Parent-Child Interactions in Book Reading and Narrative Skill for Prekindergarteners: Exploring “During” vs. “After” Book Reading Interactions

Abstract

We investigated how parent-child interactions during and after book reading are related to narrative skills among prekindergarten-aged children. We addressed this question by using a nationally representative sample in the U.S., the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B; unweighted $N \approx 550$; weighted $N = 2,766,947$), and by employing a latent variable approach. The results showed that parents employed a variety of interactional behaviors such as asking open-ended and closed-ended questions and directing the child to pictures during reading. In comparison, only a limited number of parents engaged in interactions after book reading. The results of structural equation modeling showed that interaction after, but not during, reading was uniquely related to the child’s retell skill after the child’s communicative oral language skill and family socio-economic status were controlled. These results suggest that interactions after book reading such as summarizing the book might be beneficial for the child’s story retell.

*Keywords*: book reading, retell, prekindergarten, parent-child interaction, during reading, after reading
Parent-Child Interactions in Book Reading and Narrative Skill for Prekindergarteners: Exploring “During” vs. “After” Book Reading Interactions

Children’s ability to retell stories is important not only to oral communication but also to literacy acquisition (Graesser, Golding, & Long, 1991; Mol, Bus, & de Jong, 2009; Reese, Suggate, Long, & Schaughency, 2010; Snow, 1983; Tabors, Snow, & Dickinson, 2001). One crucial mechanism for children’s narrative skill development is interactions involving book reading in the home (Pritchard, 1990). Listening to stories in a book read by an adult provides opportunities for children to learn vocabulary, language features (syntax and expression), interpretation of text, and text structure (Sulzby, 1985), all of which children can draw on in their own narrative production (Purcell-Gates, 1988).

According to Vygotsky’s social interaction framework, learning occurs via interactions between a competent partner (adult) and a novice learner (child). Similarly, Rogoff (1990) proposed that cognitive skills develop through apprenticeship involving interactions between a novice learner and an expert—a novice learner becomes more competent by gradually taking more responsibility from an expert. This applies to children’s language learning including vocabulary and oral narrative skills where adults act as experts and children as novice learners. In particular, parent-child interactions in joint book reading can provide an important context to facilitate children’s oral language such as narrative skill (White & Low, 2002; see below for details) as the adult can use various means to facilitate the child’s comprehension. Parent-child interactions during joint book reading include frequency, quality, types, and timing of various actions such as referring to pictures, asking questions, and providing comments for interpretation/understanding of the story.
Research has shown that parents (mostly mothers) vary in their interactional styles during joint book reading (see Fletcher & Reese, 2005, for a review). Large variations have been observed in the amount of extra-textual talk, types and frequency of questions raised, emphasis made, and comments and statements related to understanding the book (Haden, Reese, & Fivush, 1996; Hammet, van Kleeck, & Huberty, 2003; Ninio, 1980; van Kleeck, Gillam, Hamilton, & McGrath, 1997). Importantly, differences in these behaviors have been shown to be related to children’s retell skills. Mothers’ labeling and elicitation of description, amount of elaboration, previewing of books, and amount of prompting and questions were related to children’s retell skills (Kang, Kim, & Pan, 2009; Low & Durkin, 2001; Reese, 1995; White & Low, 2002). Evidence from parent-child book reading interventions supports the influence of parent-child interaction styles on child language skill (see Reese, Sparks, & Leyva, 2010 for a review). For instance, studies on dialogic reading, one approach to book reading, indicate that parents’ or teachers’ encouragement of children to talk about the story by asking questions and expanding on the children’s utterances are effective in improving the children’s language skills (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Whitehurst, Falco, Lonigan, & Fischel, 1988) and narrative skills (Reese, Leyva, Sparks, & Grolnick, 2010; Zevenbergen, Whitehurst, & Zevenbergen, 2003).

These results are in line with a cognitive theory of text comprehension. According to the construction and integration model, successful text comprehension requires a coherent representation of text, called the situation model (Kintsch & van Dijk, 1978), and the situation model is established by constructing local coherence (and propositions) and integrating multiple elements of texts such as referential and logical/causal relations as well as incorporating the child’s background knowledge (Graesser & Clark, 1985; Kintsch & van Dijk, 1978; van den
Broek, Kendeou, & White, 2009). Maternal elaboration, prompting, and questions are likely to facilitate the child’s understanding of the story and, consequently, retell skill because they provide opportunities to link and integrate different elements of the story.

The above noted maternal interactional behaviors can be found throughout the book reading session, including both during and after book reading. Then, one naturally arising question is whether one aspect, the timing of interactions—i.e., “during” versus “after” book reading—might be important in relation to the child’s retell skills. On the one hand, interactions during reading might be important to facilitate clarifications (e.g., clarifying vocabulary) and establishing local coherence. On the other hand, questions or comments made during reading might interfere with the comprehension process by diverting limited cognitive resources (attention and working memory) from building and maintaining coherent representation for younger children (Goldman, 2004; van den Broek, Kendeou, Lousberg, & Visser, 2011). Furthermore, interactions after book reading might be more conducive to revisiting and connecting different parts of the story, and facilitating inferences to help establish overall coherence.

Studies have reported different parent-child interactional styles that are aligned with interactions during and after book reading. Haden et al. (1996) found three different maternal interaction styles in book reading: (1) a describer style that focuses on labels and descriptions of pictures; (2) a comprehender style that focuses on meaning comprehension (e.g., predictions and inferences); and (3) a performance-oriented style that focuses on story reading without interruption and discussion about the story after reading. Furthermore, Melzi and her colleagues (2005, 2011) reported two dimensions of maternal narrative styles, story tellers and story builders. Story tellers tend to focus on ensuring children’s attention to the story and staying on
the storyline, whereas story builders make child-directed requests, involve the child in the narration, and discuss topics related to the story. Although both the story teller and story builder styles would not employ these different interactions exclusively during or after book reading, the types of interactions that can occur during and after book reading might be associated with these two interactional styles. The story teller would likely engage more in during book reading activities because the primary focus is to provide narrative information with little deviation from the story line (Melzi, Schick, & Kennedy, 2011). The story builder, on the other hand, would maintain story coherence during and after book reading in order to relate the story to the real world.

The studies reviewed here suggest that parents differ in their interaction styles during joint book reading. Furthermore, different interactional styles appear to align with activities during versus after book reading. Then, a critical question is whether interactions during versus after book reading are differentially related to children’s oral retell skill. To our best knowledge, this question has not been examined in relation to children’s retell ability, but it has been explored in relation to story comprehension and vocabulary. van den Broek and colleagues (2011) examined this question in a read-aloud context with two- to three-year-olds and found that questioning during reading was more effective in story comprehension than questioning after reading. Furthermore, Reese and Cox (1999) found that the effect of maternal interactional styles varied as a function of children’s oral language status—children in the performance-oriented condition (focus on “after” reading interactions) had higher vocabulary scores on a posttest if they had a greater initial vocabulary size.

Building on these previous studies, in the present study, we examined the extent of adult-child interactions during and after book reading and whether and how these adult-child
interactions are related to the child’s story retell, using a large, nationally representative sample in the U.S., the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B; unweighted $N \approx 550$; weighted $N = 2,766,947$). The specific research questions are as follows:

(1) To what extent do prekindergarten children’s parents engage in interactional behaviors during and after joint book reading?

(2) How are parents’ interactional behaviors during and after joint book reading related to children’s narrative skill?

Answering the first research question will provide descriptive information about the extent of parent-child interactions during book reading. This is informative, particularly for the given dataset (ECLS-B) because it provides population level information. Previous studies, although informative, tended to have small sample sizes ($1 \leq N_s \leq 139$; Fletcher & Reese, 2005), which limit generalizability. Another unique aspect of the present study was the use of a latent variable approach. A latent variable captures a hypothesized construct using information from observed indicators (i.e., measures) and minimizes the influences of measurement error; therefore, it is preferred. It should be noted that, as our primary focus was whether or not a collection of mother-child interactions during or after book reading, not specific individual interaction activities (e.g., describing pictures or summarizing), are related to children’s retell, the latent variable approach was appropriate. When addressing the second research question, the child’s communicative oral language skill and family socioeconomic status (SES) were included as covariates so we could examine whether mother-child interactions are important over and above the child’s concurrent oral language skill$^1$ and family SES. We hypothesized that

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$^1$ Communicative oral language skill was included to control for the child’s overall oral language skill. An alternative oral language skill at 48 months in the ECLS-B data was the MacArthur
interactions after book reading might be independently related to children’s oral retell after accounting for interactions during reading and the child’s communicative oral language skill, given a previous finding of its relation to vocabulary (Reese & Cox, 1999).

**Method**

**Data Source**

Data for the present study were obtained from the ECLS-B, Kindergarten 2006 and 2007, conducted by the National Center for Education Research (NCER) and sponsored by the U.S. Department of Education. The ECLS-B is designed to provide comprehensive information on children’s early learning, care, and health experiences related to children’s early development and kindergarten readiness. It used a complex survey design and oversampled certain subpopulations such as children from diverse racial and ethnic backgrounds (e.g., American Indian/Native Alaskan and Asian/Pacific Islanders), children with low and very low birth weight, and twins. (Snow et al., 2009). The sample was selected using a clustered, list frame sampling design. It consisted of registered births as recorded by the National Center for Health Statistics (National Center for Education Statistics, 2005). Births were sampled from 96 core primary sampling units (counties and country groups) representing all infants born in the U.S. in 2001. Among 14,000 births sampled for the ECLS-B study, 10,700 children were followed from birth through kindergarten, and data were collected at five time points: when the children were approximately 9 months (2001-02), 24 months (2 years; 2003-04), prekindergarten aged (48 months; 2005-06) and at two kindergarten entries (60 months for fall 2006-07 and 72 months for Communicative Development Inventory word inventory (Fenson et al., 1994). This was not included in the present study due to a severe ceiling effect. No other oral language measures were available in the ECLS-B dataset.
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fall 2007-08). Data were collected from multiple sources (i.e., children, mothers and fathers, child care providers, teachers, and schools) through multiple methods (i.e., direct assessment, face-to-face and telephone interviews, and observation as well as birth certificates). In the present study, we used the data from 48 months. Figure 1 summarizes the data resource, sampling, population, measures, and data analysis used in the study, which are detailed below.

Participants

A simple random subsample of 800 parent-child dyads was administered the Two Bags Tasks when the children were 48 months (prekindergarten) (Snow et al., 2009). The Reading Aloud Profile-Together (RAPT; Goodson, Layzer, Smith, & Rimzdius, 2004) coding scheme was used to provide detailed information about parents’ and children’s behaviors during joint book reading activity (Snow et al., 2009). Out of 800 subsamples, approximately 550 dyads were codable and, thus, were used in the present study. It should be noted that to protect participant confidentiality, all sample sizes are reported rounded to the nearest 50, as required by the NCER guidelines (Snow et al., 2009). However, all the reported percentages are based on the actual

\footnote{According to the ECLS-B manual, n \approx 100, but additional children’s data were considered unscorable when they were coded as “not applicable” or “not ascertained.” Approximately 22 percent (n \approx 200) were not codable for various reasons: 1) less than 2 minutes with the joint book reading activity\footnote{(the minimum amount of time required to code the activity); 2) technical problems with the DVD; and 3) language that was not supported by the RAPT coding team (Najarian, Snow, Lennon, & Kinsey et al., 2010). Two inclusion criteria of the present study were applied to approximately 600 parent-child dyads: those who had a missing value for the weight variable (W3R0) (approximately 50 dyads were dropped); and those who had not completed the reading and narrative assessment (an additional 50 dyads were dropped).}
sample sizes. The unweighted sample of parent-child respondent dyads consisted of 48.1% male children, and 100% of the parent respondents were mothers. The children’s sample was racially and ethnically diverse: 50.4 % White, non-Hispanic, 14.5% Black or African American, non-Hispanic, 13.9% Hispanic, 8.9% Asian, non-Hispanic, and 12.3% Other, including Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, or more than one race. The mean age of children for the assessments was 52.51 months ($SD = 3.71$, range $= 44.50$ to 61.90). The weighted sample information for the present study is presented in Table 1 for comparison.

**Measures**

**Predictors: Parent-child reading behaviors during and after joint book reading.**

“Corduroy” (Don Freeman, 1968) was used in the book reading activity at home, and the parent-child book reading was video-taped and coded using the RAPT coding system. The RAPT was designed for the Even Start Classroom Literacy Interventions and Outcomes Study (CLIO), which is a subset of the Observation Measure of Language and Literacy Instruction (OMLIT; Goodson et al., 2004) observation system to provide information about parents’ and children’s behaviors while they are engaged in joint book reading. The RAPT divides joint book reading activity into three phases: (1) activity before reading the book, or prereading; (2) activity during book reading; and (3) activity after reading the book, or postreading (Najarian, Snow, Lennon, & Kinsey, 2010). A total of 32 behaviors (see Appendix A) were coded for behaviors during these three phases, and each targeted maternal behavior was coded dichotomously in terms of the presence of the target behaviors (yes = 1; no = 0).

In the present study, out of 32 items, guided by literature and previous studies, we selected 14 items (see Table 2) that are related to comprehension, and these 14 items formed two
latent variables based on exploratory (EFA) and confirmatory factor (CFA) analyses: parent-child behaviors from during book reading and parent-child behaviors after book reading. Parent-child behaviors during reading included the following eight items: (1) the parent captures the child’s attention before reading; (2) the parent directs the child to pictures during reading; (3) the parent asks closed-ended questions during reading; (4) the parent expands on the story during reading; (5) the parent answers the child’s questions during reading; (6) the parent highlights new vocabulary during reading; (7) the parent relates the book to the child’s experiences during reading; and (8) the parent asks open-ended questions during reading. Open-ended questions are those that require more than a yes/no response (e.g., What do you think this book is about? What do you think will happen next?), and closed-ended questions are those that elicit a yes/no response (e.g., Is he looking for a button?).

Parent-child behaviors after reading included the following six items: (1) the parent lets the child look at the book after reading; (2) the parent answers questions about the book after reading; (3) the parent responds to the child’s comments after reading; (4) the parent asks for the child’s recall of the book after reading; (5) the parent asks questions related to the child’s experiences after reading; and (6) the parent summarizes the book with the child’s involvement after reading. Overall inter-rater reliability was reported as greater than .98 in terms of percent agreement (Najarian et al., 2010). Although RAPT behaviors included prereading interactions in addition to those during and after book reading, we focused on behaviors during and after book reading primarily for two reasons. First, previous studies reviewed earlier suggested that the majority of meaning-construction related activities occur during and after book reading. Second,

3 Although this item states “before” reading, EFA and CFA suggested its association with “during” reading.
preliminary EFA and CFA did not yield a coherent latent variable when using the prereading interactions.

**Outcome: Narrative skills.** The children were administered two story items from the PreLAS Let’s Tell Stories subtest (Rainstorm and Butterfly; Duncan & De Avila, 1998) to measure their narrative skills. The field interviewer pointed to a series of pictures while telling the children a scripted story. After each story, the children were asked to retell it, using the pictures as prompts if needed. Their responses were audiotaped and simultaneously handwritten by the field interviewer. Transcripts were then completed and/or corrected later and were scored by trained assessment coders (Najarian et al., 2010). Scores ranged from 0 to 5: 0 “no response,” 1 “short, isolated phrases or at least one word in English,” 2 “disconnected thoughts, at least one sentence, or many grammatical errors,” 3 “recognized story line, limited detail, or grammatical errors,” 4 “a recognizable version of a story in coherent or fluent sentences,” and 5 “articulate, detailed sentences, vivid vocabulary, and complex constructions.” The reliability of coding was established during the training phase by comparing coders’ scores to those assigned by three standard coders. The reported average percent agreement, using an adjusted interrater reliability (see Najarian et al., 2010) was 98.9 (range from 91.3 to 100) and 98.1 (range from 90 to 100) for story 1 (Rainstorm) and story 2 (Butterfly), respectively.

**Covariates.** Child’s communicative oral language skills and family socioeconomic status (SES) when the child was approximately 48 months were used as control variables.

**Child’s communicative oral language skill.** Oral language was rated by the parent respondents using the six items from Leventhal (1998), which were related to communicative language skills (communicative language skill, hereafter). The six items were whether the child “speaks clearly so a stranger can understand,” “refers to him/herself as I,” “is able to get the
attention of the listener,” “uses appropriate social greetings,” “is a good listener,” and “waits his/her turn to speak.” The responses were based on a 5-point scale ranging from 1 “never” to 5 “very often.” The responses were recorded as 0 “never” to 4 “very often” in the present study. The five items, excluding “refers to him/herself as I,” were selected to construct one latent factor to demonstrate general communicative skill at prekindergarten using EFA and CFA. Cronbach’s alpha with five items was .61 for the sample in the present study. Note that although the reliability is less than ideal, its impact is much reduced in the latent variable approach because common variance among items is used.

SES. The SES in the ECLS-B is a composite scale with five variables reflecting father/male guardian’s education, mother/female guardian’s education, father/male guardian’s occupation, mother/female guardian’s occupation, and household income (Snow et al., 2007). Each of these measures was standardized with a mean of 0 and a standard deviation of 1, and the reported SES values are a composite of these standard scores. The measure ranged from -2.25 to 3.00 in the present study.

Data Analysis

The primary analytic strategies were EFA, confirmatory CFA, and structural equation modeling (SEM) using Mplus 6.11 (Muthen & Muthen, 2010). As noted earlier, informed by the theory and results of EFA, factor structures were tested using CFA. CFA is one way to determine construct validity by examining how a given construct predicts observable items (Kline, 2005). The ECLS-B data include sampling weights and were used to ensure that analyses can be nationally representative. To account for these complex data and to generalize findings for all children in the U.S., sampling weights (W3R0; W3R0*(8,900/800) in particular for this study),
strata (W3CST), and cluster (W3CPS) variables available in the ECLS-B data file were used in the statistical analyses.

In both measurement and structural model testing, parameter estimates were obtained by Weighted Least Squares Means and Variance (WLSMV) Adjusted estimation, which is the default estimation method for analyses with categorical indicators and appropriate for the presence of ceiling or floor effects in Mplus 6.11 (Muthen & Muthen, 2010). Model fit was evaluated by multiple indices such as chi-square, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA; Browne & Cudeck, 1993), and the Weighted Root Mean Square Residual (WRMR; Finney & DiStefano, 2006; Muthen & Muthen, 2010). RMSEA values below .05, CFI and TLI values equal to or greater than .95, and WRMRs less than .9 are preferred for an excellent model fit (Hu & Bentler, 1999; Muthen & Muthen, 2010). RMSEA values below .08, CFI and TLI values equal to or greater than .90, and WRMRs less than 1.0 are considered reasonable (Kline, 2005; Muthen & Muthen, 2010).

Results

Descriptive statistics are presented in Table 2. Children’s narrative skill in the two tasks had average scores of 2.22 and 2.53, indicating that many children’s retelling had the main story line, but with limited details (score of 2). The indicators of the children’s communicative oral language skills had average scores ranging from 2.15 to 3.30 with sufficient variation in each indicator.

Table 2 shows that a greater number of parents engaged in reading interactions during reading than after reading. On average, parents engaged in highlighting new vocabulary least frequently (12% of parents) and directing the child to pictures most frequently (86% of parents) during reading. Approximately 28% of the parents asked open-ended questions, whereas 77%
asked closed-ended questions during reading. There was substantial variation around the means across the interactional behaviors during reading. Parent-child interactions after reading occurred infrequently, ranging from 2% of the parents engaging in summarizing the book with the child’s involvement to 7% of parents letting the child look at the book. Only about 5% of parents explicitly asked questions related to the child’s experiences, and 7% asked the child to recall the book content, both of which are presumably and potentially important for comprehension. Overall, these results indicate that the majority of parents engaged in asking and answering questions during reading, but their explicit engagement after joint book reading was largely limited. Despite the floor effects in the postreading parent-child behaviors, however, there was sufficient variation around the means of each variable. Given the floor effects, we used WLSMV Adjusted estimation in the subsequent analysis.

As noted earlier, the following latent variables were constructed using CFA: parent-child behavior during reading, parent-child behavior after reading, communicative language skill, and narrative skill. Factor loadings were all statistically significant ($ps < .001$); they are shown in Table 2. Bivariate correlations among the latent variables and the observed SES variable are shown in Table 3. Parent-child interactions during reading were somewhat weakly related to those after reading ($r = .26$, $p < .001$). Parent-child interaction after reading, not during reading, was also relatively weakly related to children’s narrative skill ($r = .31$, $p < .001$).

In order to examine the unique relations of interactions during and after joint book reading with the child’s narrative skill, a structural equation model was fitted. The model fit was adequate: $X^2 (df) = 277.611$ (199), $p < .001$, $CFI = .93$, $TLI = .92$, $RMSEA = .027$, $WRMR = 1.11$. The results with standardized path coefficients are presented in Figure 2. Parent-child interaction during reading was not uniquely related to narrative retell ($p = .18$), whereas parent-
child interaction after reading was uniquely related to narrative ($\beta = .32$, $p = .005$) after parent-child and child interactional behavior during reading, child’s communicative language skill, and socio-economic status were controlled. Communicative language was uniquely related to narrative skill ($\beta = .25$, $p = .001$), and SES was not ($p = .24$) after accounting for the other variables in the model.

**Discussion**

The primary foci of the present study were to understand the extent to which mothers engage in various interactional behaviors during and after joint book reading and how these reading behaviors are related to children’s narrative skill. We used large U.S. national data to examine these questions. In the discussion below, we use the term “mother-child interactions” instead of “parent-child interactions,” given that 100% of the parent respondents/participants were mothers.

In line with previous studies (Fletcher & Reese, 2005; Hammet et al., 2003; van Kleeck et al., 1997), large variations were observed in maternal interactions during joint book reading. Many mothers directed children’s attention to pictures and asked closed-ended questions, whereas fewer mothers highlighted vocabulary and asked open-ended questions during reading. Compared to interactions during reading, the average occurrence of interaction after reading activities was low. On average, many mothers did not engage in comprehension-related activities after book reading such as asking the children questions about the book or asking for recall of the book.

Despite their low occurrence and consequent floor effects, however, it was the interactions after reading that were uniquely related to children’s narrative skill even after child’s communicative language skill and family SES were controlled. In fact, mother-child reading
behavior during reading was not related to the child’s narrative skill even in a bivariate examination. This finding is surprising, given previous findings of the relation of mother-child interactions to narrative skills for prekindergarten children (e.g., Kang et al., 2009; Reese et al., 2010; Zevenbergen et al., 2003). However, it is difficult to compare the present findings to previous studies because the previous studies did not differentiate between mother-child interactions that occurred during versus after book reading. Furthermore, the present finding is divergent from a recent study (van den Broek et al., 2011) that explicitly examined interactions during versus after reading and found that questions during reading are beneficial for children’s comprehension. Again, the results cannot be directly compared due to many differences in the research design, including the outcomes and age of the participants—prekindergarten children and their story retell in the present study versus toddlers and their story comprehension in van den Broek et al.’s (2011) study.

A natural question that arises from the present finding is why mother-child interactions after reading would contribute to the development of narrative skills. One explanation is that although interactions that take place during reading are important to children’s comprehension of the book (Kang et al., 2009; Reese, 1995; White & Durkin, 2002), postreading interactions provide further critical opportunities to facilitate story comprehension and retell. Many interactions during reading were low level activities such as the parent asking closed-ended questions (see Table 2), whereas those after reading were higher order, more demanding behaviors such as asking for recall of the story and summarizing the story. Whereas the parent’s and child’s main focus and associated interactions during book reading might be comprehending the focal text at hand or constructing local coherence, after book reading, the parent can attend to how various propositions across the story can be brought together to construct global coherence,
which then facilitates the children’s comprehension of the story (Graesser & Clark, 1985; Kintch & van Dijk, 1978; van den Broek et al., 2009). As noted earlier, the child has to establish causal/logical relations to build coherence for successful text comprehension, and after book reading might be a more opportune time for these higher order activities than during reading. Therefore, the types of interactions that co-occurred during versus after book reading might have driven the relation to the child’s retell performance, not the timing of “during” versus “after” book reading per se. Young children such as the prekindergarteners in the present study might particularly benefit from attention to the type of interactions that take place after reading due to the challenging nature of interconnecting meanings and different parts of the story to establish the situation model (van den Broek & Espin, 2012).

The interactions found during versus after book reading appear to be aligned with previously identified parental interactional styles. As described earlier, the performance-oriented style found in the research by Reese and colleagues (1996, 1999) focuses on reading a story uninterrupted and discussion after story reading, whereas a describer and a comprehender tend to focus on meaning comprehension during book reading. Furthermore, Melzi and her colleagues (2005, 2011) identified two dimensions of maternal narrative styles, story tellers and story builders. Story tellers tend to focus on telling the storyline to the audience (i.e., child), whereas story builders make child-directed requests and involve the child in the narration. As shown in Table 2, interactions that take place during reading are mostly associated with mothers telling the story to the child, including asking questions, directing attention to vocabulary, and relating to the child’s experiences. In contrast, interactions that take place after reading appear to be closely associated with story builders’ and performance-oriented behaviors such as asking for recall of
book content, responding to the child’s comments, and summarizing the book with the child’s involvement.

When these findings are taken together, it appears that the interactional styles used after reading are related to children’s retell skill. However, an important question remains about whether the timing of “during” versus “after” reading is an important aspect beyond interactional styles that co-occur with during and after book reading. This question can be investigated by assigning mother-child pairs into different conditions in which the same interactional styles are presented during versus after reading. Although we could not find such a study in extant literature, a previous study presented similar, albeit not the same, questions and interactions in “during” (i.e., comprehender style) and “after” (i.e., performance-oriented) conditions to four-year-olds and found that children with larger initial vocabularies made greater gains in their vocabulary in the “after” reading condition (Reese & Cox, 1999). These results suggest that the relation of mother-child interactional styles, including during versus after reading, to child’s retell skill may not simple, but more nuanced.

An alternative explanation for our present findings (i.e., the relation of after reading, but not during reading, to the child’s narrative skills) might be attributed to the way the data are coded in the ECLS-B. In the ECLS-B, only the presence or absence of target behaviors are coded, which precludes capturing variation in the frequency of target behaviors. This is an important limitation of the present study originating from the data source. Therefore, a future replication study addressing this issue is warranted.

**Limitations and Implications**

A few limitations of the present study are worth noting. As noted above, the measures of mother-child interactions captured the presence or absence of activities, not the frequency of
these activities. The latter is more optimal as it captures more precise information. This limitation is a constraint inherent in the ECLS-B dataset. Second, despite the unique relation found in the present study, floor effects in the after-reading interactions are a limitation. Future studies addressing these limitations are needed. Another direction for future studies is examining mother-child language interactions beyond book reading contexts such as family reminiscing (e.g., Reese, 1995; see Fivush, Haden, & Reese, 2006 for a review). For instance, maternal language behaviors during past event narratives, such as associative remarks (related to world knowledge), were related to the child’s story production (Reese, 1995), and children from low-income families performed better in comprehension and narrative production when in a family reminiscing context than in dialogic and control conditions (Reese et al., 2010). Furthermore, given the role of language skills in literacy acquisition, it would be informative to examine the relations of mother-child interactions during book reading and children’s retell to their literacy skills. Finally, inherent to the dataset, all the parents in the study were mothers, and the extent to which the present findings can be generalized to other caregivers including fathers is unknown.

Given the correlational nature, the implications for practice are preliminary and should be taken with caution. However, in conjunction with previous observational studies and intervention studies (see Reese et al., 2010; Zevenbergen et al., 2003), the unique contribution of the after-reading interactions preliminarily suggests that promoting mother-child engagement and interactions beyond during reading and extending it to after book reading have the potential to facilitate the development of children’s narrative skill. Given the limited occurrence of postreading interactions in the present study and the unique contribution of these mother-child behaviors, further investigations are needed to confirm their potential effect. Overall, the present findings, together with previous studies, suggest a need to illuminate the precise mechanism of
how mother-child interactions during book reading are related to children’s language (including narrative skill).
Appendix

Maternal Book Reading Behavior Items in RAPT

<table>
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<tr>
<th>Reading activity</th>
<th>Item description</th>
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| Activity before reading the book | Parent makes child comfortable  
Parent captures child’s attention  
Parent labels parts of book  
Parent points to book parts  
Parent identifies sounds/letters  
Parent reminds child of similar books  
Parent responds to child’s questions  
Parent asks closed-ended questions  
Parent relates book to child’s experiences  
Parent asks open-ended questions |
| Activity during book reading     | Parent tracks print  
Parent acts out story  
Parent directs child to pictures  
Parent asks closed-ended questions  
Parent expands on story  
Parent answers child’s questions  
Parent highlights letters  
Parent highlights new vocabulary  
Parent asks child to remember back  
Parent relates book to child’s experiences  
Parent asks open-ended questions  
Parent has child read text |
| Activity after reading the book  | Parent asks if child liked book  
Parent lets child look at book  
Parent answers questions about book  
Parent responds to child’s comments  
Parent reviews vocabulary  
Parent asks for recall of book  
Parent asks questions related to child’s experiences  
Parent asks open-ended questions  
Parent summarizes book without child’s involvement  
Parent summarizes book with child’s involvement |

References


Table 1

*Descriptive Statistics for Gender, Racial/Ethnic Backgrounds, Age, and Socioeconomic Status* for Unweighted and Weighted Samples

<table>
<thead>
<tr>
<th></th>
<th>Unweighted Sample (N ≈ 550)</th>
<th>Weighted Sample (N = 2,766,947)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>51.9%</td>
<td>48.2%</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>50.4%</td>
<td>62.1%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>14.5%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13.9%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>8.9%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Other</td>
<td>12.3%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Age in months</td>
<td>(M (SD)) 52.51 (3.71)</td>
<td>(M (SD)) 51.97 (3.64)</td>
</tr>
<tr>
<td></td>
<td>Min-Max 44.50 - 61.90</td>
<td>Min-Max 44.50 - 61.90</td>
</tr>
<tr>
<td>Family SES</td>
<td>.12 (.83)</td>
<td>.13 (.81)</td>
</tr>
<tr>
<td></td>
<td>Min-Max -2.25 - 3.00</td>
<td>Min-Max -2.25 - 3.00</td>
</tr>
</tbody>
</table>
Table 2

*Descriptive Statistics and Standardized Factor Loading and Residuals (S.E.)*

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>Min-Max</th>
<th>Factor loading (s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parent-child interaction during reading</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent captures child’s attention before reading</td>
<td>.72 (.45)</td>
<td>0.00-1.00</td>
<td>.52 (.09)</td>
</tr>
<tr>
<td>parent directs child to pictures during reading</td>
<td>.86 (.35)</td>
<td>0.00-1.00</td>
<td>.76 (.08)</td>
</tr>
<tr>
<td>parent asks closed-ended questions during reading</td>
<td>.77 (.42)</td>
<td>0.00-1.00</td>
<td>.94 (.04)</td>
</tr>
<tr>
<td>parent expands on story during reading</td>
<td>.60 (.49)</td>
<td>0.00-1.00</td>
<td>.71 (.06)</td>
</tr>
<tr>
<td>parent answers child’s questions during reading</td>
<td>.39 (.49)</td>
<td>0.00-1.00</td>
<td>.47 (.06)</td>
</tr>
<tr>
<td>parent highlights new vocabulary during reading</td>
<td>.12 (.32)</td>
<td>0.00-1.00</td>
<td>.51 (.10)</td>
</tr>
<tr>
<td>parent relates book to child’s experiences during reading</td>
<td>.37 (.48)</td>
<td>0.00-1.00</td>
<td>.56 (.09)</td>
</tr>
<tr>
<td>parent asks open-ended questions during reading</td>
<td>.28 (.45)</td>
<td>0.00-1.00</td>
<td>.50 (.09)</td>
</tr>
<tr>
<td><strong>Parent-child interaction after reading</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent lets child to look at book after reading</td>
<td>.07 (.26)</td>
<td>0.00-1.00</td>
<td>.62 (.10)</td>
</tr>
<tr>
<td>parent answers questions about book after reading</td>
<td>.03 (.16)</td>
<td>0.00-1.00</td>
<td>.61 (.11)</td>
</tr>
<tr>
<td>parent responds to child’s comments after reading</td>
<td>.05 (.22)</td>
<td>0.00-1.00</td>
<td>.78 (.09)</td>
</tr>
<tr>
<td>parent asks for recall of book after reading</td>
<td>.07 (.26)</td>
<td>0.00-1.00</td>
<td>.94 (.06)</td>
</tr>
<tr>
<td>parent asks questions related to child’s experiences after reading</td>
<td>.05 (.22)</td>
<td>0.00-1.00</td>
<td>.62 (.13)</td>
</tr>
<tr>
<td>parent summarizes book with child’s involvement after reading</td>
<td>.02 (.14)</td>
<td>0.00-1.00</td>
<td>1.00 (.06)</td>
</tr>
<tr>
<td><strong>Communicative skill</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking clearly</td>
<td>3.30 (.81)</td>
<td>0.00-4.00</td>
<td>.44 (.06)</td>
</tr>
<tr>
<td>Getting attention of listener</td>
<td>3.68 (.59)</td>
<td>0.00-4.00</td>
<td>.48 (.06)</td>
</tr>
<tr>
<td>Using appropriate social greetings</td>
<td>3.24 (.83)</td>
<td>0.00-4.00</td>
<td>.65 (.08)</td>
</tr>
<tr>
<td>Being a good listener</td>
<td>2.79 (.82)</td>
<td>0.00-4.00</td>
<td>.36 (.06)</td>
</tr>
<tr>
<td>Waiting his/her turn to speak</td>
<td>2.15 (.81)</td>
<td>0.00-4.00</td>
<td>.44 (.07)</td>
</tr>
<tr>
<td><strong>Narrative skill</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Let’s tell stories, “Rainstorm”</td>
<td>2.22 (.99)</td>
<td>0.00-5.00</td>
<td>.81 (.10)</td>
</tr>
<tr>
<td>Let’s tell stories, “Butterfly”</td>
<td>2.53 (1.07)</td>
<td>0.00-5.00</td>
<td>.78 (.09)</td>
</tr>
</tbody>
</table>

*Note.* Unweighted N ≈ 550.
Table 3

*Intercorrelations Among Latent Variables and Observed Variable (SES)*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parent-child interaction during reading</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Parent-child interaction after reading</td>
<td>.26***</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Communicative language skill</td>
<td>.20**</td>
<td>.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Narrative skill</td>
<td>.03</td>
<td>.31**</td>
<td>.26***</td>
<td></td>
</tr>
<tr>
<td>5. SES</td>
<td>.22**</td>
<td>.08</td>
<td>.23***</td>
<td>.15*</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, *** p < .001
Figure 1. The process of data analysis, including sampling, measures, and analysis.
Figure 2. Relations of parent-child interactions during and after book reading, child’s communicative language skill, and socioeconomic status (SES) to child’s narrative retell. Standardized path coefficients are presented. Solid lines represent statistically significant relations, and dashed lines represent non-significant relations.