a Bee and said, “*This is my friend Bee. Bee starts with a /b/ sound. What word starts with a /b/ sound?: car, boat, shoe*”. This task

consisted of two practice items and 10 test items. There is no significant difference between the computer-based and paper-based administration of this task . Further, there is a strong positive correlation ($r = 0.88$) between children's performance on this task and the alliteration awareness subtest of the PIPA (Dodd et al. 2000).

Name writing. Children's name writing ability was assessed by asking the children to write their name in a large space on A4 paper. The name writing attempts were scored according to a 14-point scale which showed progression within four steps of name writing development: Step 1 (scores 1 – 3): beginning to differentiate name writing from pictorial representation. Step 2 (scores 4 – 6): use of unidentifiable letter-like forms. Step 3 (scores 7 – 11): beginning to use identifiable letters, and Step 4 (scores 12 – 14): complete name representation. See Cabell et al. (2009) for a full description of the scoring procedure.

Home literacy questionnaire. A questionnaire examining home literacy practices was sent out to all families immediately following the assessments. The questionnaire was adapted from Boudreau (2005) and from van Bysterveldt, Gillon, and Foster-Cohen (2010). Fifty-four of these questionnaires were returned (i.e., a response rate of 59%). The full questionnaire is included in the Appendix.

Transcription and Analysis

The digital sound files containing the story retelling samples were transcribed verbatim by a researcher experienced in language sample analysis, using standard Systematic Analysis of Language Transcripts (NZ version) software conventions (Miller, Gillon, and Westerveld 2012). Utterance segmentation was based on communication units (C-units), defined as one main clause with all its subordinate clauses (Loban 1976). However, following standard SALT conventions, elliptical responses (phrases) in response to the examiner's prompts were also considered a C-unit. In addition, sentence fragments were counted as separate C-units when

the final intonation contour of the utterance indicated that a complete thought has been spoken. Only complete and intelligible (C&I) C-units were used for analysis. All reformulations, repetitions, and disfluencies were placed in parentheses. Finally, all child utterances that were unrelated to the story (i.e., comments, questions) as well as formal beginnings (title) and formal endings (e.g., "The end") were excluded from the analysis. Reliability of the story retelling transcription and analysis are reported in Westerveld, Gillon, and Boyd (2012).

Story comprehension. The children were asked eight questions following the first exposure to the story (e.g., "Who is the story about? Why did Ana have to stay at home? Who found Ana? Why were Ana's parents happy to see her?"). To ensure all children had access to the same information prior to listening to the story for a second time, children were given the correct information if they did not respond to the questions or if their answers were clearly incorrect. A scoring guide was used to determine if the child's answers were considered correct or incorrect and if further prompts were allowed. Story comprehension was calculated as the number of questions answered correctly.

Story quality (SQ). All transcripts were analysed at macrostructure level by scoring the stories on a story quality rubric. The rubric covers six text structure elements: introduction, main character/s, supporting character/s, conflict, resolution, and conclusion as well as a measure of holistic coherence and a measure of 'theme'. The child was awarded points for each characteristic: 5 points for proficient inclusion, 3 points for emerging proficiency, and 1 point for minimal or no evidence of inclusion. The scores were totalled to yield an SQ score (minimum score 8, maximum score 40).

Oral language measures. Only measures that are known to be sensitive to language development as well as language ability were considered for analysis: Number of Different

Words (NDW) to reflect expressive *vocabulary* (Watkins et al. 1995), total number of utterances (UTT) to measure *verbal productivity* (Scott and Windsor 2000), mean length of utterance in words (MLU) and grammatical accuracy (GA) in percent grammatically correct utterances to measure *grammatical complexity and competency* (Fey et al. 2004).

Results

Internal consistency

The results were analysed using statistical software SPSS (PASW 2012). To investigate the internal consistency of the measures, partial correlation coefficients were calculated for all emergent literacy measures, controlling for age. As shown in Table 1, there were significant correlations between the code-related measures. Furthermore, story quality showed significant correlations with story comprehension, length of the story in number of utterances (UTT), number of different words (NDW), and MLU. There were no significant correlations between story comprehension and the number of utterances used to retell the story (UTT), or between story comprehension and grammatical accuracy (GA), reflecting the multidimensional nature of the oral language measures derived from the story retelling and comprehension task. As shown in Table 1, NDW and UTT were highly correlated ($r = .91$). Because the number of utterances is much easier to calculate than the number of different words contained in a story, it was decided to retain UTT only for further analyses. Finally, significant, but small to medium correlations (ranging from .241 to .432) were found between the code-related measures and story comprehension and story quality performance.

Descriptive statistics

To answer the first research question, descriptive statistics were obtained and presented in Table 2. As shown in Table 2, there was a wide range in performance on all measures. To

determine if this variability was age-related, and to answer research question two, regression analyses were performed for each emergent literacy measure. There were no significant effects for age on initial phoneme awareness, name writing, letter name knowledge, length of the story retelling, MLU, and grammatical accuracy (all p 's $> .05$), indicating that these emergent literacy skills did not improve with age / time at kindergarten. In contrast, significant effects for age were found on measures of story comprehension and story retelling quality, with performance improving with age (p 's $< .05$). There were no significant differences in performance between girls and boys (at $p < .05$) with two exceptions: girls gained a higher score on Letter name knowledge (M: 10.9; SD: 5.7) compared to boys (M: 7.8; SD: 5.1) ($p < .05$) and emergent name writing: girls (M: 11.2; SD: 3.9) boys (M: 8.7; SD: 4.5) ($p < .05$).

To determine if the older children (i.e., three months or less until school-entry at 5;0 years) showed better performance than the younger children, two age groups were selected: 1) very young group: ages 4;0 to 4;3 ($n = 22$) and 2) off-to-school group: ages 4;9 – 5;0 ($n = 26$). As expected the groups differed significantly on age ($p < .001$), but there were no group differences in performance on the PPVT ($SS, p = .634$). A series of univariate analysis of variance (ANOVA) tests was completed using each of the emergent literacy measures as the dependent variable and age (youngest vs off to school) as the between-subjects variable. In addition, (eta squared) η^2 values were calculated for each of the analyses as an estimate of the effect size. This documents the amount of explained variance in a variable as a function of age group. For example an η^2 value of .23 indicates that 23% of the variance between the two variables is explained by the age group. Results from this series of univariate analyses indicated no group differences on measures of initial phoneme awareness ($p = .310$), letter name knowledge ($p = .836$), emergent name writing ($p = .855$),

MLU ($p = .158$), or number of utterances used to retell the story ($p = .238$), with small effect sizes (r^2 ranging from .001 to .037). Significant group differences were found on story comprehension ($p = .001$, $r^2 = .221$) and story quality ($p = .005$, $r^2 = .186$), with the 'off to school' group showing better performance.

Next, we calculated the percentage of children who scored above chance on the initial phoneme awareness and the letter name knowledge tasks. To score above chance on the phoneme awareness task, children had to score 6 or more items correct ($p < .05$) out of the 10 trials. When considering the overall group ($n = 94$), a total of 21 children (22.8%) achieved this level. For letter identification, 57.6% of the children scored above chance (7 or more letters correct out of 18). Further analysis of the name writing scores showed that 30.4% of the children ($n = 28$) were starting to use identifiable letters, whereas 51.1% ($n = 47$) produced complete name representations.

Once again, we were interested in contrasting the performance on initial phoneme awareness and letter name knowledge of the very young children to that of the 'off to school' group. As shown in Figure 1, there were no significant differences between these two groups on the percentage of children achieving above chance.

Insert Figure 1 here

Home literacy environment

A total of 54 parents (approximately 60%) completed the home literacy questionnaire. All parents indicated they had at least 20 children's books in the home, with 64% of the parents reporting they owned more than 60 children's books. The majority (88%) of the parents indicated they started reading picture books to their child before the age of one, the remaining seven parents stated they started reading picture books when their child was between 12 – 18 months of age. When asked how often parents read to their child at

bedtime, 75% reported this was at least 6 times a week. When asked if parents read to their children at other times of the day, all parents said they read to their children at least once a week; 45% reported this was more like 3 or 4 times a week, and 26.5% indicated they read to their child more than 7 times a week. Finally, we asked if parents tried to teach their children to write or read words. A total of 32 parents reported they seldom or sometimes tried to teach their child to write words, 21 parents said they often or very often engaged their child in writing words. When asked if parents tried to teach their children to read words, only one parent reported 'never'; 32 parents indicated 'seldom' or 'sometimes' and 21 parents selected 'often' or 'very often'.

To answer the final research question, correlation coefficients were calculated for the emergent literacy measures and the answers on the home literacy questionnaire. There was a significant positive correlation between the number of times children were read to at other times of the week and their ability to retell a story, as indicated by the story quality measure ($r = .335, p = .028$). There was a positive correlation between the number of books in the children's homes and their letter name knowledge ($r = .456, p = .001$), as well as positive associations between the number of times a week the parents reported teaching their child to read words and their children's ability to write their names ($r = .357, p = .008$) and their letter name knowledge ($r = .426, p = .001$). Finally, there was a negative correlation between the age from which the children were read to and their name writing ($r = -.277, p = .043$) and initial phoneme awareness ability ($r = -.311, p = .022$), indicating that children whose parents started reading to them at an early age showed better performance on those measures.

Discussion

This study investigated the emergent literacy skills of four-year-old children attending free kindergarten early childhood education in New Zealand. A total of 92 children participated in a range of tasks measuring code-related and meaning-related skills known to be predictive of later literacy development. The first aim was to describe the emergent literacy performance of this group of children. Except for the story retelling task, the assessment measures were generally successful in eliciting analysable responses from the children. All children participated in the initial phoneme identification and the letter name identification tasks, and all except one child attempted to write their own name. Although all children seemed happy to listen to the story and attempted to answer the questions, 12% of the children either refused to retell the story or produced stories that were too short for analysis. As hypothesised by Westerveld, Gillon, and Boyd (2012), this non-compliance rate may simply be age-related and does not necessarily imply spoken language difficulties. As expected, there was a wide range in performance on all measures (see Table 2). These results are consistent with previous research examining the emergent literacy performance of American preschool-age children (e.g., Cabell et al. 2009; Lonigan et al. 1998).

To answer research question two, which posed whether children's emergent literacy performance was sensitive to age, several analyses were performed. When including all children, regression analyses showed no effects for age on any of the code-related measures (initial phoneme identity, letter name knowledge, emergent name writing), nor on the length of the story retell or the mean length of utterance used to retell the story. In contrast, significant age effects were found on measures of story comprehension and story retelling, with performance improving with age. For our subsequent analysis, we only included two groups of children: 1) children who had just started kindergarten (ages 4;0 – 4;3) and children who were approaching primary school entry (ages 4;9 – 5;0). Once again,

significant group differences were only found on story comprehension and story quality with the 'off to school' group showing significantly better performance (with medium to large effect sizes). There were no group differences on any of the other emergent literacy measures. Taken together, these results suggest that children improve significantly in their ability to comprehend and retell stories during their time at kindergarten, but not in their ability to write their own name, identify letters by name, or identify first sounds in words.

The significant improvement in story comprehension and retelling ability as a function of age may well be a result of the emphasis placed on stories at kindergarten. One of the communication goals in the New Zealand preschool curriculum, Te Whāriki (Ministry of Education 1996) states: "*Children experience an environment where they experience the stories and symbols of their own and other cultures*" (78). Kindergarten teachers are encouraged to provide children with experience of a wide range of stories and for children to hear and practice story-telling (79). As shown by the results from the parent questionnaire, most children came from literacy-rich homes with most parents reporting reading to their child each night, and the majority of parents reported owning more than 60 children's books. It is well known that children who arrive at preschool with better language skills, tend to develop their language skills more easily (e.g., Justice et al. 2008).

To further investigate the lack of increase in performance with age on code-related measures, and considering the nature of the emergent literacy assessment tasks (multiple choice), we calculated how many children scored above chance-level on letter name identification and initial phoneme awareness. Overall, 21 children (22.8%) scored above chance (6 or more correct) on phoneme awareness; 43 children (57.6%) scored above chance (7 or more letters correct out of 18) on letter name knowledge. There were no significant differences between the youngest children and the 'off to school' groups on the

percentage of children achieving above chance (Figure 1). Further analysis of the name writing scores showed that just over 30% of the children (n = 28) were starting to use identifiable letters, whereas 51.1% (n = 47) produced complete name representations. Considering the importance of these emergent literacy skills at school-entry in predicting future reading achievement (Tunmer, Chapman, and Prochnow 2006; Carson, Gillon, and Boustead 2013), these results warrant further investigation. There may be a need for a more direct emphasis in kindergarten education on stimulating children's phonological awareness and letter name knowledge, particularly as the children approach school entry. Not only do kindergarten teachers need to be aware of the importance of facilitating their students' phonological awareness skills, we also need to ensure these teachers possess the required knowledge to effectively teach this construct. Recent research conducted by Carroll and colleagues revealed that many early childhood professionals show low levels of explicit phonological knowledge (Carroll, Gillon, and McNeill 2012, 2014). After professional development and coaching, however, teachers not only showed significant improvement in their own knowledge, they were able to transfer that knowledge to natural teaching situations, resulting in an improvement of phonological awareness skills in their students (Carroll, Gillon, and McNeill 2014).

The finding that girls perform better than boys only on two code-related measures (letter name knowledge and name writing) is interesting in the context of global data showing girls outperform boys on reading comprehension measures at 10 years of age in most countries (Mullis et al. 2012). The data from the current study suggest that the gender differences in reading comprehension for New Zealand children may not be attributed to gender differences in oral narrative language, story comprehension, or vocabulary skills prior to school entry. Both letter name knowledge and name writing require direct teaching

and practise. This gender difference observed on these tasks warrants further investigation as perhaps from a young age boys and girls show differing preferences for the types of literacy tasks they engage with, or teachers and parents influence these aspects of development in differing ways for boys and girls during their kindergarten year.

Home literacy environment

The final question considered the relationship between children's home literacy environment and their emergent literacy performance. Generally speaking, children came from a literacy-rich environment, in which parents started reading picture books to their child before their first birthday, and often read to their child at bedtime. As we mentioned earlier, there was a positive correlation between the frequency of book reading in the home and the children's ability to retell a story. This finding confirms the notion that frequent exposure to stories may help build stable mental models for stories, which in turn will aid story comprehension and reading comprehension (see Graesser, Singer, and Trabasso 1994). We also found a positive correlation between the number of books in the children's homes, and the number of times a week a parent reported teaching their child to read words, and the children's letter name knowledge. These findings suggest it is the parents' input rather than the kindergarten experience that may promote the children's letter name knowledge (see also Sénéchal and LeFevre 2002). Finally, a negative correlation was found between the age from which the children were read to and their name writing and initial phoneme awareness ability. These results indicate that children whose parents started reading to them at an early age showed better performance on measures of phonological awareness and name writing.

Conclusion

This is one of the first studies to investigate the language and emergent literacy skills of four-year old children attending public (free) kindergarten in New Zealand. This study is notable in that information from the participants' home literacy environment was available alongside assessment findings of their emergent literacy skills, and their story comprehension and retell abilities. These data provide insight into both the home literacy context and the early childhood context and enable consideration of the contributions of both home and pre-school in promoting those code- and meaning-related skills critical to future successful reading acquisition. The findings of this study suggest that kindergarten teachers may need to adopt a more targeted approach to focused teaching activities and games within a language and literacy language rich environment if all children, including those children from more impoverished home literacy environments, are to achieve strong early literacy related skills at school entry.

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Appendix 1: Parent Questionnaire

Adapted from Boudreau (2005)

1. How often do you, or other members of your family, read to your child in a typical week?

• **At bedtime:**

never once 2 3 4 5 6 7 times more, please estimate:___

• **Other times:**

never once 2 3 4 5 6 7 times more, please estimate:___

2. During a typical week, how often does your child ask to be read to? Choose a number from 1 to 5, where 1 means *never* and 5 means *very often*.

never seldom sometimes often very often

My child asks to be read to: 1 2 3 4 5

3. Please circle the number you think best describes your child's situation. Choose a number from 1 to 5 where 1 means *never* and 5 means *very often*.

never seldom sometimes often very often

My child goes to the library: 1 2 3 4 5

4. Please estimate the number of children's books that are available in your household:

None 1-20 21-40 41-60 61-80 more, please estimate

5. How old was your child when you started reading picture books to him or her?

Please estimate age.....

6. During a typical week, how often do you engage in the following activities? Choose a number from 1 to 5 where 1 means *never* and 5 means *very often*.

never seldom sometimes often very often

I teach my child:

- How to write words 1 2 3 4 5

- How to read words 1 2 3 4 5

Table 1. Partial correlations between all emergent literacy measures (controlling for age)

	NW	PID	LNK	SC	SQ	UTT	NDW	MLU	GA
NW	--	.402**	.539**	.311*	.279*	.160	.202	.169	-.009
PID		--	.538**	.432**	.241*	-.016	.015	.000	.122
LNK			--	.228	.269*	.026	.112	.121	.082
SC				--	.283*	.008	.120	.301*	.301*
SQ					--	.524**	.674**	.516**	-.011
UTT						--	.910**	.369#	-.313*
NDW							--	.607**	-.277*
MLU								--	-.197
GA									--

Note: PID: initial phoneme identification; LNK: Letter name knowledge; SC: story comprehension; SQ: story quality; UTT: number of utterances used to retell the story; NDW: number of different words; MLU: Mean length of utterance in words; GA: percentage of grammatically accurate utterances. $n = 70$. * $p < .05$; ** $p < .001$, # $p = .001$.

Table 2. Participant performance on the emergent literacy measures

Measure	N*	Max	Range	Mean	SD
Score					
Name Writing	91	14	0 -14	10.2	4.3
Phoneme ID	92	10	1 - 10	4.9	2.6
LNK	92	18	1 - 18	9.6	5.7
SC	92	8	0 – 8	4.6	1.6
SQ	76	40	0 - 32	18.2	6.2
UTT	76	NA	1 – 25	7.9	4.6
MLU	76	NA	2.3 – 10.2	5.6	1.6
GA	76	100	0 – 100	77.5	23

Note: * 1 child refused to attempt the name writing task; 16 children did not produce an analysable story retell. SD: standard deviation; Phoneme ID: initial phoneme identification; LNK: Letter name knowledge; SC: story comprehension; SQ: story quality; UTT: number of utterances used to retell the story; MLU: Mean length of utterance in words; GA: percentage of grammatically accurate utterances.

Figure 1

Comparing the youngest (4;0 – 4;3 years) and the oldest ('off to school' 4;9 – 5;0 years) groups on measures of initial phoneme awareness and letter name knowledge. No significant group differences were found.

