

**HOME READING ENVIRONMENT, MATERNAL SHARED BOOK READING  
STYLES, AND DIALOGIC READING INTERVENTION IN CHINA**

by

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## **ABSTRACT**

In the present study, three hundred and seventy-five middle class families with 3- to 6-year-olds attending a public kindergarten in Wuhan, China participated in a survey assessing demographic and shared reading related information. Ninety-six of these families were selected for the purpose of identifying maternal shared reading styles and evaluating the effectiveness of the dialogic intervention developed by Whitehurst and colleagues (1988). Many of the results are similar to the data reported in Western studies. First, the majority of mothers indicated that shared reading was a common and longstanding practice. Second, two maternal reading styles were identified: story telling and story collaborating. Middle-class Chinese mothers in the current study were more likely to adopt the story-telling style compared to their middle-class Western counterparts. Third, the behavioral changes in Chinese mothers that occurred after being trained in dialogic techniques, coupled with the greater language gains demonstrated by children in the intervention group as compared to the control group at both post- and follow-up-tests, suggest that the Dialogic Reading intervention is effective. Fourth, the current results are consistent with a model of shared reading that highlights reciprocal maternal and child influences. Whereas mothers contribute to children's language development by establishing adequate home literacy practices and support, children are active agents

within that context as evidenced by different levels of interest, which influences language achievement.

*Keywords: Shared book reading; Preschooler; Chinese; Language development*

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## **Introduction**

Parent-child or shared book reading is defined as a child's exposure to children's books with a caretaker's direct involvement in one or more literacy activities. These activities include looking at the book with the child, identifying and discussing pictures, asking and answering questions regarding the story, and making comments and providing feedback (p. 172, Celano, Hazzard, McFadden-Garden, & Swaby-Ellis, 1998). During shared book reading, children are exposed to narratives, vocabulary, syntax, story structure, and basic print concepts by their parents (Clay, 1979; Ferreiro & Teberosky, 1982; Justice & Ezell, 2000; Sénéchal & LeFevre, 2001; Snow, Burns, & Griffin, 1998; Sulzby, 1985; Whitehurst, Epstein, Angell, Payne, Crone, & Fischel, 1994). For example, Hoff-Ginsberg (1991) reported mothers' child-directed speech during book reading contained greater lexical diversity, greater syntactic complexity, and higher rates of topic-continuing replies than spoken language used during care-taking activities or free play. Therefore, the shared reading activities have been viewed as a vocabulary acquisition device (DeLoache & DeMendoza, 1987; Ninio, 1983; Pellegrini, Brody, & Sigel, 1985; Sénéchal, Cornell, & Broda, 1995; Sénéchal & LeFevre, 2001) and preparation for later literacy in school (Cornell, Sénéchal, & Broda, 1988; Elley, 1989; Sénéchal & Cornell,

1993; Sénéchal, LeFevre, Hudson, & Lawson, 1996; Sénéchal, Thomas, & Monker, 1995). Moreover, Neuman and Celano (2001) and Marvin and Wright (1997) noted that children with language delays were less likely than other children to listen to stories, engage in dialogue with adults about books being read, or to ask or answer questions about past and future events in stories.

Despite the scarcity of evidence at the time, the National Academy of Education emphasized the potential importance of the role of caregivers in reading development in 1985: “The single most important activity for building the knowledge required for eventual success in reading is reading aloud to children” (p. 3, National Academy of Education Commission on Reading, 1985). Since then, the frequency, as well as the quality, of parent-child shared book reading experiences during early childhood have been found to related to children’s future differences in academic achievement (DeLoache, & DeMendoza, 1987; Donahue, Voelkl, Campbell, & Mazzeo, 1999; Elley, 1989; Mason & Allen, 1986; Martin, Gonzalez, & Kennedy, 2003; Teale, & Sulzby, 1986; Zhu & Yuan 2005). Researchers have found positive effects of shared reading on preschool children’s emergent literacy and oral language skills, including increases in vocabulary (Sénéchal, 2000; Sénéchal & LeFevre, 2001), knowledge of print (Reese &

Cox, 1999; Justice & Ezell, 2000; Snow, Burns, & Griffin, 1998; Snow & Ninio, 1986; Wells, 1985; Whitehurst, Epstein et al., 1994), knowledge of morphology (Sénéchal, Pagan, Lever, & Ouellette, 2008), and complexity of conversational language (Erika Hoff-Ginsberg 1991; Morrow, 1988). For example, Wells (1985) studied shared book reading of parents and their children between 1 and 3 years by videotaping in their homes at 3-month-intervals. Using a sample of 32 normal children, he found that shared book reading, as measured directly in the home, was significantly associated with children's literacy knowledge (concepts of print and letter identification), oral language at 5 years assessed by teachers, and with reading comprehension at 7 years of age (Wells, 1985).

All of these studies support the contention that shared book reading offers benefits to young children. Most of this research, however, was conducted with Western samples, so it is not clear if shared book reading is something that would provide the same benefits in other cultures. In China, there has only been a few studies of shared reading (e.g. Chen, 2005; Ji, 2006; Zhu, 2003; Zhu & Yuan, 2005). However most of them were conducted using surveys. In this thesis, an attempt was made to test whether differences in shared book reading are related to differences in language ability in a Chinese sample; to explore the differences, if any, exist between Chinese and Western cultures in regard to shared

book reading, and to examine the relative contributions of mother and child to the didactic reading experience.

## **Review of Literature**

### **Aspects of the Mother-Child Dyads that Underlie Cognitive Changes**

**Establishing episodes of joint attention.** Joint attention refers to occasions in which both parent and child simultaneously focus on a shared object or event. Shared book reading provides a context for establishing periods of extended joint attention (Ninio & Bruner, 1978; Snow, Dubber, & de Blauw, 1982; Snow & Ninio, 1986; Sorsby & Martlew, 1991; Tomasello & Farrar, 1986), usually focused on the story contained in the print and illustrations (Baker, Frenandez-Fein, Scher, & Williams, 1998). Shared episodes may provide children with multiple learning opportunities that enhance language development (Bruner, 1985; Tomasello & Farrar, 1986). For example, the cognitively demanding task of mapping words onto the correct referent becomes easier while the referent is located on the page at which both parent and child are visually focused and the parent can point when the target object is less salient.

Tomasello and Todd (1983) provided an operational definition of episodes of joint attention as conditions during which either the child or the caregiver initiate interaction with the other; both child and caregiver then visually focus on a single object or event for more than 3 seconds; and at some point during the joint focus the child directed some overt behavior toward the mother (especially a look to the face) as evidence that he/she was aware of their interaction. Adopting this definition, Tomasello and Farrar (1986) reported that at 15 and 21 months, children spent about 2/3 of interaction time with their caregivers inside joint attention episodes during shared book reading and caregivers engaged in longer conversations, used shorter sentences, and produced more comments during those episodes. Tomasello and Farrar (1986) further stated that object labels given inside, but not outside, the joint attention episodes facilitated the child's concurrent and future language capabilities.

**Familiarizing with new vocabulary and complex language.** Joint book reading not only brings young children into touch with literacy conventions which are prerequisites for understanding texts (Cochran-Smith, 1984), but also exposes them to novel vocabulary and concepts (Ard & Beverly, 2004; Biemiller & Boote, 2006; DeTemple & Snow, 2003; Elley, 1989; Ewers & Brownson, 1999; Hargrave & Sénéchal,

2000; Hayes & Ahrens, 1988; Ninio, 1980, 1983; Justice, 2002; Justice, Meier, & Walpole, 2005; Penno, Wilkinson, & Moore, 2002; Reese & Cox, 1999; Robbins & Ehri, 1994; Sénéchal, 1997; Sénéchal & Cornell, 1993; Sénéchal, Thomas, et al, 1995), grammatical forms of written language (Hoff-Ginsberg, 1991), and discourse rules that typically occur in conversation (Mason & Allen, 1986). For example, Hayes and Ahrens (1988) found that children's books contain 50% more rare words than television or college students' conversations. Hoff-Ginsberg (1991) also argued that written language is more sophisticated than the spoken language used during care-taking activities or free play. Moreover, children are exposed to objects and environments in books that they might not experience in their daily lives. Thus, a child living in an urban environment might only learn about life on a farm through a book. In addition, researchers have demonstrated that young children's vocabulary size is reliably associated with the frequency of shared book reading at home, even when controlling for variables such as parents' education and children's nonverbal intelligence (Administration for Children and Families, 2003; Burns & Blewitt, 2000; Raikes, Luze, Brooks-Gunn, Raikes, Pan, Tamis-LeMonda, et al. 2006; Sénéchal & LeFevre, 2002; Sénéchal, et al., 1996; Sénéchal, LeFevre, Thomas, & Daley, 1998; Sénéchal, Thomas, et al.,1995; Sénéchal & LeFevre

2001, 2002). For example, Sénéchal and LeFevre (2001, 2002) reviewed several studies and concluded that exposure to new words during book reading resulted in rapid vocabulary growth and children who were more engaged (they either labeled novel words in the book or pointed to their illustrations) produced more new words than did children less engaged.

**Knowledge of inferential language.** Books contain inferential language about information, characters, events, and ideas that are not directly presented in the pictures and text. Children appear to make the greatest gains if their teachers (Dickinson & Smith, 1994) and mothers (Haden, Reese, & Fivush, 1996) require them to think beyond the information available in the present circumstance such as encouraging inferences about why an event happened or about characters' feelings, making predictions, or relating a story element to personal experience (DeTemple & Snow, 2003; Pellegrini et al., 1985). During such interactions, children become familiarized with representational function of words and pictures (Bus, van IJzendoorn, & Pellegrini, 1995; DeTemple & Snow, 2003; Reese, 1995; Snow, 1983; Snow & Ninio, 1986; Sigel & McGillicuddy-Delisi, 1984; Sorsby & Martlew, 1991). Van Kleeck, Woude, and Hammett (2006) found that an eight-week, twice-weekly 15-min one-on-one book sharing intervention with embedded

scripted questions that target inferential language resulted in gains in the inferential language skills of preschoolers with language impairments from low-income families. Several researchers also associated parental use of inferential language during book reading with young children's language and cognitive achievements (Painter, 1999; Pellegrini, Galda, Jones, & Perlmutter, 1995; van Kleeck, Gillam, Hamilton, & McGrath, 1997). Some have argued that simply listening to stories provides children with opportunities for developing decontextualized language skills or thinking in the abstract (Purcell-Gates & Waterman, 2000; Wells, 1987), since through such encounters with print children 'discover the symbolic potential of language; its power to create possible or imaginary worlds through words' (p.156, Wells, 1987). Others, however, contend that decontextualized language skills do not result from direct contacts with print during book reading, but emerge as a result of a variety of interactive experiences (e.g., Snow, 1991).

**Establishing reading routines.** Ninio and Bruner (1978) were the first to characterize mother-child storybook reading as an important routine in early language achievement. These routines provide regular, structured interactional opportunities that are predictable, expanded, and elaborated over time (Snow et al., 1982). Very young children tend primarily to label and comment on pictures and are unable to tell a coherent

story. They gradually learn to tell a more lucid story; their language gradually becomes written language-like until eventually they are able to read independently (Sulzby, 1985). Parents are thought to facilitate this process by adapting their interactions to their child's skill level (e.g., Ninio & Bruner, 1978). Parents who reported reading to their child frequently at younger ages and provided a wide range of literacy materials fostered children with superior expressive and receptive language development (Bus et al., 1995; Payne, Whitehurst, & Angell, 1994; Sénéchal & LeFevre, 2002) and higher levels of school readiness (Wells, 1985).

### **Meta-analyses**

Shared book reading is associated with many aspects of children's language and vocabulary growth (e.g., Mason & Allen, 1986; Sénéchal, Thomas, et al., 1995), emergent literacy skills (e.g., DeBaryshe, 1993; Payne, Whitehurst, & Angell, 1994; Mason, Stewart, Peterman, & Dunning, 1992; Scarborough, 1989; Share, Jorm, Maclean, & Matthews, 1984; Well, Barnes, & Wells, 1984), and future academic achievement (Cochran-Smith, 1983; Mason & Allen, 1986; Teale, 1981). Two meta-analyses, largely restricted to correlational data, were conducted to assess the reliability and magnitudes of the relationship between parent-child reading and the linguistic competence of the child

(Bus & van IJzendoorn, 1995; Scarborough & Dobrich, 1994). Although diverse reading styles had been identified (e.g., Watson, 1989; Watson & Shapiro, 1988), frequency of the meetings was selected as the target independent variable in both meta-analyses because it was the only measure commonly used.

Scarborough and Dobrich (1994) examined 24 studies of parent-child shared book reading and language/literacy outcomes during preschool and early school year, published between 1960 and 1993. A relationship between frequency of shared book reading and subsequent linguistic competence was obtained; however, the associations between frequency and literacy achievement during school years, emergent literacy skills prior to school instruction, and preschool language abilities, were not robust in comparison to the contributions of other predictors such as demographic indices of SES and early interest in literacy. They estimated that only about 8% of the variance ( $r \leq .28$ ) in emergent literacy or literacy outcomes in children could be attributed to preschool children's exposure to books.

Bus and colleagues (1995) employed a more sophisticated statistical methodology (Advanced BASIC Meta-Analyses developed by Mullen, 1989) to assess the relationship between shared book reading and language outcomes. They reviewed a slightly more

extensive body of studies (29 studies which included 5 unpublished papers) and weighted each effect size (Cohen's *d* or standardized difference between the means of two groups) to prevent large samples from dominating the outcome. They also concluded that frequency of parent-preschooler book reading accounted for about 8% of the variance in outcome measures when the effect of SES was partialled out.

Scarborough and Dobrich (1994) noted that the effects of parent-preschooler reading were not always distinguished from the effects of other covarying predictor variables. For example, it is possible that the frequency of reading aloud in the home is simply a marker variable for other characteristics that are linked such as the child's interest in print and learning rather than the parents' interest in reading to the child. Thus, there only was a modicum of evidence that frequency of shared book reading affected child's academic performance, despite the wide acceptance of such a connection.

### **Effective interventions**

Intervention studies provide evidence of the benefits of shared book reading (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Crain-Thoreson & Dale, 1999; Crowe, Norris, & Hoffman, 2000; Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996; Fielding-Barnsley & Purdie, 2003; Hargrave & Senechal 2000; Justice & Ezell, 2000;

Justice, Kaderavek, Bowles, & Grimm, 2005; McNeill & Fowler, 1999; Ninio, 1983; Whitehurst, Arnold, et al., 1994; Whitehurst, Epstein, et al., 1994; Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Vadez-Mechaca & Caulfield, 1988). For example, interventions were effective in promoting children's oral language development (e.g., Crain-Thoreson & Dale, 1999; Fey, Cleave, Ravida, Long, DeJmal, & Easton, 1994; Girolametto, Pearce, & Weitzman, 1996; Whitehurst et al., 1988) and other aspects of emergent literacy development, such as print awareness (e.g., Justice & Ezell, 2000, 2002; Saint-Laurent, Giasson, & Couture, 1998).

Whitehurst et al. (1988) were the first to intervene with Head Start children whose language skills and home experiences were relatively impoverished. The techniques they taught the mothers are called dialogic reading. Mothers are trained to take the role as an active listener. The dialogic reading method offers a mother a guide using the PEER sequence (P=Prompts, E=Evaluation, E=Expansion, R=Repetition). There are five types of prompts, called CROWD, that are used in dialogic reading to begin PEER sequences. C stands for completion prompts. The adult leaves a blank at the end of a sentence for the child to fill in. An example of a completion prompt is: "The bird ate one \_\_\_\_." R stands for recall prompts, which are questions about what happened in a book that a child has

already read. Recall prompts work for nearly everything except alphabet books. They help children in understanding story plot and in describing sequences of events. An example of a recall prompt is: “Do you remember what happened to all the plants?” O stands for open-ended prompts, which help children increase their expressive fluency. They are open-ended because there is no single correct response and many appropriate things that a child might say in response to the prompt. An example of an open-ended prompt is: “What is happening on this page?” W is for wh- prompts, which include what, where, when, and why. Their primary function is to draw children’s attention to the illustration details and teach them new vocabulary. An example of a Wh- prompt is: “What does the boy hold in his hand?” Children are asked to relate the pictures or words in the book they are reading to real-life experiences. Finally, D stands for distancing prompts. They help children link books and the real world, as well as helping with verbal fluency, conversational abilities, and narrative skills. An example of a distancing prompt is: “I don’t think Ralph likes the cake. What’s your favorite dessert? Are there any desserts that you don’t like?”

Whitehurst et al., (1988) recruited 21 to 35 month-olds from middle- to high-SES families and tape-recorded the reading sessions at home. Mothers in the trained group

engaged in the target dialogic PEER reading techniques; by contrast, mothers in the control group read to their children as frequently but in customary fashion; straight reading and comments were primarily employed. At the posttest immediately following the reading intervention, children in the intervention group obtained a 6-month gain in expressive vocabulary and an 8.5-month gain in expressive language fluency. As compared to their counterparts in the control group, these children had a higher mean length of utterance (MLU), greater grammatical complexity of speech, and better scores on standardized tests of expressive language ability. Nine months after the completion of treatment, similar but smaller differences between the two groups were obtained.

In follow-up studies, Whitehurst and his colleagues recruited children in different age groups from diverse SES levels and found that in the intervention group, children's receptive (children's comprehension of novel words) and expressive (children's production of novel words) vocabularies were improved (e.g., Whitehurst, Arnold, et al, 1994; Whitehurst, Fischel, Caulfield, DeBaryshe, & Valdez-Menchaca, 1989). Several investigators also found dialogic reading enhanced children's literacy abilities. For example, Whitehurst, Epstein, et al., (1994) reported greater gains in print concepts, letter recognition, and writing for the 4-year-olds from low-SES families compared to their

counterparts receiving no intervention. The positive effects on emergent literacy skills were maintained through the end of kindergarten years (Whitehurst, Zevenbergen, Crone, Schultz, Velting, & Fischel, 1999). Furthermore, Whitehurst, Epstein, et al. (1994) found that the measure of compliance with the at-home book reading program by primary caregivers in the intervention condition correlated with language outcome scores ( $r = .51$ ), controlling for pretest scores.

Whitehurst's work was extended by a number of investigators. Arnold et al., (1994), Dale et al., (1996), and Whitehurst, Arnold, et al. (1994) implemented Whitehurst's intervention program through a videotape-training package designed to teach dialogic reading techniques. Greater gains in expressive and receptive language for the 24 to 34 month-olds from middle- to upper-class families were revealed in a 4-week intervention. Hargrave and Sénéchal (2000) successfully incorporated dialogic reading into a day care program. Each caregiver was responsible for dialogic reading to eight children during circle time. The ratio used by Whitehurst and colleagues (1994) typically did not exceed five children per caregiver.

Valdez-Menchaca and Whitehurst (1992) applied the dialogic reading procedure in a day-care in Tepic, Mexico using 20 2-year-olds from low-income backgrounds,

whose families had a mean income of less than \$2,500 per year. The linguistic ability of these children had developed slowly as measured by standardized assessments, even though the children's physical and motor development were normal. Children were matched by language test scores and then were assigned randomly to an intervention or control condition. Throughout the 6 weeks of the program, each child in the intervention group was presented with high rates of "who, what, when, where, how, and which" questions (referred to hereinafter as "wh- questions"), open-ended questions/directives, corrections, expansions, and praise contingent on the child's verbal productions. In each session, a teacher sat with a child and asked the child "to help the teacher to tell the story." The teacher and the child took turns in telling the story about each page and the child was never treated as a passive listener. In contrast, no specific language stimulation was provided to the control group children. Instead, they engaged in one-to-one activities with a teacher that were designed to foster their perceptual and motor skills, such as building puzzles, coloring books, and cutting paper. Effects of the intervention were assessed through standardized language tests and by comparing the children's spontaneous language while they shared a picture book with an adult who was unaware of their group

assignment. As in the Whitehurst et al.'s (1988) study, positive effects on children's expressive language were obtained.

In Australia, Elias, Hay, Homel, and Freiberg (2006) and Fielding-Barnsley and Purdie (2002; 2003) used the dialogic reading intervention with children who were considered early "at risk" readers. In the Elias et al.'s (2006) study, 62 caregivers/parents were involved, who came from a disadvantaged low socio-economic status community where English was not the first language in 54 per cent of the homes. They attempted to increase parental involvement in their preschoolers' education and, consequently, enhance children's language and emergent literacy development. Before the intervention, an average of 38 minutes of parent-child reading occurred per week. Over the six months of the program, the amount of child-parent reading increased to 89 minutes. In the following year, the preschool children in the program were more literacy ready for reading and more willing to engage with text and illustrations as compared to other children coming from the same four preschools.

Fielding-Barnsley and Purdie (2002, 2003) included activities designed to encourage parents to develop their preschool child's concepts of print, phonological awareness, and alphabet knowledge. Preschool children were selected for the intervention

if there was a family history of reading disability, such as a sibling who was not coping with reading in school. Parents in the experimental group were instructed in how dialogic reading should be implemented using videotape with a pre-reading booklet and telephone support from an experienced literacy teacher when requested. After the eight-week intervention, the frequency of shared book reading increased and the repeated exposures to books facilitated children's language development and confidence with text, relative to the baseline for the experimental groups.

### **Cross-Cultural Comparisons: China versus Western Countries**

Vygotsky (1978) argued that social guidance shapes the culturally valued ways that children come to think and solve problems. Rogoff (1990) asserted, "individual development of higher mental processes cannot be understood without considering the social roots of both the tools for thinking that children are learning to use and the social interactions that guide children in their use" (p. 35). Mistry also declared, "human development is conceptualized as the acquisition and appropriation of culturally defined modes of speaking, thinking, and acting" (Cowan, 1997, p. 347). Following these socio-cultural approaches, several researchers emphasized the importance of integrating students' everyday life experiences and cultural practices into education (Bloch, 1999;

Breen, Loudon, Barret-Pugh, Rivalland, Rohl, Rhydwen, Lloyd, & Carr, 1994; Heath, 1983; Toohey, 2001). During parent-child book sharing activities, a skilled adult can monitor a child's understanding of the text by questioning and, if the child doesn't understand, can appeal to the illustrations or create bridges from the text to the child's experience to aid comprehension (Rogoff, 1990). Through this joint construction of meaning for the story, parents emphasize the appropriate social behaviors and children practice and become socialized into the belief systems, interpersonal dynamics, and communicative patterns of their culture (Heath, 1983; Pelligrini & Galda, 2003; Rogoff, 1990). However, researchers who have attempted to discover how properties of mother-child interaction contribute to children's language development focused on Western, middle-class mothers and children. Therefore, these data may not be representative of other populations.

There are many ways that cultural traditions might be influential including parents' beliefs, parents' reading styles, content chosen for the reading episodes, and vocabulary preference.

**Beliefs and Expectations.** Cultural context includes what community members believe about language and its usage (Park & King, 2003) and those beliefs have

consequences for how parents engage their children in early literacy activities. Cultural psychologists have claimed that in Euro-American culture an independent construal of the self is emphasized and verbal expression is highly valued whereas in East Asian culture an interdependent self and empathy with others is encouraged (Markus & Kitayama, 1991). Several researchers suggest that parents' beliefs about literacy are related to their behaviors during shared reading (Baker & Scher, 2002; DeBaryshe, 1995; DeBaryshe, Binder, & Buell, 2000; Lynch, Anderson, Anderson, & Shapiro, 2006; Serpell, Baker, & Sonnenschein, 2005; Sonnenschein & Munsterman, 2002). Particularly, American middle-class mothers usually treat their children as potential conversational partners and consider it desirable to have children speak articulately (Heath, 1983; Snow, Arlman-Rupp, Hassing, Jobse, Joosten & Vorster, 1976; Snow, de Blauw, & Van Roosmalen, 1979). Normative response of mothers in other sociocultural groups, however, may differ (Heath, 1983; Schieffelin & Ochs, 1986a). Researchers have found that in cultures that emphasize interdependent values, such as China, children are often encouraged to produce short and succinct accounts of stories and personal memories. For example, Wang and colleagues (Wang, 2001a, 2001b, 2006; Wang, Leichtman, & Davies, 2000) found that unlike American mothers, Chinese mothers create a conversational

environment that is repetitive and low in elaboration while talking about past events with their 3-year-old children. Children's use of extended narratives and embellished information is discouraged. Similar patterns have been demonstrated in Korean dyads, in which mothers were more likely than U.S. mothers to prevent their 3-year-olds from introducing their own topics (Mullen & Yi, 1995); and in Japanese dyads, in which children's contributions were often kept short by interrupting (Minami & McCabe, 1995).

Even within Western populations, there is evidence of social class differences in childrearing beliefs, maternal behaviors, and characteristics of the home environment (Bingham, 2007; Celano, Hazzard, McFadden-Garden, & Swaby-Ellis, 1998; DeBaryshe, 1995; Luster, Rhoades, & Hass, 1989; Skinner, 1985). For example, DeBaryshe (1995) found a robust association between maternal language-related beliefs and reading practices for a lower income and a working-class sample of children aged 26 to 60 months. Mothers who held the beliefs that shared book reading would facilitate their children's subsequent language and literacy-related skills provided their children with broader and more frequent joint reading experiences and engaged in more discussion with their children during these interactions. Celano et al. (1998) investigated a group of low-income families of preschoolers attending a pediatric clinic and successfully used

maternal reading beliefs to predict two self-reported measures of shared reading frequency. Bingham (2007) also found positive relations between maternal beliefs in effective book reading and the home literacy environment (i.e., how many books owned by the child, frequency of visits to the library, etc.) as well as the quality of joint-book reading interactions.

**Style.** Language is a crucial part of culture (Schieffelin, Woolard, & Kroskrity, 1998) and caregivers interact with their children differently across cultures and communities during shared book reading (Park & King, 2003). The distinction in style reflects cultural differences both in how the shared narrative is defined as well as in mothers' general assumptions about how children develop into members of their culture. While many researchers have examined the frequency of book reading as reported by parents and its relation to concurrent measures of language, reading readiness, and to later school performance, fewer researchers have directly observed the maternal reading styles and how these differ across age and family situations. Throughout the last two decades investigators have compared the diversity of shared book reading interactions in a variety of countries including Finland (Silven, Ahtola, & Niemi, 2003), Netherlands (Bus, Leseman, & Keultjes, 2000), Italy (Tardif, Shatz, & Naigles, 1997), Japan (Murase, Dale,

Ogura, Yamashita, & Mahieu, 2005), China (Tardif, Gelman, & Xu, 1999; Tardif, Shatz, & Naigles, 1997), and Peru (Melzi & Caspi, 2005). For example, Melzi and Caspi (2005) recorded mothers sharing a wordless picture book with their 3-year-olds and coded each maternal utterance for pragmatic function (i.e., interactive or informative) and narrative context (i.e., narrative or non-narrative). They identified two distinct book reading narrative clusters: Storytellers, who act as the sole narrator of an engaging story without actively seeking the child's contribution, and storybuilders, who co-construct the story with their young child through a series of questions and answers. Seventy-five percent of Peruvian and 7% of U.S. mothers adopted the storytelling style, whereas 25% of Peruvian and 93% of U.S mothers adopted the storybuilding style. Also, Murase, Dale, Ogura, Yamashita, and Mahieu (2005) compared the sequential structure of mother-child reading activity in Japanese and American dyads with children between 12 and 27 months. Japanese mothers followed the osmosis model during which mothers share ideas with their children via rhetorical questions whereas U.S mothers followed the instruction model represented by eliciting elaborative information and scaffolding via instructional feedback. Japanese children were more likely to produce labeling in the form of imitation

whereas their U.S counterparts were more likely to produce labeling following maternal information-asking questions.

Although direct comparisons between Western and Chinese cultural communicative styles during shared book reading are limited, what is known about the cultural differences in parental narrative styles when discussing past events with children might be informative (Fivush & Nelson, 2004). Wang, Leichtman, and Davies (2000) asked 21 Caucasian American mothers from Boston and 20 Chinese mothers from Beijing to talk with their 3-year-olds about two selected events that took place within the month before the interview. All the mothers were college educated and middle or upper-middle class. American mothers showed a high-elaborative style, embellishing descriptions of past events and collaboratively recreating stories with their children about shared experiences. Chinese mothers demonstrated a low-elaborative style. They provided short and direct conversations with few details, introduced the topics and controlled the activity discussions, repeated factual questions in order to elicit the correct response, or presented the wanted answer to their children during discussion. Similar results were also reported by Fivush and Haden (2003); Han, Leichtman, and Wang (1998); MacDonald, Uesiliana, and Hayne (2000); Wang and Leichtman (2000); and

Wang, (2001). If these narrative styles are used in shared book reading, then North American mothers would be more likely to employ the dialogic reading techniques whereas Chinese mothers would be more likely to engage in straight reading, labels, and comment, leaving the child in the role of a passive listener.

**Content.** Research reports containing information about children's narrative development in diverse communities offered descriptions of the content in interactions (e.g. choosing to talk about self versus others) that foster narrative skills (e.g., Fung, Miller, & Ling, 2004; Heath, 1983; Melzi & Caspi, 2005; Miller, Wiley, Fung, & Liang, 1997; Wiley, Rose, Burger, & Miller, 1998). Since culture influences what information and how much talking with children is acceptable (Fajardo & Freedman, 1981; Schieffelin & Ochs, 1983; Ochs & Schieffelin, 1984; Wang & Leichtman, 2000), during narrative conversations about personal experiences, researchers point out that Chinese society defines the self in relation to others and conversations that highlight the self are not valued (Han, Leichtman, & Wang, 1998; Leichtman, Wang, & Pillemer, 2003). For instance, Chinese mothers, in comparison to their Western counterparts, place a greater emphasis on proper behavior, discipline, and social obligations (Wang, 2001a; Fivush & Haden, 2003); emphasize the importance of group solidarity and interpersonal

connectedness with higher proportions of other to self-mentions (Han, Leichtman, & Wang, 1998); and prevent children from introducing their own topics (Mullen & Yi, 1995)

**Vocabulary.** Given that the style and content of joint picture book reading varies notably across cultures, it is possible that there are qualitative differences in the language usage in different cultures during these interactions that will result in variations in children's language gains. In particular, when looking at a picture book with their children, what parents talk about depends on how they perceive the contents. Cross-cultural studies on scene perception (Chua, Boland, & Nisbett, 2005; Masuda & Nisbett, 2001; Miyamoto, Nisbett, & Masuda, 2006) have revealed that when shown an identical set of naturalistic scenes and tested on the attention directed toward different parts of those scenes (measured via eye tracking or a change detection task), adults from cultures that privilege individualistic values, including European and American societies, tended to focus on the focal agent or object in the scenes, but adults from cultures that emphasize collectivistic values, such as Chinese societies, paid more attention to the relations and context in which the focal elements were embedded. For example, when looking at a picture with a girl petting a cat, American mothers tend to emphasize the girl, the cat, and their features, whereas Chinese mothers pay more attention to how the girl and the cat are

related through the action of petting, the nurturing role of the girl, and the dependent role of the cat (Chan, Brandone, & Tardif, 2009). Because concepts of objects and relations tend to be articulated using common nouns and main verbs, respectively, the relative proportion of common nouns and main verbs that parents include in their speech can serve as a proxy to the perceptual preferences with which they approach the pictures.

Tardif, Gelman, and Xu (1999) firstly explored the relative differences in the proportions of nouns and verbs used by American and Chinese mothers with their 20-month-old toddlers in joint picture book reading. Dyads in both cultures were given 10 minutes to look at an identical picture book containing 43 wordless pictures, with half of the pictures chosen from books in each culture. American mothers produced significantly more common nouns and fewer main verbs than did the Chinese mothers. Consistently, American toddlers tended to spontaneously produce more common nouns and fewer main verbs than did Chinese toddlers. This tendency stayed consistent across all the language measures (the Child Development Questionnaire created by the authors and the MacArthur Communicative Development Inventory) and the levels of children's vocabulary size. Chan et al., (2009) reexamined the transcripts in Tardif et al's (1999) research excluding all the picture-irrelevant (e.g., "Are you tired?") and behavioral

control (e.g., “Turn the page”) maternal utterances. Differences in common noun and main verb production both within and across languages were sustained: American mothers produced significant more common noun types than main verb types; Chinese mothers produced significant more main verb types than common noun types; American mothers produced significant more common noun types than did Chinese mothers. In addition, Chinese mothers produced more picture-relevant speech in terms of both variety and quantity of words. However, when comparing in terms of mean length of utterance, American mothers were more likely to produce elaborated and lengthy narratives.

## **Shared Book Reading in China**

### **Misunderstandings about Shared Book Reading**

In contrast to the rich body of literature describing shared book reading in middle-income and, to a lesser extent, low-income families in Western countries, there is scarcity of such information in China. Nevertheless, several Chinese researchers made educational recommendations about shared book reading based on their reading of the Western literature and their own teaching experiences. Despite the growing concern about early childhood education in Chinese families, especially in urban households, some of these concerns are accompanied by misunderstandings. First, there is little agreement on the

appropriate onset age of shared book reading. Some Chinese parents equate reading with vocabulary teaching and consider it is too early to read to their children during infancy (Lv, 2006) whereas other parents started to read before the child is born. Unlike parents in Western developed countries who usually start to read to their infants between 6 and 9 months in middle class samples (e.g., Deckner, Adamson, & Bakeman, 2006; DeBaryshe, 1993; Payne et al., 1994;), Chinese parents generally initiate reading activities after their children reach 12 months (Shu, 2009; Ji, 2006). Second, there are few reading materials available appropriate for young children in China (Zhou, 2002; Zhu & Yang, 2003, Zheng, 2009). Classical fairy tales and old primers are highly respected, pets and cartoon characters are common protagonists, and teaching of the morality of good and/or evil is a critical theme (Chen 2005; Ji, 2006; Tang, 2003; Shu 2009; Wang, 2009; Zheng, 2009). In addition, although the Chinese publishing industry is gradually providing age appropriate reading materials, the majority of books are for children older than 6 years (Shu, 2009). Third, whereas Chinese parents are willing to invest money in children's education (accounting for 40% of household income), some of them spend little time reading with their children (Shu, 2009). For example, less than 15% of the families spent 20 minutes reading daily with their children aged from 2 to 6 in Zhoushan (Zhang, 2006).

## **Surveys on the Shared Book Reading**

Since reading in early childhood first stated as part of the education goal in the “Guidance for Kindergarten Education” (Trial version)” in 2001, several investigators surveyed early reading activities in China. Shu and Wu from Beijing Normal University and Anderson, Jana, and Li from the Reading Research Center in the University of Illinois cooperatively investigated shared book reading activities in more than 20 preschools and primary schools in Beijing, Tianjing, and Baotou (Zhang, 2009). Based on their survey, they developed guidelines aimed to change parents’ concept of shared book reading and home literacy environment. For example, Shu and her colleagues (2002) examined the relation between home literacy environment and children’s language abilities using 269 six-year-olds and 305 nine-year-olds from four primary schools in Beijing. A questionnaire assessing the number of picture books in the home, frequency of shared picture book reading, age of onset of picture book reading, average duration of shared picture book reading, frequency of shared trips to the library and bookstores, frequency of parents’ private reading, frequency of child’s private reading, and parents’ educational level was completed by each child’s primary caregiver. A composite literacy environment score derived from the questionnaire was correlated with a composite child

language measure derived from tests of children's receptive and expressive language abilities. From 10.3% (six-year-olds) to 17.5% (nine-year-olds) of the variance in child's language scores were accounted for by home literacy environment. Therefore, effective shared reading activities during preschool years are expected to better prepare children for school years.

The cooperative project was extended to other cities in China. Large samples were surveyed to gain information about the number of books at home; the materials chosen; initiation, location, frequency, duration, and time of collaborate reading activities; parental attitudes; parental knowledge about shared book reading; and occasionally parental reading styles. For example, Chen (2005) investigated 242 3- to 6-year olds and their parents in urban districts of Chongqing. Although parents purchased children's books (85.5% of children owned more than 10 books at home), some of them regarded shared book reading as word-recognition teaching and intellectual development, and a majority of parents (81%) integrated moral preaching. Some parents were unlikely to initiate shared book reading while others took control of the reading and treated their children as passive listeners. Approximate 15 to 30 minutes were spent on shared book reading, usually 3-4 times per week before bedtime. Parents either imitated characters'

behaviors (66.9%), varied speech tones (59.1%), or asked questions about materials in books (56.2%). However, most parents used only one method. Ji (2006) investigated 273 preschoolers (92 three- to four-year-olds, 100 four-to-five-year-olds, and 81 five-to-six-year-olds) in Guilin and reported that 43.6% of parents started shared book reading when their child was 1 year old. The younger the child was at the time the mother was surveyed, the earlier shared book reading was reported to be introduced to the child, perhaps reflecting an increasing emphasis on dyad reading in Chinese families. Most parents rated triggering children's interest in reading and establishing reading habits as their priority for engaging in shared book reading. However, one third of parents considered parent-child reading as fostering their children's reading and writing abilities. Half the parents read with their children before bedtime three to four times a week, but in 69 families, children were read to no more than once a week. The average duration of reading for most families was 20 minutes per session and parents significantly decreased the frequency of shared book reading when their children were 6 years old. Several parents used more than one reading technique. The most used technique was pointing to related pictures while reading books (65.5%), followed by instructing children to observe pictures and words with explanations (57.9 %). Most parents formed their book reading styles based on their

experiences (71.8%), reflecting that instruction might improve parental reading styles.

Zhu and Yang (2003) recruited 314 participants with children aged 3-6 years old from four cities (Nanjing, Jiangsu, Zhoushan, and Shenzhen); a higher proportion of pointing to relevant pictures while reading books (68.9%) was found with their sample. They also found that 45.2% of parents answered questions asked by their child without initiating questions; 37.6% of parents asked questions without providing any answers to their child's questions.

### **Observations of Maternal Shared Book Reading Styles and Interventions**

Information about how parents read to their children in China usually has been based on parental reports (Chen, 2005; Li, 2011; Ji, 2006; Tang, 2003; Wang, 2009; Zhu & Yang, 2003). Most participants reported to actively engage their child aged 3-6, by asking and/or answering questions during book reading activities. In the only observational Chinese study, Zhu (2003) videotaped 75 twenty-minute mother-child dyads in Shanghai and summarized four book reading narrative styles parents used when reading with 3 to 6-year-olds. First, parallel readers focused on the picture books without engaging their children. These parents might try to draw children's attention by changing intonation pattern and speech rate; however, interactions between parents and children

were not observed. Another scenario for the parallel pattern would be that parent posed questions during reading but were ignored by their child. Second, deviating readers ignored the story line of the picture books, fussed about trivial details, and talked excessively about issues unrelated to the materials in the books. Third, cooperative readers tried to actively engage their child in book reading via questions and answers, structured pauses for their child to fill in, related the story content to their child's life experiences, and helped their child to recall the story at the end of the reading session—a reading style similar to Whitehurst's dialogic reading. Fourth, vocabulary readers contributed the majority of their time to teach their child new words appearing in the books. However, when Zhu and Zhou (2006) summarized Zhu's (2003) research, they eliminated the vocabulary readers probably because there are overlaps between this reading style and the other three. For instance, cooperative readers might include vocabulary teaching using dialogic reading techniques. Zhu also found changes in parents' behaviors with children from different age groups. Before the child was 54 months old, parents tended to rephrase and read using their own words in order to make a book easy and intriguing to the child. Parents' straight reading peaked when their child was 66 months old followed by a decrease afterwards. Parents started to ask questions about the

context when their child was 42 months old and frequency of these questions increased as the child aged.

Zhu and Yuan (2005) intervened with 3- to 5-year-olds for two years. Mothers in the intervention group were instructed to employ various methods such as posing questions, role-playing, and requesting the child to imagine a story based on the name of the book. Mothers in the control group were asked to continue to read with their children without any instructions. Two years later, the children in the intervention group obtained higher receptive and expressive language scores. However, no pretest data were collected, only a brief summary of the instructions to parents was provided, and there was no information about the tests being used for language assessment. Zeng (2002) instructed teachers to read with 32 4-year-olds once a week, aiming to teach them to observe pictures in sequence, analyze characters' expressions and gestures, use imaginative links to pictures, and repeat stories using their own words. Teachers also helped children to read independently every day. Nine months later, these children obtained higher scores on comprehension, imagination, summary, and vocabulary tests as compared to the children in the control group from the same grade. Unfortunately, neither the information about the procedures nor the language tests used were reported.

## **Rationale**

Research on preschool children's language development in Western countries has focused on the frequency and styles of mothers reading stories with their children, with many scholars emphasizing the effect of such reading experience on children's subsequent language achievement. Members of different cultures, however, may have different perspectives about the role of home book-reading activities. Van Kleeck and Stahl (2003) pointed out that "the research on book sharing often endorses, either implicitly or explicitly, very particular cultural and political viewpoints." (p. viii). Survey and observational data illustrate that there are great differences in parental emphasis on literacy support, time spent on literacy activities, and parental conversation styles that possibly mirror the independent vs. interdependent social orientation across Western and East Asian cultures, respectively. Unlike Western cultures that embrace independence and emphasize self-expression, personal uniqueness, and self-sufficiency, Chinese society places an emphasis on interdependence, stressing group solidarity, social hierarchy, and personal humility. Therefore, one might expect differences in reading variables and language outcomes in China compared to the West. However, the possibility of directly

comparing Western and Chinese communicative styles during shared book reading is presently limited by the scarcity of the research effort in China.

The dialogic reading intervention program developed by Whitehurst that changes maternal book reading techniques in a short period of time has been reported to increase children's mean length of utterance (MLU) and gains of 6 to 8.5 months on standardized tests of language in Western populations (e.g., Whitehurst et al, 1988; Whitehurst, Falco, et al., 1988; Whitehurst Arnold, et al., 1994; Whitehurst, Zevenbergen, et al., 1999). In China, whereas the social goal of harmonious relations with others are valued, mothers may expect their children to learn to be the audience, produce short and succinct account of utterances when answering questions, and most importantly, not interrupt the storyteller. In dialogic reading, on the other hand, mothers are encouraged to take the role of an active listener and are trained to engage the child in shared book activities using different techniques. This 4-6 weeks intervention has been noted by Chinese investigators (e.g., Wang 2003; Xie & Yang, 2007; Zhu & Zhou, 2006); however, only two Chinese intervention programs (Zeng, 2002; Zhu & Yuan, 2005) that partially followed dialogic reading techniques have been reported. Children in the intervention groups in both studies achieved higher receptive and expressive language scores than the controls in the

posttests. However, sufficient information was not provided about the instructions given to parents and the language tests used to assess the children. Thus, more complete information is needed to assess the impact of shared book reading interventions on Chinese children.

## **Objectives**

### **Home Literacy Environment**

The first objective was to investigate the home environment of all 3- to 6-year-olds attending a public kindergarten in Wuhan, China. For this purpose, a survey was constructed in Chinese mimicking the Stony Brook Family Reading Survey (Whitehurst, 1992) that covered demographic information including maternal education level as well as a range of home literacy practices. These practices include the number of times per day that a caregiver read to the child, the average duration of shared reading events, and the child's age at which parents began reading with their child. Three additional questions about a child's interest in shared book reading developed by Deckner, Adamson, and Bakeman (2006) were also included. In order to gain more insight into cultural

differences in children's shared book reading activities, survey data were compared to the data reported in Western studies.

**Maternal education level.** In Western studies, maternal education level has been linked to home literacy environment and maternal didactic reading behaviors (Vernon-Feagans et al., 2001). Mothers with higher education background, compared to those less educated, introduced more books (Raz & Bryant, 1990), engaged in more frequent and durable shared-book reading (Adams, 1990; McCormick & Mason, 1986; U.S. Department of Education, 2006), used more elaborate and varied language (Ninio, 1980; Peralta de Mendoza, 1995), applied more conversational-eliciting techniques (Hoff-Ginsberg, 1992), produced more "what" questions (Ninio, 1980), discussed more complex concepts (Eisenberg, 2002), emphasized story content and meaning (Elliot & Hewison, 1994), and provided fewer directions in interaction (Hoff-Ginsberg, 1992; Hammer, 2001). In China, mothers with higher education also reported purchasing more picture books, reading more frequently with longer duration, and engaging more often in a number of instructive behaviors such as asking questions and instructing children to observe pictures and words with explanations during story time than did mothers with fewer years of education (Zhou 2002).

Maternal education level correlated with Western children's language achievement (Adam, 1990; Anderson & Stokes, 1984; Carlson, 1998; Fish & Pinkerman, 2003; Hart & Risley, 1995; Hoff-Ginsburg, 1998; Lempers, Clark-Lempers, & Simons, 1989; McCormick & Mason, 1986; Smith & Dixon, 1995; Storch & Whitehurst, 2001; Vernon-Feagans, Miccio, Manlove, & Hammer, 2001). Children of mothers with higher education level produced longer utterances (Hart & Risley, 1995; Hoff, 2003); used a greater variety of object labels (Hoff-Ginsburg, 1998; Ninio, 1980); and used more elaborate and varied language (Ninio, 1980; Peralta de Mendoza, 1995) than did children of mothers with lower education background. In China, maternal education level was found to correlate with children's reading scores when the children were 7 years old (Shu, Li, Gu, Anderson, Wu, Zhang, & Xuan, 2002). However, the relationship between maternal education level and preschoolers' language achievement has not been reported. In the current study, the correlation between maternal education level and child's language development was computed.

**Reading frequency and duration.** Questions about reading frequency and duration were included in the survey because they appeared in most surveys developed by Western and Chinese researchers. Interview and questionnaire responses by parents of 2-

to 6-year-old American and Canadian children revealed that young children are read to on once a day on average with each session lasting between 15 to 20 minutes. In China, large samples were surveyed in a variety of regions and Chinese children were less likely to be read to than their North American counterparts. More than half the parents read with their child for 15-30 minutes, 3-4 times per week when their child was 3-6 years old (e.g., Chen, 2005; Ji, 2006; Li, 2011; Wang, 2009). The reading frequency data collected in the present study were compared to outcomes reported both in China and Western countries.

**Age of onset.** Age of shared book reading onset was investigated because several researchers found that parental reports of the age at which they began to read with their children negatively correlated with the frequency of reading with their child (Lyytenin et al., 1998) and child's oral language skills (DeBaryshe, 1993; Payne, Whitehurst, & Angell, 1994). In Western countries, the average age of onset of shared reading was between 7.6 months (DeBaryshe, 1993) and 9 months (Senechal et al., 1998) during the 1990s. A decade later, parents appear to read earlier with their children (Deckner, Adamson, & Bakeman, 2006). In the only Chinese report, Ji (2006) found that 43.6% of the 273 surveyed families in Guilin started shared book reading when their child was 1 year old. She did not collect any follow-up data to see if there was a correlation between

the age when mother began to read and child's subsequent language achievement, a deficit that will be remediated in the current study.

**Child's interest.** It is likely that parents read to their infants to evoke interest in books and literacy; in turn, children who display an interest in literacy activities induce their parents read to them more frequently (Arnold et al., 1994; Baker, Mackler, Sonnenschein, & Serpell, 2001; Ortiz, Stowe, & Arnold, 2001; Scarborough & Dobrich, 1994). Child's interest in reading also appears to be an important predictor for language achievement based on the data collected in Western countries. It has been found to be associated with language development (Crain-Thoreson & Dale, 1992, Deckner et al., 2006; Laakso, Poikkeus, & Lyytinen, 1999), literacy skills (Scarborough & Dobrich, 1994), letter knowledge (Deckner et al., 2006), and emergent literacy knowledge including identifying and printing letters, understanding rudimentary letter-sound relations, phoneme blending, recognizing printed words, knowledge of mechanics and purposes of book reading, as well as familiarity with narrative and expository prose forms before school age (Frijters, Barron & Brunello, 2000; Wells, 1985). The child's interest in reading is also associated with his/her willingness to select challenging reading material

(Baker, Mackler, Sonnenschein, & Serpell, 2001; third grade) and sixth grade language achievement (McKenna, Kear, & Ellsworth, 1995).

Early interest and motivation toward literacy have usually been assessed using parental reports about the child's perceived desires and preferred activities (Almy, 1949; Thomas, 1984; Wells, 1985a, 1985b, 1986) whereas some researchers assessed children's interest in reading via observation. For example, Crain-Thoresen and Dale (1992) videotaped parent-child joint reading at age 24 months and measured child's engagement by looking at their behaviors including directing his/her gaze at the book, pointing to pages, making book-related comments, holding the book appropriately, turning pages, and so forth. Laakso, Poikkeus, and Lyytinen (1999) videotaped the interaction of mother-child dyads at 14 months of age in a laboratory and rated child's interest in shared reading on a 5-point Likert scale with 1 as no interest and 5 as shows continuous interest. In a more recent study, Deckner and colleagues (2006) rated continuous 30-second-intervals of observation on 5-point Likert scales for child's availability, affect, and active participation during the shared book reading. Scores for the three scales were used to calculate the mean rating of interest in reading over intervals for each child.

In China, children's interest in reading has only been assessed using survey and/or preference methods. Mou (2003) reported that only 30.1% of the surveyed Chinese families considered their child as having "interested in reading" whereas 59.8% of the families rated their child as "moderate interest in reading". Li (Fu, 2005) asked a large sample of children (200 from Nanjing and 200 from Chengdu) to rank their preference towards television shows, toys, reading books, and food. The majority of children chose playing with toys as their favorite or second favorite activity. Among children who watched TV less than an hour per day, 20.4% rated reading books as their favorite, and 13.3% of the children who watched TV more than two hours gave reading books the highest ranking. Fu (2005) investigated child's interest in reading in Shanghai by interviewing 24 five-year-olds and their teachers and asking their parents to fill out a survey. Five children never had been to a bookstore. Five children reported that they were not interested in reading and eight children could not name their favorite storybook. When children were asked to rank their preference among television shows, toys, and reading books, 20 out of 24 rated reading books as the least favorite. However, 21 children reported enjoying listening to stories in class and none expressed negative feeling towards story reading. The majority of parents considered their children to be

interested in shared book reading. It is premature to conclude that Chinese children lack interest in shared book reading activities as compared to their Western counterparts because comparisons with Western countries are difficult due to the diverse methods of data collection. In the current study, children's interests in reading were assessed via survey as well as observation coded using schemes developed by Deckner et al., (2006). Identical aspects of child's interest in shared reading were assessed in survey and observation. Maternal reports and coded observations of child's responses to literacy experiences were compared to determine the correlation between the two methods. Also, since no research has been done with Chinese children's language acquisition as an outcome measure, the correlation between the child's interest in reading and language achievement was calculated.

### **Identification of Reading Styles**

Book reading styles reflect cultural differences both in how the shared narrative is defined as well as in parents' general assumptions about how children develop into members of their culture. However, the majority of language studies are based on White middle-class, English-speaking populations. Systematic studies of how parents read with their young children across various cultures and communities are still limited. Therefore,

the second objective is to address this limitation through an observation of how Chinese mothers engage in storybook reading with their 3.5-year-olds.

Information about shared book reading styles in China usually has been based on parental reports (Chen, 2005; Li, 2011; Ji, 2006; Tang, 2003; Wang, 2009; Zhu & Yang, 2003). Reports are suspect to the extent that they are affected by memory errors and social desirability. Observations are less prone to such errors. Zhu (2003) videotaped 75 reading dyads with children aged 36-72 months. She categorized mothers into four categories: parallel readers (parents who read the text/pictures without interactions with their children), cooperative readers (parents who engaged their child in shared book reading via techniques equivalent to Whitehurst's dialogic reading), deviating readers (parents who paid overwhelming attention to trivial details while ignoring the story in the picture books), and vocabulary readers (parents who spent most of time on teaching new words). Only three out of 75 mothers were categorized as parallel readers. The number of mothers in each of the other categories was not stated.

In Western studies, no researchers have reported seeing deviating readers and/or the intensive vocabulary teaching found in Zhu's (2003) observation, although distinctions between cooperative and parallel readers during joint book reading (for

example: cooperative readers pose questions to elicit utterances from children whereas parallel readers read without actively engaging their children) have usually been reported (Anderson-Yockel & Haynes, 1994; Haden, Reese, Fivush, 1996; Melzi & Caspe, 2005; Welborn & Haden, 1999). For example, Anderson-Yockel and Haynes (1994) observed African-American and Caucasian working-class mother–toddler dyads reading an experimental book and a favorite book brought from home. Similarities in joint book reading behaviors were found, but the African American mothers initiated fewer questions than did the Caucasian mothers. It seems important to assess whether deviating reading and intensive vocabulary teaching are characteristics of Chinese mothers and whether there are other cultural differences between Chinese and Western mothers in other samples. An effort was made to provide detailed description of parent-child reading in China by video recording shared book reading sessions, coding maternal and children’s speech and gestures, and specifying maternal reading styles. The data was compared to reports in both Chinese and the Western literature.

### **A Dialogic Reading Intervention**

The final objective is to teach dialogic reading techniques to families with 3.5-year-olds in China. The exact procedures of Whitehurst et al.’s (1988) Dialogic Reading

intervention were used in the present study. Evaluations of the outcomes of interventions provide experimental verification of a causal relation between the style of reading of picture books at home and the development of language and literacy skills. Also, intervention results have relevance for application in the areas of early education and special education by determining the benefits for children's literacy skills.

## **Method**

### **Participants**

All 397 mothers of children attending a public kindergarten named "Happiness", serving 3- to 6-year-olds from middle-class families in Wuhan, a city of 11 million people in China, were contacted and asked to complete a survey assessing demographic and shared reading related information. Twenty-two mothers, who did not complete the survey, were removed from the study sample.

In a meta-analysis, Mol, Bus, de Jong, and Smeets (2008) found that dialogic reading alters home literacy activities of families with 2- to 3-year-old children and benefits children's receptive and expressive language. This impact was reduced substantially if the children were 4 to 5 years old when the intervention was introduced.

Also, since 3 to 4 years are the most common ages targeted in the interventions conducted in Western countries and cross-cultural comparisons are of interest, 3.5-year-olds were chosen as the target population for intervention in the study. Families with children in the first grade of the kindergarten received an informed consent form (see Appendix 2). After informed consent was obtained, 96 children ( $M = 44.5$  months  $SD = 3.7$  months) with their mothers that agreed to participate were quasi-randomly selected (to balance for child gender) and assigned to the intervention and control groups.

### **Procedure**

The intervention was conducted in four sessions at home, scheduled at the convenience of the participants. At the beginning of the first home visit, approximately 10 minutes were spent with both mother and the child to make them feel comfortable with the idea of being videotaped. Each mother was asked to select a story from the assigned serial picture books and read with her child for 10 minutes. This mother-child shared-reading session was videotaped. The following instruction was given to each mother before each shared book reading session: “I would like you to read this book to your child as you would typically read with him/her for at least 10 minutes. If you haven’t started to read to your child yet, please read this book in a way you feel

comfortable with. I will tell you when the 10 minutes elapses. You can stop reading at that time or continue for as long as you wish. You may start when you are ready.” Each child also received a language test. The order of language assessment and videotaping of book reading was counterbalanced within each group and matched across groups.

Twelve boys and 12 girls in the intervention group were randomly selected to receive the five verbal subtests, followed by the 10-minute videotaping. The remaining 24 children in the intervention group were videotaped before completing the five verbal subtests. At the end of the first home visit, mothers in the intervention condition were trained individually with the first seven techniques described in Whitehurst et al. (1988) and Arnold et al.’s (1994) dialogic reading program and provided with written instructions to take home. The instructions and related examples are described in the “Training” section below.

In the second session, which occurred two weeks after the initial visit, mothers in the intervention group were seen to complete the training.

The third session, the posttest, occurred four weeks after the initial home visit and included a videotaping of reading interactions and the language tests for all 96 children. Each mother was asked to select a different book to read from the one she or

the child chose at pretest. During the four-week intervention, mothers in the intervention group were encouraged to read books available at home with their children using the techniques discussed in training and mothers in the control group were instructed to read in their customary fashion at home. Both groups of mothers were asked to read with their children for a daily minimum of 10 minutes.

The fourth session, the follow-up, took place six months after the initial home visits; all 96 children were revisited and completed the language test.

## **Measures**

**Survey.** A survey (see Appendix 1) was constructed in Chinese mimicking the Stony Brook Family Reading Survey (Whitehurst, 1992) that covers maternal education level and a range of home literacy practices including the number of times per day that a caregiver reads to the child, the average duration of shared reading events, and the age at which parents began reading with their child. Three additional questions about child's interest in shared book reading developed by Deckner et al., (2006) were also included.

**Language assessment.** Each child's language ability was assessed using the Verbal section of the Chinese Wechsler Young Children Scale of Intelligence (C-WYCSI). The C-WYCSI is an individually administered instrument for assessing the

intelligence of children aged 3 ½ to 6 ½ years (Gong & Dai, 1988). It provides subtest and composite scores that represent intellectual functioning in verbal and performance cognitive domains. Five scores derived from the verbal subtest were of interest: information, vocabulary, arithmetic, similarities, and comprehension.

***Information.*** The child answers twenty-three questions that address factual knowledge and long-term memory on a broad range of general knowledge.

***Vocabulary.*** The child gives definitions for twenty-two words describing objects, actions, and concepts that the examiner reads aloud.

***Arithmetic.*** The child orally answers twenty arithmetic questions.

***Similarities.*** Sixteen questions. The child is read an incomplete sentence containing two concepts that share a common characteristic. The child is asked to complete the sentence by providing a response that reflects the shared characteristic.

***Comprehension.*** The child answers fifteen questions based on his or her understanding of general principles and social situations.

The C-WYCSI is a revision of Wechsler Preschool and Primary Scale of Intelligence (WPPSI) developed for Chinese children. The test was standardized using 2,200 normal urban children (aged 3 - 6.9 years) and 1,120 normal rural children (aged 3

- 6.9 years) across China. The internal consistency, split-half, and test-retest reliabilities of C-WYCSI were above .80 (Gong, Dai, 1988). The average of reliability coefficients of the subtests are 0.79 (urban) and 0.83 (rural), the stability coefficients of IQ are from 0.82 to 0.89 and the coefficients of correlation of IQ on the C-WYCSI with IQ on the WPPSI are from 0.786 to 0.878 (Gong, Dai, 1988). The C-WYCSI has been shown to be a useful screening instrument for detecting children who require intervention for their low level of intellectual functioning when compared with direct observation by teachers (Gong & Dai, 1988).

## **Training**

Mothers in the intervention group received two one-to-one instructional sessions at home 2 weeks apart that were based on the dialogic reading program developed by Whitehurst et al., (1988). Written descriptions with examples were presented and summarized on separate handouts for mothers to read during the training sessions and to follow at home afterwards. During the presentation of descriptions and related examples, the researcher stopped periodically for role-playing and discussion with mothers. The nine techniques are:

1. Ask “what” questions. When children practice language they develop their

language skills and when parents ask “what” questions they evoke speech from the child. Such questions more effectively elicit language than does either pointing or asking “yes/no” questions. Example: Adult: “What are those?”

2. Follow answers with questions. Once the child knows the name of a pictured object, parents should ask a further question about the object. Examples include attribute questions, which require the child to describe aspects of the object such as its shape, its color, or its parts, and action questions, which require the child to describe what the object is used for or who is using it. Example: Adult: “What are those?” Child: “Shoes” Adult: “What is he doing with his shoes?”
3. Repeat what the child says. Parents should repeat the child’s correct responses to provide encouragement and to indicate when the child is correct. Example: Child: “Shoes” Adult: “Yes, shoes”
4. Help the child as needed. Parents should provide models of a good answer and have the child imitate these models. Example: Adult: “What are those?” Child: no response. Adult: “Those are his shoes, aren’t they?”

5. Praise and encourage. Parents should provide feedback and praise when the child says something about the book. Example: Adult: “What are those?” Child: “shoes”  
Adult: “Yes, shoes, great!”
6. Shadow the child’s interest. It is important for parents to talk about the things that the child wants to talk about. When the child points at a picture or begins to talk about part of a page, parents should use this interest as a chance to encourage the child to talk. Example: Child: points to picture of a birthday cake. Adult: “What’s that?”
7. Have fun. Parents can make reading fun by using a game-like, turn-taking approach.
8. Ask open-ended questions. Parents should ask less structured questions that require the child to pick something on the page and tell about it, for example, “What do you see on this page?” and “Tell me what’s going on here.” These questions are more difficult than specific questions, and at first the child might be able to say very little when asked these questions. Parents should encourage any attempts to answer and provide models of good answers. Additional open-ended

questions can be asked about the same page. When the child runs out of things to say about a page, one more piece of information should be added.

9. Expand what the child says. Parents should model slightly more advanced language by repeating what the child says with a bit more information or in a more advanced form. For example, if the child says “Duck swim,” parents should say something like “Right, the duck is swimming.” If the child says “Wagon,” the parent should say something like “Yes, a red wagon.” The best expansions add only a little information, so that the child is able to imitate them.

### **Books for observations**

The books selected for use in the present study satisfied several criteria: (1) colorful illustrations with text; (2) new vocabulary represented in both the illustrations and text; (3) texts were of reasonable length to decrease the likelihood of frustration; (4) books were appropriate for the age range of participating children in this study; (5) rhyme and word books were eliminated; and (6) children had not been previously exposed to the books in the kindergarten. Two books meeting these criteria, “I want to watch the sea” and “I want a younger brother” (Jolibois, 2006) from the children’s storybook series “There is a Mess in the Henhouse” were chosen for all dyads and sessions. They targeted

children aged from 2-5, originally written by Christian Jolibois in French, and translated into Chinese in 2006 under the title “A different Carmella”. Since the original French release, the series has gained immense popularity and commercial success worldwide. Both books are 47 pages long, have no more than 40 words per page, include 1500-2000 words in total, and feature colorful cartoon-like illustrations that depict the action conveyed by the text. Each book describes the adventure of a hen, Carmella, in different situations.

### **Units for analysis**

**Unit.** A unit was defined as an utterance or gesture that conveys an idea. It was necessary to identify the endpoint of the unit, even if the unit contained only one word.

*Verbal units* are utterances that conveyed a single idea or piece of information.

For a child’s verbalization to be counted as a verbal unit, it had to be intelligible; that is, the coder could understand it or, if not, the mother responded as though it was intelligible to her.

*Non-verbal units* included:

1. Pointing at pictures in the book. (Child’s actions such as banging on the book or pointing at irrelevant objects in the room are excluded.)

2. Child's vocalizations that reflected participation, but that the coder could not understand and the mother did not respond to as intelligible.

**Turn.** A turn included all verbalizations and gestures relevant to a given topic by a person. A new turn began when (a) a different person spoke or gestured, or (b) 5 seconds passed and the same person spoke again.

**Verbal turns.** A child's turn was considered verbal if it included intelligible verbalizations that were understood by the coder, or responded to by his/her mother even it was not understood by the coder, regardless of whether or not the utterance was accompanied by gestures.

**Non-verbal turns.** Non-verbal turns consisted of one or more gestures not accompanied by an intelligible verbalization.

**Episode.** An episode consisted of one or more turns towards a picture in the book. The onset of an episode occurred when (a) the book was open to a picture and (b) child or mother was pointing, gesturing, vocalizing in a fashion directed to the contents of the book. The offset of an episode occurred when the book was closed or a new picture was introduced.

## **Coding**

First, the researcher created an initial transcript of mother and child communication that segmented their speech and gestures into units. A research assistant then reviewed the videotape and transcript; disagreements were resolved through consensus.

### **Coding of maternal utterances/gestures.**

1. Straight reading: reading the book with no variation while no response was required (“Once upon a time...” from the book.)
2. Labeling: naming an object or an event, its properties, or an ongoing action (in the picture book the character is the same through several pages while the actions change, therefore descriptive action words as well as naming by noun are coded as labeling. “The rooster is playing with a stick”); providing a description of a picture or commenting on what happens in the story (“That’s the rooster’s dad.” “I wonder what the rooster will do since the sea disappeared.” “I can foresee this must be a very interesting story.”)
3. Elaborating: giving additional relevant information. (“People live in houses” following child’s “house”).

4. Imitating: imitating the child's utterance ("it's a rooster" following children's "Rooster". However, "It's an animal" following the child's "Rooster" was not coded as imitation, but elaborating).
  
5. Questioning:
  - (1) wh-questions: asking for information ("Where is the Rooster?" "What color is the spoon?" which can be answered by name or label).
  
  - (2) Completions: reading with structured pauses for the child to fill in ("The rooster is traveling with .....?")
  
  - (3) Yes/No questions: expected answer to be yes/no or nod/shake of head.

Confirming of intersubjectivity between mothers and children, that is, mothers' sense of sharing an idea with their children, was also included in this category ("The rooster wants to have a younger brother, doesn't he?")
  
6. Feedback:
  - (1) Positive feedback: ("Yes, you are right." "Good job.")
  
  - (2) Negative feedback: ("No, that is not quite right.")

Note: Chinese "en" was excluded when it indicated pause between words.

7. Behavior directives: directing the child to perform an action (“Turn the page”  
“Sit tight” “Pay attention, look”).

**Coding of children’s utterances/gestures.**

1. Verbal

- (1) Imitation: repetition of maternal utterances
- (2) Utterance responses to maternal questions
- (3) Spontaneous utterances produced by the child

2. Non-Verbal

- (1) Gesture responses to maternal questions
- (2) Spontaneous gestures produced by the child

These categories were based on those used by DeLoache and DeMendoza (1987) and Whitehurst et al., (1988). The coding system was comparable to those used in other studies of mother-child book-reading interactions (e.g., Blake, Macdonald, Bayrami, Agosta, & Milian, 2006; Hammer, Nimmo, Cohen, Draheim, & Johnson, 2005; McArthur, Adamson, & Deckner, 2005; Murase et al., 2005; Ninio & Bruner, 1978; Senechal et al., 1995; Snow & Goldfield, 1983).

**Coding of child's interest.** Based on the coding schemes used by Deckner et al., (2006), the researcher and a research assistant rated continuous 30-second-intervals 1-3 for the child's availability, affect, and active participation during the shared book reading. The child's availability for shared reading was rated from 1, not available for book reading (child not attending to the reading material), to 3, constant availability for book reading (child appears riveted to the book) based on the child's proximity to the mother and visual attention to the book. Affect (the child's enjoyment during shared reading) was rated from 1, negative affect (child crying or protesting during part of the interval), to 3, positive affect (child laughing or smiling frequently during the interval) based on facial, vocal, and behavioral cues. Finally, active participation (the child's involvement during shared reading) was rated from 1, no participation (child made no contributions during the interval), to 3, frequent participation (child made more than four verbal comments or more than five physical acts and gestures) as indicated by speech acts such as labeling, gestures such as pointing to pictures, and active manipulation of the book such as turning the pages. Score for each aspect of child's interest was then calculated as the mean rating over all 20 intervals. A research assistant coded a randomly selected 15% of the intervals from each protocol for reliability.

## **Reliability**

Inter-rater reliability estimates for maternal and children's communicative behaviors were calculated using the Cohen's kappa statistic ( $k$ ) for 25 percent of the book-reading sessions. Although there is little consensus regarding the optimum number of sessions to be used in assessing agreement in behavioral coding, 25% of reading sessions is similar to the percentage used by other interventionists (e.g., Crain-Thoreson & Dale, 1999; Justice, & Ezell, 2000). The mean  $k$  values for the communicative acts produced by the mothers and children were .78 and .83 respectively. Reliability of child's interest ratings were determined by using weighted kappa, a measure of reliability that corrects for chance agreement for ordinal scales (Bakeman & Gottman, 1997; Cohen, 1968). The weighted kappas were .80, .78, and .75 for child availability, affect, and active participation, respectively. When differences between the raters' coding occurred, the transcripts were then reviewed and agreement was reached by consensus.

## **Results**

Because a large number of analyses were performed in the current study using survey measures, observational measures of child and maternal narrative behaviors, and

children's verbal IQ scores, an alpha level of .005 was chosen for significance to control the experiment-wise error rate.

### **Survey Data Based on the Entire 375 Families**

The 375 middle-class families with children attending the public “Happiness” kindergarten in Wuhan who agreed to participate answered survey questions about family demographics as well as literacy-related attitudes and behaviors. Children were engaged in shared reading for at least once a day in 92.6% of the households and an average of 16-30 minutes were spent on individual shared book reading sessions in 59.2% of the 375 families. Shared reading was introduced before the child was 3 years old in all but 6 families. More than half of the mothers reported that shared reading was initiated before the child was 12 months old.

The Pearson's *rs* among all the survey variables appear in Table 1 and five significant correlations were obtained. The negative correlation involving maternal education level and maternal reports of the age at which they started to read with their children was consistent with Lyytenin et al's (1998) findings. In addition, the significant correlation between children's affect and active participation in shared book reading as reported by their mothers indicated that these aspects of the child's interest were

associated. The positive correlations involving reading duration with both the child's attention and the child's active participation also found support in the literature (Scarborough & Dobrich, 1994). However, unlike previous studies where maternal education level explained some of the variances in maternal verbal input with low-, middle- and working-class samples (e.g., Lawrence & Shipley, 1996; Lyytenin et al., 1998; Hoff-Ginsberg, 1992; Rowe, Pan, & Ayoub, 2005; Yarosz & Barnett, 2001), maternal education level was not significantly associated with frequency or duration of shared reading activities assessed in the survey.

There were also several other non-significant correlations that are not consistent with previous findings. For instance, although parents might be more likely to read to girls due to parental expectations regarding girls' greater competence in reading activities (Eccles, Jacobs, & Harold, 1990) and the higher activity level of boys (Eaton & Enns, 1986), gender and shared reading were independent. It seems that parents tend to provide equal opportunities to boys and girls for their child's language development. Also, Rowe, Pan, and Ayoub (2005) found mothers increased their total amount of talk during shared reading as children aged from 14 to 36 months. However, such a link was not found in the current study.

### **Data Based on the Selected 96 Families**

A series of *t* tests for independent samples were conducted to assess the differences between experimental groups for child's age, maternal education, frequency of shared reading, and onset age. Additional crosstab analyses were used to investigate the differences between groups for duration of shared reading and child's interest. As can be seen in Table 2 and 3, the control and intervention group did not differ significantly on any of the survey measures (all *ps* > .01).

The indices of child's interest obtained from maternal report were compared to the ratings of video recording of interaction during the first 10-minute shared book reading were compared using a series of Pearson correlation analyses. Because the ratings of child's availability, affect, and active participation differed from survey and observation ( $r = .197$  for availability,  $r = .121$  for affect, and  $r = .138$  for participation), both were included in analyses when appropriate.

In the following sections, the analyses of four classes of dependent measures appear: (a) interactions between mothers and children; (b) maternal reading behaviors and maternal reading styles; (c) children's communicative behaviors; and (d) children's early language abilities.

Hoff-Ginsberg (1992) noted that frequencies seem to be more predictive of child language outcomes than other measures, such as proportions. Therefore, all analyses of reading behaviors were conducted using frequency counts as the dependent variables. In addition, as suggested by Stevens (1996), a univariate approach to assessing repeated-measures designs is more powerful, i.e., a smaller Type II error rate, than a multivariate approach when the condition of sphericity is met (Mauchly's  $W = 1.00$  and  $p > .05$ , reflecting that the variances of the differences between groups were roughly equal), as they were in the present experiment. Thus, the significance of changes over time between the intervention and control groups were assessed using a series of mixed two- and three-way repeated-measures ANOVAs, with sessions (pre/post or pre/post/follow-up) as the within-subject factor, and group and mother-child (when appropriate) as the between-subjects factors.

In preliminary analyses, child's gender was treated as a between-subjects factor; however, the inclusion of gender didn't produce any significant effects on didactic interactions between mothers and children, maternal language use, or child's communicative behaviors and language achievement. It is not surprising since child's

gender did not associate with any of these variables (see Table 4). Therefore, in the analyses reported, gender was not included as a variable.

**The didactic interactions between mothers and children.** The question of interest was whether mother-child dyads in the intervention and control groups differed in interactions after training. Changes in three dependent variables were investigated: total number of episodes, total number of turns per episode, and total units produced by each dyad. It was assumed that the total number of episodes would be reduced because fewer pictures would be discussed in greater detail in the intervention group after training. The increased discussions should also be reflected in an increasing total turns per episode and total units produced. As can be seen in Table 5, the didactic interactions between mother and child did change as expected. However, the magnitude of change was significant only with the units measures. In addition, a significant main effect for dyad (child vs. mother)  $F(3, 93) = 1640.38, p = .001$  was found on total production of units reflecting the dominant role taken by mothers during shared reading, replicating results reported in Western studies (e.g., DeLoache & DeMendoza, 1987; Murphy, 1978; Ninio, 1980).

### **Maternal communicative behaviors and reading styles.**

*Maternal utterance/gestures.* Changes in the frequencies of each of the ten maternal communicative units was assessed using a series of mixed two-way repeated-measures ANOVAs, with sessions (pretest vs. posttest) as the within-subject factor, and group (control vs. intervention) as the between-subjects factor. As can be seen in Table 6, mothers from both groups rarely imitated the child's utterance, posed blanks for completion, provided negative feedback to child's answers, or directed child's behaviors in both pre- and posttest as reflected by the less than 6 incidences in 10 minutes. Still, mothers in the intervention group changed their shared book reading behaviors in accordance with the goals of the dialogic reading program. They were more likely to ask wh- and yes/no questions about characteristics of an object for which the child knew the label, provide additional information about the label in the text to expand the conversation, and praise their child's correct responses. Thus, instruction facilitated adults' use of dialogic reading techniques. Since the total number of utterances for mothers in the intervention group did not change significantly over sessions  $F(1, 47) = 2.613, p = .113$ , intervention affected the quality but not the quantity of maternal communicative behaviors.

### *Maternal reading styles.*

*Pretest.* To identify narrative styles used by the middle-class Chinese mothers in the present study, category frequencies produced by each mother during the 10 minutes joint book reading interaction were subjected to a series of K-means cluster analyses regardless of assigned group. In order to make comparisons to previous results, two, three, and four cluster solutions were assessed (i.e.,  $K = 2, 3,$  and  $4$ ). Final cluster centers (found using squared Euclidean Distance for the divergence measure where the intra-cluster variance is minimal and the between-cluster variance is maximum) and F ratios (representing the differences between the clusters) are presented in Table 7.1, Table 7.2 and Table 7.3. Probability values less than .005 associated with a category are interpreted as a contribution to the separation of the clusters.

$K = 2$ . Two reading styles, comparable to those reported by Welborn Thill & Haden (1999) and Melzi & Caspe's (2005), were identified: story telling and story collaborating. Storytellers constituted 58.3% of the sample ( $N = 56$ , 32 in intervention group and 24 in control group) and were characterized by the majority of maternal utterances read directly from the book. On the other hand, the remaining forty story collaborators stopped periodically to actively elicit greater child participation through the

extensive use of wh- and yes/no questions and provided positive feedbacks to encourage children's responses.

$K = 3$ . Three reading styles were identified: story telling, labeling and affection-building. Story telling constituted 41.7% of the sample ( $N = 40$ , 22 in intervention group and 18 in control group). As can be seen in Table 7.2, labeling was characterized by the use of labeling and wh-questions with less direct reading than story telling. Thirty-two mothers (33.3% of the sample, 18 in intervention group and 14 in control group) displayed this style. They guided their children's reading of the story by providing basic information about the pictures that was not written in the text as well as asking wh-questions to elicit children's production of labels and comments about pictures in the book. The affection-building style (22.9% of the sample,  $N = 24$ , 8 in intervention group and 16 in control group) was characterized by the higher frequency of confirmations produced between mothers and children than the other clusters (e.g. "The rooster wants to have a younger brother, doesn't he?") as a sense of sharing knowledge and a form of strengthening the emotional bond between dyads. This reading style is similar to the osmosis model characterizing Japanese mothers and children who were in close and

empathic interdependence with each other, (Murase, Dale, Ogura, Yamashita, & Mahieu, 2005).

$K = 4$ . As can be seen in Table 7.3, clusters 2, 3, and 4 matched the three narrative styles in the K-means cluster analysis where K equals to 3. However, cluster 1 is neither comparable to any of the styles listed in Zhu's (2003) study nor obviously interpretable.

In order to determine the optimal number of clusters, a quantitative method proposed by Calinski and Harabasz (1974) was used in which the best cluster solution would be the one that maximized the ratio of the between-the-cluster sum of squares to the within-the-cluster sum of squares. The Calinski and Harabasz method suggested that a two-cluster solution ( $C(g) = 681.9435$ ) was better than a three-cluster solution ( $C(g) = 395.2313$ ). As such, the two-cluster solution was considered to best represent the maternal reading styles, and this solution was used in all future analyses.

*Posttest.* To foster comparisons with previous studies, K-means cluster analysis with K equals to 2 and 3 were run on the frequencies of maternal narrative behaviors in posttest. In cluster analysis with  $K = 3$ , the cluster 3 is neither comparable to any of the styles listed in previous studies nor obviously interpretable, therefore, the results of this

cluster analysis is not presented. Final cluster centers and F ratios representing the differences between the two groups of mothers when  $K = 2$  are presented in Table 8.1.

Twelve mothers from the intervention group adopted the story collaborating style and stopped periodically to comment on the book, actively elicited greater child participation through the extensive use of wh- and yes/no questions and gave additional relevant information based on child's responses. All the remaining mothers (48 in control group and 36 in intervention group) used story telling style and narrated the story mostly through the use of statements, either read directly from the text or provided information about the pictures that was not written, and directed fewer questions to the child.

Clusters formed in a similar pattern in pre- and posttest except that elaboration became a dominant discriminate factor in the cluster forming process (see Table 7.1 and Table 8.1). Unlike in the pretest where mothers in both clusters created conversational dyads that were low in elaboration (cluster center 1 = 6 vs. cluster center 2 = 10), the twelve mothers who categorized as cluster 2 in the posttest dramatically increased their frequencies of expanding what the child said with a bit more information (cluster center 1 = 9 vs. cluster center 2 = 30). Four of these 12 collaborating mothers changed from story telling to elaborating. They rarely imitated, posed completion question, provided

feedback, or directed child's behaviors. Instead, these mothers significantly increased their use of elaboration (pretest cluster center = 8.5 vs. posttest cluster center = 49.0), wh- (pretest cluster center = 5.5 vs. posttest cluster center = 59.0), and yes/no questions (pretest cluster center = 14.5 vs. posttest cluster center = 52.5) but decreased their direct reading from the text (pretest cluster center = 74.5 vs. posttest cluster center = 31.5). The remaining 8 collaborating mothers who adopted collaborating style in both pre- and posttest read with their children in a similar manner in both tests except that they significantly increased their production of elaboration (pretest cluster center = 14.3 vs. posttest cluster center = 20.0;  $t = -7.922, p = .000$ ).

An additional K-means cluster analysis with K equal to 2 was performed on the frequencies of maternal narrative behaviors in posttest with the 84 story-telling mothers. The rationale was twofold: (1) to determine whether the 32 mothers who were categorized as story collaborators in the pretest reverted to storytellers after intervention, and (2) to assess the effect of intervention on the 52 mothers who were categorized as storytellers in the pretest. As can be seen in Table 8.2, 52 (28 from control group and 24 from intervention group) out of 84 mothers adopted the story collaborating style. Changes of maternal reading style for the 84 mothers were summarized in Table 9. Inspection of

Table 9 indicated little evidence of mothers reverting from collaborators to storytellers with only 2 of the 32 mothers changed to story telling style after intervention, and both mothers were in the control group. The 24 pretest control group storytellers and 28 pretest intervention group storytellers were compared for their change of clusters using a crosstabs analysis. The pretest storytellers in the intervention group were more likely to adopt the collaborating styles after training as compared to their counterparts in the control group,  $\chi^2 = 5.470, p = .019$ .

*Predicting maternal reading styles.* A logistic regression was performed using pretest data to predict which of the reading style was used by each of the 96 mothers at pretest. Survey measures (i.e., gender, child's age, maternal education, frequency per day, duration per session, onset age, availability, affect, and active participation) and ratings of child's interest from observation (i.e., observed availability, affect, and active participation) were the predictors. Mothers adopting dialogic reading techniques at pretest were more likely to have children who actively participated in the dyads as observed during shared book reading session ( $B = 4.481, Wald = 17.885, p = .000$ ). None of the other variables significantly predicted maternal reading styles.

Second, in order to ascertain the specific traits that separated the 12 intervention mothers who were classified as collaborators in the first posttest cluster analysis when  $K = 2$  and the remaining 36 intervention mothers, a logistic regression was performed with all mothers in the intervention group using survey measures and observed child's interest measures as the predictors and the cluster assignment at posttest when  $K = 2$  as the predicted variable. The 12 collaborators were identical to the remaining mothers except that they were more likely to report reading picture books with their children,  $p = .005$ .

Third, in order to assess reasons why dialogic reading training changed some mothers' reading styles but not others, a logistic regression was run with the 28 mothers in the intervention group who did not initially engage their children using collaborative techniques at pretest (see Table 9). Again, survey measures and observed child's interest measures were the predictors and the assignment at the follow-up cluster analysis when  $K = 2$  at posttest was the predicted variable. Mothers who changed from storytellers to collaborators were more likely to initiate shared reading at an earlier age ( $p = .007$ ) and more likely to have children who were observed to pay attention to the reading materials at pretest ( $p = .007$ ).

### **Child's communicative behaviors, interest, and verbal IQ scores.**

*Child's communicative behaviors.* A series of two-way repeated measures ANOVAs with sessions (pretest vs. posttest) as the within-subject factor and group (control vs. intervention) as the between-subjects factor were performed on children's communicative behaviors. Changes in the children's utterances and gestures are shown in Table 10. Intervention effects on children's behaviors were less marked than effects on the maternal use of language. Inspections of Table 10 show that the frequencies of utterance and gesture responses upon requests increased in the intervention group and remained constant over sessions in the control group. Consistent with one goal of dialogic reading training, children in intervention group were more likely to respond to their mothers' requests, indicating a more active conversational role taken by the child during book reading. In contrast, children's other behaviors including imitating maternal utterances and spontaneously asking a question or making a statement were relatively constant across sessions in both intervention and control groups.

Changes in maternal behaviors should correlate with changes in their child's behavior. Within the intervention group, frequency changes of each maternal reading category were investigated as predictors of frequency changes of child's utterance response and gesture response. Low-frequency maternal reading categories (i.e.,

imitation, completion, positive feedback, negative feedback, and directive behaviors) were omitted. Mothers who increased their use of wh-questions had children whose verbal responses increased ( $t = 8.064, p < .0005$ ) and mothers who increased their use of yes/no questions had children whose gesture responses increased ( $t = 3.036, p = .004$ ).

***Child's interest.*** The extent to which participation in the dialogic reading intervention influenced the changes in child's interest was examined using three mixed two-way repeated measures ANOVAs, with sessions (pretest vs post-test) as the within-subjects factor, group (control vs. intervention) as the between-subjects factor, and changes in child's interest as the dependent measures. Changes in the child's interest are shown in Table 11. Inspections of Table 11 reveal an interaction between child's availability and group assignment: child's availability increased in the intervention group while it remained constant over sessions in the control group. In contrast, other aspects of child's interest were relatively constant across sessions in both intervention and control groups.

***Verbal scores.***

***Predictors of child's verbal IQ score at pretest.*** In order to determine if early shared reading experiences predicted language acquisition, a linear regression was run

on children's verbal IQ scores on C-WYCSI at pretest with all 96 children. Responses to survey questions (i.e., child's age, maternal education, frequency per day, duration per session, onset age, availability, affect, active participation), ratings of child's interest during observation at pretest (i.e., observed availability, affect, and active participation), and maternal reading style at pretest (i.e., story-telling vs. story-collaborating) were the predictor variables. Consistent with the associations between child's interest in reading and language development (Crain-Thoreson & Dale, 1992, Deckner et al., 2006; Laakso et al., 1999), literacy skills (Scarborough & Dobrich, 1994), and letter knowledge (Deckner et al., 2006) in Western studies, two predictors assessing children's interest in shared reading had predictive utility. Children who paid more attention (i.e., higher availability scores) as reported by his/her mother ( $b = 9.191, t = 3.812, p < .0005$ ) and who were more likely to enjoy the shared reading activities during observation (i.e., higher affect scores) ( $b = 19.613, t = 3.170, p = .002$ ) were found to score higher on the language test.

*Intervention effect on child's verbal IQ scores at post- and follow-up tests.* IQ scores and standard deviations on the verbal section of the Chinese-Wechsler Young Children Scale of Intelligence (C-WYCSI) and five verbal subscales at pretest, posttest,

and follow-up appear in Table 12. The extent to which participation in the dialogic reading intervention influenced the language abilities of Chinese 3.5-year-olds was examined using a series of mixed two-way repeated measures ANOVA, with sessions (3 levels) as the within-subjects factor, group as the between-subjects factor, and children's verbal IQ and five subscales scores as dependent measures. Bonferroni method was employed to adjust for multiple comparisons. As can be seen in Table 12, Table 13 and Figure 1, children in the control group performed relatively constantly over sessions whereas children in the intervention group significantly increased their verbal IQ scores at posttest followed by a drop at follow-up, but still maintained significantly higher scores at follow-up than at pretest  $p < .005$ . Graphical plots of Vocabulary, Similarities, and Comprehension scores of the intervention group over sessions follow a similar pattern except that the differences between follow-up and pretest scores were no longer significant for Similarities and Comprehension subtests.

*Predictors of changes in child's verbal IQ scores.* In order to determine which aspects of the changes that occurred during the four-week interval had an effect on child's subsequent language gains, two linear regressions were performed with all the 96 children in both intervention and control group. Changes in maternal behaviors (reading,

labeling, elaborating, wh-questions, yes/no questions), changes in child's behaviors (utterance responses and gesture responses), and changes in child's interest as observed (availability, affect, and participation) were the predictor variables whereas the amount of change on child's verbal IQ score from either pre- to posttest or from pre- to follow-up test was the predicted variable. Only changes in availability was found to significantly predict changes in child's verbal IQ scores from pre- to posttest ( $b = 13.101$ ,  $t = 2.971$ ,  $p = .004$ ). None of the change scores predicted changes in child's verbal IQ scores from pre- to follow-up test. An additional one-way ANCOVA was conducted with changes in child's availability as covariate, group as the independent variable, and changes in child's verbal IQ scores from pre- to posttest as the dependent variable. At posttest, children in the intervention group showed greater gains in their verbal IQ scores than their counterparts in the control group after controlling for changes in child's availability,  $F(1, 94) = 12.031$ ,  $p = .001$ .

### **Summary**

The 375 three to six-year-olds attending "Happiness" kindergarten were engaged in shared book reading once a day in most of the households. More than half of the families spent an average of 16-30 minutes for each reading session. Shared book

reading activities were first initiated when the child was 12 months old. Frequency and duration of shared book reading were significantly related to reported child's attention and active participation scores, but not maternal education, child's gender or child's age.

Two reading styles, story telling and story collaborating, were identified. Story tellers constituted 58.3% of the sample and were characterized by the majority of maternal utterances read from the book verbatim. Story collaborators actively engaged children through the use of wh- and yes/no questions and encouraged responses of the children through the use of positive feedbacks.

After dialogic reading training, mothers in the intervention group were more likely to elaborate labels in the text, ask wh- and yes/no questions, and praise their child's correct answers. The total number of maternal utterances stayed constant over sessions whereas the total number of verbal and gesture responses of the children in the control group increased significantly. Participation in the dialogic reading intervention increased children's availability and verbal scores.

Variability in children's interest in shared book reading was found related to differences in maternal reading styles and children's language achievement: (1) children who actively participated in shared reading session at pretest were more likely to have

story-collaborating mothers; (2) children who paid more attention to their mothers and book at pretest were more likely to have mothers changed from story tellers to story collaborators after dialogic training; (3) children's reported availability and observed affect accounted for 25.7% of the variance in children's language scores at pretest; (4) children who increased their attention from pre- to posttest were more likely to have greater gains on their language test.

### **Discussion**

Parent and child construct the meaning of a story during shared book reading. Most theories of how shared book reading facilitates literacy have been tested with Caucasian European and American children and their parents. Members of different cultures may have different perspectives about the role of shared book reading activities at home (Rogoff, 1990; Vygotsky, 1978). If so, the antecedents of shared book reading and the potential role of such reading activities as a stimulus for early literacy may vary between countries. To investigate these possibilities, the mother-child shared book reading environment and the maternal reading styles in middle-class Chinese households were assessed and compared with Western counterparts.

Researchers initially studied North American and Australian mother-child dyads and demonstrated that child's language abilities could be improved through a dialogic reading intervention across a range of social classes. Although some Chinese researchers have noted this intervention, only a few Chinese investigators (i.e., Zeng, 2002; Zhu & Yuan, 2005) reported results partially based on dialogic reading techniques. Children in the intervention groups in both studies achieved higher receptive and expressive language scores than the controls in the posttests. However, limited information about the instructions and language tests were described. Therefore, the effectiveness of the dialogic reading intervention on Chinese children's language achievement using the identical training procedures employed in Western studies was of interest.

The final issue of interest relates to the intertwined nature of parental and children's efforts. Despite numerous studies reporting positive associations between preschool literacy experience and later language and literacy development, only a few researchers have examined children's interest in literacy and suggested that children's literacy interest might be important to any model that links shared reading with later language achievement and literacy knowledge (Lyytenin et al., 1998; Ortiz et al., 2001;

Scarborough, Dobrich, & Hager, 1991). In the current study, the possible link between reading interest and language learning was investigated.

### **Home Reading Environment**

Cultural context includes what members believe about language and its usage (Park & King, 2003). Those beliefs have consequences for characteristics of the home environment (Baker & Scher, 2002; DeBaryshe, 1995; DeBaryshe, Binder, & Buell, 2000; Lynch et al., 2006; Serpell et al., 2005; Sonnenschein & Munsterman, 2002). In middle class North American families, mothers believe that shared book reading will facilitate their children's subsequent language and literacy-related skills and provide their children with frequent joint reading experiences at a young age. Children were read to on a daily basis with sessions lasting over 20 minutes (e.g., Bingham, 2007; DeBaryshe, 1993; DeBaryshe, et al., 2006; Huebner, 2000; Karrass et al., 2003; Lonigan, 1994; Payne et al., 1994; Stephenson et al., 2008; Sénéchal, LeFevre, Hudson & Lawson, 1996). Mothers reported starting to read to their infants between 7.6 and 9 months in 1993 and 1994 (e.g., DeBaryshe, 1993; Payne et al., 1994) and at 6 months in 2006 (Deckner, Adamson, & Bakeman, 2006). On the other hand, Chinese children were reported to experience fewer and shorter shared book sessions (3-4 times per week and

15 minutes per session) in surveys conducted with large samples (Chen, 2005; Ji, 2006; Yang, 2003; Shu, 2009). Chinese parents reported initiating shared reading activities at a later age (2-3 years old in Shu, 2009; 12 months in Ji, 2006; however, social economic status were not specified in either study). Five to seven years later, reports from the 375 middle-class Chinese families participating in the current study reflected that aspects of the home literacy environment were similar to those reported in Western households, reflecting a gradual cultural shift: children were engaged in shared reading at least once a day in 92.6% of the households. The average session was 16-30 minutes in 59.2% of the families. However, similar to Ji's (2006) findings, about half the Chinese families (56.4% of the 273 surveyed families in Ji's study in 2006 and 47.9% of the 375 families in the current study) did not initiate shared reading until their child was 12 months. It may be that many Chinese, as compared to Western, families believe that daily short joint reading experiences are sufficient for young children's language development and infants younger than 12 months will not benefit from shared book reading activities (Lv, 2006).

In the current study, several significant correlations reported in Western studies were not replicated. First, DeBaryshe (1993) demonstrated that age of onset of shared

reading was the strongest predictor among other home environment measures of child's oral language skills age 2. Payne, Whitehurst, and Angell (1994) also found that a child's age when reading began was inversely related to both expressive and receptive language when the child was 4 years old using a sample of 323. However, the onset age of shared reading had no influence on reading frequency or child's verbal IQ scores at age 3.5, but significantly related to child's enjoyment as observed during shared reading in the current study. Thus, in understanding the association between age of onset of shared reading and later language skills, it is critical to determine whether the early reading is in itself contributing to language development or if early reading is a marker for other parenting behaviors and/or child's characteristics that are more important to the development of language. For example, infants with longer attention spans or those who express more interest in reading might be read to earlier (DeBaryshe, 1993). If parents choose to read to their children based in part on the child's interest, especially enjoyment towards reading, then perhaps part of the association between onset age and a child's language achievement could be explained by the fact that children with greater enjoyment in shared reading are eliciting earlier and more cognitively rich interactions

from their parents. Further research that investigates relations among interest, shared reading, and language could address these questions.

Second, maternal education has been found to explain some of the variation in maternal verbal input in low-income (Rowe, Pan, & Ayoub, 2005), working-class (Hoff-Ginsberg, 1991, 1992, 1994) and middle-class (Lawrence & Shipley, 1996) samples in Western countries. More educated mothers talked more and used more diverse vocabulary with their children than did less educated mothers. However, mothers' educational experience had no influence on the frequency or duration of shared book reading with Chinese mothers in the current survey. It is possible that because academic success is valued as the most important pursuit in China, the majority of Chinese mothers are eager to invest money and time in their child's education for a brighter future (Shu, 2009). Therefore, the differences of maternal verbal input among mothers with different education background were minimal. It is also possible due to social desirability. Mothers who were less likely to engage their children in shared book reading might inflate their answers, thus reduced the individual differences with other participants in frequency and duration.

Third, although Western parents are reported more likely to read to girls due to parental expectations regarding girls' greater competence in reading activities (Eccles, Jacobs, & Harold, 1990) and the higher activity level of boys (Eaton & Enns, 1986), child's gender and frequency or duration of shared reading activities were independent with the present Chinese sample. This difference may result from different cultural perceptions of children's learning (Anderson, 1995) that are reflected in parents' beliefs and behaviors of shared reading (Rogoff, 1991). Chinese mothers tend to provide equal educational opportunities to boys and girls, possibly as a consequence of the one-child policy.

### **Maternal Reading Styles**

Individuals develop as they participate in cultural activities (Rogoff, 2003). Shared book reading is one of these activities and children growing up in different communities are oriented toward particular styles of narrative experiences (Heath, 1983; Invernizzi & Abouzaid, 1995; Miller, 1997; Ochs & Capps, 2001). Despite the importance of culture-specific patterns to children's narrative development, there is a lack of work investigating cultural variations in maternal narration styles (e.g., Ochs & Capps, 2001). The majority of developmental studies are based on Caucasian middle-class,

English-speaking populations. Cross-cultural comparisons of how young children and family members share stories across cultures and communities are still limited. This gap would be addressed by comparing how middle-class Chinese mothers and mothers from other countries read with their young children.

Two maternal reading styles (i.e., story telling and story collaborating), originally noted by Welborn Thill and Haden (1999), were identified with the current middle-class Chinese sample. At pretest, the 56 storytellers read the text of the books and required either no or limited contribution from the child. On the other hand, the 40 collaborating mothers stopped periodically to elaborate the text in the book, challenged their child by breaking up the text with different types of questions, and provided positive feedback to encourage their child to respond. These two maternal narrative styles were similar to the parallel and cooperative reading styles reported in the previous Chinese observational research conducted by Zhu (2003) with 3 to 6-year-olds. However, deviating readers identified in her research that ignored the story line of the picture books, fussed about trivial details, and talked excessively about issues unrelated to the materials in the books were not found with the current sample. Since Zhu (2003) did not provide the

distributions of mothers employing each of the reading styles she identified, further comparison with her results was not possible.

When compared with Western studies, the storytelling style is comparable to the “storytellers” identified by Melzi and Caspe (2005) with 36 to 48-month-olds from middle to upper-middle class families and the “describers” identified by Haden et al. (1996) with 40-month-olds from middle class families. The story collaborating style is also similar to the “story builders” in Melzi and Caspe’s (2005) study and the “collaborators” in Haden et al.’s (1996) study. However, the percentage of mothers adopting storytelling style among Chinese and families from other countries are different: 58% in the present study with middle-class Chinese mothers, 7% of the middle-class American mothers and 75% of the middle-class Peruvian mothers in Melzi and Caspe’s (2005) study (two styles were identified with 15 mothers: 1 storyteller and 14 storybuilders), and 29% of the middleclass American mothers in Haden’s (1996) study (three styles were identified with 17 mothers: 5 describers who were devoted to describing the pictures and naming characters; 5 comprehender who focused on teaching print concepts and the process of reading; and 7 collaborators who intended to elicit children’s responses about the story and made confirmations of their children’s

contributions). Therefore, in addition to the individual preferences, cultural differences play a role in the type of narrative support mothers provide their children during shared book reading. Given the exploratory nature of the study, it is not possible to assess the cultural source of variation in the styles used by mothers. However, cultural differences found in the narrative styles preferred by Chinese and American mothers might be related to their beliefs about narrative roles. In the book reading task, American mothers may construe narrative as a child focused activity and acted a co-narrator. Chinese mothers, on the other hand, may expect their children to learn to be the audience and learn by being “active listeners” (see Fung, Miller, & Lin, 2004); that is, by observing, being attentive and, most important, by not interrupting the storyteller. By doing so, Chinese mothers act as the expert storytellers and promote the societal goals of harmonious relations with others (Lau & Cheung, 1987).

### **Dialogic Reading Intervention**

The changes in maternal communicative behaviors and reading styles that occurred following the intervention, along with the changes in children’s communicative behaviors and interest as well as language gains, reflects that dialogic reading techniques are effective in China.

**Maternal communicative behaviors and reading styles.** After training, 20 out of 48 mothers in the intervention group changed from storytellers to collaborators. These mothers altered their shared book reading behaviors generally in accordance with the goals of the instructional dialogic reading program by providing additional information about objects and asking questions about characteristics of objects. Six out of 48 mothers in the control group also changed from storytellers to collaborators at posttest. It is likely that some mothers spontaneously employed dialogic reading techniques without training. The increase in the usage of wh- and yes/no questions in shared book reading coupled with the gains in children's verbal score is consistent with the possibility that asking questions might be a crucial tool in promoting preschoolers' language learning. According to Vygotsky (1978), through questioning, mothers are able to adjust reading materials and manners to their children's developing language competencies and to gradually create a match between their behaviors and the child's zone of proximal development. Meanwhile, frequent questioning would encourage children's responses and interest towards books (Lyytenin et al., 1998), hence increases the opportunities for language learning. On the other hand, mothers in the intervention group who changed from storytellers to story-collaborators had children who primed such a transition with

attention to the reading materials observed at pretest. This possibility is consistent with Karrass et al.'s (2003) finding that when the child was looking at a picture, the mother was more likely to elaborate and ask questions about the picture. Thus, the emergence of dialogic communicative patterns during shared reading would be a consequence of both children's attention and mothers' efforts.

**Child's communicative behaviors.** Unlike children in the control group who produced a stable number of units during the 10-minute shared book reading across sessions, children of mothers who received training exhibited significant increases in utterance and gesture responses reflecting that they responded to the relatively higher level of wh- and yes/no questions by assuming a more active conversational role during book reading at posttest. Correlations between changes of maternal wh- and yes/no questions and changes in children's rate of responding reflect that 3.5-year-olds have the requisite skills for participating in contextualized print-based interactions and mothers whose behavior was changed by the training were more likely to have children whose behavior changed. Therefore, it is important that mothers stimulate active involvement of children by eliciting both verbal and gesture responses.

**Child's verbal scores.** Children in the intervention group demonstrated greater gains on subtests that examined skills related to vocabulary, similarities, and comprehension. The vocabulary subtest required children to give definitions for objects, actions, and concepts; the similarities subtest examined children's ability to complete sentences by providing a response that reflected the shared characteristic between concepts; and the comprehension subtest allowed children to answer questions based on their understanding of general principles and social situations. It appears that these skills were enhanced via maternal elaborating and questioning about an object/picture, the focus of dialogic reading training. On the other hand, the effects of intervention on children's information and arithmetic growth were absent. The information subtest assessed a child's factual knowledge and long-term memory on a broad range of general knowledge topics, whereas the arithmetic subtest examined a child's ability to orally answer arithmetic questions. It is likely that the information assessed in these subtests was not related either to dialogic training or to the content of the picture books that mothers were reading.

Chapman, Tunmer and Prochnow (2001) reported that many reading interventions do not yield long-term gains. Furthermore, there is little unambiguous evidence for a

causal relation between preschool experience with books and academic performance despite the wide acceptance of such a link (Scarborough & Dobrich, 1994). For example, many researchers proposed that preschool dialogic reading experiences confer educational advantages to children from both middle-class (Whitehurst, et al., 1988) and low-income families (e.g., Snow, 1991; Snow et al., 1995; Whitehurst & Lonigan, 1998) in the elementary school years. Whitehurst, et al. (1988) proposed that dialogic reading during preschool enhances children's language skills that, in turn, facilitate language achievement and other academic tasks (e.g., Whitehurst, et al., 1988). On the other hand, Feagans and Farran (1994) found that the gains in children's narrative skills associated with the dialogic reading intervention only lasted through the fall of the kindergarten year. In the current study, children in the intervention group continued to show greater gains than their counterparts in the control group at the 6-month follow-up test. However, effects of the dialogic reading intervention tended to decrease over time. There are several possible explanations for the convergence of the intervention and control groups over the half-year period in the present study. First, school experience might compensate for a lack of quality family reading activities (Cunningham & Stanovich, 1991). A second explanation refers to the families' commitment to the intervention and whether they

continued to implement the dialogic techniques. Perhaps continued contact with families to reinstate the importance of following the intervention guide would help to maintain the gains associated with dialogic training. Because the factors that account for the diminution are a matter of speculation, significant broad-scale investment in shared reading programs will not be justifiable until long-term effects are demonstrated and understood.

**Children's interest.** Picture book reading is an activity between an adult and a child during which both parties share a site of interest, such as an object or an event (Adamson & Chance, 1998). Variability in children's interest in shared reading was found to be associated with differences in the conversations that accompany shared reading (Baker, Scher, & Mackler, 1997; Karrass et al., 2003; Ortiz et al., 2001; Lonigan, 1994; Scarborough & Dobrich, 1994; Sénéchal, Cornell et al., 1995). Also, individual differences in child's interest may mediate positive developmental outcomes related to shared book reading (Lonigan, Anthony, & Burgess, 1995; Payne, Whitehurst, & Angell, 1994; Sénéchal, LeFevre, Hudson, & Lawson, 1996; Sénéchal, LeFevre, Thomas, & Daley, 1998). In the current study, child's interest was divided into three ways in which it could be expressed in shared reading: availability (i.e., attention), active participation, and

affect (i.e., enjoyment). The effect of the intervention could be overstated if the various measures of child interest in reading were highly correlated. However, correlations between the three measures were small to moderate in magnitude ( $-.073 < r_s < .396$ ), supporting the notion that interest is a multifaceted construct that needs to be examined with multi-dimension assessment.

*Predictors of maternal reading styles.* One question is the extent to which children's behaviors during reading are guided by parents or by the child's spontaneous behaviors that parents respond to during reading. Scarborough and Dobrich (1994) and Lonigan (1994) reported that preschoolers who display greater interest in literacy are likely to be read to more frequently or for longer than other children. Conversely, encouraging parents to increase the frequency of reading to children who are not interested in book reading may actually have a negative effect on literacy (Bus et al., 1995). In the current study, 3.5-year-olds who actively participated in the shared reading activities as observed in pretest were more likely to have story-collaborating mothers, indicating that a child's responsiveness in interactions could be a major factor in the maintenance and/or the development of maternal use of questions (Scarborough & Dobrich, 1994). In turn, parental reading styles are potentially an important determinant

of child's interest in shared reading (Ortiz et al., 2001). As discussed earlier, similar to Arnold et al.'s (1994) and Ortiz et al.'s (2001) findings, children whose mothers had been trained to use dialogic reading strategies demonstrated increased attention and active participation in shared reading activities relative to children in the control group whose parents received no training in the present study. Consistent with researchers who noted that shared book reading provides a context for establishing periods of extended joint attention (Crain-Thoreson & Dale, 1992; DeBaryshe, 1995; Ninio & Bruner, 1978; Ortiz et al., 2001; Snow et al., 1982; Snow & Ninio, 1986; Sorsby & Martlew, 1991; Tomasello & Farrar, 1986), it appears that children's attention in shared reading is related to adults' abilities to engage the child. Mothers were more likely to elicit child responses via wh- and yes/no questions than by reading from the picture book or by commenting about an object (Justice, Weber, Ezell & Bakeman 2002; Olsen-Fulero & Conforti, 1983). Therefore, child's participation could be both a prerequisite and a consequence of maternal reading styles.

*Predictors of children's IQ scores.* Children who improved their attention level during the 4-week interval were found to obtain greater gains in verbal IQ score, regardless of group assignment. This result is consistent with the growing body of

evidence that early interest can drive children toward proficiency in language (Crain-Thoreson & Dale, 1992; Deckner et al., 2006; Frijters et al., 2000; Laakso et al., 1999, Lonigan, 1994; Olofsson & Niedersoe, 1999; Payne et al., 1994; Scarborough & Dobrich, 1994; Sénéchal et al., 1996; Tomasello & Todd, 1983; Weinberger, 1996). Tomasello and Todd (1983) provided the first evidence that the ability of mother-child dyads to establish and maintain joint attention is related to the child's subsequent language growth. Children were between 12 and 18 months of age at recruitment. The amount of time dyads spent in joint attention episodes over a 6-month-period was positively related to the child's vocabulary size at the end of this period. Crain-Thoreson and Dale (1992) reported that child's engagement in shared reading at 20 months predicted language ability at age 4 ½, a better predictor than either the style or frequency of parental behaviors during the reading sessions. It appears that when the child shows interest in shared reading activities, the dyad engaged in longer and more interactive conversations, resulting in better language acquisition (Bus et al. 1995; Sonnenschein & Munsterman, 2002; Tomasello & Farrar, 1986). In this light, it may be that intervention efforts incorporating shared reading should look for additional ways to promote children's attention.

The current result is also consistent with the two meta-analyses in which the associations between shared reading measures and literacy achievement during school years were not robust in comparison to the contribution of early interest in literacy (Bus & van IJzendoorn, 1995; Scarborough & Dobrich, 1994). For example, Scarborough and Dobrich (1994) examined seven correlational studies in which both children's interest in literacy and shared reading measures were included as predictors of language achievement. Children's interest variables (median  $r = .37$ ) explained as much or more variance than shared reading measures (median  $r = .28$ ). In the current study, the frequency of shared book reading accounted for 2.4% of the variance in children's verbal IQ scores at pretest when children's interest and age were partialled out, a lower percentage of variance as compared to the 8% in the two meta-analyses. In contrast, 25.7% of the variance in child's verbal IQ scores could be attributed to contribution of children's attention reported by mothers and children's enjoyment observed during pretest. As Scarborough and Dobrich (1994) suggested, it is possible that the shared book reading measures are a marker variable for child's interest in picture books rather than the mothers' interest in reading to the child.

In summary, the child as well as the mother influence the child's language achievement. The association between child's availability during shared reading and language achievement demonstrates how early interest can drive children toward proficiency in language, starting from a young age (Thomas, 1984). Although changes in child's availability accounted for some of the improvement in child's verbal IQ scores from pre- to posttest, there were residual differences related to other aspects of the dialogic training that contributed to the language gains. A number of variables might be important to the success of this didactic activity: shared reading directed at the interest of individual child (Crain-Thoreson & Dale, 1992), creating a fun atmosphere around reading (DeBaryshe, 1995), or non-specified aspects of reading techniques targeted in the dialogic training procedure (Reese & Cox, 1999). Evaluation of these possibilities should be targeted in future research.

### **Conclusion**

Many of the results found in the current study are similar to the findings reported in Western studies of shared reading. First, the majority of mothers indicated that shared reading was a common and longstanding practice reflecting that shared reading was a

valued family activity. Second, two maternal reading styles that are comparable to the styles found in the Western studies were identified: story telling and story collaborating. Storytellers view the written words as a key element of the shared reading experiences and adhere to the text whereas collaborators are more likely to pose questions to generate discussion with their children as well as providing additional information about the object/picture they were looking at. The styles mothers adopt during a book reading task are not only dictated by individual preferences but also by cultural preferences. Middle-class Chinese mothers in the current study were more likely to adopt the story-telling style compared to their middle-class American counterparts in previous studies. Third, the behavioral changes in Chinese mothers that occurred after being trained in dialogic techniques, coupled with the greater language gains demonstrated by children in the intervention group as compared to the control group at both post- and follow-up-tests, provide additional information suggesting the possible cross-cultural importance of teaching mothers dialogic reading techniques. Fourth, the current results are consistent with a model of shared reading that highlights reciprocal maternal and child influences. Whereas mothers contribute to children's language development by establishing adequate home literacy practices, children are active agents within that context as evidenced by

different levels of availability, which influences child's language achievement. This reciprocity should be incorporated in theoretical models and practical interventions of didactic reading. Finally, the smaller-than-expected long-term effects of dialogic reading intervention suggest that more research is needed. It is possible that some mothers might stop engaging in dialogic reading after the initial 4 weeks of intervention and others might find it challenging to maintain the dialogic reading in the suggested frequency for half a year. Reinstatement, monitoring and feedback following training might encourage continued maternal implementation and foster child's subsequent language achievement.

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## Tables

Table 1

*Correlation Matrix of All the Survey Variables for 375 Families*

	Education	Frequency	Duration	Onset	Availability	Affect	Participation	Gender	Child's Age
Education	1								
Frequency	.024	1							
Duration	.166	.051	1						
Onset	-.295*	-.066	.065	1					
Availability	.312*	.033	.381**	-.250	1				
Affect	.054	-.020	-.205	-.271	.253	1			
Participation	.250	.186	.352**	-.046	.269	.310*	1		
Gender	-.279	-.001	-.005	-.080	-.045	.105	-.120	1	
Child's Age	.013	.010	.133	-.006	.103	.208	.169	-.185	1

\*\*  $p < .001$ , two-tailed. \*  $p < .005$ , two-tailed.

Table 2

*Mean, Standard Deviation, and Comparison of Groups on Quantitative Survey Measures*

Measure	Intervention		Control		<i>t</i>	<i>p</i>
	M	SD	M	SD		
Child's age (month)	44.96	2.05	44.13	4.84	-.964	.338
Maternal education (year)	14.54	2.87	13.92	2.90	-1.060	.292
Times per day	1.52	.69	1.44	.47	-.691	.491
Onset age (month)	15.67	6.92	15.54	7.72	.586	.852

Table 3

*Sub-Category Frequencies of Qualitative Survey Measures and Comparisons between Groups*

Measures	Intervention				Control			
	1	2	3	4	1	2	3	4
Duration	10	30	6	2	12	32	4	0
Availability	0	20	28	N/A	0	32	16	N/A
Affect	2	6	40	N/A	0	16	32	N/A
Active	0	20	28	N/A	0	20	28	N/A

Note: Duration: 1 = 0-15 minutes, 2 = 16-30 minutes, 3 = 31-45 minutes, 4= 46-60 minutes.

Availability: 1 = not available for book reading (child not attending to the reading material), 3 = constant reading (child appears riveted to the book)

Affect: 1 = negative affect (child crying or protesting during part of the interval), 3 = positive affect (child smiling frequently during the interval)

Active: 1 = no participation (child made no contributions during the interval), 3 = frequent contribution (more than four verbal comments or more than 5 physical acts and gestures)

Table 4

Correlation Matrix of All the Survey Variable and Observed Child's Interest for the Selected 96 Families

	Education	Frequency	Duration	Onset	Child's age	Gender	Availability	Affect	Participation	Availability
Education	1									
Frequency	.015	1								
Duration	.169	.051	1							
Onset	-.304*	-.065	.066	1						
Child's age	.064	-.003	.132	-.027	1					
Gender	-.254	.000	.000	-.078	-.186	1				
Availability	.319*	.033	.381**	-.262	.117	-.042	1			
Affect	.059	-.020	-.205	-.361**	.235	.043	.253	1		
Participation	.244	.186	.352**	-.060	.159	-.169	.269	.310 *	1	
Availability1	.098	.086	-.080	-.160	.102	-.146	.197	.432**	.201	1
Affect1	.011	.025	.101	.067	.014	-.006	.139	.121	.198	-.073
Participation1	.316 *	.020	.045	-.061	-.004	-.183	.058	-.037	.138	.396**

\*\*  $p < .001$ , two-tailed. \*  $p < .005$ , two-tailed.

Availability, Affect, and Participation are scores obtained in survey;

Availability1, Affect1, and Participation1 are scores obtained from observation at pretest.

Table 5

*Mean, Standard deviations (in parentheses), and Comparison of Groups on Didactic Interactions between Children*

Measures	Intervention		Control		Group × Session	Group × Session	Simp
	Pretest	Posttest	Pretest	Posttest	F (p)	F (p)	Inter
Total # of episodes	29.3 (10.7)	25.5 (8.5)	29.5 (9.0)	29.5 (7.9)	5.669 (.019)		
Total turns/episode	3.6 (3.8)	3.9 (1.9)	3.7 (2.0)	3.3 (1.6)	1.680 (.198)		
Total units	163.8 (40.3)	185.7 (48.5)	181.4 (31.5)	171.7 (24.7)	12.703 (.001)*	.254 (.616)	12.16
Total maternal units	135.2 (29.1)	144.3 (34.4)	140.2 (23.4)	135.0 (19.1)	5.319 (.023)		
Total child's units	28.6 (20.0)	41.4 (19.4)	41.3 (19.5)	36.7 (17.5)	17.188 (.000)**		10.60

\* $p < .005$ . \*\* $p < .001$ .

Table 6

*Means, Standard Deviations (in parentheses), and Comparison of Groups on Frequency of Categories of*

Category	Intervention		Control		Group × Session	Sim
	Pretest	Posttest	Pretest	Posttest	F (p)	Interv
Reading	54.25 (24.16)	44.46 (18.89)	53.67 (17.97)	55.46 (14.55)	9.905 (.002)*	14.156
Labeling	24.92 (10.92)	17.88 (9.85)	24.92 (13.52)	25.75 (12.22)	19.748 (.000)**	31.580
Elaborating	11.71 (10.38)	16.71 (11.83)	7.71 (5.30)	6.71 (5.19)	38.565 (.000)**	62.120
Imitating	3.63 (4.12)	1.96 (1.71)	4.25 (3.52)	3.79 (3.22)	2.410 (.124)	
Wh-	13.17 (13.91)	22.83 (15.67)	14.67 (10.96)	13.87 (9.21)	9.709 (.002)*	16.590
Completion	1.00 (3.10)	2.13 (2.21)	1.00 (2.20)	.92 (1.40)	3.177 (.078)	
Yes/No	20.67 (13.95)	29.67 (21.39)	22.21 (12.82)	18.62 (8.93)	18.586 (.000)**	19.016
Positive	3.88 (4.17)	5.79 (3.31)	6.00 (4.05)	5.50 (2.75)	11.131 (.001)*	14.003
Negative	.58 (1.09)	.37 (.64)	.58 (.77)	.33 (.63)	.030 (862)	
Behavior	5.12 (4.77)	2.50 (1.75)	5.17 (4.77)	4.38 (2.26)	5.211 (.025)	

\* $p < .005$ . \*\* $p < .001$ .

Table 7.1

*Final Cluster Centers, F ratios, Significant Levels, and Number of Cases in Each Cluster for Maternal Narrative Categories in Pretest when Two Clusters were Formed*

Variable	Final Cluster Centers		F	p
	1	2		
Reading1	67	36	92.498	.000**
Labeling1	23	28	5.333	.023
Elaborating1	6	10	9.577	.003*
Imitating1	2	6	26.545	.000**
Wh1	7	24	83.769	.000**
Completion1	1	2	3.541	.063
Yesno1	15	31	50.106	.000**
Positive1	3	7	23.167	.000**
Negative1	0	1	3.777	.055
Behavior1	4	6	4.092	.046
Number of cases				
Control	24	24		
Intervention	32	16		
Total	56	40		

\* $p < .005$ . \*\* $p < .001$ .

Table 7.2

*Final Cluster Centers, F ratios, Significant Levels, and Number of Cases in Each Cluster for Maternal Narrative Categories in Pretest when Three Clusters were Formed*

Variables	Final Clusters			F	p
	1	2	3		
Reading1	74	42	36	94.450	.000**
Labeling1	21	34	19	16.197	.000**
Elaborating1	6	10	8	3.811	.026
Imitating1	2	5	5	5.810	.004*
Wh1	7	19	19	14.592	.000**
Completion1	0	3	1	9.195	.000**
Yesno1	16	17	36	31.336	.000**
Positive1	3	5	7	8.253	.001*
Negative1	0	1	1	5.583	.005
Behavior1	3	5	9	19.507	.000**
Number of cases					
Control	18	14	16		
Intervention	22	18	8		
Total	40	32	24		

\*  $p < .005$ . \*\*  $p < .001$ .

Table 7.3

*Final Cluster Centers, F ratios, Significant Levels, and Number of Cases in Each Cluster for Maternal Narrative Categories in Pretest when Four Clusters were Formed*

Variables	Final Clusters				F	p
	1	2	3	4		
Reading1	37	31	73	47	68.579	.000**
Labeling1	19	37	23	27	8.841	.000**
Elaborating1	7	17	6	6	19.764	.000**
Imitating1	4	7	2	5	7.376	.000**
Wh1	12	37	7	15	57.776	.000**
Completion1	2	3	0	1	5.111	.003*
Yesno1	17	22	16	40	28.669	.000**
Positive1	5	8	3	6	7.680	.000**
Negative1	1	1	0	0	6.474	.001*
Behavior1	8	5	3	6	8.286	.000**
Number of cases						
Control	14	6	16	12		
Intervention	8	8	26	6		
Total	22	14	42	18		

\* $p < .005$ . \*\* $p < .001$ .

Table 8.1

*Final Cluster Centers, F ratios, Significant Levels, and Number of Cases in Each Cluster for Maternal Narrative Categories in Posttest when Two Clusters were Formed*

Variable	Final Cluster Centers		F	<i>p</i>
	1	2		
Reading2	52	33	15.448	.000**
Labeling2	22	19	1.127	.291
Elaborating2	9	30	71.472	.000**
Imitating2	3	2	2.512	.116
Wh2	16	36	28.966	.000**
Completion2	1	2	1.535	.218
Yesno2	19	60	157.083	.000**
Positive2	5	8	12.016	.001*
Negative2	0	0	1.209	.274
Behavior2	4	2	4.674	.033
Number of cases				
Control	48	0		
Intervention	36	12		
Total	84	12		

\**p* < .005. \*\**p* < .001.

Table 8.2

*Final cluster centers, F ratios, significant levels, and number of cases in each cluster for maternal narrative categories in posttest when two clusters were formed with 84 mothers*

Variable	Final Cluster Centers		F	<i>p</i>
	1	2		
Reading2	70	41	167.178	.000**
Labeling2	23	22	.080	.778
Elaborating2	7	10	6.729	.011
Imitating2	2	3	7.249	.009
Wh2	10	20	31.544	.000**
Completion2	0	2	21.865	.000**
Yesno2	17	20	4.222	.043
Positive2	5	6	3.001	.087
Negative2	1	0	1.713	.194
Behavior2	4	4	.145	.705
Number of cases				
Control	20	28		
Intervention	12	24		
Total	32	52		

\*\*  $p < .001$ .

Table 9

*Changes of Maternal Reading Styles for the 84 Mothers Who were Categorized as Storytellers in the Init.*

*of Posttest*

	Change of Clusters			
	Telling in both	Telling to Collaborating	Collaborating in both	Collaborating to
Control	18	6	22	2
Intervention	12	16	8	0

Table 10

*Means, Standard Deviations (in parentheses), and Comparison of Groups on Frequency of Categories of Behaviors*

Category	Intervention		Control		Group × Session F ( <i>p</i> )	Simple ma Interventic
	Pretest	Posttest	Pretest	Posttest		
Imitation	2.50 (4.33)	2.25 (2.36)	5.04 (9.67)	4.50 (7.13)	.115 (.735)	
Utterance response	12.71 (13.56)	22.13 (13.93)	17.58 (12.91)	16.13 (11.69)	12.972(.001)*	19.453 (.0
Spontaneous utterance	8.21 (7.11)	7.38 (6.22)	11.54 (14.62)	9.38 (10.33)	1.273 (.262)	
Gesture response	3.13 (2.95)	6.42 (3.55)	3.63 (4.20)	4.33 (2.82)	11.407(.001)*	37.041 (.0
Spontaneous gesture	2.08 (2.47)	3.21 (4.01)	3.46 (4.41)	2.38 (3.23)	7.678 (.007)	

\* $p < .005$ . \*\* $p < .001$ .

Table 11

*Means, Standard Deviations (in parentheses), and Comparison of Groups on Frequency of Categories of*

Category	Intervention		Control		Group × Session	Simple n
	Pretest	Posttest	Pretest	Posttest	F ( <i>p</i> )	Interve
Availability	2.59 (.30)	2.73 (.21)	2.60 (.36)	2.61 (.37)	14.262 (.000)**	32.323 (.
Affect	2.14 (.21)	2.18 (.16)	2.05 (.10)	2.06 (.12)	1.126 (.291)	
Participation	1.79 (.49)	1.96 (.35)	1.81 (.38)	1.83 (.26)	3.804 (.054)	

\* $p < .005$ . \*\* $p < .001$ .

Table 12

*Means and standard deviations (in parentheses) Chinese-Wechsler Young Children Scale of Intelligence*

*subscales between pretest, posttest and follow-up.*

Variables	Pretests		Posttests		Follow-up	
	Intervention	Control	Intervention	Control	Intervention	Control
C-WYCSI	123 (12.7)	119 (9.4)	130 (9.5)	120 (10.4)	126 (9.7)	119 (7.8)
Information	13 (2.1)	13 (1.2)	14 (1.8)	13 (1.4)	13 (1.4)	12 (1.1)
Vocabulary	11 (2.2)	11 (1.9)	14 (2.2)	11 (2.3)	13 (1.3)	11 (1.9)
Arithmetic	16 (2.3)	14 (2.7)	16 (2.2)	15 (2.7)	16 (2.1)	14 (2.4)
Similarities	13 (3.0)	14 (1.8)	15 (2.7)	14 (2.1)	14 (2.1)	14 (1.6)
Comprehension	15 (3.8)	13 (2.4)	16 (3.1)	13 (3.0)	15 (2.8)	14 (2.1)

\* $p < .005$ . \*\* $p < .001$ .

Table 13

*Pairwise Comparisons of Sessions for Chinese-Wechsler Young Children Scale of Intelligence (C-WYCS.*

*Similarities, and Comprehension between Pretest, Posttest and Follow-up for Intervention and Control C*

Intervention	(I) Session	(J) Session	Significance			
			C-WYCSI	Vocabulary	Similarities	Com
0	1	2	.638	.470	.898	
		3	1.000	.156	1.000	
	2	1	.638	.470	.898	
		3	1.000	1.000	1.000	
	3	1	1.000	.156	1.000	
		2	1.000	1.000	1.000	
1	1	2	.000**	.000**	.000**	
		3	.001*	.000**	.018	
	2	1	.000**	.000**	.000**	
		3	.000**	.000**	.487	
	3	1	.001*	.000**	.018	
		2	.000**	.000**	.487	

Based on estimated marginal means. Adjustment for multiple comparisons: Bonferroni

\*  $p < .005$  \*\*  $p < .001$

Example of Syntax for pairwise comparison in SPSS:

GLM PreC-WYCSI PostC-WYCSI FollowC-WYCSI BY Intervention

/WSFACTOR=Session 3 Polynomial

/MEASURE=Verbal

/METHOD=SSTYPE(3)

/SAVE=SRESID

/PLOT=PROFILE(Session\*Intervention)

/EMMEANS=TABLES(Intervention) COMPARE ADJ(BONFERRONI)

/EMMEANS=TABLES(Session) COMPARE ADJ(BONFERRONI)

/EMMEANS=TABLES(Intervention\*Session)

/EMMEANS=TABLES(Intervention\*Session)COMPARE(Session)ADJ(BONFERRONI)

/PRINT=DESCRIPTIVE ETASQ HOMOGENEITY

/CRITERIA=ALPHA(.005)

/WSDESIGN=Session

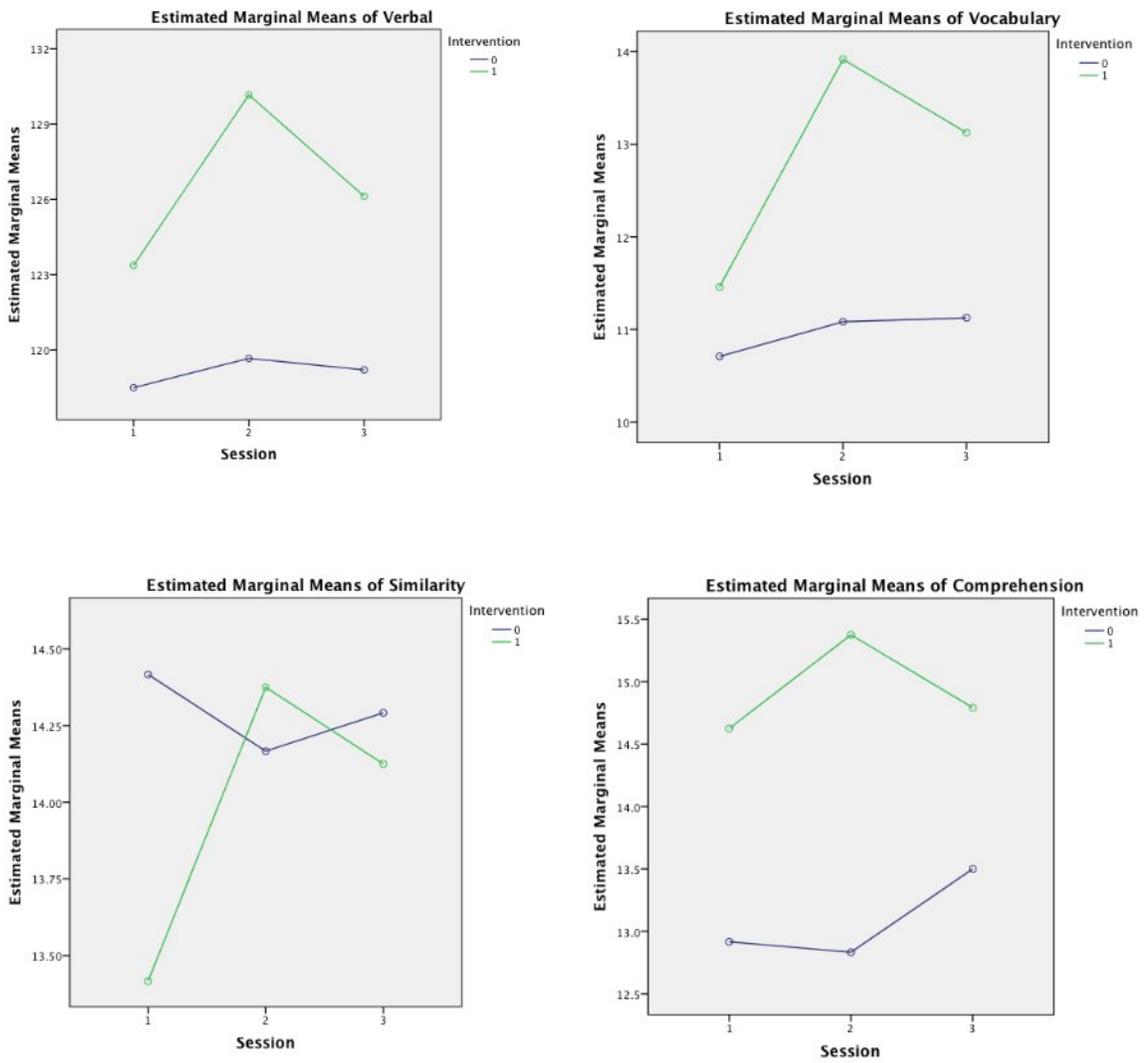
/DESIGN=Intervention.

## Figures

Figure 1

*Graphical Plot of Interactions for Verbal IQ, Vocabulary, Similarity, and*

*Comprehension Tests*



## Appendices

### Appendix A

#### Survey

Dear parent(s):

I am a PhD candidate in the psychology department at Memorial University of Newfoundland and I am asking that you consent to participate in my study. I am investigating whether demographic factors influence mother-child shared book reading. I would be grateful if you could complete and return the information below. Your answers are confidential and no individual will be identified in the reporting of results. It is entirely up to you to decide whether to take part in this research. You are free not to answer any and/or all questions if you are not comfortable with doing so. Your answers are confidential and no individual will be identified in the reporting of results.

1. How many years have you been in school?
2. How many times do you or another family member read with your child per day?
3. How long do you expect each session to last?
  - 0-15 minutes                       16-30 minutes
  - 31-45 minutes                       46-60 minutes

- >60 minutes

4. How old was your child when you first read with him/her (in months)?

5. How often does your child pay attention to the book when you read?

- Not attending to reading material
- Sometimes attending to reading material
- Constant attending to reading material

6. How does your child react when you read?

- Crying or protesting
- Acting calm and relax
- Laughing or smiling

7. How involved is your child when you read?

- No contributions
- Sometimes make comment
- Frequent participate

## Appendix B

### Consent Form

**Title:** Maternal Shared Book Reading Styles and Picture Book Reading Intervention in China

**Researcher:** Su Xiao, Department of Psychology, Memorial University of Newfoundland

Contact information: 86-13667187824 ([xiaosu928@gmail.com](mailto:xiaosu928@gmail.com) or [h29sx@mun.ca](mailto:h29sx@mun.ca))

**Supervisor:** Michael Rabinowitz, Department of Psychology, Memorial University of Newfoundland

Contact information: 1-709-864-7693 ([fmr@mun.ca](mailto:fmr@mun.ca))

You are invited to take part in a research project entitled “Maternal Shared Book Reading Styles and Picture Book Reading Intervention in China.”

This form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any other information given to you by the researcher.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part in the research or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

**Introduction:** Research on preschool children’s language development in Western countries has focused on the frequency and styles of mothers reading stories with their children, with many scholars emphasizing the effect of such reading experience on children’s subsequent language achievement. Members of different cultures, however,

may have different perspectives about the role of home book-reading activities. Due to the scarcity of the research effort in China, more complete information is needed to assess the impact of shared book reading on Chinese children's subsequent language development.

**Purpose of study:** I am investigating whether demographic factors and home literacy environment influence mother-child shared book reading and to what extent the reading activities affect children's subsequent language abilities.

**What you will do in this study:** After you have completed a survey about demographic information and home literacy practices and agreed to participate in the current research, there will be three home visits across half a year. At the first and second home visits, you will be asked to read an assigned picture book with your children for 10 minutes.

Your child's language abilities will be measured using the language subscales of the Chinese Wechsler Young Children Scale of Intelligence (C-WYCSI) at the beginning of each of the three home visits. The C-WYCSI is a standardized measure of intelligence widely used in China.

**Possible benefits:** The result of your child's language scores will be provided at the end of each home visit. Evaluations of the outcomes provide experimental verification of a relation between the style of reading of picture books at home and the development of children's language and literacy skills. Also, research results have relevance for application in the areas of early education and special education by determining the benefits for children's literacy skills.

**Possible risks:** You will be asked to read a story from an age appropriate book to your child as you would typically read with him/her for at least 10 minutes at home. No possible risk is noted.

**Confidentiality:** Each participant's performance is confidential and no individual will be identified in the reporting of results. Access to the computer information will be limited to my supervisor, Dr. Rabinowitz, and myself.

**Anonymity:** Upon request, your child's results can be made available to you for up to six months after the study is completed. At that time, the list linking your name and the assigned computer number will be destroyed and the record will be anonymous. Investigators who request the data will be provided an electronic copy without any link to the name of you or your child.

**Recording of Data:** At the first and second home visits, your conversation dyads will be videotaped. This record will subsequently be transcribed and stored on a computer.

**Reporting of Results:** The collected data will be used in the researcher's PhD dissertation. No individual will be identified in the reporting results. A fake name will be used if direct quotations are absolutely necessary.

**Storage of Data:** Data will be retained for a minimum of five years, as required by Memorial University policy on Integrity in Scholarly Research.

**Questions:** You are welcome to ask questions at any time during your participation in this research. If you would like more information about this study, please contact me at 86-13667187824 (xiaosu928@gmail.com) or my research supervisor Dr. Michael Rabinowitz at 1-709-864-7693 ([fmr@mun.ca](mailto:fmr@mun.ca)).

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at [icehr@mun.ca](mailto:icehr@mun.ca) or by telephone at 1-709-864-2861.

**Consent:**

Your signature on this form means that:

- You have read the information about the research
- You have been able to ask questions about this study

- You are satisfied with the answers to all of your questions
- You understand what the study is about and what you will be doing
- You understand that you are free to withdraw from the study at any time, without having to give a reason, and that doing so will not affect you now or in the future.

If you sign this form, you do not give up your legal rights, and do not release the researchers from their professional responsibilities.

The researcher will give you a copy of this form for your records.

**Your Signature:**

I have read and understood the description provided; I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research project, understanding that I may withdraw my consent at any time. A copy of this Consent Form has been given to me for my records.

\_\_\_\_\_

\_\_\_\_\_

Signature of participant

Date

\_\_\_\_\_

\_\_\_\_\_

Child's Birth Date

Telephone Number

**Researcher's Signature:**

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

\_\_\_\_\_

\_\_\_\_\_

Signature of investigator

Date

Telephone number: 86-13667187824

E-mail address: [xiaosu928@gmail.com](mailto:xiaosu928@gmail.com) or [h29sx@mun.ca](mailto:h29sx@mun.ca)