

Repeated Book Reading and Preschoolers' Early Literacy Development

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The effects of repeated book reading on children's early literacy and language development were examined in a meta-analysis of 16 studies including 466 child participants. Results indicated that repeated book reading influenced both story-related vocabulary and story-related comprehension. Findings also showed that the adults' use of manipulatives or illustrations related to the story, positive reinforcement of children's comments, explanation concerning the story when asked, and open-ended questions to prompt child verbal responses were associated with positive child outcomes. Implications for practice are described.

Children often ask to have the same story read to them over and over. Oral story-telling traditions with children are based on the idea that repetition is valuable (Mandler & Johnson, 1977). In the 1980s, studies began to be published investigating the impact of repeated reading on the language and early literacy development of young children (e.g., Eller, Pappas, & Brown, 1988; Elley, 1989). The repeated reading of a picture book or story book by an adult to a child is a frequently recommended practice to enhance young children's early language and literacy development (Justice, Meier, & Walpole, 2005; Miller, 1998; Penno, Wilkinson, & Moore, 2002; Thielke, 1997).

The use of adult-child book reading to build the vocabulary and story comprehension of young children has been widely discussed in the literature (e.g., Dickinson & Smith, 1994; Pellegrini, Galda, Jones, & Perlmutter, 1995) and in research reports (e.g., Elley, 1989; Hargrave & Sénéchal, 2000; Justice, 2002; Sénéchal, 1997; Van Deren, 2003). Building on the theory that repeated exposure to learning content enhances understanding and mastery of the content, investigators found varying degrees of success in enhancing children's vocabulary through the use of repeated book reading episodes (Eller et al., 1988; Leung & Pikulski, 1990; Sénéchal, Thomas, & Monker, 1995). Researchers have also examined the role of specific types of adult-child interaction strategies on the enhancement of children's language development and story comprehension (e.g., Bellon, Ogletree, & Harn, 2000; van Kleeck, Gillam, Hamilton, & McGrath, 1997) during repeated book reading episodes.

The purpose of this research synthesis was to determine the manner in which repeated readings of the same book promote language and early literacy outcomes. A characteristics-consequences framework was used to conduct the research synthesis where the focus of analysis was identifying the conditions under which repeated book reading had optimal language and early literacy enhancing effects (Dunst & Trivette, 2009; Dunst, Trivette, & Cutspec, 2007). Different characteristics of repeated book reading were examined to isolate which characteristics matter most in terms of understanding how and in what manner repeated book reading influences young children's language and early literacy outcomes (Morrow, 1988).

Search Strategy

Studies were located using *story retelling* or *repeated story reading* or *story rereading* or *repeated reading* or *repeated practice reading* or *repeated storybook reading* or *repeated book*

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reading AND infant or neonate or toddler or preschool* or kindergarten as search terms. Both controlled vocabulary and natural language searches were conducted (Lucas & Cutspec, 2007). The search sources included Psychological Abstracts (PsychInfo), Educational Resource Information Center (ERIC), MEDLINE, CINAHL, Academic, Search Premier, Education Research Complete, and Dissertation Abstracts International. These were supplemented by Google Scholar, Scirus, and Ingenta searches as well as a search of an EndNote Library maintained by our Institute. Hand searches of the reference sections of the retrieved journal articles, books, dissertations, and unpublished papers were also conducted to locate additional studies.

Studies were included if the effects of repeated reading interventions on child language or early literacy outcomes were evaluated, and Cohen's *d* effect sizes for comparative conditions (e.g., one time vs. more than one time reading of the same story) or between group comparisons could be computed from data in the research reports. Single participant design studies were included only if it was possible to combine single participant data into group data.

Search Results

Sixteen studies were located that included 19 samples of children (Appendix A). The studies included 466 child participants. The number of participants in the individual studies ranged between 3 and 82 (Mean = 25). The average age of the children ranged between 34 and 82 months (Mean = 54). The samples were equally divided in terms of males (51%) and females (49%). Child development status was reported in 16 studies (18 samples). The studies included typically developing children (9 studies), children at-risk for family and socio-economic reasons (7 studies), children with identified developmental disabilities (1 study), and children identified as English as a second language learners (1 study).

Appendix B includes selected characteristics of reading episodes experienced by the children. Four types of books were used in these studies. Most of the studies described the book that was read as a storybook. Three studies used a picture book, two studies used a rhyming book, and one study used a science picture book. The number of different books read during the different studies ranged from 1 to 16 (Mean = 5). The number of readings per book ranged from 2 to 10 (Mean = 4). The duration of the interventions ranged from less than one week to 16 weeks (Mean = 6), and the number of days between the repeated readings during the intervention periods ranged between 1 to 21 days (Mean = 4). The duration of time spent in each repeated reading episode was reported in only six studies and ranged between 10 to 30 minutes (Mean = 18).

Appendix C includes the key features of the adult-child interactions during the repeated reading episode. The eight key features coded for each study were organized into the

following three major categories: child engagement, adult responsiveness, and the use of questions for eliciting child verbal responses. Table 1 shows how the eight adult features are organized within the three categories and includes the definitions that were used for coding each of the individual features. The eight features were coded as used or not used in the reading episodes for each study. The number of features used in a study ranged from 1 to 6 (Mean = 3).

The studies included the following outcome measures: children's expressive language (e.g., comments, labels; Crowe, 2000), story-related vocabulary; (e.g., specific vocabulary pre-selected from the story; Justice et al., 2005), and story-related comprehension; (e.g., events, characters present in the story; Dennis & Walter, 1995). Story-related comprehension included the child's narration of the story action (e.g., Crowe, 2000), recall of the story events (e.g., Dennis & Walter, 1995), and recognition of literacy constructs such as letter recognition during the story (e.g., Miller, 1998). The expressive language measures included standardized expressive language tests (e.g., Leung & Pikulski, 1990) and frequency of spontaneous words, comments, questions, etc. that occurred during the reading episodes (e.g., Fletcher & Jean-Francois, 1998). Story-related vocabulary included the number of targeted words correctly defined (e.g., Justice et al., 2005) and rating of targeted vocabulary acquisition (e.g.,

Table 1
Definitions of the Characteristics of the Readers' Repeated Reading Behavior

Reading Interaction Characteristic	Definition
<i>Child Engagement</i>	
Encourages Child Participation	Reader says, "Help me read the story," or engages in talk in general during the reading episode
Uses manipulatives/illustrations	Reader uses props, toys, or illustrations relevant to the book that help engage the child in the reading episode
<i>Adult Responsiveness</i>	
Gives positive feedback	Reader verbally reinforces child's comments or participation
Labels	Reader names an object, its properties, or an ongoing action, or asks child to label or point to object or action
Models responses	Reader offers examples of the response for which he/she is looking from the child
Explains	Reader clarifies the meaning of the words that the child may not yet know
<i>Questioning</i>	
Prompts responses	Reader asks child to make comments, ask questions, or share relevant personal experiences during the reading, and to verbally retell the story
Asks open-ended questions	Reader asks the child open-ended questions about the book during the reading episode such as predicting parts of the story

Leung & Pikulski, 1990). Thirteen studies used at least one outcome measure that focused on story-related vocabulary or story-related comprehension. These outcomes were measured from audio or video recordings, standardized assessments, or child interviews/assessments. The particular types of outcome measures, outcome constructs, and the study designs used in the studies are shown in Appendix D.

The research designs used by the investigators included one-group between condition comparisons (e.g., adult elaborating during reading episode vs. adult not elaborating during reading episode), one group pretest and post-test comparisons (e.g., before book-reading vs. two or more book-readings), and between group post-test comparisons (e.g., repeated book-reading vs. control group). Eleven studies included between condition comparisons, five studies included pretest and post-test comparisons, and eight studies included between group post-test comparisons.

Cohen's d effect sizes were computed for the between group or comparative conditions differences as the size of effect in the studies. The effect sizes were calculated as the mean difference between the intervention or comparative conditions divided by the pooled standard deviations of the two conditions (Dunst, Hamby, & Trivette, 2007). The average weighted effect sizes and 95% confidence intervals were used for substantive interpretation. A confidence interval not including zero indicates that the average effect differs significantly from zero at the $p < .05$ level (Shadish & Haddock, 2009). The Z -statistic was used to assess the strength of the relationship between the characteristics of adult-child reading episode interactions and the child outcomes. The relationships were examined in a number of different ways to discern which kinds of characteristics influenced child outcomes.

Synthesis Findings

The relationships between the repeated reading episodes and the three major study outcomes constituting the focus of investigation are shown in Table 2. The repeated reading interventions were significantly related to differences in the three outcome categories with the average effect sizes ranging between 0.54 (95% CI = 0.35-0.72) and 0.88 (95% CI = 0.74-1.01). None of the confidence intervals included zero, indicating that all the average effect sizes differed significantly from zero. However, the more related the

study outcomes (story related vocabulary and story-related comprehension) were to the content of the repeated book reading episode, the larger the sizes of effect.

The extent to which the relationships between the repeated book reading episodes and the outcome measures were influenced by the characteristics of adult interactions during the story book readings is shown in Table 3. The results indicated that the relationships between the repeated book reading episodes and outcome measures were affected by adult attempts to promote child engagement, adult responsiveness to child behavior, and efforts to encourage child participation through the use of questions. In studies where the adults used manipulatives or illustrations, the effect sizes tended to be larger ($d = 0.66$, 95% CI = .53-.79) compared to studies using more general encouragement strategies ($d = 0.48$, 95% CI = .34-.62). When adults provided positive reinforcement for children's responses or provided explanations to the children, the study effect sizes were larger ($d = 0.80$, 95% CI = 0.63-0.97 and $d = 0.68$, 95% CI = 0.54-0.83 respectively) than when the adults simply labeled or modeled the correct response for the children. The effect sizes for open-ended questions were larger ($d = 0.60$, 95% CI = 0.46-0.74) than for adult-prompted responses from the children ($d = 0.47$, 95% CI = 0.33-0.62).

Table 4 shows the effect sizes for the relationships between the number of repeated readings per book, the number of weeks of intervention, and the average number of days between the reading episodes and the child outcomes. All of the relationships were statistically significant regardless of moderator subgroups as evidenced by confidence intervals not including zero. There were, nonetheless, several noteworthy findings. First, the average effect size for the relationship between the number of books read to the children and outcomes was larger when only one book was read in the repeated book reading episode ($d = 1.08$, 95% CI = 0.86-1.29). Second, the average effect size for the relationship between repeated book reading and outcomes was larger when a book was read four or more times ($d = 0.87$, 95% CI = 0.67-1.07). Third, the average effect size between the repeated reading episodes and the study outcomes was larger when the interventions lasted four weeks or less ($d = 0.82$, 95% CI = 0.67-0.98). Fourth, the relationship between repeated book reading episodes and the study outcomes was moderated by the duration of the book reading episode when the duration

Table 2
Average Weighted Cohen's d Effect Sizes and 95% Confidence Intervals for the Relationship Between Repeated Reading Episodes and the Study Outcomes

Outcome Categories	Number		Average Effect Size	95% Confidence Interval	Z -test	p -value
	Studies	Effect Sizes				
<i>Story-Related Vocabulary</i>	11	30	.88	.74-1.01	13.04	.0000
<i>Story-Related Comprehension</i>	6	12	.65	.42-.88	5.53	.0000
<i>Expressive Language</i>	8	21	.54	.35-.72	5.76	.0000

of the reading session was 20 minutes or more ($d = 0.93$, 95% CI = 0.73-1.14). Fifth, the average effect size for repeated reading episodes and the study outcomes was larger for studies that had fewer average days between reading episodes ($d = 0.84$, 95% CI = 0.66-1.02). Taken together, the findings suggest that reading the same book on four or more occasions for 20 minutes or more during each episode over the course of a month had the greatest effects on the child outcomes.

The extent to which the relationships between the repeated reading episodes and the study outcomes were moderated by either child or study variables is shown in Table 5. The differences in the sizes of effects between repeated book

reading episodes and outcomes measures were moderated by both child age and child diagnosis. Children between 49 and 60 months of age had the largest effect size ($d = 1.60$, 95% CI = 0.86-1.26). The average effect size ($d = 0.87$, 95% CI = 0.74-1.00) was larger for children who were typically developing compared to children at risk for poor outcomes ($d = 0.49$, 95% CI = 0.34-0.65).

Discussion

Findings reported in this *CELLreview* showed that repeated book reading episodes had positive effects on the

Table 3

Average Weighted Cohen's d Effect Sizes and 95% Confidence Intervals for the Relationships Between Adult Interaction Characteristics of the Repeated Reading Episodes and the Outcome Measures

Adult Interaction Characteristics	Number		Average Effect Sizes	95% Confidence Interval	Z-test	p-value
	Studies	Effect Sizes				
<i>Child Engagement</i>						
Uses Manipulatives/Illustrations	9	36	0.66	.53-.79	10.00	.0000
Encourages Child Participation	6	30	0.48	.34-.62	6.78	.0000
<i>Adult Responsiveness</i>						
Provides Positive Response to Child's Comment	4	15	0.80	.63-.97	9.15	.0000
Provides Explanation in Response to Child's Query	6	23	0.68	.54-.83	9.23	.0000
Provides Label in Response to Child's Query	3	17	0.43	.22-.65	3.91	.0000
Models Response	3	10	0.31	.08-.53	2.68	.0075
<i>Questioning</i>						
Asks Open-Ended Questions	9	36	0.60	.46-.74	8.47	.0000
Prompts Response	9	37	0.47	.33-.62	6.37	.0000

Table 4

Average Weighted Cohen's d Effect Sizes and 95% Confidence Intervals for the Relationships Between Book Reading Characteristics and Repeated Reading Episodes and Outcome Measures

	Number		Average Effect Size	95% Confidence Interval	Z-test	p-value
Characteristics	Studies	Effect Sizes				
<i>Number of Books Reread</i>						
1	7	22	1.08	.86-1.29	9.82	.0000
2	5	13	.72	.56-.87	9.10	.0000
3 or More	7	28	.59	.44-.74	7.63	.0000
<i>Number of Readings per Book</i>						
2 or 3	13	43	.70	.59-.81	12.35	.0000
4 or More	6	20	.87	.67-1.07	8.59	.0000
<i>Weeks of Intervention</i>						
Less than 2 Weeks	5	16	.70	.47-.93	5.89	.0000
2 to 4 Weeks	8	21	.82	.67-.98	10.46	.0000
10 + Weeks	4	19	.40	.22-.58	4.43	.0000
<i>Duration of Reading Episodes</i>						
10 - 15	3	17	.30	.11-.49	3.06	.0022
20 +	4	10	.93	.73-1.14	8.93	.0000
<i>Average Days Between Readings</i>						
1	6	23	.84	.66-1.02	9.30	.0000
2	7	22	.71	.52-.90	7.29	.0000
3 +	5	15	.61	.45-.76	7.66	.0000

Table 5

Average Weighted Effect Sizes and 95% Confidence Intervals for the Moderators of the Relationships Between Repeated Reading Episodes and Outcome Measures

Moderators	Number		Average Effect Size	95% Confidence Interval	Z-test	p-value
	Studies	Effect Sizes				
<i>Child Age (Months)</i>						
< 48	8	32	.49	.34-.64	6.50	.0000
49 to 60	4	13	1.60	.86-1.26	10.30	.0000
61 or More	7	18	.84	.67-1.00	9.89	.0000
<i>Child Diagnosis</i>						
Typically Developing	9	25	.87	.74-1.00	12.94	.0000
At-risk	9	35	.49	.34-.65	6.35	.0000
<i>Published Studies</i>						
Yes	14	45	.71	.60-.82	12.96	.0000
No	5	18	.86	.64-1.08	7.59	.0000
<i>Comparison</i>						
Between Conditions	11	24	.84	.67-1.01	9.91	.0000
Pretest-Post test	5	19	.72	.52-.92	6.97	.0000
Between Group Post Test	8	20	.72	.52-.81	8.94	.0000

expressive language, story-related vocabulary, and the story comprehension of young children in the studies included in the research synthesis. More specifically, the largest effects were found between repeated book-reading episodes and story-related vocabulary and story-related comprehension.

Certain characteristics of repeated book reading opportunities were found to be associated with the most positive child outcomes. These characteristics included focusing on one or two books at a time, reading each book four or more times, reading for 20 minutes or more if the child is still interested, and reading the book daily or every other day.

The particular characteristics of the adult interactions that were associated with positive results included providing positive responses to child comments, giving answers to child questions, using visual aids and manipulatives, and asking a child open-ended questions. These characteristics of the adult interaction found to be beneficial in repeated book reading studies are consistent with other types of book reading studies (Deckner, Adamson, & Bakeman, 2006; Dunst, Simkus, & Hamby, 2012; Valdez-Menchaca & Whitehurst, 1992).

One of the limitations of this research synthesis is the small number of studies that included young children with disabilities. About half the samples of children were at-risk for delays because of environmental factors, and half the samples were children who were typically developing. Only one study (Crowe, 2000) focused on preschool children diagnosed with a disability (e.g., language impairment).

Implications for Practice

Since the 1980s, there have been proponents of the idea that reading the same book repeatedly was likely to have positive effects on early language development in young children (Eller et al., 1988; Elley, 1989). The results of this synthesis

provide support for this belief. The results from the synthesis have a number of implications for how adults should read books to young children. Reading the same book at least four times every few days allows the child sufficient exposure to words and the story theme to enhance the child's understanding of the story (e.g., Carger, 1993; Crowe, 2000). The findings from this synthesis also have implications for how adult-child interactions should occur during book reading episodes. Adult behaviors such as responding positively to the child's comments (e.g., Crowe, 2000; Fletcher & Jean-Francois, 1998), using manipulatives to encourage interactions (Crowe, 2000; Penno et al., 2002), encouraging the child's participation in the book reading episode (e.g., Leung, 2008; Penno et al., 2002), and asking open-ended questions which encourages the child to actively participate in the reading episode (e.g., Carger, 1993; Van Deren, 2003), are characteristics that likely will enhance the child's language development.

The findings from the research synthesis have additional implications for using repeated book reading episodes with young children to promote or increase vocabulary and story comprehension. When selecting books to read with young children, use books that are age-appropriate and interesting to the child and read the books repeatedly over the course of a couple of weeks. During the reading episodes, encourage the child to actively participate in the reading episode by reinforcing the child's comments or behaviors concerning the book (e.g., pointing to a picture), by providing explanations in response to the child's questions and words the child might not yet understand, and by asking the child open-ended questions about what is happening in the book or what is going to happen next.

Nearly all the *CELL* book reading practice guides (www.

earlyliteracylearning.org) include many of the repeated book characteristics found effective in promoting early literacy and language skills. All of the practice guides include the use of naturalistic teaching procedures that make reading fun and enjoyable. These teaching procedures are also effective intervention practices for promoting vocabulary, expressive and receptive language, and early literacy development.

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Appendix A
Background Characteristics of the Study Participants

Study	Sample Size	Child Mean Age (Months)	Child Gender		Ethnicity		Child Condition
			Male	Female	Child	Percentage	
Ackerman (1976)	19	54 ^a	NR	NR	NR	NR	NR
Carger (1993)	3	66	1	2	Latino	100	English as second language
Cornell et al. (1988)	72	37	36	36	Caucasian	100	Typical
Crowe (2000)	5	40 ^a	2	3	NR	NR	Developmental disabilities
Dennis & Walter (1995)	6	72	3	3	NR	NR	At-risk
Fletcher & Jean-Francois (1998)	16	35	7	9	African American Multiracial	81 19	At-risk
Justice et al. (2005) (Sample 1)	26	67	16	10	African American Caucasian Asian American	84 9 7	At-risk
Justice et al. (2005) (Sample 2)	31	67	19	12	African American Caucasian Asian American	84 9 7	At-risk
Leung & Pikulski (1990) (Sample 1)	24	60	12	12	NR	NR	Typical
Leung & Pikulski (1990) (Sample 2)	24	72	12	12	NR	NR	Typical
Leung (2008) (Sample 1)	14	41	NR	NR	Caucasian African American Asian American Latino	66 25 6 3	Typical
Leung (2008) (Sample 2)	18	54	NR	NR	Caucasian African American Asian American Latino	66 25 6 3	Typical
McDonnell et al. (1997)	4	34	2	2	Caucasian	100	Typical
Miller (1998)	23	48 ^a	NR	NR	African American Caucasian Asian American Latino	NR NR NR NR	At-risk
Morrow (1988)	52	48	NR	NR	Caucasian Non-Caucasian	60 40	At-risk
Penno et al. (2002)	47	78	24	23	Maori Pacific Islander Caucasian Other Asian American	34 23 19 13 11	Typical
Pronger et al. (1985)	45	82	NR	NR	NR	NR	Typical
Senechal (1997)	90	49	30	30	Caucasian Asian American	90 10	Typical
Van Deren (2003)	7	48	6	8	Caucasian Other	70 30	At-risk

^aMedian.
NR = Not reported.

Appendix B
Characteristics of the Repeated Book Reading Episodes

Study	Type of Book	Number of Books	Number of Readings per Book	Average Number of Days Between Repeated Readings	Duration of Each Session (Minutes)	Duration of Intervention (Weeks)
Ackerman (1976)	Storybook ^a	12	4	NR	NR	NR
Carger (1993)	Picture storybook ^b	1	3	2	NR	1
Cornell et al. (1988)	Picture storybook	2	2	1	30	< 1
Crowe (2000)	Storybook	1	3	2	NR	1
Dennis & Walter (1995)	Storybook	1	3	7	15	4
Fletcher & Jean-Francois (1998)	Rhyming book	1	6	3	NR	3
Justice et al. (2005)	Storybook	10	4	2	20	10
Leung & Pikulski (1990)	Picture storybook	2	3	2	NR	2
Leung (2008)	Informational picture book ^c	3	3	1	NR	4
McDonnell et al. (1997)	Storybook	1	10	1	NR	3
Miller (1998)	Rhyming book	16	4	1	10	16
Morrow (1988)	Storybook	3	3	21	15	10
Penno et al. (2002)	Storybook	2	3	7	NR	3
Pronger et al. (1985)	Storybook	1	3	3	NR	1
Senechal (1997)	Storybook	1	3	1	20	NR
Van Deren (2003)	Storybook	2	3	2	NR	1

^a Primarily text with pictures.

^b Pictures with limited text.

^c Informational science book.

NR = Not reported.

Appendix C
Key Features of the Repeated Reading Episodes

Study	Child Engagement		Adult Responsiveness				Questioning	
	ECP	MAN	PF	LAB	MOD	EXP	PR	OEQ
Ackerman (1976)			X					X
Carger (1993)		X					X	X
Cornell et al. (1988)		X		X			X	X
Crowe (2000)	X	X		X			X	X
Dennis & Walter (1995)					X		X	X
Fletcher & Jean-Francois (1998)			X					
Justice et al. (2005)						X		
Leung & Pikulski (1990)		X						
Leung (2008)	X	X					X	
McDonnell et al. (1997)				X				X
Miller (1998)	X	X		X		X	X	X
Morrow (1988)	X		X		X	X	X	X
Penno et al. (2002)	X	X				X		
Pronger, et al. (1985)							X	
Senechal (1997)			X			X		X
Van Deren (2003)					X		X	X

NOTE. ECP = encourages child participation; MAN = uses manipulatives/illustrations; PF = gives positive feedback; LAB = labels pictures; MOD = models child's responses; EXP = provides explanations; PR = prompts child's responses; QEC = asks open-ended questions.

Appendix D
Cohen's d Effect Sizes of Repeated Book Reading Episodes

Study	Type of Design	Type of Contrast	Comparison	Outcome Measure	Outcome Category	Cohen's <i>d</i>
Ackerman (1976)	One group	Book read once vs. Book read 2 or more times	Between conditions	Frequency of anticipatory child comments	Expressive Language	1.31
				Frequency of questions from child	Expressive Language	0.69
				Frequency of miscellaneous child comments	Expressive Language	1.90
Carger (1993)	One group	1 st book reading vs. 3 rd book reading	Pre/post-test	Total words used in child's retelling	Expressive Language	1.31
				Number of two syllable or more words used in child's retelling	Expressive Language	2.22
				Number of ideas or events from the story successfully conveyed in English during child's retelling	Expressive Language	1.24
				Number of target vocabulary words from book used in child's retelling	Story-Related Vocabulary	1.53
Cornell et al. (1988)	Two groups	1 st book reading vs. 2 nd book reading	Between conditions	Frequency of correct child recalls during reading (book 1)	Story-Related Comprehension	0.70
				Frequency of correct child recalls during reading (book 2)	Story-Related Comprehension	0.59
Crowe (2000)	One group	1 st book reading vs. 2 nd book reading	Between conditions	Frequency that child answered questions	Expressive Language	-0.82
				Frequency of labels and comments made by child	Expressive Language	1.71
				Frequency that child followed the action of the story	Story-Related Comprehension	-0.27
		1 st book reading vs. 3 rd book reading	Between conditions	Frequency that child answered questions	Expressive Language	-0.59
				Frequency of labels and comments	Expressive Language	0.55
Crowe (2000) cont.	One group	1 st book reading vs. 3 rd reading	Between conditions	Frequency that child followed the action of the story	Story-Related Comprehension	-0.16
Dennis & Walter (1995)	One group	1 st book reading vs. 2 nd book reading	Between conditions	Number of text units from story recalled in child's retellings	Story-Related Comprehension	0.14
		1 st book reading vs. 3 rd book reading	Between conditions	Number of text units from story recalled in child's retellings	Story-Related Comprehension	0.73
Fletcher & Jean-Francois (1998)	One group	Mean of 1 st 3 book reading sessions vs. Mean of last 3 book reading sessions	Between conditions	Number of different child responses	Expressive Language	2.22
				Frequency of child verbal activity	Expressive Language	0.92
Justice et al. (2005) (Sample 1)	Experimental-control	Repeated book reading vs. Control	Post-test	Number of target words correctly defined by child	Story-Related Vocabulary	1.35
				Number of target words correctly defined by child	Story-Related Vocabulary	0.10
Justice et al. (2005) (Sample 2)	Experimental-control	Repeated book reading vs. control	Post-test	Number of target words correctly defined by child	Story-Related Vocabulary	1.00
				Number of target words correctly defined by child	Story-Related Vocabulary	0.85

Appendix D, continued

Study	Type of Design	Type of Contrast	Comparison	Outcome Measure	Outcome Category	Cohen's <i>d</i>
Leung & Pikulski (1990) (Sample 1)	One group	1 st book reading vs. 2 nd book reading	Between conditions	Rating of target vocabulary acquisition	Story-Related Vocabulary	0.59
		1 st book reading vs. 3 rd book reading	Between conditions	Rating of target vocabulary acquisition	Story-Related Vocabulary	0.77
	Experimental-control	Repeated book reading vs. Control	Post-test	Rating of vocabulary	Expressive Language	0.10
Leung & Pikulski (1990) (Sample 2)	One Group	1 st book reading vs. 2 nd book reading	Between conditions	Rating of target vocabulary acquisition	Story-Related Vocabulary	0.81
		1 st book reading vs. 3 rd book reading	Between conditions	Rating of target vocabulary acquisition	Story-Related Vocabulary	1.41
	Experimental-control	Repeated book reading vs. Control	Post-test	Rating of vocabulary	Expressive Language	0.55
Leung (2008) (Sample 1) Condition 1	One group	Before book read vs. book read 3 times	Pre/post-test	Rating of target vocabulary comprehension	Story-Related Vocabulary	1.71
				Rating of target vocabulary comprehension	Story-Related Vocabulary	0.52
	Condition 2	Retelling vs. no retelling condition	Between conditions	Rating of target vocabulary comprehension	Story-Related Vocabulary	0.54
Leung (2008) (Sample 2) Condition 1	One group	Before book reading vs. book reading 3 times	Pre/post-test	Rating of target vocabulary comprehension	Story-Related Vocabulary	2.90
				Rating of target vocabulary comprehension	Story-Related Vocabulary	1.02
	Condition 2	Retelling vs. no retelling condition	Between conditions	Rating of target vocabulary comprehension	Story-Related Vocabulary	0.43
McDonnell et al. (1997)	One group	1 st book reading vs. book read 3 or more times	Between conditions	Number of child initiations	Expressive Language	1.24
				Number of different words used by child	Expressive Language	1.73
Miller (1998) Group A	One group	Before book read vs. book read more than 3 times	Pre/post-test	Print awareness	Story-Related Comprehension	0.20
				Letter identification	Story-Related Comprehension	0.11
				Comprehension	Story-Related Comprehension	0.68
Group B		Before book read vs. book read more than 3 times	Pre/post-test	Print awareness	Story-Related Comprehension	0.35
				Letter identification	Story-Related Comprehension	0.54
				Comprehension	Story-Related Comprehension	0
Group C		Before book read vs. book read more than 3 times	Pre/post-test	Print awareness	Story-Related Comprehension	0.42
				Letter identification	Story-Related Comprehension	1.00
				Comprehension	Story-Related Comprehension	0.30

Appendix D, continued

Study	Type of Design	Type of Contrast	Comparison	Outcome Measure	Outcome Category	Cohen's <i>d</i>
Morrow (1988)	Two groups	1 st book reading vs. 3 rd book reading	Post-test	Frequency of questions from child	Expressive Language	-1.56
				Frequency of child's comments	Expressive Language	1.64
				Frequency of predictions made by child	Expressive Language	1.76
				Frequency of child speech drawing on own experience	Expressive Language	-0.30
				Frequency of child's labeling	Expressive Language	-1.07
				Frequency of child's speech focused on narration	Story-Related Comprehension	1.39
Penno et al. (2002) Condition 1	One group	Before book read vs. 3 rd book reading	Pre/post-test	Percentage of correct child answers on target vocabulary test	Story-Related Vocabulary	1.21
				Percentage of correct child answers on target vocabulary test	Story-Related Vocabulary	0.28
				Percentage of correct child answers on target vocabulary test	Story-Related Vocabulary	0.70
Pronger et al. (1985)	Two groups	1 st book reading vs. 3 rd book reading	Post-test	Number of content words included in child's retellings	Story-Related Vocabulary	2.13
		1 st book reading vs. 2 nd book reading	Post-test	Number of content words included in child's retellings	Story-Related Vocabulary	0.67
Senechal (1997) Condition 1	Two groups	1 st book reading vs. 3 rd book reading	Post-test	Percentage of correct child answers on vocabulary test	Story-Related Vocabulary	1.1
				Percentage of correct child answers on vocabulary test	Story-Related Vocabulary	0.90
	Two groups	1 st book reading vs. 3 rd book reading	Post-test	Percentage of correct child answers on vocabulary test	Story-Related Vocabulary	2.30
				Percentage of correct child answers on vocabulary test	Story-Related Vocabulary	1.40
Van Deren (2003)	One group	1 st book reading vs. 2 nd book reading	Between conditions	Recall scores of child's retellings	Story-Related Comprehension	0.59
		1 st book reading vs. 3 rd book reading	Between conditions	Recall scores of child's retellings	Story-Related Comprehension	1.18