STORYBOOK READING AND THE ADDITION OF TOY PROPS: THE EFFECTS ON CHILD ENGAGEMENT AND INTEREST AND THE INTERACTIONS BETWEEN CAREGIVERS AND THEIR CHILDREN

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ABSTRACT

VICKY POSTON ROY: Storybook Reading and the Addition of Toy Props:

The Effects on Child Engagement and Interest and the Interactions Between

Caregivers and Their Children

(Under the direction of Elizabeth Crais, Ph.D.)

Using a repeated-measures design, this study examined the addition of toy props during

storybook reading between caregivers and their young children 18-27 months of age. Twelve

children identified as demonstrating "high engagement" and 12 children identified as

demonstrating "low engagement" during storybook interactions and their caregivers were

recruited to participate. Group membership was based on a researcher developed literacy

attitude and behavior questionnaire completed by the participating caregiver. Caregiver-

child dyads were video-recorded on two occasions at their home reading two different

storybooks and engaging in a "favorite" activity. Toy props were included during one of the

storybook interactions, counterbalanced across participants.

The results of the study revealed significant group differences between prop

conditions for the total interaction time and the rate of child protesting behaviors.

Additionally a trend was identified between dyads in the high and low engagement groups

for both the total number of child verbal/vocal acts and total child gesture use. Specifically

there was a differential influence for the addition of toy props dependent on engagement

group membership with children in the low engagement group producing more verbal/vocal

acts and gestures during the prop condition than the no prop condition. In contrast, children in the high engagement group tended to produce few verbal/vocal acts and gestures during the prop condition compared to the no prop condition.

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Many years ago, I left home hoping to find who I was meant to be. After a few years and one degree, I set off on another journey still not quite sure what it was that God had planned for me. At the end of that road and with another degree to boot, I once again embarked on another educational journey, this time dragging my sweet husband-to-be along for the ride. Many life experiences and unforeseen circumstances have brought me to the place where I am now, but it has been the people who I have found, and in some cases those who have found me, that I must thank for making me into the person I was always meant to be.

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CHAPTER 1

STATEMENT OF THE PROBLEM

Storybook interactions between caregivers and their children have been the focus of an extensive body of research over the last three decades (Dickinson & McCabe, 1991; Pellegrini, Brody, & Sigel, 1985; Whitehurst et al., 1994; Whitehurst et al., 1999) (See Bus, van IJzendoorn, & Pellegrini, 1995; Snow, Burns, & Griffin, 1998 for detailed reviews). Research has documented the concurrent and predictive relationship between aspects of storybook reading, and the language and literacy outcomes of young children (Bus et al., 1995; Dickinson & McCabe, 2001; Moerk, 1985; Pellegrini et al., 1985). Thus, storybook reading has become a commonly recommended practice to caregivers of children who are experiencing difficulties with language and literacy development (Snow et al., 1998; Snow, Scarborough, & Burns, 1999).

In the mid 1980s, storybook reading was described by the Commission on Reading as the "single most important activity for building the knowledge required for eventual success in reading" (Commission on Reading, National Academy of Education, 1985 p.23). This statement has been supported by research documenting a positive relationship between early storybook reading and later language and literacy development (Bus et al., 1995; Dickinson & McCabe, 2001; Moerk, 1985; Pellegrini et al., 1985). However, the Commission's claim has received great attention in the literature (See Allen, Cipielewski, & Stanovich, 1992; Bus et al., 1995; Cipielewski & Stanovich, 1992; Senechal, Thomas, & Monker, 1995; Yarosz & Barnett, 2001) in part due to the

frequently cited review conducted by Scarborough and Dobrich (1994) indicating that only a small proportion of the variance in later language and literacy skills can be accounted for by the frequency with which children engage in storybook reading with a caregiver prior to school entry.

In response to the Scarborough and Dobrich (1994), Bus and colleagues (Bus et al., 1995) used available literature to conduct a meta-analysis that allowed for control of sample size across previous studies. The results of the meta-analysis were similar in that early storybook reading accounted for only a small proportion of the variance in later language and literacy skills; however, the analyses also revealed a moderate effect size, which Bus et al. concluded provided clear support for storybook reading as an important contributing factor to later language and literacy development. Lonigan (1994) also suggested that these initial small differences may be magnified over time and in turn may have a significant impact on later language and literacy development.

Further debate has highlighted factors other than frequency of storybook reading that may influence later literacy and language outcomes. These factors include the types of interactions between caregivers and their children, the home literacy environment, and the child's interest and engagement in storybook reading activities (Bus et al., 1995; DeBaryshe, 1995b). Despite the debate in the literature regarding the importance of the frequency of storybook reading, most researchers generally accept the potential benefits associated with shared storybook reading and the identified relationships between storybook reading and later language and literacy development (Snow et al., 1998; Teale & Sulzby, 1986). What remains unclear is the exact contribution of the varying

components of storybook reading that factor into the success of these types of caregiver-child interactions and their relationship with later language and literacy outcomes.

Research aimed at delineating the specific contributions of storybook reading to later child development has examined varying factors of shared book reading. Such factors as the frequency of home literacy practices and the quality of the interactions between caregivers and their young children have been investigated in both the emergent literacy field and the more general field of speech-language pathology (Bus et al., 1995; Justice & Kaderavek, 2002; Lonigan, 1994; Scarborough & Dobrich, 1994; Schuele & van Kleeck, 1987; Snow et al., 1998). In contrast to the abundance of research available examining the relationships between these related factors and their contributions to the benefits related to storybook reading, another key factor, the child's interest and engagement in storybook reading, has received little attention in the literature to date.

A child's interest and engagement in storybook reading has been identified by several researchers as a potentially critical factor influencing, as well as being influenced by, storybook reading (Lonigan, 1994; Scarborough & Dobrich, 1994; Snow et al., 1998; Sonnenschein & Munsterman, 2002). Not only may increased child interest and engagement contribute to successful storybook interactions (DeBaryshe, 1995b; Schneider & Hecht, 1995), but also children who are interested and engaged are more likely (than those who are not) to read independently for pleasure once they learn to read (Baker, 2003; Wigfield & Guthrie, 1997). Furthermore, children who demonstrate early interest and engagement in storybook reading and other literacy related activities are more likely to demonstrate greater achievements in language and literacy development

throughout the early school years compared to their low-interest peers (Frijters, Barron, & Brunello, 2000; Guthrie & Knowles, 2001; Olofsson & Niedersoe, 1999).

Unfortunately, many of the children who might benefit the most from the potential positive influences of storybook reading (e.g. children with language and literacy difficulties) have been described as less interested and engaged in this type of interaction (Kaderavek & Sulzby, 1998a, 1998b; Morrow, 1983). Despite the growing support for child engagement as a critical factor in the success of storybook reading interactions, there are few studies that have attempted to better understand the components that contribute to increases (or decreases) in child engagement and interest in storybook reading. One potential strategy recommended in the clinical literature for increasing child interest and engagement during storybook reading is the use of toy props (Musselwhite & King-DeBaun, 1997). In spite of this unique and creative suggestion, however, researchers have not examined the use of toy props and the impact on child engagement and interest in storybook reading.

The current study aims to examine the influence of toy props during storybook reading and their relationship with child engagement. Based on the notable contributions of storybook reading on language and literacy development of typically developing children and its potential to greatly impact the development of language and literacy skills of children experiencing difficulties with these areas, it is imperative that research be conducted to shed light on different strategies and modifications that may promote child interest and sustained engagement during such an important activity.

CHAPTER 2

LITERATURE REVIEW

The review presented below aims to summarize the pertinent literature related to storybook reading and its relationship to language and literacy development. In doing so, current research examining storybook reading as a recommended practice will be reviewed. In addition, potential factors that contribute to the success of storybook reading and thus the identified impact of storybook reading on later language and literacy development are discussed. A particular emphasis is placed on the role of child interest and engagement and its potential contributions to the success of shared book reading interactions. Finally, potential means for facilitating and promoting child interest and engagement during storybook reading are discussed highlighting the need for empirical research in this area.

Impact of Differences in Early Experiences

Differences between the home experiences of children have been found to contribute to child language and literacy development. In a seminal study, Hart and Risley (1995) observed 42 families over a three-year period. Thirteen of the dyads were classified as families from high or professional socioeconomic status, 10 were classified as families from middle socioeconomic status, 13 were classified as families from lower socioeconomic status and 6 families were classified as receiving welfare. The data collected included monthly one hour observations over approximately 2 ½ years during a

variety of caregiver-child interactions including mealtime, play and other activities of daily living.

Although this study focused primarily on differences between the home experiences of children from varying socioeconomic levels, the results also highlight a potential relationship between early differences in the quantity of language heard in the home and later language development. The results of Hart and Risley's study showed significant differences between the groups in the amount of language heard per hour and the total number of words heard by the children. Specifically, during the time the children were between 11-18 months of age, the average child from professional socioeconomic status heard a mean of 2,150 words and 642 utterances per hour with 75% of these utterances being directly addressed to the child. The average child from middle socioeconomic status (including children from both middle and lower socioeconomic status) heard 1,250 words and 535 utterances per hour, with 60% of these utterances addressed to the child. In contrast, the average child from a family receiving welfare heard a mean of only 620 words and 394 utterances per hour with only approximately 50% of these utterances addressed to the child. The result of Hart and Risley's study led them to estimate that by age three, children from the professional families heard an average of 30 million words, children from the working class families heard an average of 20 million words, and children from families receiving welfare heard an average of only 10 million words.

Given the differences noted in the early home experiences and the number of words heard by each group of children, Hart and Risley examined the expressive vocabularies of these children when they were 30 -36 months of age. The results

mirrored the findings presented earlier in that children from professional families averaged an increase of 766 words to their expressive vocabularies where as children from families receiving welfare added an average of 357 words to their expressive vocabularies (less than half the increase identified for children from professional families). Hart and Risley concluded that the significant differences in early language experiences led to an "ever-widening gap" in vocabulary growth curves when projecting the developmental trajectories of the children.

This conclusion is supported by follow-up data reported by Hart and Risley (1995) examining the relationship between the amount and quality of language heard during the first 3 years of life and achievement scores when the children were 9-10 years of age. Based on data collected on 29 of the original 42 children, a multiple regression analysis revealed the quality of caregiver language during the first three years of life accounted for 61% of the variance in the children's scores on the *Peabody Picture Vocabulary Test – Revised (PPVT-R; Dunn & Dunn, 1981)* and the *Test of Language Development* (TOLD; Hammill & Newcomer, 1988). Additionally, the PPVT-R scores collected for the children in the third grade from families receiving welfare revealed a continued gap in vocabulary development compared to the children from families of professional socioeconomic status. Thus the findings from this study provide clear evidence that there is a significant relationship between the early experiences of children during the first few years of life and their later achievement on formal assessments of language.

Storybook Reading Provides a Facilitating Setting

The potential impact of differences in the amount and type of language to which children are exposed has previously led researchers to identify different contexts of caregiver and child interactions that may contribute to increases in language and literacy development. A variety of contextual settings have been examined but the most common settings have been storybook reading (Deloache & DeMendoza, 1987; Moerk, 1985; Ninio & Bruner, 1978; Pellegrini et al., 1985; Snow & Goldfield, 1983) and play (Girolametto, 1988; Girolametto, Weitzman, Wiigs, & Pearce, 1999; Kaderavek & Sulzby, 1998b). Mealtime and dressing have also been examined as contexts that have the potential to benefit language and literacy development. However, these contexts have received less attention in the research to date and are therefore not reviewed in detail here.

In an attempt to look at mother-child interactions across these four different contexts (play, storybook reading, mealtime, and dressing), Hoff-Ginsberg (1991) examined 63 mother-child dyads within these contexts. Thirty of the dyads were from working class families and the remaining were from upper-middle class families. Working class was defined as completing high school with no further education except technical training and, if working, employed in unskilled, semiskilled, or service positions. Upper-middle class was defined as completing at least two years or more of college and, if working, employed in either professional or managerial positions. The language behaviors of the mothers that were measured included mean length of utterance (MLU), speech rate, total number of root words, number of topic continuing replies, number of maternal utterances serving as conversation eliciting questions, and number of

behavioral directives. These language behaviors were derived from videotaped samples of the dyads collected during mealtime, dressing, book reading, and toy play.

The results indicated that child-directed speech during toy play included the highest rate of directives and the lowest rate of conversation eliciting utterances. In contrast to the language facilitating maternal language characteristics observed during shared book reading, the directives observed during toy play may have a negative effect on child language development (Hart & Risley, 1995; Nelson, 1973). In mealtime contexts, the rate of maternal speech was even lower, yet the rate of conversation-eliciting utterances was the highest (along with dressing). Maternal speech was different from all other contexts for dressing in that it had the least lexical complexity. Interestingly, given the focus of the current study, shared book reading (as opposed to the other three contexts) had the greatest lexical diversity, the greatest syntactic complexity, and the highest rate of topic-continuing replies. Each of these characteristics of maternal language use have been found to relate positively with a variety of measures of child language development (Dodici, Draper, & Perterson, 2003; Hoff-Ginsberg, 1986; Tomasello & Farrar, 1986). The results from Hoff-Ginsberg support the notion that storybook reading is especially conducive to a style of mother-child interactions that promotes language learning.

In comparing storybook reading and free play contexts, Jones and Adamson (1987) examined the interactions between 32 children age 18-23 months and their mothers. Dyads were videotaped for approximately 10 minutes while engaged in storybook reading and in free play. The results of this study indicated that the type of activity greatly influenced the language used by the dyad. Specifically, book reading was

found to involve more metalinguistic language use and increased the interpretability of the children's communicative intent as compared to the free play task. Additionally, mothers used more referential speech and less language aimed at regulating the behavior of the child during book reading as compared to free play interactions.

Given the findings from these studies, there is some indication that storybook reading provides a unique opportunity for language and literacy learning not necessarily afforded during these other contexts. As noted, maternal speech during book reading has also been found to be structurally more complex and often includes a larger vocabulary than mother-child interactions in other contexts. Book reading interactions also typically include more questions and labeling behaviors as well as fewer directives (Hoff-Ginsberg, 1991) than other types of interactions. In addition, storybook reading is a frequently occurring routine in the lives of many families (e.g., Trelease, 2001) and thus the clinical implications involved in identifying strategies to promote and facilitate successful storybook interactions are potentially great. Therefore, storybook reading was chosen as the context to be investigated in the current study because of the evidence suggesting that this activity typically involves richer language input (compared to the language input during other contexts) believed to be conducive to language and literacy development.

Theoretical Support of Storybook Reading as a Context for Learning

Storybook reading as a framework for facilitating language and literacy development is supported by Vygotsky's sociocultural theory of cognitive development (1978a). This theory is built on the premise that individual intellectual development cannot be understood without reference to the social milieu in which the child is

embedded. According to Vygotsky, children acquire knowledge through social interaction with more knowledgeable others. Cognitive development occurs in situations where the child's problem solving can be guided by a more knowledgeable other who can structure and model the appropriate solution to the problem. Cognitive processing therefore occurs first on a social plane where it is internalized and transformed to form an individual plane (Rogoff, 1990). Shared storybook reading is a prime example of this type of social context interaction between a caregiver and a young child. Through storybook reading interactions, the child's cognitive development, language and literacy skills are enhanced in interaction with a more knowledgeable other. Vygotsky's (1978) theory of cognitive development through social interaction is exemplified in shared storybook interactions by providing a known context within which the caregiver can support the child's learning and understanding.

Barbara Rogoff (1990) built upon Vygotsky's (1978) theory of social constructionism and provided a theoretical framework for storybook reading as an important context for language and literacy development through her notion of "guided participation". Guided participation involves a collaborative process through which children and their caregivers are able to construct "bridges from the child's present understanding and skills to reach new understandings and skills and arrange and structure a child's participation in activities with dynamic shifts over development in the child's responsibilities" (Rogoff, 1990, p8). The context surrounding shared storybook reading offers a natural framework for the child's role as an apprentice in guided participation by providing a setting for children to share in an experience that they might not be able to participate in without the guided support of a more knowledgeable reader. The guided

participation allows children to function at the edge of their competence but still remain within what Vygotsky (1978b) refers to as a child's "zone of proximal development". As caregivers consciously and unconsciously support their children, while also challenging them to become more competent in the shared book reading interaction, cognitive processing leading to increases in language and literacy development is occurring.

Vygotsky's (1978b) theory of social constructionism and Rogoff's (1990) notion of guided participation provide important theoretical frameworks that allow an understanding of the role of storybook reading as a context for learning language. Storybook reading provides a child with an opportunity to learn through social interaction with a more knowledgeable other through a process of ongoing scaffolding and support from the caregiver. This process is adjusted by the caregiver to match the child's zone of proximal development. By participating in storybook reading, children are often exposed to modeling of language at a higher level and encouraged to participate in interactions that challenge their current understandings.

An additional theoretical point of view that supports storybook reading as a potentially beneficial context for learning comes from Arnold Sameroff (1993; 1995). The transactional developmental model takes into account both the individual as well as the social context in which development occurs. Sameroff's theory is particularly important to the success of storybook reading given that it allows consideration of the child, the caregiver, and the interaction between the two when examining such an interrelated context. Development is seen as a product of the continuous interactions of the child and the dynamic experiences afforded by his or her caregiver/s within a given social context. The transactional model gives equal emphasis to the role of the caregiver

as well as the role of the child. As suggested by Sameroff and Fiese (1990), development

is transactional and to gain a full picture of the transactional nature of storybook

interactions, it is important to examine both the individual and the social context in which

the interaction takes place.

Importance of Storybook Reading as a Context for Learning

Given the theoretical support for storybook reading as a potentially beneficial

context for language and literacy development, research over the last 20 years has aimed

to document the relationships between early storybook reading and later literacy and

language development (Bus et al., 1995; Dickinson & McCabe, 2001; Moerk, 1985;

Pellegrini et al., 1985). Storybook reading is believed to facilitate early episodes of joint

attention between caregiver and child by providing a mutual focus of attention in which

caregivers are able to expand and extend the child's language through the use of their

own language and gestures (Moerk, 1985; Neuman, 1996). The mutual focus of attention

achieved during storybook reading is important for vocabulary mapping as well as other

areas of language development (Morales et al., 2000). Storybook interactions are also

believed to facilitate the process referred to by Werner and Kaplan (1963) as

"decontextualization". This process refers to the increasing abilities of children to

separate meaning from context. Through storybook reading children are first introduced

to unique contextual aspects of the interaction. These contextual aspects involve the part

of the story that is directly observable in the illustrations. With increasing development

on the part of the child, caregivers are able to use storybooks to help the child move

beyond the here and now through interpretation and inferences. The process of

decontextualization is believed to be a critical component of symbolic development and therefore is important for many aspects of language and cognitive growth (Fenson, 1986).

In addition, storybook reading facilitates growth in many other areas of language and literacy including receptive language, vocabulary, emergent literacy skills, and later reading and academic success (Bus et al., 1995; Dickinson & McCabe, 2001; Justice, Meier, & Walpole, 2005; Moerk, 1985; Phillips & McNaughton, 1990; Snow et al., 1998). Caregivers often consider storybook reading as an opportunity to teach their children new ideas and concepts (Arnold, Lonigan, Whitehurst, & Epstein, 1994). During storybook reading, caregivers have been found to use a variety of strategies to help scaffold learning (Pellegrini et al., 1985). A caregiver's behaviors and the corresponding talk that is evoked during storybook reading make interactions centered around storybooks an ideal learning environment for language and literacy skills (DeTemple, 2001).

Results of studies examining children's language and literacy skills have indicated strong stability in the rankings of children in these areas across the age span (Dickinson & McCabe, 2001; Sulzby, 1985). Therefore, children who score low on measures of language and literacy skills in kindergarten/first grade relative to their peers typically continue to score low on language and literacy measures later in school (Dickinson & McCabe, 2001). This finding suggests that the individual differences which are apparent upon school entry remain throughout the school years.

Evidence also suggests that early storybook reading is a strong predictor of later reading achievement (Bus et al., 1995). Unfortunately there has not been a consensus regarding exactly which contributing factors of shared book reading are the most

important to later language and literacy success. This is partly due to the fact that children come to school with various amounts of previous exposure to book reading. However, the later language and literacy outcomes for children with varying experiences are clearly different, warranting further investigation into the factors that contribute to (and thus may help prevent) early differences.

Contributions to Successful Storybook Reading

The success of storybook interactions is dependent on a variety of inter-related factors. Two key factors that can be identified in the literature are the ability of caregivers to provide appropriate opportunities and support for their children during storybook interactions and the children's ability to demonstrate their current skill level (Scarborough & Dobrich, 1994). Further, these factors have a transactional relationship and shared mutual influence consistent with Sameroff's transactional model of development (Sameroff & Fiese, 1990). For example, the impact of a caregiver's scaffolding may be dependent on the child's motivation and interest in engaging in shared storybook interactions (Lonigan & Whitehurst, 1998). Through this transactional interaction, a caregiver has the potential to influence his or her child, as well as the child having the potential to impact the caregiver. Furthermore, both partners in the shared storybook interaction are influenced by the nature of their interactions and the framework or context surrounding them (Sameroff & Fiese, 1990).

Sameroff's (1993; 1995) general systems view of development also emphasizes the influence of the environment and the dynamic interactions between the child and the environment as key components of learning and overall child development. A systems view of development has the child functioning as a part of a number of hierarchically

organized, interrelated systems with each system having the potential to influence both within and across systems. The effects of this transactional process are cumulative and have increasing influence over each other over time, demonstrating continuities in development. Thus through shared storybook interactions, development in literacy influences language and vice versa, and these influences are stable across the age span.

Caregiver and Environmental Contributions to Successful Storybook Reading

In an effort to understand the interrelated factors that contribute to successful storybook reading, a number of factors have been considered (for review see Bus et al., 1995; Lonigan & Whitehurst, 1998; Scarborough & Dobrich, 1994). These factors not only contribute to the success of caregiver-child storybook interactions, they also have been shown to influence later language and literacy development. Specific contributions associated with the caregiver and social context of the interaction include the frequency of storybook reading, the benefits of repeated readings of the same book, the quality of the home literacy environment, and the important role of the primary caregivers, teachers, and other care providers. Each of these contributions will be reviewed focusing on the potential role each factor plays in the success of storybook reading and thus its impact on child language and literacy development.

Frequency of Storybook Reading. There is an abundance of research to date that supports frequency as an important factor contributing to the success of storybook reading and the positive influence of successful interactions on later language and literacy development (Bus et al., 1995; Lonigan, 1994; Scarborough & Dobrich, 1994; Senechal, LeFevre, Hudson, & Lawson, 1996; Sonnenschein & Munsterman, 2002)**.** For example, Scarborough, Dobrich, and Hager (1991) examined the frequency of adult reading,

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caregiver-child reading, and child solitary reading in the home through interviews and questionnaires collected when the children were 30, 36, 42, and 48 months of age. A total of 45 families were included in the study with 22 caregivers identified as poor readers with incidence of reading difficulties in their families, 12 caregivers identified as typical readers with at least 1 family member identified as a poor reader, and 22 caregivers identified as average readers with no incidence of reading difficulties in the family (see Scarborough, 1989, 1990 for a full description of the design and sampling methods). The study involved an initial interview with caregivers about their current home literacy practices as well as a variety of child assessments and observations. In addition, the caregivers completed short questionnaires regarding the frequency of book reading with their child at each data collection point

The results indicated that children who were later identified as poor readers participated in substantially fewer book reading experiences than children who were identified as typical readers. As the authors note, the identified differences were not related to caregiver reading ability, but something inherent in the child that was contributing to how often the caregiver and child engaged in shared book reading.

In a later study, Debaryshe (1995) examined the relationship between shared book reading experiences and the child's early oral language skills. In this study, Debaryshe examined maternal report of home literacy practices of 41 two-year-old children. The factors of interest included age at which mothers began reading to their children, the frequency of home reading sessions, the number of different stories read per week, and the frequency of library visits. Child receptive and expressive language skills were measured using the Reynell Developmental Language Scales (Reynell, 1985).

Multiple regression analyses were conducted and revealed that frequency of storybook reading was more strongly correlated with receptive language skills than expressive language, with home reading exposure accounting for 35% of the variance in receptive language scores on the Reynell. Additionally, the age at which mothers began reading to their children was found to be the most robust predictor of oral language skills.

Frequency of storybook reading has also been found to be correlated with children's early literacy related skills (Sonnenschein & Munsterman, 2002). As a part of a larger longitudinal study, Sonnenschein and Munsterman studied 30 caregiver-child dyads engaging in storybook interactions in their homes right before the children entered kindergarten. Each dyad read a familiar book chosen by the caregiver and an unfamiliar book provided by the researcher. In addition, caregivers reported on the frequency with which their children engaged in reading activities on a 4-point scale (0 = none, 1= less than 1x per week, 2= multiple times each week, 3= almost daily). Multiple regression analyses revealed strong correlations between frequency of reading in the home and orientation towards print and phonological awareness. Correlations were not found between frequency of reading and story comprehension or motivations for reading.

Although evidence has supported the importance of the frequency that caregivers engage in storybook reading with their young children and its relationship to later development, there has been some debate over the exact contribution of frequency when considered in light of other components of shared book reading. In the review by Scarborough and Dobrich (1994) cited previously, the frequency of storybook reading only accounted for a small amount of the total variance associated with literacy outcomes as well as language development. Specifically, frequency of early storybook interactions

accounted for approximately 8% of the overall variance in later school achievement and only about 7% of the variance associated with emergent literacy skills and later language outcomes. The authors concluded that although the frequency of storybook interactions between children and their caregivers is indeed associated with later language and literacy development, these relationships are weak at best.

In contrast, Bus and her colleagues (1995) conducted a meta-analysis of many of the same studies included in Scarborough and Dobrich's (1994) review. Their results indicated a more moderate relationship between frequency of storybook reading and later language and literacy outcomes. The effect sizes were strongest for language skills (d=.67), with slightly smaller effect sizes for reading and emergent literacy (d = .55 and d = .58, respectively). Bus and colleagues (1995) suggested that differences between these and previous results are due to the fact that the quantitative meta-analysis used to compare the studies took into consideration the accumulation of trends.

Therefore, although the frequency of storybook reading is considered important, it is not necessarily the major component contributing to the benefits associated with storybook reading. As pointed out in the literature (Bus et al., 1995; Scarborough & Dobrich, 1994), frequency may in and of itself be dependent on other factors such as the quality of the caregiver-child interaction and the individual characteristics of the caregiver and child.

Repeated Storybook Reading. Another potential contribution to the success of storybook reading that has been examined in the literature is the benefit of repeated storybook readings. Storybook interactions provide a unique opportunity to revisit the same story and pictures over and over again (DeTemple, 2001; Moerk, 1985). By

repeatedly reading familiar books, children are able to participate in the interaction by filling in familiar words and eventually taking on more of the responsibility of the book reading exchange. Repeated readings also provide an opportunity for children to incorporate previous adult models into their own speech, extending their language abilities (Snow & Goldfield, 1983). Furthermore, caregivers have been found to use more high level talking strategies during repeated readings of storybooks compared to initial readings. During initial readings, caregivers appear to be checking the child's comprehension of the story (Crowe, 2000). In doing so, caregivers typically ask more yes/no type questions and questions that request a label from the child. In contrast, during subsequent readings of the same book, caregivers encourage their children to predict outcomes and make inferences (Phillips & McNaughton, 1990).

This type of talk is consistent with DeTemple's (2001) notion of immediate and non-immediate talking strategies. Immediate talk refers to language that is focused on the here and now and is therefore contextual in nature. Immediate talk includes labeling, yes/no questioning, demonstrating a skill (e.g., counting or pointing), and the familiar "fill in the blank" routine where caregivers provide a partial statement with the expectation that the child will fill in the missing information. In contrast, non-immediate talk encourages children to make connections to their own background knowledge and relate their experiences to the actions in the book. Non-immediate talk is decontextualized and includes predictions and inferences. DeTemple (2001) suggests that because non-immediate talk refers to information that is not immediately available in the pictures or environment, this type of language typically involves extended discourse which is more implicit and complex than the language involved in immediate talk. Thus,

non-immediate talk (and the child's responses to it) is believed to be a higher level of language use compared to immediate talk and is often observed during repeated readings of a book rather than the initial reading.

DeTemple (2001) also found immediate talk to be negatively associated with early literacy measures and non-immediate talk to be highly positively associated with later language and literacy skills. Specifically, caregivers who used a high percentage of immediate talk during storybook interactions had children who had lower scores on measures of early literacy skills. On the other hand, caregivers who used more non-immediate talk and encouraged their children to think beyond what was illustrated in the pictures, had children who scored higher on language and literacy measures. Further, increases in the frequency of non-immediate talk may be associated with repeated storybook readings because the language and context of the story are more familiar. Caregivers are therefore no longer checking for story comprehension but are attempting to extend their child's knowledge by relating the story to personal experiences and asking the child to draw on previous readings to make predictions (McDonnell, Friel-Patti, & Rosenthal-Rollins, 2003). Thus during repeated storybook readings, children are encouraged to engage in higher mental processing leading to greater gains in language and literacy development.

In a more recent study, McDonnell and her colleagues (2003) examined the interactions between caregivers and their children during repeated storybook readings over a three-week period. The dyads were videotaped during storybook interactions on four occasions reading the same book. The results indicated that the caregivers continued to initiate interactions throughout the story, continually challenging their children by

utilizing increasingly more sophisticated language strategies. Interestingly, the results also indicated that caregivers became less active participants in the storybook interaction as children became more familiar with the target book; thus, a shift in the balance in participation between the caregiver and child was noted. These results, coupled with the results from DeTemple (2001), support the idea that repeated readings of a familiar storybook evoke increasingly more sophisticated language from both reading partners and therefore are an important contributing factor to the associated benefits of storybook reading.

In contrast to repeated readings of the same book, first time readings may provide opportunities for immediate language building and examining the inherent interest and engagement of the child. In addition, it may be expected that children who are interested and engaged in first time readings may be more likely to seek out additional opportunities for reading and thereby become further engaged, thus demonstrating the transactional nature of these interactions. If caregivers can promote the initial (and continued) interest and engagement of their child in shared storybook interactions, then the child is more likely to benefit from the higher-level and non-immediate kinds of strategies used by caregivers in repeated readings. Unfortunately there is limited information about which factors contribute to successful initial readings and what benefits might be associated with identifying strategies for increasing this success. Therefore, studying initial readings and strategies to enhance the engagement and interest in those interactions, may ultimately lead to additional means to contribute to successful shared storybook interactions.

Quality of the Home Literacy Environment. An additional factor that may

contribute to storybook reading and its impact on language and literacy skills is the

quality of the home literacy environment (Bus et al., 1995; Snow et al., 1998; Whitehurst

& Lonigan, 1998). The home literacy environment includes measures such as the

number of children's books available in the home, the availability of other literacy

materials in the home, and the amount of time other people in the household engage in

literacy activities (DeTemple, 2001). Many researchers have suggested that these

environmental factors influence the child's motivation and interests in (and opportunities

for) literacy activities and therefore have the potential to influence language and literacy

development (Justice & Kaderavek, 2002; Scarborough & Dobrich, 1994). In addition,

these measures have been linked to later vocabulary development and measures of

emergent literacy skills (Crain-Thoreson & Dale, 1992; Payne, Whitehurst, & Angell,

1994; Roberts, Burchinal, & Durham, 1999; Roberts, Jurgens, & Burchinal, 2005;

Wallace, Roberts, & Lodder, 1998; Wells, 1985).

Anderson-Yockel and Haynes (1994) examined the reading habits and attitudes of

10 African-American mothers and 10 White mothers, both from working class families.

The results indicated minimal differences between the African-American and White

mothers' behaviors, as well as their beliefs and attitudes regarding storybook interactions.

Specifically, mothers in both groups were very similar in that they owned a library of

children's books, read to their children on a regular basis, and perceived storybook

interactions to be important to their child's development. The only differences that were

identified between the two groups of mothers were related to the frequency of reading.

White mothers reported reading to their children more frequently (than the African-

American mothers) as well as being read to more frequently when they were children. The White mothers also reported reading books for pleasure more often than the African-American mothers. It should be noted that no differences were found between the language measures of the children examined in this study except for the African-American children produced more spontaneous verbalizations and the White children produced more correct responses as well as more frequently failed to respond to questions asked by their mothers.

In looking at a composite measure of both the frequency of book reading and the home literacy environment, Bus and colleagues' (1995) review of previous literature found these two factors to be associated with later language and literacy outcomes. Specifically, children who were read to more often and had greater home literacy support demonstrated higher scores on measures of language and literacy abilities.

In a more recent study by Roberts and colleagues (2005), the overall responsiveness and support of the home environment was found to be the strongest predictor of children's language and early literacy skills. The researchers followed 72 African American children beginning in their first year of life and continuing until the children entered kindergarten. Caregivers completed questionnaires about their child's daily literacy practices at 18, 30, and 42 months of age and again right before entry into kindergarten. Dyads were also observed engaging in shared book reading interactions when the children were 2, 3, and 4 years of age. Measures of the quality and responsiveness of the home environment were collected at 9, 18, 30, and 42 months of age using the Home Observation for Measurement of the Environment Inventory (HOME; Caldwell & Bradley, 1984).

The global measurement of the home environment predicted receptive vocabulary at 3 years of age, and early literacy skills and receptive and expressive language at 4 years of age and entry into kindergarten. The home environment was found to contribute to language and early literacy development above and beyond specific literacy practices measured in their study, such as frequency of storybook reading, child interest in storybook reading, and the quality of the interactions between caregivers and their young children.

Finally, many cultural differences appear to influence the home literacy experiences of children with various backgrounds and therefore contribute to the impact of storybook reading on later language and literacy development. Although the majority of caregivers agree that storybook reading is important to the academic success of their children, a large percent of caregivers are unclear as to exactly how their children learn to read (Paratore, 2002). Dickinson and McCabe (2002) suggested that the academic difficulties experienced by many children from various cultural and socioeconomic backgrounds can be attributed to a "mismatch" between the language used in the child's home environment and the language used in the school setting. These differences were suggested to make it difficult for some children to understand the ways in which teachers are asking them to use language. Additionally, evidence suggests that differences in the early language and literacy experiences among children from various backgrounds may also make it difficult for teachers to provide appropriate scaffolding to support the learning of these children (Vernon-Feagans, 1996). Therefore, the child's early home experiences and literacy exposure are equally important when considering the success of storybook interactions and their impact on language and literacy development. Although

there is increasing information available regarding differences that may occur among children from varied backgrounds, little information is available related to differences that may occur for children from similar backgrounds, particularly related to their interest and engagement in shared storybook reading.

Caregiver's Role During Storybook Reading. The role of the caregiver *during* storybook interactions has also been considered key to successful interactions and to facilitating language and literacy development in young children. Several researchers have examined the behaviors of caregivers during storybook reading interactions (Anderson-Yockel & Haynes, 1994; Bus et al., 1995; Haynes & Saunders, 1998; Pellegrini et al., 1985; Scarborough & Dobrich, 1994). Caregivers have been observed to progressively increase the complexity of the language strategies they incorporate during storybook interactions over time (Deloache & DeMendoza, 1987). This progression occurs as the child's developing language and literacy skills increase, indicating that caregivers are adjusting their input to match the perceived increases in the level of their child's abilities (Pellegrini et al., 1985). This notion of "parent attunement" is consistent with Vygotsky's (1978a) previously discussed theory of a zone of proximal development. Vygotsky's theory proposes that optimal learning occurs when input is provided within this zone of proximal development. Therefore, the caregiver's ability to "attune" to their child's current skills and provide scaffolding to help children achieve success at slightly higher levels is believed to facilitate language and literacy development (Pellegrini et al., 1985). Interactions during storybook reading are ideal situations for providing this optimal support.

As discussed earlier, caregivers of typically developing children focus initially on the obvious aspects of the story depicted in the illustrations, utilizing increased amounts of questions to check the child's comprehension (Crowe, 2000). Caregivers take on primary responsibility for organizing and structuring these interactions. As children become more capable, they begin to take on more of the responsibilities by initiating more interactions, commenting, and pointing (McDonnell et al., 2003). With increasing sophistication on the part of the child, caregivers begin to utilize more challenging language strategies encouraging their children to make predictions and infer meaning. Caregivers then "adapt, extend, clarify, and at times disregard the print" (Crowe, 2000 p 506) during storybook interactions in response to the behaviors of their children. In the review by Scarborough and Dobrich (1994), caregivers' behaviors before and after storybook reading interactions were also suggested to be important to the development of language and literacy skills. However, as indicated by the authors, this finding warrants additional research. Given that caregivers' behaviors are key to the success of storybook interactions, the following section reviews the literature related to attempts to modify their storybook interactions with young children.

Attempts to Optimize Caregiver Contributions. The early relationships between storybook reading and language and literacy as well as the predictive relationships between storybook reading and later academic success, often results in the recommendation of storybook reading as an intervention for both children with typical and atypical development. The popular press has suggested that storybook reading is a critical component of early child development and thus many caregivers seek opportunities to engage in storybook reading with their young children (Trelease, 2001).

Furthermore, storybook reading seems particularly well-suited for children who are experiencing difficulties with early language and literacy development given the inherent opportunities for vocabulary building, the shared focus of attention, and the potential for scaffolding in order to match the interaction to the child's abilities and interest (Justice & Kaderavek, 2002; Schuele & van Kleeck, 1987; Snow et al., 1998).

In hopes of influencing later child outcomes, researchers have attempted to train caregivers, early care and education providers, and teachers to use specific language strategies during storybook reading. Specifically, Whitehurst and colleagues trained a variety of caregivers to use "dialogic reading" strategies to promote language development in young children (Arnold et al., 1994; Whitehurst et al., 1994; Whitehurst et al., 1999). The main purpose of dialogic reading is to shift the control of the interaction from the caregiver to the child. The primary role of the adult during dialogic reading is to serve as active listener and facilitator. By asking questions and adding information, caregivers encourage their children to increase the sophistication and complexity of their own language use. Specific dialogic reading strategies such as increasing the use of wh-questions, use of open-ended question forms, and avoiding single response question forms such as yes/no questions, have been taught to caregivers and other providers to effectively help them modify their language input to their children during storybook interaction (Whitehurst et al., 1994).

Recent attention has also been given to training parents and other care providers to focus on print-referencing skills during storybook reading. For instance, Justice and her colleagues (Ezell & Justice, 2000; Justice & Ezell, 2000, 2002) trained caregivers to point to the words in the book, highlight letters and sounds, and acknowledge a variety of

concepts about print while interacting with their children during storybook reading. Similar to the interventions focusing on increasing caregiver's use of language facilitating strategies, the majority of the print-referencing studies have also focused on the caregiver's contributions to the interaction with little or no direct attention given to what the child is doing during these interactions.

A further focus has been on modifying the literacy environment for young children as a means to facilitate shared storybook interactions. For example, Neuman (1996) examined the storybook interactions of 41 families from low-socioeconomic backgrounds. Of these families, 18 caregivers were considered low proficiency readers and 23 were considered high proficiency readers. The study involved increasing the access to literacy activities by providing each family with a total of 12 storybooks and the opportunity to meet with a "book club" once a week for 12 weeks. Neuman defined "access" not only as the acquisition of books but also as the opportunity to discuss the books in a group format which allowed the caregivers to identify different strategies for interacting with their children during storybook reading. The meetings of families and professionals focused on discussing the book and its relation to each family. Neuman concluded that increasing caregivers' access to children's storybooks improved the quality of interactions between caregivers and their children of low and high reading proficiency. By providing access to books and the opportunity to engage in a meaningful discussion regarding each book's topic, caregivers were observed to increase their use of language facilitating strategies during storybook interactions with their children.

Other research has focused on the support provided by preschool and kindergarten teachers as well as early care and education providers during the early years of

development (Dickinson & McCabe, 2001). Research suggests that quality daycare and preschool environments have the potential to act as a buffer against the negative effects of other environmental factors such as low income (Whitehurst et al., 1994), low caregiver literacy levels (Neuman, 1996), limited home literacy support (Dickinson & McCabe, 2001), and other child characteristics (Vernon-Feagans, Hurley, & Yont, 2002). Whitehurst and colleagues (1994) found that the teachers in their study were able to improve the language skills of low income preschoolers by incorporating positive language strategies into storybook readings. Additionally, in a more recent study, Whitehurst and his colleagues (1999) provided storybook reading training to Head Start teachers. The results of this study support the findings of Whitehurst et al (1994) in that positive effects were also observed from the emergent literacy intervention. Other studies have found similar results (Burchinal, Lau, & Sparling, 1994) indicating that high quality storybook interactions in daycare and school have beneficial effects on the language and literacy outcomes of young children.

Vernon-Feagans and colleagues (2002) suggest a possible buffering effect of high quality care outside of the home for children who are at risk for literacy failure. Unfortunately there are many barriers to the potential benefits of storybook reading in classroom and daycare settings. For example, Whitehurst and others (1994) reported that none of the teachers who participated in their study continued the small group reading sessions after terminating the study. As indicated by Dickinson and McCabe (2001), the degree to which teachers have the time and resources to incorporate these recommended practices into their daily schedules varies tremendously.

Vernon-Feagans (1996) also reported some potential challenges when determining the particular components of storybook reading in early care and educational settings that impact later development. In *Children's Talk in Communities and Classrooms*, Vernon-Feagans reported on data collected during the Abecedarian Early Intervention Project that was initiated in 1972. This project was one of the first intervention studies to randomly assign children to treatment versus no treatment groups. The Abecedarian children were primarily from African American low income backgrounds and the Mainstream control children were primarily white children from middle-income families. The children were randomly assigned to the intervention program where they received fulltime high quality childcare services ($n = 57$) or the non-treatment control group ($n = 54$). Vernon-Feagans (1996) reported on the individual interactions between children in both groups during storybook reading as well as the teachers' abilities to provide effective feedback during these interactions.

The results indicated that although teachers were not responding differently to the children, per se, they were responding differently to the types of responses that the children gave during storybook interactions. Specifically, when a child responded with an irrelevant or incorrect answer, the teachers were more likely to ignore this response than provide effective scaffolding. In contrast, when a child provided no response to a question, the teachers were more likely to restructure their question or encourage the child to try again. Unfortunately, the Abecedarian children were twice as likely to provide an irrelevant response as opposed to no response when they did not know an answer compared to the mainstream control children. Consequently, their teachers ignored their responses rather than restructuring the question or encouraging the child to

try again. As a result, the two groups of children benefited differentially from the storybook interactions. Although it is important to think about the reasons for the differences noted for the child responses, it was evident that children influenced the type of scaffolding and responses provided by the teachers.

The cumulative findings from these studies indicate that caregivers can be trained to take advantage of the opportunities that occur during storybook reading, and in turn, enhance children's language and literacy development. Intervention studies aimed at guiding parents and other care providers to increase specific language facilitating strategies such as the strategies targeted by Whitehurst and his colleagues have been found to positively influence child language skills. Additionally, encouraging caregivers to target print-related concepts has also been found to be successful as a parent-based intervention when considered within the context of the family. It is also reasonable to conclude that scaffolding techniques during storybook interactions have the potential to impact language and literacy development if teachers are trained to provide children with appropriate language and literacy facilitating responses regardless of the individual responses of the child. Unfortunately this is not always the case and individual differences between children upon school entry may be exacerbated (Dickinson & McCabe, 2001). As indicated by Mahoney and Wheedon (1997), programs that enable caregivers to maximize their abilities and competencies to influence their children's development and well-being are an important focus of intervention for young children.

Caregiver Modifications for Children with Disabilities. Storybook intervention studies have also focused on children with language impairments and children with developmental disorders (Bellon, Ogletree, & Harn, 2000; Crowe, Norris, & Hoffman,

2000; Ezell, Justice, & Parsons, 2000; Light, Binger, & Kelford Smith, 1994; McNeill & Fowler, 1999). Similar to those studies reported previously involving typically developing children, the majority of studies addressing children with disabilities have focused on increasing the caregiver's use of language facilitating strategies during storybook reading. One of Whitehurst and colleagues' (Whitehurst et al., 1991) first dialogic reading intervention studies involved children with specific expressive language impairment. Crain-Thoreson and Dale (1999) and McNeill and Fowler (1999) also provided training to caregivers of preschool age children with mild to moderate language delays. The findings from these studies indicate that caregivers can be trained to increase their use of language facilitating strategies during storybook reading, resulting in notable increases in a variety of child behaviors (e.g. total number of words produced, ratio of caregiver-child participation). In a more recent study, Crowe (2004) examined the effectiveness of storybook reading as a context for parent training with 6 caregivers and their children with language impairments. Caregivers were trained to use interaction patterns during storybook reading that evoked attention to the pictures, requested information, responded to the child's question, and/or acknowledged the child's response. Children significantly increased the frequency of communicative turns, total number of words, and number of different words produced during storybook reading as a result of caregiver training.

There is also evidence to support the use of storybook reading to facilitate language and literacy development of children who have a diagnosis of autism spectrum disorder. Kirchner (1991) described a case study of a 4-year-old child with Asperger syndrome who participated in a discourse based language intervention involving

reciprocal book reading. The results indicated that the child was able to use language in increasingly novel ways after the introduction of the storybooks. Bellon and colleagues (2000) also examined the effect of adult scaffolding during repeated storybook reading with one child diagnosed with high functioning autism. The results of these studies were similar to previous research indicating that adult scaffolding is effective in increasing the verbal output of children with disabilities. Although limited in scope, the available research suggests that storybook reading provides a context within which caregivers can successfully learn to facilitate language and literacy development in both children who experience difficulties in these areas as well as children who are typically developing. One of the issues, however, that is not as clear is the degree to which certain characteristics of the child such as language skills contribute to the child's interest and engagement in shared storybook reading and how these factors may be transactionally related and impact later language and literacy skills.

Child Contributions to Storybook Reading

Another important contribution influencing the success of storybook interactions is the influence of the child. Although limited in scope, contributions specific to the child have been identified including the child's ability to participate and demonstrate their understandings during storybook reading and the child's interest and engagement during this type of caregiver-child interaction. Children bring to any task a variety of characteristics that influence the success of a particular interaction. As caregivers possess certain strengths and weaknesses, so too do their children.

Studies have found that although the majority of caregivers are able to judge appropriately their child's current level of functioning, this is not always the case

(Pellegrini, McGillicuddy-Delisi, Sigel, & Brody, 1986). Although there are probably many factors contributing to the difficulty in estimating a child's current functioning, the child's ability to respond to and engage with the caregiver can be assumed to impact these interactions (Altwerger, Deiehl-Faxon, & Dockstader-Anderson, 1985). For example, Crowe (2000) found that the caregivers in her study were underestimating the abilities of their children with a diagnosis of autism and therefore not providing adequate scaffolding to support their children during storybook interactions. Other studies have indicated that children with expressive language delays and/or other developmental disabilities may have difficulty demonstrating their skills (Kaderavek & Sulzby, 1998b; Marvin & Mirenda, 1993; Marvin & Wright, 1997) and therefore their caregivers have a difficult time providing scaffolding that is within their zone of proximal development.

Further characteristics that have been highlighted in the literature include the child's motivation and interest surrounding storybook reading. In fact, Scarborough and Dobrich (1994) suggested that the child's motivation and interest may be more influential than the frequency and quality of storybook interactions. In addition, the work of Justice and Kaderavek (2002) has indicated that a large proportion of children with disabilities do not enjoy storybook interactions. These authors argue that motivation is critical to the success of storybook reading. Although it is difficult to determine the directionality of influences, the child's motivations and internal rewards for such an interaction are likely to influence the impact storybook reading will have on the overall benefits of these interactions. Given the goal of the current study, it is important to examine the available literature regarding the impact of child engagement and interest on the success of storybook reading.

Engagement and Interest in Storybook Reading. Child interest and engagement during shared storybook reading appears to be a particularly important factor impacting the benefits associated with storybook reading. Engagement has been defined in the early education literature as "the amount of time children spend interacting appropriately with the environment at different levels of competence" (McWilliam & Bailey, 1992, p.234). Although engagement during storybook reading has only recently received attention in the literature (Baker, Scher, & Mackler, 1997), the importance of engagement with the environment has been identified as a potentially critical mediating factor in early childhood learning (Kruif & McWilliam, 1999; McWilliam & Bailey, 1992) with high levels of engagement correlating with higher levels of academic achievement (McGarity & Butts, 1984). Researchers have suggested that engagement is essential to learning (McWilliam & Bailey, 1992) and thus one can assume that engagement may contribute significantly to the success of interactions between young children and their caregivers.

In research examining storybook reading, the term "engagement" has been used in a slightly different manner to refer to behavioral indicators of a child's active participation (Crain-Thoreson & Dale, 1992; DeBaryshe, 1995b). Specific examples include directing one's gaze toward the book and turning the pages. The terms "interest" and/or "motivation" have typically been used to refer to the child's intrinsic behaviors and enjoyment of storybook reading and are most often measured by caregiver report or self-report (Baker & Scher, 2002; Lonigan, 1994; Senechal et al., 1996). The majority of studies that refer to the child's motivation to participate in either independent or shared reading have focused on older children (kindergarten and beyond) (Baker, Mackler, Sonnenschein, & Serpell, 2001; Wigfield & Guthrie, 1997). This is primarily due to the

difficulties in reliably measuring motivation in young children. Therefore, when examining these factors in very young children, researchers have attempted to operationalize interest and motivation by examining behavioral indicators of engagement (either in addition to or instead of caregiver report). These behavioral indicators can be inferred to represent the young child's interest and motivation to partake in such activities.

Although the observable behaviors of joint attention and engagement and interest in storybook reading appear to overlap during the early stages of child development, the underlying functions are thought to be different. Engagement and interest in storybook reading go beyond the ability to sustain joint attention and direct and follow the gaze of another. Engagement and interest in storybook reading during the early years of development are believed to contribute to a child's intrinsic motivation and attitude toward literacy related activities (Guthrie & Knowles, 2001). For the purposes of this study, joint attention was conceptualized as the *ability* to participate in shared interactions with a caregiver. On the other hand in very young children, engagement, and more so interest, refers to the child's *desire* or *motivation* to participate in shared interactions. The distinction between these terms is important as each contribute to the success of shared storybook reading. Although all of these factors deserve attention, the current study focused on the children's "desire and motivation" to participate in shared interactions with a caregiver and their active efforts to do so. These factors will be referred to jointly as engagement and interest.

Evidence suggests that early engagement and interest in storybook reading are important contributing factors to the benefits associated with shared storybook reading

and its relationships with later reading achievement (Lonigan, 1994; Scarborough &

Dobrich, 1994). Early interest in reading has been linked to the frequency of independent

reading in later childhood (Baker, Dreher, & Guthrie, 2000; Baker et al., 1997; Baker &

Wigfield, 1999; Snow et al., 1998) which has been linked to improved reading

achievement scores and later language and literacy outcomes (Anderson, Wilson, &

Fielding, 1988; Baker et al., 1997; Cipielewski & Stanovich, 1992). Specifically,

Anderson and colleagues (1988) found that the amount of independent reading engaged

in between the second and fifth grade accounted for 16% of the variance in fifth grade

reading comprehension scores.

In an important early study, Almy (1949) interviewed 106 caregivers of first

graders regarding their children's attitudes and behaviors toward literacy activities. The

results indicated a correlation between the composite score for the children's literacy

related attitudes and behaviors, and their concurrent reading scores. Although only

minimal research was conducted following the results of Almy's findings, there has been

recent attention in the research literature regarding the relationship between child interest

and engagement in early reading, and later reading achievement (Arnold et al., 1994;

Baker et al., 2001; Crain-Thoreson & Dale, 1992; DeBaryshe, 1995b; Frijters et al., 2000;

Morrow, 1983; Senechal et al., 1996; Wells, 1985). Arnold and colleagues (1994)

suggest a relationship between the age when caregivers begin reading to their children

and the child's interest and motivation to engage in these types of interactions

independently as well as with an adult. Other findings suggest that the frequency of early

storybook reading is also related to child interest and engagement (Lonigan, 1994). In

the review cited previously by Scarborough and Dobrich (1994), child interest in literacy

accounted for approximately 14% of the variance in children's language and literacy outcomes. It should be noted that this correlation is higher than the one reported for frequency of storybook reading, which accounted for only about 8% of the variance in language and literacy outcomes. However, it remains unclear as to the direction of influence regarding frequency and child engagement. Further, there is little information available as to additional strategies or techniques that may enhance a child's interest and engagement in shared storybook reading. Thus, studies that may shed light on these kinds of strategies would be useful in attempts to increase successful shared storybook interactions.

  Measuring Child Engagement and Interest. Our knowledge base regarding child engagement during storybook reading and the impact on later language and literacy development is limited primarily due to the fact that there are very few instruments available for measuring engagement and interest that are appropriate for very young children (Baker & Scher, 2002). To date, the majority of studies examining child interest and engagement have relied on caregiver report. For example, Sonnenschein and Munsterman (2002) asked caregivers how frequently their child read books with others at home. Roberts and colleagues (2005) interviewed the participating mothers in their study when their children were 18, 30, and 42 months and when their children entered kindergarten to rate whether the children enjoyed being read to on a five point scale (1= not at all, 2 = a little, 3 = pretty much, 4 = very much, and 5 = loves it). However, the majority of caregiver reporting methods to date only include a few specific questions related to child interest and engagement and are dependent on the caregiver's own perceptions.

With older children (kindergarten and beyond), researchers have used self-report measures. Specifically, Baker and Scher (2002) asked children to choose which of two stuffed animals they were most like, with one animal portrayed as demonstrating a negative attitude toward the literacy related questions and one animal portrayed as demonstrating a positive attitude. Similar self reporting methods were used by Frijters, Barron, and Brunello (2000). In this study children were presented with two pictures of children engaging in similar literacy activities. One picture showed a child with a happy face and the other picture showed a child with a sad face. Both pictures were exactly the same with the exception of the expression on the child's face. For example, one picture includes a child sitting reading a book alone. For this picture the researcher would say to the child, "This girl likes to look at books by herself" while pointing to the happy picture. The examiner would then point to the picture of the girl looking sad and say "This girl does not like to read books by herself." The child was then asked which girl they were most like. Depending on the child's response (e.g. child pointed to happy face), the examiner would then say, "Do you like to look at books by yourself a little or a lot?" Both approaches appeared to successfully differentiate children who did and did not have an interest in reading.

A few studies have examined behavioral indicators of active engagement during storybook reading such as choosing to look at books, directing gaze at the book, pointing to pictures in the book, and turning pages (Crain-Thoreson & Dale, 1992; Morrow, 1983). Active Learning Theory proposes that learning is an active process that requires learners to *do something* (Murray, 2000). Learning is not considered to be the passive acceptance of knowledge that exists out in the world; rather, learning requires that the

learner actively engages with their environment. This theory also supposes that active learning does not necessarily require physical activity but is reliant on actively engaging the brain during an activity. Therefore, it might be assumed that more subtle behavioral indicators may serve as indication that the child is engaged but not overloaded by the cognitive demands of the interaction itself. Active learning may be seen in children during shared storybook interactions in many forms, both physically and mentally. The child who points to pictures on request or answers questions during storybook reading, as well as the child who shows engagement and interest in a book by attending and listening to the book, demonstrate active learning.

Active engagement can also be assumed to be one way to facilitate mastery motivation and thus build intrinsic motivation. Mastery motivation is described as "a psychological force that stimulates an individual to attempt to master a task that is challenging" (Carlton, 1996). Mastery motivation is believed to be the basis for later intrinsic motivation and has been found to predict later cognitive development (Messer, et al., 1986). Intrinsic motivation is believed to facilitate greater learning and academic success for elementary and junior high school students (Gottfried, 1985). This is assumed to be due to the fact that intrinsically motivated individuals tend to be more actively involved in their learning and have been found to use strategies that promote deeper understanding of that learning through application of newly acquired knowledge. Therefore attempts to identify strategies that may increase a child's interest and engagement in a particularly beneficial learning context may build competence and promote development of intrinsic motivation to independently engage in these types of activities later in life.

Mastery motivation is believed to develop across three age ranges: birth to 9 months, 9-24 months, and 24-36 months (Barrett and Morgan, 1995). At birth, infants are seen to have an undifferentiated need for competence and through development become intrinsically motivated to engage in particular activities based on perceived levels of competence and individual persistence and preference for challenge and/or novelty (White, 1959). If we assume that this process is the same for building the intrinsic motivation to engage in shared book reading and later independent reading, then research is warranted examining strategies that facilitate active engagement and mastery motivation during storybook reading with children much younger than the children in the majority of studies to date (preschool age and older).

Active engagement was identified as it relates to storybook reading in a study by Senechal and colleagues (Senechal et al., 1995) who examined the differences between children's incidental acquisition of new vocabulary words during storybook reading when passively listening compared to actively engaging in the storybook interaction. This study involved 32 four- and five-year-old children. Children were randomly assigned to one of two book reading conditions. In condition 1, children listened passively to one book read three different times on three different occasions. In condition 2, children were asked a series of questions during the book reading interaction that required them to actively participate by pointing or labeling the pictures. In this condition, the adult asked a "what" or "where" question following each targeted word. Pretest and posttest measures were collected for comprehension and production vocabulary for targeted words. The results of this study indicated that children who actively participated in the book reading interactions by pointing to (M = 4.2) and or labeling the words (M = 4.0)

understood and produced significantly more new words than children who simply

listened passively to the adult reader (M = 2.7).

Finally, one preliminary study utilized a subjective rating scale to rank the quality

of the child's engagement based on a four-point continuum (Kaderavek & Sulzby,

1998a). This particular study compared the child's engagement during storybook reading

with a caregiver, to caregiver-child interactions during play. The results identified a set

of children who demonstrated "low orientation" or limited engagement that was *specific*

to the context of storybook reading. These children were described as reluctant and/or

resistant to engage in the book reading interaction, and if able to engage, demonstrated

minimal interest in the book. Taken together, the studies reviewed thus far support the

hypothesis that child interest and engagement in storybook reading is an important factor

to consider when examining the benefits of storybook reading and the later relationships

with language and literacy development of young children. However, less information is

available about the early development of interest and engagement in storybook reading in

young children and the methodologies to study these interactions.

Early Foundation for Interest and Engagement. Early child interest and

engagement in storybook reading is believed to be a consequence of positive early

storybook interactions and a predictor of later reading skills (Scarborough & Dobrich,

1994; Sonnenschein & Munsterman, 2002). Given that these influences can be assumed

to be transactional rather than unidirectional in nature (Sonnenschein & Munsterman,

2002), it is important for research to examine factors contributing to early child

engagement and interest in storybook reading.

Arnold and colleagues (Arnold et al., 1994) suggest that many typically developing children from middle income families have participated in a substantial amount of storybook reading with a caregiver by 2 ½ years of age. In Arnold et al., middle-to-upper income caregivers were interviewed regarding their child's health, family, and developmental factors. The interview also included specific questions regarding the literacy attitudes and behaviors of the child. Over the course of the study, caregivers completed a diary indicating their daily literacy practices with their child. The diary elicited a variety of information including ratings for their child's interest and enjoyment in literacy related activities using a 5-point scale. The researchers found that all of the children had extensive experience with storybook reading by the time they were 2 ½ years of age. Moreover, those children whose caregivers reported beginning to read with them prior to 6 months of age were more likely to enjoy storybook reading and demonstrate greater interest and engagement than children whose caregivers reported beginning to read with their children after 6 months of age.

From these findings, it is reasonable to assume that many children are developing at least a foundation for interest (or lack of interest) in storybook reading interactions before they are 2 ½ years of age. Unfortunately, there is limited research available examining these early interactions between caregivers and their very young children and the factors contributing to early child engagement and interest in storybook reading. For this reason, it is critical to examine the storybook interactions of very young typically developing infants and toddlers in order to better understand the factors that contribute to an early foundation for interest and engagement as well as identify potential strategies for fostering engagement and interest during shared book reading interactions.

One of the foundational skills for building interest and engagement may be joint attention. There is a large evidence base supporting a link between early joint attention skills and later language development. Joint attention, defined as the ability to follow and direct the attention of others (Baldwin, 1995), typically develops within a relatively brief period between 9 and 15 months of age (Carpenter, Nagell, & Tomasello, 1998). During this developmental stage, joint attention is observed to progress in a sequential manner with increasing sophistication. Language development progresses in a similar fashion with evidence supporting the theory that joint attention skills are precursors to language development (Markus, Mundy, Morales, Delgado, & Yale, 2000; Morales, Mundy, & Rojas, 1998; Morales et al., 2000; Mundy, Sigman, & Kasari, 1990; Sigman & Ruskin, 1999). Joint attention is believed to be critical for language development (Baldwin, 1995; Tomasello & Farrar, 1986). Specifically, lexical development, receptive language skills, and expressive language abilities have all been found to correlate positively with early measures of joint attention (Markus et al., 2000; Morales et al., 1998; Morales et al., 2000; Mundy & Gomes, 1998).

Storybook reading is an ideal context for the development of joint attention skills because it provides multiple opportunities for both caregiver and child to direct and respond to the gaze of another. Storybooks provide a concrete representation that can be examined and discussed by the caregiver-child dyad for extended periods of time as well as be returned to for multiple viewings (Moerk, 1985). Joint attention skills are also believed to be important for vocabulary acquisition with storybook reading providing a unique opportunity for providing young children with multiple experiences with new words (Markus et al., 2000; Morales et al., 2000). Evidence suggests that the majority of

mothers' language during storybook reading with very young typically developing children relates to vocabulary development through picture description and labeling, and the use of simple wh-question forms (Moerk, 1985; Ninio & Bruner, 1978). Joint attention skills are critical in order for a child to be able to take advantage of the multiple opportunities for vocabulary development during storybook reading with a caregiver. When thinking specifically about storybook reading, the ability to sustain joint attention is only one of the factors contributing to the success of the interaction. Preliminary research suggests that there are children who are capable of demonstrating joint attention for extended periods of time when engaged in certain types of activities (e.g. play); however, these same children demonstrate limited interest and engagement during storybook reading (Kaderavek & Sulzby, 1998a). Thus the study of means to motivate joint attention and therefore increase the interest and engagement during storybook reading would contribute to the literature focused on enhancing shared storybook interactions.

Potential Impact of Low Interest and Engagement during Storybook Reading. Children who experience difficulties with language and literacy development are at particular risk for low interest and engagement in storybook reading. Morrow (1983) examined the storybook interest of 172 kindergarten children of which 75 children were identified as exhibiting high literacy interest and 98 were identified as exhibiting low interest in literacy related activities. The findings indicated that the majority of children in the high interest group demonstrated higher pre-literacy skills compared to children in the low interest group. Evidence from Kaderavek and Sulzby (1998a) suggests that although many typically developing children are highly engaged by storybook reading,

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there are many children with language impairments who demonstrate limited interests in participating in such interactions. Specifically, Kaderavek and Sulzby found that almost half of the children with language impairments in their study exhibited low interest in storybook interactions whereas all of the typically developing peers demonstrated high rates of interest and engagement during storybook reading. Baker and colleagues (2000) also identified a relationship between children identified as struggling readers and decreased interest in book reading interactions with caregivers.

Despite being a commonly recommended practice to both caregivers of typically developing children as well as children with language impairments, it has also been suggested in the literature that encouraging caregivers to engage in storybook reading when the child is uninterested and difficult to engage may have unanticipated negative consequences. In particular, researchers have highlighted the potential for exacerbating the child's limited interest by persisting in an activity that is unpleasant for the child (Baker, 2003; Baker et al., 2001; Frijters et al., 2000; Kaderavek & Sulzby, 1998a). This persistence has the potential to begin a negative feedback loop in which the child, for whatever reason, is uninterested in storybook reading and yet the caregiver continues in the interaction, potentially increasing the disinterest and/or avoidance on the part of the child and decreasing the likelihood that the child will engage in independent storybook reading later in life (Scarborough & Dobrich, 1994). Two situations are therefore created: struggling readers who have difficulty understanding print and therefore choose to avoid reading situations, and avoidant readers who do not experience difficulty with the act of reading per se but who choose to not engage in later independent book reading due to a lack of motivation and interest (Baker, 2003; Dreher & Baker, 2003). Therefore,

research aimed at identifying strategies that have the potential to increase child interest and engagement during storybook reading, and thus decrease the likelihood of triggering this negative feedback loop, is critical.

  Means of Promoting Engagement and Interest during Storybook Reading. Many strategies have been highlighted throughout the literature as facilitating engagement and interest in storybook reading. DeBaryshe (1995b) suggests that reading storybooks aloud with young children may promote child engagement and interest in storybook reading thus increasing the frequency with which children seek out caregivers to engage in storybook reading as well as positively affecting caregiver-child interactions. Additionally, repeated storybook reading and the caregiver's ability to adapt the language input during storybook reading interactions may also facilitate engagement and interest in this type of activity (Martinez & Roser, 1985; Pierce & McWilliams, 1993).

  In a dissertation study aimed at improving the quantity and quality of child engagement during adult-child interactions, Danko (2004) examined the addition of visual props during circle time. Visual props included individual or sequenced pictures such as photos or hand-drawn pictures, objects such as puppets and toy props, and pictures of repetitive actions such as clapping hands or stomping feet. Using a single subject multiple baseline design, Danko trained classroom teachers to incorporate visual supports (including props) into their regular circle time activities. The study involved three children with a diagnosis of autism and their teachers. The results from this study indicated significant increases in all three children's on task-behaviors as well as their active circle-time participation and attentional circle time behaviors. Danko concluded that the addition of visual supports and props during circle time enhanced child

engagement. Although not specific to storybook reading, the results of this study support the theory that the addition of visual supports can significantly improve the quantity and quality of child engagement behaviors during shared activities with a caregiver.

Additionally, Dexter (1998) examined the effect of Aided Language Stimulation (ALS) on the verbal output of children with autism spectrum disorder. ALS is based on a milieu teaching approach in which facilitators incorporate the use of visual symbols into their language output. For example, a facilitator might say "Let's open the book" while pointing to picture symbols that represent "open" and "book" (Beukelman & Mirenda, 1998). ALS incorporates modeling as the primary method of teaching and encourages children to actively engage with their communication systems for the purpose of reciprocal communication. The use of ALS during storybook reading is aimed at increasing the child's active participation and engagement. The results of Dexter's study indicated that the children in his study benefited from the incorporation of visual symbols during storybook reading. Five of the six children demonstrated observable gains in their imitative and spontaneous communication involving verbal output and picture communication use.

The specific use of toy props during storybook reading has been highlighted in the applied literature as one method for facilitating and promoting child engagement and interest in this activity. King-DeBaun and colleagues (King-DeBaun, 1990, 1999; Musselwhite & King-DeBaun, 1997) have recommended the use of toy props during storybook reading as a way to engage children with disabilities in active participation. However, despite these recommendations, there is no known study that has empirically examined the influence of toy props on caregiver-child interactions during storybook

reading. Although not specifically focused on incorporating toys during storybook

reading, the previously cited study by Kaderavek and Sulzby (1998a) did examine the

relationship between child engagement during storybook interactions versus engagement

during toy play with a caregiver. This study involved 10 children identified as typically

developing and 10 children meeting the criteria for specific language impairment (SLI).

The results indicated that all of the typically developing children demonstrated high

interest in storybook reading whereas only 60% of the children with SLI showed high

interest and the remaining 40% demonstrated decreased interest in such activities.

Moreover, of particular significance was the finding that all of the children with SLI

demonstrated increased engagement during toy play with a caregiver compared to

interactions involving storybook reading. The authors indicated that these results suggest

that a general low level of engagement was not the primary factor contributing to the

differences between the groups. More particularly, these children demonstrated low

engagement specific to storybook reading. However, Kaderavek and Sulzby did not

explore whether the toys could be used to enhance child engagement during the shared

book reading interactions. The results of this study coupled with the recommendations

for inclusion of toy props during storybook reading warrant further research examining

the potential benefits of toy props during storybook reading with caregivers and their

children, and the influence on child engagement.

Summary of Relevant Literature

In summary, storybook reading with young children has been linked to positive

language and literacy outcomes. A child's interest and engagement during storybook

reading has been suggested to play a critical role in the success of these types of

interactions. Storybook reading interest and engagement has been found to correlate with later language and literacy development as well as to be predictive of the frequency with which a child engages in independent reading during the early school years. However, very few studies have attempted to examine potential strategies aimed at fostering child interest and engagement during storybook reading interactions between caregivers and their very young children. The current study aimed to examine the addition of toy props to storybook reading interactions and their influence on the interest and engagement of toddlers 18 to 27 months of age. Because the majority of the storybook literature focuses on preschool age children and older, this study provides important initial information that contributes to our understanding of shared book reading interactions between caregivers and their very young children as well as strategies to facilitate a positive foundation of interest and engagement in storybook reading during the early years of a child's development.

Research Questions

The purpose of this study was to determine whether the addition of toy props during storybook reading had an effect on child engagement and caregiver-child interactions. In addition the study explored whether the addition of toy props had a differential effect on young children identified as "high interest" compared to those identified as "low interest" storybook reading partners. The research questions and hypothesized outcomes for the study were as follows:

1. Does the addition of toy props during storybook interactions increase child engagement as measured by the total number of communicative acts and rate of communicative acts (per minute) produced by the child during the storybook interaction?

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It was hypothesized that the addition of toy props would positively affect child engagement for both groups of children as measured by an increase in the total number of child communicative acts and an increase in the rate of communicative acts produced by the child per minute.

2. Does the addition of toy props during storybook interactions increase the total time (in seconds) that the caregiver and child participate in the book reading interaction?

It was hypothesized that the addition of toy props would result in an increase in the total amount of time (in seconds) the caregiver and child participated in the storybook interaction.

3. Does the addition of toy props during storybook interactions alter the balance of participation between the caregiver and child?

It was hypothesized that the addition of toy props during storybook interactions would significantly shift the balance of participation between the caregiver and child as defined by a positive change in the ratio of caregiver-child turns (favoring the child).

4. Does the addition of toy props during storybook interactions increase child engagement as measured by a subjective rating of attention to the book?

It was hypothesized that the addition of toy props would have a positive effect on child engagement for both groups of children as measured by an increase in the subjective rating of attention to the book and caregiver.

5. Does the addition of toy props during storybook interactions have a differential effect on children identified as "low interest" storybook reading partners compared to children who are identified as "high interest" partners?

It was hypothesized that both groups of children would benefit from the addition of toy props; however, it was expected that the benefits would be significantly greater for the children identified as "low interest" partners compared to their "high interest" peers.

CHAPTER 3

METHODS

The purpose of the current study was to determine whether the addition of toy props during storybook reading positively influenced caregiver-child interactions. Additionally, the current study aimed to identify whether a differential effect of toy prop use would be seen for children identified by the caregivers as demonstrating high engagement compared to children demonstrating low engagement during storybook reading. The section that follows will detail the methods used in the current study.

Participants

A total of 24 caregiver-child dyads were recruited to participate in the study based on a power analysis conducted to determine an adequate sample size. Stevens (2000) provides a chart for determining necessary sample sizes for repeated-measures investigations when power is set at .80. Using standard conventions, alpha was set at .05. Given the expectation that the addition of toy props would significantly increase the amount of child and adult behaviors produced during the storybook interactions, it was expected that there would be large differences between the storybook conditions (props vs. no props). Therefore, the analysis for sample size was based on an expectation of a large effect size.

Another consideration in the power analysis was the degree to which the measures would be correlated across storybook conditions. There is some indication from previous research (Anderson-Yockel & Haynes, 1994; Hayden, Reese, & Fivush, 1996; Haynes &

Saunders, 1998; Justice & Kaderavek, 2003; Reese, Cox, Harte, & McAnally, 2003) that the correlations among measures would be moderate to high. Assuming there would be a moderate correlation (.50) among the measures across storybook conditions, the sample size needed would be 13 participants per group. Assuming there would be a high correlation (.80) among the measures across storybook conditions, the sample size needed would be 8 participants per group. Thus, it was estimated that a sample size between 8-13 participants per group would be adequate for the investigation.

Child Participants. All of the children met the following criteria: a) between the ages of 18 and 27 months of age at the time the storybook readings took place (*M*= 21.7 months; SD= 2.61), b) no parental concerns regarding hearing status, and c) developing typically per caregiver report and standardized developmental measures (defined in Materials section). All of the children lived at home with both caregivers. Twelve children were the family's only child, 9 children had one sibling, and 3 children had two siblings. Ten were cared for in the home, whereas 10 were in childcare outside of the home approximately 10-30 hours per week, and 4 children were in childcare for over 30 hours each week.

None of the families reported any current concerns regarding their child's hearing. Twelve of the children had ear infections in the last year with only 8 of these children reportedly having an ear infection in the last 6 months. Of the twelve families reporting frequent ear infections in the past, 6 of the children reportedly recovered with completion of a full round of antibiotics and 6 children received P.E. tubes followed by complete recovery.

In an effort to document that each child in the study was within normal limits for speech and language development, three standardized measures were administered during the first home visit. These measures are described in detail in the Materials section. The Preschool Language Scale – 4 (PLS-4; Zimmerman, Steiner, & Pond, 2002) is a standardized assessment of receptive and expressive language development. The mean standard score on the Auditory Comprehension subtest of the PLS-4 was 111 (SD = 11.2) with a range from 81-127 and the mean standard score on the Expressive Communication subtest was 114 (SD = 11.6) with a range from 91-147. The MacArthur-Bates Communicative Development Inventory-Words and Sentences (CDI; Fenson et al., 1992) is a caregiver questionnaire assessing a child's expressive vocabulary and grammatical development. The raw scores on the CDI ranged from 26-570 (M = 221; SD = 174.6) and the percentile rankings ranged from the 20th -95th (M = 51st; SD = 25).

None of the caregivers reported any concerns regarding their child's overall development. In order to ensure that all of the children participating in the current study were within normal limits for overall development, the age-appropriate Ages and Stages Questionnaire (ASQ; Squires, Potter, & Bricker, 1999) was completed by each caregiver. The ASQ is a caregiver questionnaire system that documents a child's general development in five areas: communication, gross motor, fine motor, problem solving, and personal-social. All of the children were within normal limits on all subtests with the exception of 4 children. Of these children, two exhibited a borderline delay in the personal/social area of development, one exhibited a borderline delay in the problem solving area of development and one child exhibited a borderline delay in fine motor and personal/social development and a moderate delay for gross motor development. These

four children were included in the sample because they were equally distributed among

the two engagement groups, were all within the normal range on the PLS-4, and were all

above the 20th percentile on the CDI. The scores for these four children are presented in

Table 3.1 with each child's score in the delayed area, the cutoff score provided by the

ASQ system, respective PLS-4 standard score for both the receptive and expressive

subtests, and their percentile rank on the CDI.

Table 3.1 Individual Scores for Four Children Demonstrating Delays on the ASQ

Child	Engagement Group	A&S Delayed Area	ASQ Score	ASQ cutoff	MacArthur Percentile	PLS-4 AC	PLS-4 EC
AM027	Low	Problem Solving	30	30	30	85	92
AW018	High	Personal/Social	35	35	30	124	123
CA026	Low	Fine Motor	35	35	25	108	111
		Personal/Social	35	35			
		Gross Motor	15	35			
CE013	High	Personal/Social	30	30	90	117	147

Dyad Descriptive Information. The majority of children participated with their

mothers except for two children whose fathers completed the study (one in each

engagement group). All dyads lived in the Raleigh/Durham/Chapel Hill area or

surrounding small towns. All dyads were Caucasian with the exception of three families.

Of these three, one family was Asian, one family was Hispanic, and one family was of

mixed ethnicity (African-American and Caucasian). All of the caregivers had completed

at least some college, with the majority of caregivers reported the completion of a college

degree ($n = 15$) and/or either current enrollment in or completion of a graduate or

professional degree (*n* = 7). Nine of the families earned an average family income of $50-80,000 annually and 11 families earned over $100,000 annually. Four families averaged less than $40,000 annually, but three of these families included at least one caregiver who was currently working towards a graduate or professional degree.

    Group Matching. Of the total 24 children participating in the study, 12 were identified as exhibiting "high engagement" during storybook interactions and 12 children were identified as exhibiting "low engagement" during storybook interactions. Ratings of child engagement in storybook reading were based on caregiver report on the Individual Child Literacy Questionnaire (Roy, 2005b) completed at the onset of the study (details in Materials section). All of the dyads were matched on child age (within 30 days of each other) and caregiver annual income and education level. Nine of the dyads were matched on gender. The remaining three dyads consisted of male/female matches with the female participant being in the high interest group for each dyad. Education level was defined by highest level of schooling completed by the participating caregiver. Family annual income level was estimated to the nearest $5,000 increment. These definitions were modified from criteria used by DeBaryshe, (1995b) and Goodwyn, Acredolo, & Brown, (2000). See Table 3.2 for participant matching descriptive information.

Table 3.2 Matching Criteria for High and Low Engagement Groups

High Grp	ICLQ[1]	Age[2]	Income[3]	ED[4]	Sex	Child Care[5]	Low Grp	ICLQ	Age	Income	ED	Sex	Child Care
CE013	4.00	26;29	3	4	M	H	IS012	3.50	27;27	2	4	M	H
EG035	4.83	23.08	17	5	F	D	IF008	2.92	23;15	17	4	F	H
MH021	4.58	21;10	11	5	F	D	JW033	2.83	21;05	17	4	M	H
AW018	3.92	18;04	13	5	F	D	EA030	2.17	18;03	17	5	F	D
GD005	3.75	23;26	9	4	F	D	RH016	1.75	24;17	4	3	M	D
BT037	4.42	23;29	9	5	M	D	CK014	2.92	23;10	12	4	M	D
JI034	3.92	24;19	17	4	M	D	ER023	3.33	23;26	17	3	M	D
RJ039	3.75	22;00	17	4	M	D	JH024	3.50	22;02	7	5	M	D
EJ009	3.75	22;19	9	4	F	H	CA026	2.75	22;06	17	4	M	H
TT038	4.50	18;10	13	5	M	H	AM027	3.25	19;07	12	4	M	D
LL040	4.50	20;02	12	5	F	H	RD025	1.92	19.07	17	4	F	D
GD036	3.92	19;24	12	4	M	H	CD004	3.08	19;22	4	4	M	H

[1]Average Rating on Individual Child Literacy Questionnaire (range 1-5);
[2] Age in months; days;
[3]Annual Family income 2 = 25–29,999, 3 = 30-34,999, 4 = 35,000-39,000, 7 = 50-54,999, 9 = 60–64,999, 11 = 70-74,999, 12 = 75-79,999, 13 = 80-84,999, 17 = over 100,000
[4] Education level: 3 = some college, 4 = College Graduate, 5 = Graduate or Professional School;
[5] H = Home, D = Childcare Center

Table 3.3 provides the range of scores on the language assessments with the mean and standard deviation for the two engagement groups. The groups do not differ significantly for the child's age in months or the average score on the auditory comprehension subtest of the PLS-4. As expected, the two groups differ significantly ($p. < 05$) on their ratings on the Individual Child Literacy questionnaire. However, unexpected group differences were also noted for expressive language abilities with the high engagement group performing higher on both the expressive communication subtest of the PLS-4 and the CDI.

Table 3.3 Language Assessment Results by Engagement Group

		Range	Mean	Standard Deviation
Age in months	Low	18-27	21.6	2.6
	High	18-27	21.8	2.8
ICLQ[1]*	Low	1.75 – 3.50	2.83	.59
	High	3.75 – 4.83	4.15	.38
PLS-4 AC[2]	Low	81-120	108.1	13.3
	High	102-127	113.9	8.1
PLS- 4 EC[3]*	Low	91-121	107.8	9.4
	High	106-147	119.4	11.0
MacArthur-Bates CDI[4] –				
(Low) Raw Score*		26-288	129.5	96.1
Percentile*		20-50th		
(High) Raw score		47-570	312	190.7
Percentile		30-95th		

[1]Individual Child Literacy Questionnaire, [2]Preschool Language Scale – 4 Auditory Comprehension Subtest, [3]Preschool Language Scale– Expressive Communication Subtest, [4]MacArthur-Bates Communicative Development Inventories – Words and Sentences
* Significant Group differences (p =< .05)

Procedures

Recruitment. Recruitment took place over three phases. In Phase I, local childcare program directors within the Raleigh/Durham/Chapel Hill, North Carolina area were contacted to

participate in the recruitment phase of the study. A general description of the study was presented to each facility director and program consent was obtained. Each consenting childcare director was asked to identify classroom childcare providers at their facility who serve children within the study age range (18-27 months). On a day and time convenient to the childcare director, the researcher arranged a brief meeting with each childcare teacher to explain the purpose of the study and provide a brief description of family involvement. Teachers who consented to distribute the study description letter also agreed to collect the signed consent forms for the researcher. Letters providing a description of the study and requirements for participation, a Caregiver-Child Consent Form and a Contact Information Form were sent home with each child in the classroom who met the age criteria (See Appendix A-C). The researcher returned to each facility at least two times following the letters being sent home to collect signed consent forms and provide a brief reminder flyer for each child who had not yet returned a consent form. The reminder flyer provided a brief description of the study and an email address to contact the researcher if a family was interested in participating.

In phase II, the researcher contacted by phone each family who returned a consent form to discuss the details of the study and make arrangements to send the family an Individual Child Literacy Questionnaire (Appendix D; described in Materials section). Within one week, the researcher either dropped off an Individual Child Literacy Questionnaire (Roy, 2005b) and self-addressed stamped envelop for each consenting family at the child's childcare center or mailed the questionnaire and envelop directly to the family. In the case where the questionnaire was dropped off at the childcare center, all childcare providers provided verbal consent for the researcher to send the information home with each child whose caregiver returned a consent form. Caregivers were asked to complete the form and return it to the researcher at their earliest

convenience. The Individual Child Literacy Questionnaire requested information regarding the child's literacy attitudes and behaviors and was used to determine group membership (high vs. low engagement).

In Phase III of recruitment, all of the information collected thus far was compiled in order to identify 12 caregiver-child dyads for both the "high engagement" and "low engagement" participant groups. The first 12 participants whose average score on the Individual Child Literacy Questionnaire (Roy, 2005b) was less than or equal to 3.5 were included in the "low engagement" participant group. The first 12 participants whose average score on the Individual Child Literacy Questionnaire was greater than or equal to 3.75 were included in the "high engagement" participant group. Toward the end of the recruitment phase only children and families who met the inclusion criteria *and* could be matched with a dyad whose data had already been collected were invited to participate in the study.

All dyads that consented to participate but were not included in the study were notified via email or phone and thanked for their willingness to participate. Reasons for exclusion from the study were as follows: dyad did not meet the storybook engagement rating cut-off required for inclusion, the researcher was unable to recruit a dyad match (based on child age or gender, caregiver education level and/or annual family income), dyad was not among the first 12 dyads to meet criteria and complete the data collection process, and/or dyad did not meet the age inclusion requirement.

A total of 12 dyads were recruited from local childcare facilities. The remaining 12 dyads were recruited through word of mouth through other participants in the study as well as friends/colleagues of the researcher who work with families of young children. The recruitment

process was exactly the same for these families with the exception of the method of initial contact.

Pre-testing and Observations. Once group membership was determined, each caregiver was then contacted to set up appointments to complete the home portion of the study. Caregivers identified two time periods within a two-week time frame in which the researcher came to their home to complete a set of forms and questionnaires, administer the child language assessment, and observe and videotape the caregiver and child engaging in a "favorite" activity and reading two different children's storybooks.

During the initial phone contact, the researcher asked the caregiver to identify an activity that was one of the child's "favorites". The criteria defining a "favorite" activity were as follows: 1) an activity in which both the caregiver and child typically engaged in together, 2) an activity that the caregiver was willing to allow the researcher to video tape for approximately 3-5 minutes, 3) an activity that took place indoors, and 4) an activity that did not involve gross motor movements (e.g., running around the house, climbing on furniture). To aid caregivers in choosing an activity, the researcher suggested using a toy that the child was interested and easily engaged in such as play doh, puzzles, cars, trains, or pretend play. Caregivers were asked to choose something other than storybook reading. Dyads engaged in a variety of play activities including block play, ball play, puzzles, and simple pretend play with various dolls, small people and animals, and different play cars and trucks.

During the first home visit, each caregiver completed the following questionnaires (description provided in Materials): (1) Caregiver Demographic Questionnaire (Appendix E), (2) Caregiver Literacy Questionnaire (Appendix F), (3) Storybook Familiarity Rating Form (Appendix G), (4) Child Hearing Status Form (Appendix H), (5) Caregiver-Child Activity

Questionnaire (Appendix I), (6) MacArthur-Bates Communicative Development Inventory - Words and Sentences Form (Fenson et al., 1992), and (7) Ages and Stages Questionnaire (Squires et al., 1999). In addition, the researcher administered the Preschool Language Scale– 4 (PLS-4; Zimmerman et al., 2002) and videotaped the dyad engaging in a "favorite" shared activity for approximately 3-5 minutes. At the end of the first home visit, caregivers were asked to complete a Post-Favorite Activity Rating Form (Appendix J).

During the second home visit, all dyads participated in two videotaped storybook interactions. One storybook interaction included toy props and the other included the book only. The order of book conditions was counterbalanced across participants with the exception of one dyad in the "low engagement" group and two dyads in the "high engagement" group. For the dyad in the low engagement group, the child protested the initial no prop storybook condition and therefore the caregiver was instructed to read the book with props first and then read the book without props second. The two dyads in the high engagement group were intended to be in the prop book condition first, but the caregivers read the books without incorporating the props at all and were therefore requested to read the second book with the props. All storybook and "favorite" activity interactions took place in the dyad's home in a room of the caregiver's choice that allowed for adequate space and lighting for the video-recording. The preferred choice for most dyads was the living room although one dyad chose to read in the child's bedroom, another chose to read in the family playroom, and a third chose to sit on the back deck outside. Dyads chose to sit either on the floor or on a couch or chair.

Two cameras were utilized in order to capture the entire scene. The first camera, aimed at capturing the frontal view, was set up on a tripod directly in front and at eye level to the dyad (approximately 4-6 feet away depending on the available space). The second camera, used to

capture the dyad's nonverbal behaviors, was also set up on a tripod either to the side or behind

the dyad (depending on the location of the dyad and the setup of the room). Both cameras were

monitored by the researcher throughout the interactions in order to make necessary adjustments.

For the no-prop storybook condition, caregivers were provided with a book only and

instructed to read the storybook as they typically would do. For the storybook condition that

included toy props, the dyad was presented with four or five toy props (depending on the book)

relevant to the storyline. Each book contained the same toy pig and chicken whereas the other

toys changed depending on which book was read with props (plastic balloons and flowers for the

"Friends" book and a toy Velcro apple, one small plastic knife, and a plastic plate for the

"Apple" book). Caregivers were encouraged to incorporate the toys into the storybook

interaction using the following instructions and examples: *"For this storybook, it is very*

important that you attempt to use the toy props during your book reading interaction. For

example, you may make a noise for an animal and pretend it's walking across the book. You

might also reenact a part of the story using the toys. You are welcome to use the toys in anyway

you feel comfortable but please remember to try to use the toys in some way while you are

reading and looking at the book." At the end of the second home visit, caregivers were asked to

complete a Post Storybook Interaction Rating Form (Appendix K) to provide an indication of

whether the storybook readings were similar to or different from the caregiver and child's typical

book reading interactions. The first home visit lasted approximately 60 minutes and the second

home visit lasted approximately 30 minutes.

Study Materials

Caregiver Questionnaires. Several forms were completed by each consenting caregiver

before the storybook reading sessions (See Appendix A – I for copies of each form). Most

families were able to complete all of the forms and questionnaires during the first home visit.

However, if a caregiver chose to not complete the forms and instead watched the child

assessment or did not have enough time to complete everything, the forms were left with the

caregiver and collected during the second home visit. The specific forms and questionnaires

included:

1) *Contact Information Form* –caregiver's name, address, and contact telephone
   number as well as the participating child's name, sex, and date of birth.

2) *Individual Child Literacy Questionnaire (Roy, 2005b)* - caregiver's perceptions of
   the child's specific emergent literacy attitudes and behaviors.

3) *Caregiver Demographic Questionnaire* –caregiver's demographic information
   (e.g., age, race, income, education level).

4) *Caregiver Literacy Questionnaire* –specific literacy practices in the home.

5) *Storybook Familiarity Rating Form (Caregiver Form)* –caregiver's rating of the
   child's familiarity with 8 storybooks using a Likert scale from 1-5 with a rating of
   1 being "very unfamiliar," a rating of 3 being "somewhat familiar" and a rating of
   5 being "very familiar". Additional qualifiers for each rating were provided on
   the form. For this study, unfamiliar was defined as "never seen nor read before"
   and familiar was defined as "having read the book with the child on many
   occasions".

6) *Child Hearing Status Form* –child's current hearing status and history of ear
   infections.

7) *Caregiver-Child Activity Questionnaire* - the child's most and least favorite
   activities, activities in which the caregiver and child frequently engage in

together, and the caregiver's estimate of the amount of time (per episode) the child spends in specific play activities.

8) *Post "Favorite" Activity Rating Form (Roy, 2006)* - caregiver's rating of the "favorite" activity interaction with the child, based on how typical the interaction was compared to similar everyday interactions. This form includes a total of 4 questions regarding the child's behaviors during the "favorite" activity. The rating form was completed by each caregiver at the end of the first home visit.

9) *Post Storybook Interaction Rating Form (Roy, 2006)* –caregiver's ratings of each storybook interaction, based on how typical the interaction was compared to everyday storybook interactions with the child. This form includes a total of 8 questions regarding the child's behaviors and attitudes. The rating form was completed by each caregiver after the second home visit.

10) *Ages and Stages Questionnaire* (ASQ; Squires et al., 1999). Caregivers completed the ASQ in order to document the developmental status of each child. The ASQ questionnaire system is divided into intervals ranging from 4-60 months of age. Caregivers were provided with the appropriate age interval questionnaire corresponding to their child's age. Each questionnaire contains 30 questions divided into five subtests (communication, gross motor, fine motor, problem solving, and personal-social). Caregivers completed the questionnaire in the child's natural environment and were encouraged to attempt to elicit any response that they were unsure about whether the child could make. The caregiver indicated "yes," "sometimes," or "not yet" for each question. As indicated in the ASQ manual, a "yes" response is scored as ten points, a "sometimes" response is

scored as five points, and a "not yet" response is scored as zero. A total for each subtest is calculated by adding the score for each question; the maximum score for each subtest is 60 points. The composite score in the ASQ reflects the child's average score across the five subtests. The ASQ manual provides different cutoff points for typical developmental status for each age range examined. For most age ranges, however, a score that falls at or above 35 is considered typical.

11) *MacArthur-Bates Communicative Development Inventories* (CDI; Fenson et al., 1992) - The CDI questionnaire (Words and Sentences Form) is a caregiver report tool designed to assess expressive vocabulary and grammatical development of children age 16-30 months. The Words and Sentences form has been proven to be highly reliable in assessing language abilities in typically developing children between 16-30 months of age (Dale, Bates, Reznick, & Morisett, 1989; Fenson et al., 1994). This form consists of 680 words, divided into 22 categories that include the following: sound effects and animal sounds, animals, vehicles, toys, food, clothing, body parts, household items, furniture and rooms, outside things, places to go, people, games and routines, action words, descriptive words, words about time, pronouns, question words, prepositions and locations, quantifiers and articles, helping words, and connecting words. The CDI also includes a section for how children use words and a section on sentences and grammar that includes word endings, word forms, and sentence complexity. Caregivers marked responses that they have heard their child produce.

   Language Assessment. *Preschool Language Scale-4th Edition* (PLS-4; Zimmerman et al., 2002) - The PLS-4 assesses the receptive and expressive language skills of children birth to 7

years of age. It was standardized on over 1500 children representative of the U.S. population and on over 300 children within the age range included in the current investigation. Acceptable inter-rater, test-retest, and internal consistency reliability levels and concurrent validity are reported in the test manual. The PLS-4 assesses a relatively brief but balanced sample of language behaviors. The PLS-4 was administered by the primary researcher who is also a licensed speech-language pathologist in the state of North Carolina. The PLS-4 was administered to all children during the first home visit.

Storybooks. Eight age-appropriate storybooks were identified by the primary researcher utilizing a variety of sources (e.g., librarian and other professional recommendations, children's book publisher recommendations, leveled book catalogs and recommended book lists, previous research, and personal judgment). An attempt was made to identify books that were less well-known to account for potential variability of exposure across dyads, as well as identify books that were a part of a "series" so that some of the toy props could remain the same across the two storybooks utilized in the current study.

During the initial pilot testing, two books, *Pepo and Lolo and the Red Apple* (Larranaga, 2004a) and *Pepo and Lolo are Friends* (Larranaga, 2004b), were identified from the original 8 and determined to be "very unfamiliar". To verify that each child had not had any previous exposure to these books, a familiarity rating was completed by each caregiver during the first home visit using the researcher developed Storybook Familiarity Rating Form (Appendix G). Both books were rated by all caregivers as "very unfamiliar". Table 3.4 provides descriptive information for both of the books used in the current study.

Table 3.4 Descriptive Information for the Two Storybooks

	MLU in words	Total Number of Words	Total Number of Different Words	Description
Pepo and Lolo are Friends	5.33	48	30	Pepo and Lolo lose their balloon and get mad at each other.
Pepo and Lolo and the Red Apple	5.30	53	32	Pepo and Lolo are trying to figure out how to get the apple out of the tree.

Caregiver-Child Interaction Coding

In order to address the research questions, the following behaviors and measures were coded from the audio and/or videotaped storybook interactions:

Subjective Engagement Ratings. The purpose of coding subjective ratings of child engagement during the "favorite" activity was to verify that membership in the "low engagement" group was based on low engagement specific to storybook reading and not a more generalized lack of engagement in interacting with an adult. An average subjective engagement score was calculated utilizing a 5-point Likert scale modified from Kaderavek and Sulzby (1998a). The subjective rating involved an interval rating system where a subjective rating was made at each 15sec interval of the Total Interaction Time (defined below) for both interaction contexts (storybook and "favorite" activity). All ratings were averaged across the Total Interaction Time and a rating between 1 and 5 was assigned to each interaction. See Appendix L for additional details regarding the rating criteria and examples of possible engagement and disengagement behaviors.

Total Interaction Time. During the storybook interactions, coding of the interaction began when the caregiver made an attempt to engage the child in the book or when the caregiver or child acknowledged the book (e.g., opened book, made a comment related to the book).

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Because some caregivers tended to play with the toys first without reference or notice of the book, interaction time did not start at the first mention of the toys or when either the child or adult engaged with the toys in some way. The interaction was considered terminated when the caregiver or child closed the book and/or indicated in some way (verbally or non-verbally) that the book interaction was over (regardless of whether they continued to play with the toys).

For the "favorite" activity, coding of the interaction began when the caregiver and/or child made a verbal comment or nonverbal gesture/action initiating the activity. Coding was terminated after the dyad had participated in the "favorite" activity for at least five minutes.

Child Communicative Acts. The following definitions were used to identify a child communicative act. These measures were coded from the caregiver-child storybook interactions and were utilized in order to calculate the proportion of each type of communicative act, the child's rate of communicative acts, and total number of communicative acts based on the Total Interaction Time. These behaviors were modified from the child behaviors coded in Anderson-Yockel and Haynes (1994) and Light et al.(1994).

3a) *Verbalizations/communicative vocalizations* – any words, lexical approximations, and vocal behaviors accompanying communication.

3b) *Response to adult request for information/action* – any child response (i.e., verbal, gestural, or motorical response) to the caregiver's requests for information/action. In contrast, responses to caregiver's attempts to gain the child's attention which were followed by the child visually and/or physically orienting toward the caregiver were not coded as responses (Ex. Mom: "Look, at this." Child – turns to look at the book.).

3c) *Gesture* - any spontaneous gesture or imitation of an adult's gesture such as pointing and acting on the book (e.g., turning the page, patting the book).

Only child behaviors that were intentional in nature and served a communicative function were coded. The following definition was utilized in determining if a behavior was intentional and communicative:

> Intentional communication is defined as any "signaling behavior in that the sender is aware of the effect that a signal will have on his listener and persists in that behavior until the effect is obtained or failure is clearly indicated" (Bates, 1979; p36). Expectancy of a response as demonstrated by facial expression or extended repetition of the gesture/vocalization will be considered to be communicative in nature (Thal & Tobias, 1992).

Child Protesting Acts. The total number of child behaviors that were in protest to the storybook interaction was calculated. Protesting behaviors included crying, whining, pushing the book away, attempting to leave the interaction, squirming to leave the interaction (regardless of whether the attempt to leave was successful), and throwing the book. Crying and whining were coded as one protesting behavior unless separated by a period of 5 seconds or more of no crying. Statements from the child such as "No book" or comments about being "all done" with the book prior to completion of the story were also coded as child protesting behaviors. Attempting to close the book towards the end of the interaction but prior to finishing the book was not coded as a protesting behavior unless accompanied by some negative indication that the child was trying to end the interaction early.

Total Number of Communicative Acts (TOC). Total number of communicative behaviors during the Total Interaction Time that were vocal, verbal, gestural, and/or a combination of these behaviors (Wetherby & Prizant, 1993).

Rate of Child Communicative Act (ROC). The rate of child communicative acts was measured by the mean number of communicative acts displayed per minute for the Total Interaction Time (Wetherby & Prizant, 1993).

Conversational Control. To code for conversational control, a modification of the coding system described by Tannock (1988) and McDonnell & Friel-Patti (2003) was utilized. Conversational control refers to the speaker's tendency to direct the flow of extratextual interactions (McDonnell et al., 2003). This measure was included in order to determine the nature of participation of the caregiver and child. The following 3 measures were calculated from the Total Interaction Time:

6a. *Total number of child turns per interaction* – total number of child turns within each interaction.

6b. *Total number of adult turns per interaction* - total number of adult turns within each interaction.

6c. Ratio of Conversational Turns - ratio of adult initiated questions/comments versus child initiated questions/comments per interaction.

The following definitions were utilized in determining the three measures of conversational control defined above.

a) A *turn* is defined by the presence of one or more communicative acts emitted by an individual that are not separated by a communicative act from the partner nor by a pause of one second or more (Tannock, 1988).

b) A *turn opportunity* is defined as a prolonged pause of one second or more following the termination of the partner's communicative turn during which the individual could, but does not contribute a turn (Tannock, 1988).

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c) An *initiation* is defined as any instance where the speaker leads the interaction, including the introduction of a new topic, an attempt to elicit completion of text, initiation of routines such as counting, and maintenance of a topic with no intervening turn by the partner (McDonnell et al., 2003).

d) A *response* is defined as any response to the speaker with the same topic, completion of elicited text on request, and engagement in counting or other routines on request (McDonnell et al., 2003).

Caregiver Prop Use. In order to determine the caregivers' use of the toy props, the following behaviors were coded from the Total Interaction Time. The total number of prop use behaviors was calculated from each video clip.

a) *Labels toy prop* – Caregiver provides a name for the prop (e.g., This is a bear, an apple, here's the baby)

b) *Animates the toy prop* - Caregiver makes a noise for a toy or makes the toy do an action (e.g., makes the pig jump, makes a noise for the chicken)

c) *Relational toy prop use* – Caregiver relates the toy prop to another toy, the book, the child, or themselves (e.g., makes the pig eat the apple in the book, makes the pig jump on the chick, feeds the toy apple to the child or him/herself).

d) *Requests* - Caregiver requests information or an action from the child (e.g., "Give the piggy a bite." "You cut the apple." "Can you find the chickie."). Attention getters such as "look," "See," and 'lookit" were not viewed as active requests for the child to complete an action and therefore were not coded.

e) *General prop use* – Any prop use that could not be coded in the first four categories but was clearly an attempt by the caregiver to include the props in the storybook

interaction (e.g., standing the pig or chicken up on its feet, squeezing the chick or pig to blow air, pulling the toy apple apart).

f) Other – Narrating the child's toy prop use and making a direct connection between the toys and the book were also coded as prop use behaviors (e.g., "You are cutting that apple." "That's an apple just like the one in the book.").

Data Management

All video-recorded caregiver-child interactions were transferred to a computer (by connecting the camera through a firewire connection) and compressed into computer format in order to aide transcription and coding. All storybook and "favorite" activity interactions for each dyad were copied onto an external hard drive due to the size of each file. For each storybook reading interaction video file, the audio track was extracted using QuickTime movie software. The audio files were then transcribed using Transcriber Software. Transcriber is free, downloadable software that is user friendly and allowed for ease in transcribing the linguistic data for the study. All interactions were transcribed verbatim using the Transcriber Software and later exported into the <u>Systematic Analysis of Language Transcripts software (SALT; Miller & Chapman, 2004)</u>. SALT was utilized to facilitate and check coding of verbal and nonverbal behaviors. Transcription followed the guidelines outlined by Miller and Chapman (2004). Video interactions were viewed in order to code non-verbal behaviors as well as to check transcription.

Inter-rater Reliability

The primary researcher coded the entire data set independently and three research assistants were recruited and trained to code different aspects of the coding system for reliability purposes. One research assistant was trained by the primary researcher to use the Transcriber

Software, transcribe the storybook interactions, and code the caregiver and child turns and child responses. The second research assistant was trained to rate both the storybook reading clips and the favorite activity clips using the subjective engagement scale. This researcher was also trained to calculate the total interaction times for the storybook reading interactions. The third research assistant was trained to code the caregiver prop use behaviors.

Each research assistant met with the primary researcher individually on at least two occasions. During these meetings, the rules for coding were discussed and a sample video clip of a child not included in the study was coded by the researchers. After the initial training session was completed, the research assistant independently coded an additional practice clip for their respective behaviors and compared their results to the primary researcher's original coding. This process was continued until the research assistant and primary researcher were in agreement for at least 80% of possible agreements during training. During the initial training period, the original coding system was modified as necessary based on disagreements between coders until a consensus was met and final criteria determined. Once the criteria was determined, all data were coded using the final criteria.

Interrater agreement estimates were calculated for 12 (25%; 6 with and 6 without props) video clips randomly selected from the 48 total storybook reading video clips collected, with the exception of the caregiver prop use codes which were only coded for the 6 of the 24 storybook clips that included the toy props. Interrater reliability was also calculated for 4 (16%) of the favorite activity video clips for the subjective rating of engagement only.

A point by point agreement was calculated to determine reliability for each coded behavior by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying by 100 to gain a percent. For the child and caregiver turns, there

were 837 (84.3%) agreements out of a total 993 possible agreements. For child responses, there were 34 (92%) agreements out of a total 37 possible agreements and for caregiver total prop use, there were 47 (90.4%) agreements out of a total 52 possible agreements. For the total interaction time, there was a total of 1612 seconds in agreement between the two coders out of a total 1674 (96.3%) total possible seconds in agreement.

Coding for the subjective ratings of engagement involved a slightly more complex process. Because of the subjective nature of the engagement rating scale, it was determined that all of the video clips would be independently coded by both the primary researcher and the research assistant trained to code the engagement ratings. An initial set of criteria was established prior to coding any data included in the current study. These criteria were based on previous research and a sub-sample of pilot data collected at the onset of the study. All the storybook clips were rated by the primary researcher with modifications made to the original criteria based on any segments that could not be clearly rated given the original criteria descriptions. This iterative process continued until the entire data set had been rated by the primary researcher. Next, the research assistant trained to code the subjective ratings of engagement coded a set of practice video clips that were not included in the final data set. These ratings were compared to the primary researcher's ratings, with each disagreement being discussed and a decision made based on the consensus of the two coders. At this point, the primary researcher summed the decisions into a final set of coding definitions and both coders rated all of the video clips independently. Twelve of these video clips were randomly selected to calculate interrater reliability.

For the storybook reading subjective ratings of engagement, there were 76 (72%) out of a possible 104 agreements when calculated using exact agreements. The reliability increased to

101 (97%) agreements out of a possible 104 agreements when calculated for agreements within one point of the other coder (See Appendix L for description of 5 point criterion rating scale). For the subjective ratings of engagement during the favorite activity, there were 30 (74%) agreements out of 39 possible agreements when determined for exact agreements and 39 (100%) agreements when calculated using agreements within 1 point of the second coder.

CHAPTER IV

RESULTS

Preliminary Analyses for Potential Confounds

The results presented below focus on the preliminary analyses conducted to determine whether group differences based on gender, book influence, prop order and interaction order might have influenced any observed differences between the groups. Descriptive statistics are then provided for the questionnaire data collected as part of the current study including frequency counts for dyads in both the high and low engagement groups. Finally, the question of whether the addition of toy props during storybook reading influenced caregiver-child interactions is explored.

Gender. Due to the potential for gender differences and the fact that three pairs of dyads were not matched based on the child's gender, making the number of boys (n =15) included in the study greater than the number of girls (n = 9), it was important to look for any differences that may be attributed to possible gender influences. A series of independent t-tests were conducted to determine if mean group differences were present based on gender. No significant differences were identified between males and females based on age in months (t [22] = -1.378, p=.182), standard scores on the receptive and expressive communication subtests of the PLS-4 (t [22] = 1.867, p=.075 and t [22] = 1.082, p=.291, respectively), and raw scores and percentile rankings on the MacArthur-Bates Communicative Developmental Inventory (t [22] = 1.105, p=.281 and t [22] = 1.551, p=.135, respectively). Additionally, group differences were not found between males and females on their average rating on the Individual Child Literacy

Questionnaire (t [22] = .462, p=.649) or their average subjective rating of engagement during the favorite activity (t [22] = .899, p= .379). Based on these findings, gender was excluded from the statistical model and was not assumed to play a significant role in the results reported in the sections to follow.

Book Influence. In order to assess whether props had a differential effect across the two books (Apple book vs. Friend Book), dyads were separated into two groups based on which book they received with props. The two groups consisted of 13 dyads who read the Apple book with props (7 High, 6 Low) and 11 dyads who read the Friends book with props (5 High, 6 Low). A series of repeated measures ANOVAs were conducted using the following dependent variables collected during the prop and no prop conditions: total interaction time, subjective rating of engagement, total number of verbal acts, total number of gestures, total number of responses, total number of caregiver turns, total number of protesting behaviors, total number of communicative acts, rate of communicative acts per minute, and the ratio of caregiver to child turns.

The results of these analyses did not reveal any statistically significant findings regarding which book was read with props. However, a trend was identified for two dependent variables (p = .08 and .07, respectively). Examination of the means and standard deviations revealed a trend favoring the "Apple" book. Specifically, within the prop condition, dyads that read the "Apple" book with props had longer interactions ($M = 173$, $SD = 59.2$) than dyads that read the "Friends" book with props ($M = 140$, $SD = 35.4$). Within the no prop condition, dyads that read the "Apple" book without props ($M = 133.23$, $SD = 31.6$) also tended to have longer interactions than dyads who read the "Friends" book without props ($M = 117$, $SD = 42.3$). A similar trend was identified for the total number of caregiver turns with caregivers who read the "Apple" book

with props taking more turns than caregivers who read the "Friends" book with props. However, it should be noted that these differences did not reach significance at the .05 level.

Book Order. The order in which the dyad read each book, regardless of whether or not the book was accompanied with props, was also examined to determine whether the quality of the storybook interaction was dependent on it being the first or second reading interaction. The data were reorganized to represent the dyad's behaviors during their first book reading interaction versus their second book reading interaction. There was no distinction made between props versus no props for this set of analyses. Simple paired sample t-tests were conducted to examine whether mean differences were present. The dependent variables that were examined included: total interaction time, subjective rating of engagement, total number of verbal acts, total number of gestures, total number of responses, total number of caregiver turns, total number of protesting behaviors, total number of communicative acts, rate of communicative acts per minute, and the ratio of caregiver to child utterances. The results indicated no significant differences between any of the dependent variables when the data were categorized for the book the dyad read during the first interaction versus the book they read during the second interaction.

Total Prop Use. Total prop use was calculated to determine whether there were differences between the caregivers across engagement groups and their use of the toy props during the prop condition book reading interaction. The total number of prop use behaviors for the low engagement group was 255 ($M = 21.3$, $SD = 15.5$). The total number of prop use behaviors for the high engagement group was 228 ($M = 19$, $SD = 15.5$). An independent samples t-test was conducted to examine differences between the total number of prop use behaviors between the caregivers in the high and low engagement groups. The results revealed no significant differences between the groups, indicating both sets of caregivers tended to use the

toy props to the same degree (t [22] = .356, p= .725). It should be noted that limited prop use

was typical of a total of 9 caregivers (6 high, 3 low) who demonstrated less than 9 toy prop

behaviors (M = 5.8, SD = 1.7), whereas the remaining 15 caregivers used an overall mean of 28.7

prop behaviors (SD = 12.9). Of the 9 caregivers who demonstrated less than 9 total prop

behaviors, 4 received the props during their first book reading interaction and 5 received the

props during their second book reading interaction.

Prop Order. The order in which caregivers were provided props to use during their

storybook interactions was also examined to determine whether there was an effect of prop

presentation. For these analyses, group membership was based on whether the child received

props during the first or second storybook reading interaction. Despite careful planning and

counter-balancing, unequal dyads were represented in the conditions. The primary reasons

included the child protesting during the initial interaction without props and the parent

continuing on to attempt the book with props, and the caregiver initially not using the props

despite specific instructions to include them during the first book reading interaction so the prop

condition was attempted again during the second interaction. A total of 7 dyads in the low

engagement group and 4 dyads in the high engagement group read the book with props first, and

5 children in the low engagement group and 8 children in the high engagement group read the

book with props second. A series of repeated-measures ANOVAs were conducted with the

following dependent variables during the prop and no prop conditions: total interaction time,

subjective rating of engagement, total number of verbal acts, total number of gestures, total

number of responses, total number of caregiver turns, total number of protesting behaviors, total

number of communicative acts, rate of communicative acts per minute, and the ratio of caregiver

to child utterances. Initially, the series of repeated measures ANOVAs were conducted with

dyads from both engagement groups combined into two groups: those reading the book with props first ($n = 11$) and those reading the book with props second ($n = 13$).

The analyses revealed a significant main effect of prop order on the average subjective rating of engagement (F [1,22] = 5.857, p=.02) and the rate of communicative acts per minute (F [1,22] = 4.735, p = .04). In order to examine these differences further, a series of independent-samples t-tests were conducted. Significant main effects of prop order were observed for the subjective rating of engagement (t [22], = -2.551, p = .02) and the rate of communicative acts per minute (t [22] = -2.056, p=.05) during the no prop condition only. Specifically, children who received props first tended to have a lower subjective rating of engagement (*M* = 3.54, *SD* = 1.1) and a lower rate of communicative acts per minute (M = 9.9, SD 6.4) during the second book reading interaction without props when compared to children who read the book without props first (subjective rating of engagement, *M* = 4.44, *SD* = .56; rate of communicative acts, M = 18, SD = 11.6). In other words, there were no significant differences between either group (props first vs. props second) during the prop condition with both groups receiving relatively high average ratings of subjective engagement and producing relatively similar rates of communicative acts. However, when children read the book with the props first, their subsequent reading without props showed significantly lower subjective ratings of engagement and lower rates of communication than when the no prop condition came first and the props were second. Table 4.1 and 4.2 provide the means and standard deviations for the average subjective rating of engagement and rate of communicative acts per minute during the prop and no prop book reading condition for dyads receiving the props first and dyads receiving props second.

Table 4.1 Means and Standard Deviations for Average Subjective Rating of Engagement

	Prop Condition	No Prop Condition
Group receiving <u>props first</u> (*n* = 11)	*M* = 4.23 *SD* = .65 (1st Interaction)	*M* = 3.54 *SD* = 1.11 (2nd Interaction)
Group receiving <u>props second</u> (*n* = 13)	*M* = 4.39 *SD* = .66 (2nd Interaction)	*M* = 4.44 *SD* = .56 (1st Interaction)

Table 4.2 Means and Standard Deviations for Rate of Communicative Acts per Minute

	Prop Condition	No Prop Condition
Group receiving <u>props first</u> (*n* = 11)	*M* = 11.6 *SD* = 4.9 (1st Interaction)	*M* = 9.9 *SD* = 6.4 (2nd Interaction)
Group receiving <u>props second</u> (*n* = 13)	*M* = 13.3 *SD* = 5.6 (2nd Interaction)	*M* = 18.0 *SD* = 11.6 (1st Interaction)

Since the dyads were divided into two groups based on when they read the book with props and were not differentiated based on engagement group for these analyses, it is possible that the uneven representation of dyads from each engagement group influenced these findings. It is therefore informative to examine the descriptive statistics for each engagement group based on when they read the book with props. Table 4.3 and 4.4 provide the means and standard deviations for the average subjective rating of engagement and the overall rate of communicative acts for the high and low engagement groups, respectively. Data are presented for the 7 dyads in the low engagement group and the 4 dyads in the high engagement group who read the book

with props first, as well as data for the 5 dyads in the low engagement group and 8 dyads in the

high engagement group who read the book with props second.

Table 4.3 Means and Standard deviations for the Average Subjective Rating of Engagement
during the Prop and No Prop Book Conditions by Engagement Group.

	Prop Condition	No Prop Condition
Dyads in Low Engagement Group Receiving Props First (n = 7)	$M = 4.4$ $SD = .31$ (1st Interaction)	$M = 3.5$ $SD = 1.0$ (2nd Interaction)
Dyads in Low Engagement Group Receiving Props Second (n = 5)	$M = 4.0$ $SD = .79$ (2nd Interaction)	$M = 4.7$ $SD = .37$ (1st Interaction)
Dyads in High Engagement Group Receiving Props First (n = 4)	$M = 3.9$ $SD = 1.0$ (1st Interaction)	$M = 3.6$ $SD = 1.4$ (2nd Interaction)
Dyads in High Engagement Group Receiving Props Second (n = 8)	$M = 4.6$ $SD = .48$ (2nd Interaction)	$M = 4.3$ $SD = .62$ (1st Interaction)

Recall that the overall trend for the group receiving the props first indicated a decrease in

subjective rating from the prop to no prop condition. Additionally, there were no statistically

significant differences identified between the two groups for either dependent variable during the

prop condition. When examining the descriptive statistics, the general trend for the dyads in

both engagement groups who received props first is similar to the overall trend for the groups

when they are combined favoring the prop condition. However, an opposite trend was identified

for the dyads in the low engagement group who received the props second compared to the

overall trend for the combined dyads from the two engagement groups who received props

second. For these 5 dyads in the low engagement group, a general decrease was noted in subjective rating of engagement from the no prop condition to the prop condition. Specifically, the average subjective rating of engagement for the 5 children in the low engagement group who received props second decreased from 4.7 to 4.0 when props were added. This was not the case for the 7 children in the low engagement group who received props first (4.4 props and 3.5 no props) or both subgroups of children in the high engagement group (High/Props first = 3.9 props and 3.6 no props; High/Props second = 4.6 props and 4.3 no props).

Similarly, when the descriptive data for the overall rate of communicative acts were examined separating the two groups who received props first and props second into subgroups based on their engagement group membership, differences were identified. Recall again that the overall trend for the combined group receiving props first was a decrease from the prop condition to the no prop condition. However, when subdivided, the high engagement group who received props first actually demonstrated an increase from the prop to no prop condition. Additionally, although the group statistics for the engagement groups combined indicated a significant difference between the combined groups during the no prop condition only when they received props first compared to when they received props second, the descriptive statistics suggest that this difference may be primarily accounted for by the dyads in the high engagement group. The average difference for the no prop condition between the high engagement dyads receiving props first compared to the high engagement group receiving props second was 11.1, whereas the difference for the low engagement group was only 5.1.

Table 4.4 Means and Standard Deviations for the Overall Rate of Communicative Acts during the Prop and No Prop Book Conditions by Engagement Group.

	Prop Condition	No Prop Condition
Dyads in Low Engagement Group Receiving Props First (n = 7)	M = 13.6 SD = 4.6 (1st Interaction)	M = 10.5 SD = 7.4 (2nd Interaction)
Dyads in Low Engagement Group Receiving Props Second (n = 5)	M = 14.6 SD = 5.9 (2nd Interaction)	M = 15.4 SD = 6.8 (1st Interaction)
Dyads in High Engagement Group Receiving Props First (n = 4)	M = 8.1 SD = 3.7 (1st Interaction)	M = 8.9 SD = 5.1 (2nd Interaction)
Dyads in High Engagement Group Receiving Props Second (n = 8)	M = 12.5 SD = 5.9 (2nd Interaction)	M = 20.0 SD = 14.0 (1st Interaction)

Caregiver Literacy Questionnaire. To collect data on the home literacy practices of the dyads, a caregiver literacy questionnaire was completed by each participating caregiver. All but one caregiver in the sample reported beginning to read to their child by the time the child was 12 months of age, with over half of the dyads starting to read at or before 6 months of age ($n = 19$). All but three of the families reported reading to their children 6 or more times a week, with each reading session lasting at least 3-5 minutes. All of the families except one reported having more than 16 different children's books in their home, with 12 families reporting more than 50 different children's books in the home. All of the families reported having a variety of different children's literacy materials in their homes with most indicating that they had alphabet books (*n*

= 20), single word and sentence books ($n = 22$), interactive books ($n = 22$) and counting or number books ($n = 21$). Most families also reported having adult literacy materials including phone books ($n = 21$), cookbooks ($n = 22$), dictionaries or encyclopedias ($n = 19$), and adult books ($n = 22$) and 12 families reported receiving a weekly or daily newspaper. Ten families indicated that they visit both the library and bookstore at least once a month, whereas 14 families reported rarely visiting the local library or bookstore.

Activity Questionnaire. An activity questionnaire was completed by each caregiver to determine approximately how long their child typically engaged in a range of play activities. All of the children reportedly engaged in block play, with 20 children participating for at least 2-5 minutes. The same was true for outside play with 23 out of 24 children engaged in outside play for over five minutes at a time, with one child in the low engagement group participating for approximately 2-5 minutes. Twenty-one children engaged in toy play for at least 2-5 minutes, with one child in the high engagement group engaging in toy play for 1-2 minutes and 2 children in the low engagement group engaging in toy play for less than 1 minute at a time. Eighteen caregivers reported that their child participated in some type of pretend play for at least 2-5 minutes, with 2 caregivers in the high engagement group and 4 caregivers in the low engagement group reporting that their children were engaging in this type of play for less than 2 minutes. Finally, in terms of amount of time spent in a single reading activity, all of the children reportedly engaged in some type of storybook reading, with the majority of children engaging for at least 2-5 minutes at a time ($n = 23$) and only one child (in the low engagement group) engaging in storybook reading for less than 2 minutes at a time.

"Favorite" Activity. An average subjective rating of engagement was calculated during the "favorite" activity interaction in order to verify that group membership in the high and low

engagement groups was not related to the child's overall ability to engage in sustained interactions with a caregiver. An independent-samples t-test was conducted to evaluate whether there were differences between the high engagement and low engagement groups' abilities to engage during a preferred play activity. This test was not significant indicating that the two groups were equally able to engage in a sustained interaction with a caregiver (t [22] = -1.132, p= .27). Table 4.5 shows the range of scores for both engagement groups with group means and standard deviations.

Table 4.5 Subjective Rating of Engagement By Group During the "Favorite" Activity

Group	Range	Mean	Standard Deviation
Low Engagement Group	2.62 – 4.85	4.26	.67
High Engagement Group	3.64 – 5.00	4.53	.45

After completing the favorite activity, caregivers were asked to complete a four question Post Favorite Activity Rating Form (Roy, 2006) regarding their perceptions of how typical the play interaction was compared to other play interactions. The majority of caregivers rated the child's interest and engagement in the play interaction as "somewhat typical" or better (high group n = 11, low group n =12) with only one caregiver rating the play interaction as "very different". The child in this dyad was in the high engagement group and the caregiver reported that she is "usually more engaged in play, and leads the play experience." A similar pattern was noted for active involvement during the play interaction with the majority of the caregivers rating their child's active involvement as typical (high group n = 8, low group n = 7). There were three caregivers of children in the low engagement group and five caregivers of children in the high engagement group who rated their child as "less active than usual" in the play interaction with

one caregiver of a child in the low engagement group rating the child as "more active than usual." All caregivers rated their child as exhibiting typical alertness or better, with the exception of two caregivers of children in the low engagement group who indicated that their children were less alert than usual.

    Post Storybook Rating Questionnaire. The caregivers' perceptions regarding whether each storybook interaction was typical of previous book reading interactions were collected at the end of the second home visit. Frequency counts indicated that the majority of caregivers rated the prop book reading condition (20/24) and the no prop book reading condition (19/24) as typical or better. Two caregivers in the low engagement group and two caregivers in the high engagement group rated the prop condition interaction as "very different" from other book reading interactions, and three caregivers in the low engagement group and two caregivers in the high engagement group rated the no prop book reading interaction as "very different". Of the caregivers who perceived at least one of the book reading interactions to be different from typical reading interactions, only two caregivers (one high engagement dyad and one low engagement dyad) perceived <u>both</u> interactions to be very different from other book reading interactions. The majority of caregivers perceived their child to be "interested and engaged" during the prop book condition (20/24) with slightly fewer caregivers rating their child's interest and engagement during the no prop condition as typical or better (16/24). Of those caregivers rating the interactions as different, three caregivers (one high, two low) perceived their child to be less interested and engaged during <u>both</u> interactions. One caregiver in the high engagement group perceived their child to be less engaged and interested only during the prop condition interaction, whereas five caregivers (4 high, 1 low) perceived their child as less interested and engaged only during the no prop condition. Similarly, most caregivers perceived their child's

"active involvement" during the prop book reading condition (17/24) and the no prop condition (15/24) as typical or better. Three caregivers (one high, two low) perceived their child to be less active than usual during <u>both</u> book reading interactions, whereas 4 caregivers perceived their child to be less active during the prop condition only and 6 caregivers perceived their child to be less active during the no prop condition only. Finally, overall alertness was rated by all but two caregivers as typical or better, with one child in each engagement group perceived to be less alert than usual (i.e., sleepy). Table 4.6 provides the frequency of caregiver ratings of interactions during the prop and no prop book reading conditions for the high and low engagement groups.

Table 4.6 Caregivers' Ratings on the Post Storybook Rating Form

Prop Book Condition		Low Group*	High Group*
How typical would you rate your child's storybook interaction?	somewhat or very typical	10	10
	very different	2	2
How would you rate your child's interest and engagement in the book reading interaction?	typical interest or better	10	10
	less interested & engaged	2	2
How would you rate your child's active involvement during the interaction?	typical or better	7	10
	less active than usual	5	2
No Prop Book Condition		Low Group	High Group
How typical would you rate your child's storybook interaction?	Somewhat or very typical	10	9
	Very different	2	3
How would you rate your child's interest and engagement in the book reading interaction?	typical interest or better	9	7
	less interested & engaged	3	5
How would you rate your child's active involvement during the interaction?	typical or better	8	7
	less active than usual	4	5
Overall Impressions		Low Group	High Group
How would you rate your child's overall level of alertness?	typical	11	11
	less than typical/sleepy	1	1

* Number of caregivers in each group who selected each response

Influence of Toy Props on Storybook Reading

In order to examine the influence of toy props on storybook interactions between caregivers and their very young children, a series of repeated-measures analysis of variance (ANOVA) was conducted. According to Cohen and colleagues (2003), a repeated-measures design is useful when thinking about data in terms of a "three dimensional structure" (p 573). The participants or n make up one dimension, the dependent variables make up another dimension, and the different time points (in this case book reading conditions) make up the third

dimension. Analysis of variance is based on certain assumptions made about the population and parameters related to the dependent variable. There are essentially two assumptions underlying the analysis of variance for repeated measures designs: homogeneity of variance and normality (Howell, 2002).

In order to determine whether the data collected for the current study met all the assumptions, Levene's test of homogeneity of variance was included in all of the analyses that are presented below. There were no significant values identified across all analyses and therefore the error variance for each dependent variable was considered to be equal. In regards to normality, the values for skewness and kurtosis indicated that the data were not equally distributed and therefore do not meet the assumption of normality. According to Howell (2002), however, analysis of variance is a robust statistical procedure that is relatively unaffected by violations of the assumptions. Additionally, Howell notes that this is "especially true for the normality assumption" (p 340). Therefore, given that each sample included an equal number of participants and there were no missing data points, a violation of the normality assumption was not considered to be problematic.

In examining the influence of toy props, the goal of the current study was twofold. First, the researcher aimed to determine whether the addition of toy props during storybook reading increased child communicative behaviors and positively impacted caregiver behaviors. Second, the research aimed to identify whether the addition of toy props had a differential effect based on whether children were identified by their caregivers as demonstrating high or low engagement during shared storybook interactions. In the results that follow, the latter research aim was examined as a part of each individual analysis conducted on the following dependent variables: total child communicative acts, rate of communicative acts (per minute), total time (in seconds)

that the caregiver and child participated in the book reading interaction, the balance of participation between the caregiver and child as measured by the ratio of caregiver turns to child turns during the interaction time, and the subjective rating of engagement during storybook interactions.

Total Child Communicative Acts. To examine the potential influence of toy props during storybook reading on the child's total number of communicative acts, a repeated-measures analysis of variance was conducted with engagement group as the between subjects factor (i.e., low versus high) and the book condition (i.e., props vs. no props) serving as the within subject factor. For each child, the total number of communicative acts was calculated during both the prop and no prop book reading conditions by summing the number of child verbal/vocal acts, the number of child gestures, and the number of child responses during each book reading condition. A repeated-measures ANOVA was conducted to investigate if a main effect for prop condition, a main effect of engagement group, and/or a potential interaction between engagement group and prop condition existed.

For the total number of child communicative acts, the ANOVA revealed no significant main effects for prop condition (F [1,22] = .056, p=.815), or engagement group membership (F [1,22] = .002, p = .968). However, a significant engagement group-by-prop condition interaction was identified for the total communicative acts, F [1,22] = 4.32, p= .05). The children in the low engagement group produced more total communicative acts in the prop condition (M = 36.5) than in the no prop condition (M = 25.9). This was in opposition to the high engagement group who produced fewer communicative acts during the prop condition (M = 27.3) than during the no prop condition (M = 35.7). Table 4.7 provides group frequency counts, means and standard deviations for the children's total communicative acts.

Table 4.7 Means and Standard Deviations for Total Child Communicative Acts During the Prop and No Prop Book Conditions

	Prop Condition	No Prop Condition
Low engagement Group ($n = 12$)	$M = 36.50$ $SD = 15.4$	$M = 25.92$ $SD = 18.5$
High Engagement Group ($n = 12$)	$M = 27.25$ $SD = 15.1$	$M = 35.67$ $SD = 25.3$

The results of the analysis of variance take into account group membership and prop condition, but it is possible that the unequal number of dyads from each engagement group that received props first and second confounded the results. There were 7 dyads in the low engagement group who completed the prop condition first. When these dyads completed the second reading without props, they experienced a decrease of 8.6 in their total communicative acts. The 5 dyads in the low engagement group who completed the no prop condition first, did not experience a decrease in that their total communicative acts remained relatively the same during both reading interactions (props mean = 32.2; no props mean = 31.4). This suggests more of a general prop condition effect for the low engagement dyads in that children produced, on average, more total communicative acts during the prop condition than the no prop condition. This was not the case for the dyads in the high engagement group who on average produced more total communicative acts in their first reading interaction regardless of prop presentation. This look at the descriptive data suggests that the significant group-by-prop condition interaction was confounded by the unequal representation of the two engagement groups in the two prop condition orders.

In order to determine whether the addition of toy props increased the number of each different type of child communicative acts, total frequency counts for child verbal/vocal communicative acts, child gestures, and child responses were calculated during both book reading interactions. Repeated-measures ANOVAs were conducted on each dependent variable to determine whether group differences existed. The ANOVAs were not significant for any of the analyses. However, there was a trend toward a differential effect of toy prop use on storybook reading for children identified as demonstrating high vs. low engagement. The two ANOVAs for the engagement group-by-prop condition interaction were approaching significance for the total child verbal/vocal acts (F [1,22] = 4.03, p = .057) and for the child's total gesture use (F [1,22] = 3.803, p = .064). Specifically, children in the low engagement group tended to produce more verbal/vocal communicative acts and use more gestures during the prop book reading condition then during the no prop condition. The opposite was found for children identified as demonstrating high engagement during storybook reading. This group tended to use fewer verbal/vocal acts and gestures during the prop book condition than the no prop condition. Table 4.8 and 4.9 provide means and standard deviations for the two dependent measures by engagement group.

Table 4.8 Means and Standard Deviations for Child Verbal/Vocal Acts

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 18.2 *SD* = 9.8	*M* = 12.6 *SD* = 7.4
High Engagement Group (*n* = 12)	*M* = 12.1 *SD* = 5.5	*M* = 14.6 *SD* = 11.2

Table 4.9 Means and Standard Deviations for Child Gesture Use

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 14.7 *SD* = 6.4	*M* = 10.8 *SD* = 9.7
High Engagement Group (*n* = 12)	*M* = 9.25 *SD* = 5.8	*M* = 13.1 *SD* = 9.4

Again, given the uneven number of dyads in each engagement group who received the book with props first versus those who received the props during their second interaction, the differences identified in the group statistics may be confounded by the order of prop presentation specific to the engagement group. A repeated measures ANOVA was conducted to determine whether a main effect of reading interaction was present. The results of this analysis indicate no reading interaction order by engagement group interaction or main effect of engagement group membership. However, a trend was identified in the data for the children in both engagement groups to produce more verbal/vocal acts during their first reading interaction compared to their second reading interaction regardless of prop presentation (F [1,22] = 3.935, p = .06). This was not the case for gesture use or responses. Table 4.10 provides the means and standard deviations for the high and low engagement group based on their first and second reading interaction regardless of prop presentation for the total verbal/vocal acts.

Table 4.10 Means and Standard Deviations for the Total Verbal/Vocal Acts of the High and Low Engagement Group During Their First and Second Book Reading Interaction.

	First Book Reading Interaction	Second Book Reading Interaction
High Engagement Group (*n* = 12)	*M* = 15.1 *SD* = 10.4	*M* = 11.6 *SD* = 6.6
Low Engagement Group (*n* = 12)	*M* = 17.7 *SD* = 10.5	*M* = 13.1 *SD* = 6.7

In addition, if the data are examined further and the two engagement groups are divided into subgroups based on when they received props (props first vs. props second), a difference is noted for the 7 dyads in the low engagement group who received props first to produce more verbal/vocal acts during their first interaction which included props than the second interaction which did not include props (p = .06). Again, this is not the case for the entire low engagement group as the 5 dyads in the low engagement group who received props during their second reading interaction did not differ significantly when comparing the prop and no prop conditions. The impact of the larger, props first group clearly influence the trend in descriptive data which show an increase in number of verbal/vocal acts when props are present (mean for no props = 13.8, mean for props = 15.0). For the high engagement group, there are no significant differences in the total number of verbal/vocal acts produced during the prop and no prop reading conditions between the 4 dyads receiving props first and the 8 dyads receiving props second. However, there seems to be a first vs. second reading interaction trend in that dyads in the high engagement group produced more verbal acts during their first reading interaction vs. their second reading interaction regardless of prop presentation. Table 4.11 provides the means

and standard deviations for the subgroups of children in each engagement group who received

props first and second.

Table 4.11 Means and Standard deviations for the Total Gesture Use During the Prop and No Prop Book Conditions by Engagement Group and Prop Order Presentation.

	Prop Condition	No Prop Condition
Dyads in Low Engagement Group Receiving Props First (n = 7)	$M = 20.4$ $SD = 11.3$ (1st Interaction)	$M = 11.7$ $SD = 13.8$ (2nd Interaction)
Dyads in Low Engagement Group Receiving Props Second (n = 5)	$M = 15.0$ $SD = 6.9$ (2nd Interaction)	$M = 13.8$ $SD = 8.9$ (1st Interaction)
Dyads in High Engagement Group Receiving Props First (n = 4)	$M = 8.0$ $SD = 2.8$ (1st Interaction)	$M = 6.5$ $SD = 6.2$ (2nd Interaction)
Dyads in High Engagement Group Receiving Props Second (n = 8)	$M = 14.1$ $SD = 5.4$ (2nd Interaction)	$M = 18.6$ $SD = 11.2$ (1st Interaction)

Overall Rate of Communicative Acts. A repeated measures ANOVA was also conducted

to examine the rate of child communicative acts per minute during the prop and no prop book

reading interactions. The rate of communicative acts was determined by dividing the total

number of communicative acts by the total interaction time for each book reading condition. The

results of the repeated-measures ANOVA did not reveal any significant differences. Table 4.12

provides group means and standard deviations for the rate of child communicative acts. As can

be seen, although the differences were not significant, the means parallel the results for other

variables.

Table 4.12 Means and Standard deviations for Overall Rate of Child Communicative Acts
during the Prop and No Prop Book Conditions.

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 14.0 *SD* = 4.8	*M* = 12.6 *SD* = 7.3
High Engagement Group (*n* = 12)	*M* = 11.0 *SD* = 5.5	*M* = 16.1 *SD* = 12.7

In addition to the child's total communicative acts and rate of communicative acts, rates

for each individual child's communicative acts were calculated. Repeated-measures ANOVAs

were run for the rate of each type of communicative act (i.e., verbal/vocal acts, gestures, and

responses). For these analyses, the between subject factor was engagement group and the rate of

each communicative act during the prop and no prop book reading condition was the dependent

variables. Results indicated no significant findings for the rate of verbal/vocal child acts per

minute or the rate of child gesture use per minute. However, the ANOVA revealed a significant

main effect for engagement group on the rate of child responses (F [1,22] = 6.501, p = .018).

Using Cohen's d to determine the magnitude of the effect, the effect size of engagement group

on the rate of child responses was d = .775. According to Cohen's (1988) criteria, this is

between a medium (*d* =.50) and a large (*d* = .80) effect size. Children in the high engagement

group produced significantly more responses to the caregiver's requests for information or action

than children in the low engagement group. There was no main effect of prop condition or

significant engagement group-by-prop condition interaction. Table 4.13 provides the group

means and standard deviations for the rate of child responses.

Table 4.13 Means and Standard Deviations for Rate of Child Responses by Group and Condition.

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 1.35 *SD* = .82	*M* = 1.08 *SD* = 1.12
High Engagement Group (*n* = 12)	*M* = 2.37 *SD* = 1.78	*M* = 3.62 *SD* = 4.00

Again, given the unequal representation of dyads receiving props first vs. those who received props second in the two engagement groups, additional examination of the descriptive data is useful in understanding the results for the rate of each communicative act examined above. When the data are examined for an overall book reading interaction effect, there are no statistically significant differences between the dependent variables based on reading interaction order and no significant differences were identified for the individual low and high engagement groups when examined separately. However, it was noted that the descriptive data support the trend identified thus far showing a higher rate of communicative acts during the first book reading interaction compared to the second book reading interaction regardless of prop presentation. This further examination of the data indicated a similar trend of an influence of the first book reading interaction over the second book reading interaction with children in both groups producing higher rates of communicative acts during their first reading interactions. However, the individual subgroup of high engagement dyads did not follow this same trend. Visual inspection of the data indicated that the children in the low group produced higher rates of communicative acts during the first read and children in the high engagement group produced higher rates of communicative acts in the no prop condition.

Child Protesting Behaviors. Child protesting behaviors were also coded during both

book reading conditions. Child protesting was not considered in the original hypotheses

regarding the influence of toy props; however, after examining the data it was clear that this

measure was necessary to fully describe the book reading interactions. When examining the

descriptive data, there were 6 children who protested during the prop condition compared to 12

children who protested during the no prop condition. The range of total protesting behaviors

during the prop condition was 0 to 7 and the range of total protesting behaviors during the no

prop condition was 0 to 20. There were two children in the data set identified as outliers with

total protesting scores of 17 and 20 during the no prop condition. Interestingly, these children

represented both engagement groups.

A repeated-measures ANOVA revealed a significant main effect for prop condition (*F*

[1,22] = 4.78, p = .04), but no main effect of engagement group or engagement group-by-prop

condition interaction. The main effect of prop condition revealed a medium effect size of .663

when calculated using Cohen's d. Table 4.14 presents the mean and standard deviation for each

group indicating a significant effect of prop condition with children protesting significantly less

during the storybook interaction that included toy props than during the interaction that did not

include props.

Table 4.14 Means and Standard Deviations for the Total Child Protesting Behaviors during the Prop and No Prop Book Conditions

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 0.75 *SD* = 2.0	*M* = 2.9 *SD* = 5.6
High Engagement Group (*n* = 12)	*M* = 0.5 *SD* = 1.0	*M* = 3.5 *SD* = 5.2

It is also interesting to note that when the data are examined further to consider the potential influence of unequal representation of children from each engagement group in each prop presentation condition, the children in the low engagement group present a very interesting profile. Table 4.15 provides the means and standard deviations for the total protesting behaviors during the prop and no prop book conditions by engagement group and prop order presentation. When the group means were examined, the 7 children in the low engagement group who received props first protested significantly more on average during the no prop condition. In contrast, the five children who were in the no prop condition first produced fewer protesting behaviors when compared to their prop condition interaction. This pattern was also observed for the four children in the high engagement group who received props first. Therefore, children in the low engagement group tended to produce more protesting behaviors during the second book reading interaction regardless of prop presentation. The prop presentation along with reading interaction order may have played a role for some of the children. As can be seen in the data, children in the low engagement group protested more during the second reading interaction regardless of prop presentation but the protesting was dramatically increased when the first reading interaction included props. Additionally, a similar impact was noted for the high

engagement group with children protesting more when props were not included but this was

dramatically increased when the no prop condition was the second book reading interaction.

Table 4.15 Means and Standard deviations for the Total Protesting Behaviors During the Prop
and No Prop Book Conditions by Engagement Group and Prop Order Presentation.

	Prop Condition	No Prop Condition
Dyads in Low Engagement Group Receiving Props First (n = 7)	$M = 0.14$ $SD = .38$ (1st Interaction)	$M = 4.6$ $SD = 7.0$ (2nd Interaction)
Dyads in Low Engagement Group Receiving Props Second (n = 5)	$M = 1.6$ $SD = 3.1$ (2nd Interaction)	$M = .60$ $SD = 1.3$ (1st Interaction)
Dyads in High Engagement Group Receiving Props First (n = 4)	$M = 1.3$ $SD = 1.5$ (1st Interaction)	$M = 6.0$ $SD = 8.0$ (2nd Interaction)
Dyads in High Engagement Group Receiving Props Second (n = 8)	$M = .13$ $SD = .35$ (2nd Interaction)	$M = 2.3$ $SD = 3.0$ (1st Interaction)

Total Interaction Time. Total interaction times during both prop conditions were

calculated and a repeated-measures ANOVA was conducted to determine group differences.

The results indicated a main effect of prop condition for the total interaction time (F [1,22] =

6.89, p = .02), with dyads interacting for longer periods of time during the prop condition than

during the no prop condition, regardless of engagement group membership. The effect size for

the main effect of props was .713 indicating a medium to large effect size. Group total time in

seconds, means and standard deviations can be found in Table 4.16. There was no main effect of

engagement group or engagement group by prop condition interaction identified.

Table 4.16 Means and Standard Deviations for the Total Interaction Time (in seconds) during the Prop and No Prop Book Conditions

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 157s (2 min; 37) SD = 46s	*M* = 122s (2 min; 2s) SD = 37s
High Engagement Group (*n* = 12)	*M* = 159s (2 min; 39s) SD = 58s	*M* = 130s (2 min; 10s) SD = 38s

Given the unequal sample sizes of the subgroups of dyads (high vs. low receiving props first vs. second), it was again considered important to examine the data to determine if these potential confounds were impacting the current findings. The results indicated clear support for a main effect of prop condition with individual means for the subgroups following the same trend. Specifically, for both engagement groups, dyads on average spent more time in the book interactions when props were included compared to the time spent in book interactions that did not include toy props. Therefore, the data for the individual groups support the findings for the analysis when all groups were combined.

Balance of Participation. The balance of participation between the caregiver and child was calculated for both prop book reading conditions. The ratio was calculated by dividing the total number of caregiver turns by the total number of child turns for each storybook interaction. Group means and standard deviations are provided in Table 4.17. The repeated-measures ANOVA revealed no significant main effect of prop condition (F [1,22] = 1.385, p = .252), no significant main effect of engagement group (F [1,22] = 1.825, p .190) and no significant engagement group-by-prop condition interaction (F [1,22] = 1.272, p = .272). The mean ratio for caregiver to child turns during the prop condition for the low engagement group was 3:1.

This was found to be similar to the ratio for the low engagement group during the no prop condition. Therefore the balance of participation was not impacted by the addition of toy props.

Although not statistically significant, when examining the mean ratio of caregiver-child turns for the high engagement group, a different pattern was observed. The average ratio of caregiver to child turns during the prop condition for the high engagement group was similar to that of the low engagement group at 3:1. However, this ratio increased during the no prop condition to 5:1 suggesting that caregivers were taking more responsibility for the interaction during the no prop condition than during the prop condition. It should be noted that a visual inspection of the descriptive data identified a large standard deviation for the high engagement group during the no prop condition. This was due to one dyad in the high engagement group. When this dyad was removed from the data set and the repeated-measures ANOVA re-run, the mean for the high engagement group during the no prop condition lowered to 3.99 ($SD = 3.2$). This is only slightly higher then the other groups but the standard deviation for this group remained to be over half of the value of the mean.

Table 4.17 Means and Standard Deviations for the Ratio of Caregiver Turns to Child Turns during the Prop and No Prop Book Conditions.

	Prop Condition	No Prop Condition
Low engagement Group ($n = 12$)	$M = 3.01$ $SD = 2.2$	$M = 3.06$ $SD = 1.5$
High Engagement Group ($n = 12$)	$M = 3.4$ $SD = 1.6$	$M = 5.49$ $SD = 6.0$

Caregiver Participation. Caregiver turns were also coded in order to determine the degree to which each caregiver participated in the storybook interactions. Utterances that contained direct lines from the text were excluded from this code as it was assumed that this

would be relatively equal across groups. However, utterances that contained a repetition of the text that was clearly functioning as the caregiver's turn, apart from direct verbatim reading (e.g., used for emphasis or used in conjunction with a demonstration with the toy props), were included as caregiver turns. Means and standard deviations for each group are provided in Table 4.18. A repeated-measures ANOVA revealed no main effect of prop condition (F [1,22] = .450, p = .509) and no main effect of engagement group (F [1,22] = .000, p =.989). This analysis also revealed no engagement group-by-prop condition interaction (F [1,22] = 2.729, p =.113), indicating that the caregivers in both the high and low engagement group participated similarly for both the prop and no prop book reading interactions.

Table 4.18 Means and Standard Deviations for Total Caregiver Turns During the Prop and No Prop Book Conditions

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 44.8 *SD* = 21.6	*M* = 32.9 *SD* = 14.4
High Engagement Group (*n* = 12)	*M* = 36.4 *SD* = 12.7	*M* = 41.4 *SD* = 26.6

When the descriptive data were examined to determine whether the book reading interaction order impacted the caregivers' participation, the results indicated that there were no statistically significant differences between the caregiver's turns during their first book reading interaction compared to their second book reading interaction. It should be noted, however, that the descriptive means support the general trend in that caregivers in both engagement groups tended to produce more turns during the first book reading interaction compared to the second

book reading interaction. However, when the engagement groups were examined individually, this trend did not hold true.

Average Subjective Rating of Engagement. The average subjective rating of the child's engagement was used as the dependent variable. The means and standard deviations for each group can be found in Table 4.19. The results of this analysis indicated there was no significant main effect for prop condition (F [1,22] = 1.485, p=.236) and no significant main effect of engagement group (F [1,22] = .147, p = .705). In addition, there was no interaction identified between engagement group and prop condition (F [1,22] = .052, p=.821) during the storybook readings. However, the individual means follow the trend in favor of the prop condition.

Table 4.19 Means and Standard Deviations for Average Subjective Ratings of Engagement during the Prop and No Prop Book Conditions

	Prop Condition	No Prop Condition
Low engagement Group (*n* = 12)	*M* = 4.24 *SD.* = .563	*M* = 4.01 *SD* = .996
High Engagement Group (*n* = 12)	*M* = 4.39 SD. = .739	*M* = 4.05 *SD* = .952

Given the unequal representation of dyads in the high and low engagement group in the book and prop conditions and the hypothesis that props would increase the child's engagement during storybook reading, it is necessary to consider potential confounds as they relate to the average subjective rating of engagement. The descriptive data support a general trend for children to demonstrate higher engagement during the first book reading interaction compared to the second interaction. Table 4.20 provides the average subjective rating of engagement means and standard deviations for the high and low engagement groups when the data are categorized

by the first and second book reading interaction regardless of prop presentation. As can be seen, children in the low engagement group had a higher average rating of engagement during their first reading interaction compared to their second book reading interaction with the children in the high engagement group demonstrating relatively the same level of engagement during both interactions. Paired sample t-tests were conducted to examine these differences further and statistically significant differences were identified for the low engagement group only (t [11] = 2.781, p = .02). Specifically children in the low engagement group demonstrated an interaction order trend in that they produced more engagement behaviors during their first reading interaction regardless of prop presentation. However, prop presentation also presented an issue for the low engagement group. Similar to the result reported for protesting behaviors, children tended to have higher average ratings of engagement during their first read compared to their second read, however the frequency of engagement behaviors was dramatically decreased if the first reading interaction included props. Table 4.21 provides the descriptive data for the low engagement group only with the groups subcategorized by whether or not props were presented during their first or second book reading interaction.

Statistically significant differences were not identified for the high engagement group when the data were examined for an interaction order effect or a prop presentation effect. High engagement children tended to receive higher ratings for engagement during the prop condition regardless of which interaction it was (first vs. second). However, these differences did not reach significance at the .05 level.

Table 4.20 Means and Standard Deviations for the Average Subjective Rating of Engagement of the High and Low Engagement Groups Based on Their First and Second Reading Interaction

	First Book Reading Interaction	Second Book Reading Interaction
Low engagement Group ($n = 12$)	$M = 4.52^*$ SD = .36	$M = 3.72$ SD = .93
High Engagement Group ($n = 12$)	$M = 4.16$ SD = .74	$M = 4.27$ SD = .98

* p = .02

Table 4.21 Average Subjective Rating of Engagement Means and Standard Deviations for the Low Engagement Group Only During the Prop and No Prop Book Conditions by Prop Order Presentation.

	Prop Condition	No Prop Condition
Dyads in Low Engagement Group Receiving Props First (n = 7)	$M = 4.40$ SD = .31 (1st Interaction)	$M = 3.52^*$ SD = 1.03 (2nd Interaction)
Dyads in Low Engagement Group Receiving Props Second (n = 5)	$M = 4.02$ SD = .79 (2nd Interaction)	$M = 4.69$ SD = .37 (1st Interaction)

CHAPTER V

DISCUSSION

Storybook reading has been considered an important means for fostering early literacy skills and language development. When caregivers engage in storybook reading interactions with their young children, they have the opportunity to interact positively and create pleasurable experiences within the book reading context (Sonnenschein & Munsterman, 2002). The purpose of this study was to examine the potential influence of the addition of toy props on the success of storybook reading interactions with very young typically developing children. To the author's knowledge, there have not been any empirical studies that have examined the influence of toy props on storybook reading. Yet this practice is recommended to caregivers of children demonstrating difficulties with language and literacy as one method for facilitating storybook reading interactions (King-DeBaun, 1990; Musselwhite, 1986). Given that storybook reading has been shown to concurrently and predicatively relate to later language and literacy development (Cipielewski & Stanovich, 1992; Moerk, 1985; Senechal et al., 1996; Snow & Goldfield, 1983) and that the child's engagement and interest is an important contributing factor to successful storybook reading, the potential use of toy props to enhance engagement in storybook reading is an important finding for caregivers and professionals.

There were two main focal points for the current study: determining the influence of toy props on caregiver and child behaviors during storybook reading and identifying any differential effects that membership in the high or low engagement group may have had. It was hypothesized that the addition of toy props would have a positive impact on shared book reading

interactions between caregivers and their young children. It was also hypothesized that the addition of toy props would have a differential effect on children identified by their caregivers as demonstrating low engagement during storybook reading compared to children demonstrating high engagement. The discussion that follows summarizes the current study findings, relates them to previous research, and highlights implications for current practice. Study limitations will also be addressed providing directions for future research in the area of storybook reading and child engagement and interest.

Key Findings Related to Previous Research

The findings from the current study extend our knowledge base regarding different strategies caregivers and professionals could use with typically developing children to initiate and expand shared interactions around a storybook. This study also provides preliminary evidence to support the use of toy props during shared book reading with very young children and guides future research aimed at examining the potential benefits of toy props with children at risk for experiencing difficulties in language and literacy development. Although current literature is beginning to acknowledge the important role of the child's active engagement and interest in participating in storybook reading with a caregiver, no research is available to date examining specific ways to facilitate these interactions. The current study can be embedded within the larger framework of efforts analyzing the factors that contribute to successful storybook reading interactions and identifying those that may have the largest effect on child engagement.

Total Interaction Time. The current study identified a potentially important influence of toy props on caregiver-child interactions during storybook reading. A significant main effect was identified for the total interaction time with dyads engaging for longer periods of time when

the props were present compared to when the props were not present. Given that there was a medium to large effect size of the use of props, this finding is important in that it provides some preliminary evidence of the benefits of toy prop use during storybook reading. For the caregivers in this study, the addition of toy props appeared to provide a strategy for extending the duration of their interactions with their children around a known context. For the children, the benefits of extending the duration of the interactions may include increasing the amount of time that they have to process the information and make important connections. The increased total interaction time may also provide more opportunities for a mutual focus of attention thus potentially facilitating episodes of joint attention which have been found to positively relate to later language development (Baldwin, 1995; Tomasello & Farrar, 1986).

Extending the duration of storybook reading interactions may also prove beneficial by facilitating the process of guided participation (Rogoff, 1990). One way that the addition of toy props facilitated guided participation was to prompt episodes of pretend play. Many dyads were observed to engage in simple pretend play with the toy props present in addition to the labeling and questioning that were present in both the prop and no prop conditions. One mother in particular took the opportunity to teach her child a new vocabulary word. When the child pointed to some musical notes on the page and asked, "What's this?" The mother replied, "Notes…like lalalalala," while pretending the toy pig was singing. The addition of toy props may have provided a clearer connection for this child while also providing the mother with additional resources to explain a particularly abstract concept for a child of this age. It is also possible that the addition of toy props provided the dyads in the current study with an additional topic for conversation and dialogue, which in turn, extended the length of time the dyads engaged in the book reading interaction.

As noted above, dyads often engaged in simple pretend play with the props, but the nature of this play appeared to be influenced by the nature of the book and the props. Recall that a trend in the data was identified for differences between the "Apple" and "Friends" books (p =.079). Although not statistically significant at the .05 level, it was noted that dyads engaged for longer periods of time when reading the "Apple" book compared to the "Friends" book. Perhaps this is due to the fact that the storyline of the "Apple" book was better suited for interactions with children of this age given the sequential nature of the plot (Pepo and Lolo find an apple, work together to retrieve it, and then share the apple at the end). It may also be that this sequence was more familiar and concrete and therefore better accommodated the addition of the props. Conversely, the "Friends" storyline may have been considered more abstract by the caregivers (the book begins by describing the things that make Pepo and Lolo friends, then Pepo and Lolo get mad at each other when one loses their balloon but they make up in the end) and thus, potentially less conducive to interactions with very young children.

Additionally, it is possible that the Velcro apple included with the "Apple" book was uniquely novel and engaging to most children. Many caregivers noted never before seeing this type of toy. It is possible that the toy flowers and balloons used with the "Friends" book were not perceived as novel or did not lend themselves as well to simple pretend play when compared to the apple and knife included with the "Apple" book. The latter set of props lent themselves to an "eating routine" familiar to all children and was possibly perceived by the caregivers as "easier" to manage with the toys.

Despite these differences, however, a main effect for prop condition was identified for the total interaction time. This finding indicates that although dyads reading the "Apple" book with props tended to engage in the interaction for longer periods of time compared to the dyads

reading the "Friends" book with props, children and caregivers spent more time overall engaged in storybook reading interactions with the props present than when the props were not present (regardless of which book was used). In other words, props always increased the total interaction time, but props appear to extend the total time for some types of books more than others.

The addition of toy props might have also provided caregivers with an additional strategy for scaffolding the book reading interaction that, in turn, extended their interaction time. Observed scaffolding strategies included acting out a particular event in the story with the toy props and simply talking about a particular page for a little longer when referencing the props. Vygotsky's (1978a) interactional theory of development emphasizes the importance of caregivers' abilities to scaffold interactions for their children within their current competency level in order to facilitate success one level above where they are demonstrating independent abilities. If an increase in the total time children remain engaged in a book reading interaction is assumed to represent increased interests on the part of the child, then props might be seen as one way to get children interested in storybook reading as well as a strategy to keep them engaged, thus leading to longer interactions and more opportunities for scaffolding on the part of the caregiver.

Baker et al (2001) suggested that child interest and motivation to engage in storybook reading is fostered by pleasurable experiences during such interactions. The caregiver's ability to scaffold for the child and the child's ability to benefit from guided interactions may contribute to whether these experiences are interpreted by both communication partners as successful and enjoyable. Sonnenschein and Munsterman (2002) added to this suggestion by noting that allowing a child an active role in the interaction is also related to increases in later child motivation and interest in engaging in book reading. The use of toy props during storybook

reading may provide children with another avenue to actively engage with their caregiver and control the interaction thus extending the total time spent interacting around the storybook.

Child Protesting Behaviors. A main effect of prop condition for the rate of child protesting behaviors was also identified, thus supporting the hypothesis of a positive impact of toy props on storybook reading. Recall that there was not a main effect of order of prop presentation on the total protesting behaviors when the children were combined from the two engagement groups (i.e., all children receiving props first versus all children receiving props second). Children demonstrated a general increase in protesting behaviors during the no prop condition compared to the prop condition, regardless of the order in which the props were presented. This finding was in the predicted direction in that children demonstrated fewer protesting behaviors when the props were present compared to when the props were not present.

The findings related to interaction order are potentially confounded when the engagement groups were examined separately. Children in the high engagement group tended to follow the same trend as the combined sample. These children produced more protesting behaviors during the no prop condition regardless of the order in which the props were presented (i.e., props first vs. props second). On the contrary, children in the low engagement group presented a different trend. Specifically, for the low engagement group, children tended to produce fewer protesting behaviors during their first interaction regardless of prop presentation. However, it was noted that the protesting behaviors dramatically increased when the second interaction was the no prop condition. Thus, the addition of props may increase willingness for children who have low levels of engagement during book sharing, and, in the context of this study, particularly when those props are introduced after a first reading. It is also possible that the influence of props on protesting behaviors in the second reading may be increased even more when children have

props during both the first and second book. Further research examining this possibility may provide caregivers and professionals a strategy for either extending a first book reading interaction and/or increasing the likelihood that a child may be willing to participate in a second book reading interaction if props are included.

It is also worth noting that the presence of protesting behaviors seemed to increase the observable anxiety of all of the caregivers which in turn led to the interaction being rushed or terminated. It is possible that the addition of toy props and subsequent decrease in protesting behaviors made the interaction more enjoyable and engaging for both the children and the caregivers. Thus, the dyads participated in more of a back and forth interaction extending the overall time that the caregiver and child were sharing a mutual focus of attention and decreasing the child's desire to leave the interaction.

This is an interesting finding given Lonigan's (1994) conclusion that caregivers are likely to read to children more often and/or for longer periods of time when the child appears receptive and engaged in the interaction. In line with Sameroff's (1993) transactional model of development, it is possible that the lack of protesting was interpreted by the caregiver as an indicator of the child's interest in engaging in the storybook interaction and thus the caregivers were more likely to spend more time engaging with the book. This conclusion is supported by the descriptive data for the average subjective rating of engagement. Recall that a very similar trend was identified for the low engagement group in that an interaction order effect was noted as a potential influence. Children in the low engagement group were subjectively rated as significantly less engaged during the second interaction, and particularly so, when this interaction did not include props. Therefore, when children produced higher numbers of protesting behaviors, they were also perceived by the researcher as less engaged in the book

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reading interaction. It follows that the caregivers would also perceive their children as less engaged.

If this is the case, then one may conclude that toy props are facilitating engagement and interest on the part of the child in at least an indirect manner that may lead to enhanced storybook interactions. This conclusion is supported by Scarborough and Dobrich (1994) who noted that children who are read to more often show higher interest and motivation to engage in these types of interactions. Similarly, the findings of Sonnenschein and Munsterman (2002) suggest a positive relationship between early positive reading experiences and later motivation towards reading and literacy.

Differential Impact of Toy Props. Another important finding of the current study was the differential effect the addition of toy props had during storybook reading for children in the low engagement group compared to children in the high engagement group. Although it was hypothesized that the addition of toy props would have a differential impact on storybook reading for the two engagement groups, the impact was hypothesized to be in the same direction for both engagement groups favoring the prop book reading condition. The fact that the addition of toys props was found to increase the amount of verbal/vocal communicative acts and gestures used by the children in the low engagement group is a very positive finding. It is just this kind of strategy that may help these less engaged children become more engaged in storybook interactions with their caregivers.

This finding is also important given the identified differences between the children in the low engagement group compared to the children in the high engagement group. Recall that there was a significant difference identified between the low engagement group and the high engagement group in their expressive language abilities. Specifically, children in the low

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engagement group tended to have lower scores on the expressive communication subtest of the Preschool Language Scale – 4 (Zimmerman et al., 2002) and the MacArthur-Bates Communicative Developmental Inventory (Fenson et al., 1992), but still within the typical range. Recall also that the children in the low engagement group were found to produce more verbal/vocal acts and gestures during the prop condition compared to the no prop condition. Thus, the props seemed to encourage the children in the low engagement group to talk more than they did during the no prop condition despite their expressive language levels. In addition, across several dependent measures, the low engagement group actually demonstrated higher performance than the high engagement group during the prop condition, thus it would appear that the prop condition further boosted their output.

This finding is particularly important for the children in the low engagement group who are demonstrating language abilities at the lower end of the typical continuum. The caregivers of these children perceive them to have limited engagement during routine storybook reading. These perceptions may not be surprising given that the storybook context itself is inherently demanding with respect to language when compared to other caregiver-child contexts (e.g., play). It is possible that this language demanding context coupled with the child's demonstrated limited expressive language skills and the caregiver's perception of their child as less interested and engaged may serve as an early indicator of a group of children who may never receive an official label of language delay but who may struggle in the future with these kinds of language related tasks.

As suggested by Lonigan (1994), a cumulative effect of early difficulties with expressive language may decrease the likelihood that this group of children will seek out language rich experiences such as storybook reading which will in turn decrease their motivation and interest

in engaging in these types of interactions. A cumulative effect may also be attributed to the child's difficulty in participating in the shared interaction verbally which is therefore perceived by the caregiver as the child's lack of interest to engage in the book reading interaction, thus leading to the caregiver's lack of motivation to attempt to facilitate these types of interactions. It is possible that these early differences may represent larger differences later in life for this particular group of children. As supported by Sameroff's (1995)transactional model of development, the interrelated nature of these factors is important to consider. Therefore, the fact that the addition of props supports children who are less engaged in book reading in their efforts to interact and engage in shared book reading with their caregivers is important. Perhaps the addition of props increases the likelihood that caregivers and their young children will participate in shared book reading. In the current study, props did lead the children in the low engagement group to talk more than they did during the no prop condition despite their expressive language levels.

In direct contrast to the findings for the low engagement group, the addition of props during storybook reading decreased the amount of verbal/vocal and gestural communicative acts produced by the children in the high engagement group. In fact, children in the high engagement group had fewer verbal/vocal and gestural communicative acts during both the prop and no prop condition than did the children in the low engagement group when they had props. Not only does it appear that the props depressed the output of the children in the high engagement group compared to their no prop productions, on some variables their performance was even lower than the children with low engagement. It is possible that the addition of toy props was distracting for these children who typically demonstrate a high frequency of active engagement during storybook reading. Observational notes support this idea by indicating a tendency for children in

the high engagement group to shift their attention back and forth between the toys and book, and at times, to play with the toys to the exclusion of the storybook interaction. In addition, at least one caregiver in the high engagement group remarked "how distracting" the toys were during their interaction and several other caregivers in the high engagement group were observed to seem confused and challenged by this additional element to an already established routine. For example, one mother in the high engagement group noted, "The toys are too exciting" as she attempted to situate herself and her daughter. This mother appeared to feel she needed to compete with the toys as opposed to incorporating them into the book reading experience. Another caregiver in the high engagement group, a highly educated early childhood teacher, also demonstrated a feeling of competition for her child's attention with the toys present. Despite this mother's exceptional reading style, she acknowledged the toys minimally and never made an active attempt to incorporate the toys in the reading interaction (although the child was engaging with both the book and the toy simultaneously).

Perhaps for parents of children who are typically developing and who are already perceived as highly engaged during storybook reading, the props added a new dynamic to the interaction that was difficult for the parents to determine how to manage. As evidenced by their ratings of their children's interest and engagement in storybook reading, many of these parents may be more likely to experience relatively successful interactions with their children on a regular basis and therefore may not be accustomed to having to "work" to engage their children. The addition of toy props for these dyads may have produced some competition for the child's attention that the caregivers in the high engagement group are not used to encountering. It should be noted, however, that parental perceptions of the utility of the props were not collected

formally and observational notes were not consistently included with each data set. Therefore firm conclusions cannot be made at this point.

There are important confounding factors that must be considered when drawing conclusions based on the current study. First, despite efforts to do so, the order of prop presentation was not counter-balanced fully across the engagement groups. As a result, within engagement groups, there was an unequal distribution of dyads receiving the props during their first and second book reading interaction. This unequal distribution seems to have had the greatest overall impact on the results for the low engagement group. Specifically, there were differences identified that may be better attributed to the child's ability to sustain attention during a second book interaction than to the effects of prop presentation. The possible confound presented by the unequal representation of dyads receiving props first versus second in both engagement groups is an important consideration. Given the potential for props to attenuate the limited engagement of children identified by their caregivers as less interested and engaged in book reading interactions highlighted in the current study, further research that systematically addresses these issues is warranted.

In contrast to the initial hypotheses, no significant differences were found between the high and low groups on measures such as the subjective rating of engagement and the overall rate of communicative acts. Although on both variables the means paralleled many of the other variables, the failure to identify significant findings in these measures may be due to several reasons. The unequal representation within the two engagement groups in order of prop presentation may certainly have an influence, but other factors may also be at play. For example, the small sample size and the limited number of opportunities for the dyads to read books with toy props may have influenced the results. With a larger sample, the dependent measures with

trends in the hypothesized direction may have reached significance. In addition, with added opportunities for parents to perform with and without the toy props, other differences may surface.

Further, it is also possible that the two groups did not differ enough in their initial level of engagement. While there were significant group differences (p=<.01) between the high and low engagement groups based on the caregiver's report on the Individual <u>Child</u> Literacy Questionnaire (Roy, 2005b), the groups were quite similar based on the <u>Caregiver</u> Literacy Questionnaire (Roy, 2005a). Recall that the Individual Child Literacy Questionnaire provided data on each child's active participation during storybook reading, whereas the Caregiver Literacy Questionnaire provided data regarding the home literacy environment and each child's literacy exposure. Roberts (2005) found that the home environment and daily literacy practices accounted for some of the variance identified between groups of children later in life when it comes to language and literacy abilities. Therefore it might be assumed that although the caregivers in the current study reported differences in their child's current level of active participation during storybook reading, the similarity of their daily literacy experiences had a strong enough influence to attenuate some of the expected differences between the two groups. Given the trends in the current study and knowledge of the importance of the home literacy environment and daily literacy practices, it is likely that additional group differences would have been observed if the children had been from groups of children with more disparate home literacy exposure and engagement.

Despite the similarities in home literacy exposure of the children, significant differences were found in the total interaction time, frequency of child protesting behaviors, and total communicative acts when props were present signaling early differences emerging between the

groups of high and low engaged children during shared book reading interactions. These findings lend support to Kaderavek and Sulzby's (1998) assertion that there is a group of children who indeed have a specific disinterest in storybook reading and demonstrate limited active engagement behaviors during such interactions with their caregivers.

Further, when looking at the lack of significant differences on the subjective rating of engagement, despite significant differences for other quantitative data, it is possible that the rating scale used to make the subjective judgments was not sensitive enough to measure the subtle differences between the groups. The five-point scale included a neutral score of "3." This appeared to reduce the variability in ratings. Perhaps a scale that did not include a default neutral score would have better differentiated the groups.

Another influence on the findings regarding the subjective rating, was the difficultly the coders had reaching reliability on the subjective rating of engagement. Recall that reliability for exact matches was only 72% with notable differences identified in the ability to reliably code the prop book condition compared to the no prop condition. The resolution in the current study was to conduct consensus coding on the entire data set for subjective rating of engagement. Additional significant differences between the high and low engagement groups may be found in the future with a rating scale that offers a clearer set of operational definitions and could be used with a high level of reliability by independent scorers.

Balance of Participation. Contrary to the expected shift in the balance of participation hypothesized at the onset of the study, the current study did not result in a main effect of prop condition or group membership, or a group by prop condition interaction for the balance of participation between the caregiver and the child during the book reading interactions. Recall that the balance of participation examined the ratio of adult to child turns during the storybook

interactions. For the children in the low engagement group, the child and caregiver turns remained consistent over the two prop conditions. Perhaps this was due to contingent caregivers who were adequately judging their child's current level of participation and affirming and acknowledging each child's communicative act similarly across prop conditions. The consistency may also have been influenced by the fact that caregivers of children in the low engagement group were accustomed to scaffolding for their children and did so whether the props were present or not. Perhaps analysis of the quality of parental language input during the book reading interactions would shed further light on this issue.

Although statistically not significant, the ratio of caregiver to child turns for the high engagement group was higher for the no prop condition. In other words, caregivers were taking more turns during the no prop condition. As mentioned previously, it is possible that the addition of toys props was more distracting for the children (and perplexing for the parents) in the high engagement group, and therefore, the parents followed the children's lead of fewer overall turns. Indeed, the no prop condition may be viewed as the one more like what the dyads in the high engagement group are more accustomed to and therefore, the higher ratio of caregiver turns for every child turn may reflect their typical rate.

It is also possible that significant differences in balance of participation between the prop and no prop book reading conditions were not identified due to the fact that data was only collected at one single point. In fact, van Kleek and Beckley-McCall (2002) report that multiple data points often provide a more accurate picture of caregiver-child interactions during book reading and therefore may be an important research design consideration for future studies. Perhaps if caregivers incorporate toy props on a consistent basis during storybook reading, a main effect in the ratio of caregiver and child turns for the prop condition would be evident. As

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found in McDonnell, Freil-Patti, and Rollins (2003), repeated readings of the same book often lead to the child participating in more advanced ways. Thus it is possible that repeated readings and/or repeated opportunities for the child to experience book reading with toy props present may lead to different findings.

Home Literacy Environment. It is interesting to note that given the similarity of the participants' literacy environments discussed previously, the children were already beginning to demonstrate a specific interest (or lack of interest) in storybook reading at such an early age.   In contrast to the current study, Morrow (1983) identified significant differences in the literacy environments of the high and low engagement groups in her study. The results of Morrow (1983) indicated that the children in the two engagement groups differed in the frequency with which they chose to look at books and the frequency with which they engaged in literacy activities during free play. Both of these differences favored the children in the high engagement group. There were also differences noted between Morrow's caregivers, with the high engagement mothers having completed a higher level of education and choosing to engage in more literacy related types of leisure activities. The current study contrasted with these findings in that the caregivers in both groups tended to have similar educational experiences (most completing college or higher) and most caregivers reported similar available literacy materials at home.

Some additional differences between the current study and the Morrow study should also be noted. Specifically, Morrow used a composite measure of book reading engagement including observations during free play, teacher ratings of engagement, and a forced choice interest survey to determine engagement group membership. The current study relied solely on the caregivers' report on the Individual Child Literacy Questionnaire (Roy, 2005b) that requested

each caregiver to indicate the frequency with which their child demonstrated particular observable engagement behaviors (e.g., turning pages, making book related comments). Additionally, Morrow's participants were between 3-4 years of age, making them significantly older than the children in the current study (18-27 months). The differences between the findings from the current study and those reported by Morrow may also be due to differences in how families were recruited. The current study relied solely on volunteer participation whereas Morrow recruited entire classrooms of children providing her with a wider range of participants. Therefore, although dyads were not recruited to represent a specific population, the current study sample included a more homogeneous group of participants compared to Morrow's study.

Study Limitations

There are several limitations associated with this study that may affect the extent to which the results can be generalized to other individuals. First, a potentially limiting factor of the current study was the sequence of the prop condition procedures. Specifically, the researcher administered the PLS-4 (Zimmerman et al., 2002) during the first home visit and dyads engaged in a play activity for approximately 5 minutes. This allowed the researcher to establish rapport with the child and for the child to become familiar with the video equipment. During the second home visit each dyad engaged in the two storybook reading interactions with the presentation of the prop and no prop conditions initially counterbalanced. Unfortunately, complete counterbalancing was not achieved given the nature of the study. Therefore, as described in the results section, the final data set included 7 low engagement dyads and 4 high engagement dyads who read the book with props first and 5 low engagement dyads and 8 high engagement dyads who read the book with props second. Although an analysis was conducted to examine the main effect of prop order and only two significant differences were identified, the small sample size

did not allow for separate analyses examining the main effect of prop order for each engagement group. Instead, descriptive statistics were used to examine the relevant means and standard deviations across groups and subgroups, and trends were noted that at times contradicted the overall findings. Future studies can address this limitation by increasing the overall sample size and insuring equal representation of dyads from each engagement group in each condition.

From a subjective standpoint, the sequence of prop conditions also posed a challenge for some of the children who read the book with props first. For the children in the prop first group (regardless of engagement group), it was sometimes difficult to transition the child away from the toy props (e.g., putting them away) and move on to the second book. This was not the case for children who read the book with props second, as they were typically allowed to play with the toys while the researcher gathered and put away all of the equipment. Specifically, there were at least two children (one from the high and one from the low engagement group) who protested considerably during the reading of the second book that did not include props. This did not happen for any child who received the same book initially without props. It may be assumed that some children may be less willing to give up the toys after reading the first book and move on to the second book without toys (regardless of engagement group membership), if not given sufficient time to play with the toys from the first book. Therefore, problem solving about how to separate the book reading sessions by a specific time period or by incorporating time for all children to play with the props before moving on to the next book without props should be considered in future studies addressing similar research questions. This may decrease the likelihood that a particular child would be upset when the toys are taken away simply because they want to play with the toys for a longer period, and separate this difference from children who are genuinely not interested in reading the storybook unless the toys are present.

A second limitation regarding the design of the current study involved the criteria set to determine engagement group membership and the rating criteria used to make the subjective ratings of engagement during the caregiver-child interactions. Both criteria were created by the researcher based on current literature; however, these measures have not been empirically tested for validity and may not yet be considered reliable measures of engagement at this time. Due to the difficulty finding child participants whose caregiver's rated them at the extreme ends (specifically in the low engagement group), the cut off criteria for group membership allowed only a .25 break between the groups. This was considered a limitation in that there were several children whose ratings on the Individual Child Literacy Questionnaire (Roy, 2005b) fell very close to the cutoff point, decreasing the difference between the groups. A replication of the current study should include at least a 1-point gap between the upper and lower criterion cutoff scores for the high and low engagement group in order to examine specific differences related to engagement group membership. It is unclear whether this will require a different measure or if more disparate groups can be identified using the current tool. While the small difference between the two groups is a potential limitation of the current study, nonetheless significant differences were identified between the two engagement groups and the rating criteria did differentiate engagement levels to some degree in these children.

Third, although specific instructions were provided to all caregivers including examples as to how the props might be used, some caregivers demonstrated very limited toy prop use. Confounding this issue was the observation that some caregivers appeared very awkward in their attempts to incorporate the props, with at least two caregivers remarking on how difficult it was to manage the interaction when adding this additional element into the dynamics. Limited prop use was typical of a total of 9 caregivers (6 high, 3 low) who demonstrated less than nine overall

toy prop behaviors (compared to an overall mean of 28.7 [*SD* = 12.9] behaviors across the other caregivers), thus potentially influencing the results in favor of decreasing the potential differences between the groups in the prop condition.

There are a few possible modifications to the study procedure that may ameliorate this problem in future studies. Initially research could examine the influence of toy props when systematically incorporated by a trained researcher (e.g., research assistant, speech-language pathologist, early education teacher). A study of this nature would control for the variability in actual prop use and extend our knowledge base regarding specific strategies that are most beneficial to managing such a dynamic interaction and particular techniques for implementing them. Once strategies have been identified in a more controlled setting, caregiver training could be conducted to teach specific strategies found to be helpful in managing such an interaction while optimizing a child's active engagement in the interaction. As suggested in previous research (DeTemple, 2001; Justice et al., 2005; Martinez & Roser, 1985; McDonnell, Friel-Patti, & Rollins, 1997; McDonnell et al., 2003), the frequency of storybook reading with young children is an important component of this type of caregiver-child interaction and the benefits associated with book reading. Therefore, the ultimate goal following a more structured implementation of toy props with trained researchers would be to examine different strategies for teaching caregivers and early care providers how to incorporate toy props into storybook reading consistently in their everyday book reading routines.

Fourth, there is also a potential "examiner presence" effect. The presence of the researcher possibly influenced the child as well as the caregiver's behavior. It has been accepted in the field that the presence of an unknown party has the potential to influence the interaction between the child and caregiver. Regardless, the study was designed to attempt to circumvent

"examiner presence" effects by administering the PLS-4 with each child on the first day, allowing the examiner to establish rapport with the child prior to the storybook readings with the caregiver. The examiner also videotaped children engaging in a favorite activity with their caregiver in order to introduce the video equipment and allow the children an opportunity to experience being videotaped prior to reading with their caregivers. Nevertheless, although the majority of caregivers reported that both book reading interactions were relatively typical of previous book reading interactions, several caregivers felt like the book reading interactions were different than other similar interactions with their child. Additionally, several caregivers rated their child's perceived interest and engagement during the book reading interactions as less than usual and indicated they felt like their child was not as actively engaged as typical during the no prop book reading condition. Therefore, the degree to which the study's storybook interactions were similar to typical interactions between the caregivers and their young children may have affected the results.

Fifth, the relatively homogenous group of caregivers and children who participated in the study may be viewed as a limitation. Specifically, most of the dyads were from white families of middle-income socioeconomic status and the majority of caregivers had received high levels of education. Although a range was represented in the children's receptive and expressive language abilities, none of the children in the current study were considered to be delayed in any area of development. Another factor contributing to the make up of the sample may have been the nature of the study and home visitation requirement which may have limited the families who were willing to allow the researcher to visit them at home or those who had the time to do so. It is also very possible that families with greater variability in the availability of resources, educational level, and home environment might have responded differently to the addition of toy

props during storybook reading. Families who choose to volunteer their time may be more likely to value literacy and provide quantitatively and qualitatively different experiences for their children during storybook reading compared to families who do not volunteer for research studies. Therefore there is a question as to whether the addition of toy props may have a differential effect on the study participants' interactions compared to other groups who may have chosen not to participate in the current study. For these reasons, the results of this study should be considered in light of the sample demographics, and generalizations to other populations should be made with caution.

The demographic makeup of the current sample should be considered, however, in light of the fact that the parental education of the participating caregivers was very similar to that of caregivers in a number of other storybook reading studies (DeBaryshe, 1995a; Haynes & Saunders, 1998; McDonnell et al., 2003). It may be that caregivers with more formal education are more likely to seek or have access to study participation, or they may be more likely to respond to or be selected to participate in research studies. Indeed, Dillman (2000) reported that fewer minority respondents and those with low levels of formal education tend to volunteer for studies. Additionally, the homogenous nature of the sample may be considered a strength of the study in that the two groups were very similar in their demographic makeup and home literacy practices and yet significant differences based on engagement were observed. Thus the conclusions based on the findings are more likely related to differences in levels of storybook reading engagement.

Finally, an important limitation that should be considered when examining the results of the current study is the multiple ANOVAs run to answer the proposed research questions. It has been debated in the literature as to when and how to account for the potential inflated risk of

Type I errors when multiple comparisons or multiple tests (in the case of the current study) are conducted to test hypotheses on the same data (Cook & Farewell, 1996; Curran-Everett, 2000; Rothman, 1990). The risk of identifying a significant finding, when there is indeed no underlying effect or difference, is increased when many tests are conducted. Therefore, given the fact that multiple tests were conducted and the possibility that some of the findings in the current study may not actually be an indicator of true differences, it is important to identify this as a potential limitation to the current study, thus warranting continued investigation aimed at testing specific hypothesis based on the preliminary findings of this study and efforts utilized to control the Type I error rate.

Implications and Future Directions

The results of this investigation suggest several important directions for future research and outline some potentially beneficial areas of consideration for clinical practice. First, this study extends our current knowledge base regarding child engagement and interest as a contributing component of the success of storybook reading. Prior research has supported the important benefits associated with the frequency of shared book reading interactions between caregivers and their young children (Bus et al., 1995; Lonigan, 1994). The current study adds to this understanding by identifying one potential strategy for increasing a child's interest and active engagement, particularly when the child is perceived as having low engagement during shared book reading. Child engagement has recently been discussed in the literature as an important contributing factor associated with storybook reading (Baker & Scher, 2002; Lonigan, 1994; Sonnenschein & Munsterman, 2002) and thus identifying strategies to promote and facilitate child engagement are important. If caregivers are able to extend the time that they are engaged with their children during storybook reading by adding toy props to facilitate these

interactions, they increase the child's opportunities to experience rich language input and to participate in higher levels of discourse with a more knowledgeable other. Additionally, extending interaction times also increased the amount of time caregivers and their young children spent in interactions centered around a mutual focus of attention. This may be a potentially important finding given the known relationship between episodes of joint attention and later language development (Baldwin, 1995). Future research examining different strategies for incorporating toy props into storybook reading interactions will further increase the clinical implications of these current findings.

The current study only involved one opportunity for caregivers and children to engage with the toy props during storybook reading. Future research including data collected over multiple data points with dyads having several opportunities to incorporate the toy props into their book reading interactions is warranted. Additionally, future studies examining the influence of toy props on storybook reading should include a measure of the caregiver's perceptions of the ease with which they were able to incorporate the props and how often they typically incorporate props into their routine book reading interactions at home.

Future studies are needed examining a variety of child related factors and their influence on the success of storybook reading. Factors including the affective quality of the interaction (Sonnenschein & Munsterman, 2002), the child's interest and motivation to engage in shared book reading (Baker & Wigfield, 1999), and different strategies to promote and facilitate active engagement during caregiver-child interactions (Danko, 2004) will all contribute to the storybook reading literature and serve to influence current practice when working with young children.

Finally, future research should aim to expand the methodology and findings of this study to include populations of children with different socioeconomic backgrounds and most particularly children demonstrating difficulties with language and literacy development. Of particular interest to the researcher are the implications and potential impact of the addition of toy props during storybook reading with children with a diagnosis of autism. It has been reported in the literature that children with disabilities are less likely then their same aged peers to engage in storybook reading with a caregiver and these interactions tend to be less rich than interactions with typically developing children (Light & Kelford Smith, 1993). One potential factor contributing to this finding is the fact that children with disabilities typically have a co-occurring language disorder that can make processing and understanding the language of storybooks difficult, thus decreasing a child's motivation to engage in such language rich interactions. The addition of toy props may provide a bridge for some children between the abstract language of the book and the concrete nature of the toy props. This may be especially true for very young children who are demonstrating receptive and expressive language skills at the lower end of the range. Recall that the current study identified two groups of children (low and high engagement) and the children in the low engagement group differed significantly from the children in the high engagement group in terms of their expressive language skills. Although future research is warranted, low interest and engagement in storybook reading coupled with language abilities that border the lower end of the typical range may be a potential indicator of later language and literacy difficulties. Thus, the current study lends some preliminary support for extending this study to include children with identified language and literacy difficulties as well as children who may present as "at risk" for difficulties in the future.

The current study supports the addition of toy props as one strategy for actively engaging children in book reading interactions and possibly extending these interactions for longer periods of time. Increasing the time a child spends in a potentially beneficial learning context, such as the increased amount of time observed in the current study, may allow the child more opportunities to make new discoveries in a meaningful environment as well as allow extra time for the child to process and assimilate this information into their current understandings. Future research is warranted examining the potential benefits and applicability of toy props during storybook reading with very young children.

Final Conclusions

Storybook reading is a commonly recommended practice to both caregivers and other professionals working with young children. The findings from the current study contribute to our knowledge base highlighting child engagement and interest as an important consideration for future research. Furthermore, the identified group differences between the prop and no prop storybook conditions may provide evidence to support toy prop use as a potentially beneficial strategy for facilitating storybook interactions with very young children. Of particular interest is the finding that the addition of toy props extends the total interaction time that caregivers and their young children spend in a shared context. This finding identifies an important rational for future research in this area. Given the fact that storybook reading has been found to facilitate areas of development such as vocabulary, expressive and receptive language development, and emergent literacy, it can be assumed that longer interactions within this positive context may provide opportunities for caregivers to expand and extend their child's development in these areas. Additionally, the differences in the mean protesting behaviors during the prop and no prop conditions favoring the prop condition may contribute to the current knowledge base

regarding the hypothesis that toy props facilitate engagement and therefore may contribute to independent reading later in life. Future studies are needed to further examine the influence of toy props on storybook reading interactions especially as one strategy for extending second book readings. Future research should aim to control for the limitations of the current study including increasing the sample size, extending the total number of observations of caregivers and their young children reading storybooks with toy props, controlling for prop order effects and identifying valid measures of engagement that can be utilized with very young children.

Research on Reading Storybooks with Young Children

Dear Caregivers,

I am a speech-language pathologist and a doctoral student in the Division of Speech and Hearing Sciences at the University of North Carolina in Chapel Hill. I am conducting a research study entitled "Caregivers and Young Children Reading Storybooks with Toy Props." The purpose of this study is to examine the influence of toy props during storybook reading with young children and their caregivers. I am looking for children to participate in my study who are between the ages of 18-24 months of age and who are developing language without difficulty. I am interested in <u>both</u> children who are highly engaged in storybook reading with a caregiver as well as children who are not very engaged by this type of activity.

Caregivers and children who participate in this study will be asked to do the following:

- Caregivers will consent to allow the child's classroom daycare provider to fill out a questionnaire regarding the child's literacy attitudes and behaviors observed in the classroom.

- Caregivers will fill out 5 brief questionnaires which should take a total time of approximately 10-20 minutes to complete.

    1. Contact Information Form – provide contact information in order for the researcher to contact you and set up two home visits
    2. Caregiver Demographic Questionnaire – provide basic demographic information (e.g., age, ethnicity, education level, and estimated annual income)
    3. Caregiver Literacy Questionnaire – provide information regarding the daily literacy practices in your home
    4. Individual Child Literacy Questionnaire (Caregiver Form) – provide information regarding your child's literacy attitudes and behaviors, and preferences in play.
    5. Storybook Familiarity Rating Form – rate your child's familiarity with 8-10 children's storybooks

- Caregivers will complete three additional questionnaires in order to document the developmental status of their child–one on the child's general development, one on the words the child says (vocabulary assessment), and the other one on the child's current hearing status. It is estimated to take approximately 5-15 minutes to complete each questionnaire.

- Children will have their receptive language (what the child understands) and expressive language (what the child says) assessed by the researcher. This assessment is estimated

to require approximately 15-20 minutes to complete with children between the age of 18-24 months of age.

- On two different occasions convenient for you, the research will come to your house and videotape you and your child engaging in two different activities together. During the first home visit, you will be asked to identify a "favorite" activity that you and your child typically engage in together. The researcher will videotape you and your child engaging in this activity for approximately 3-5 minutes. During the second home visit, the researcher will videotape you and your child reading two different children's storybooks. Each of these home visits will take approximately 30-45 minutes depending on how long it takes your child to become comfortable with the camera and how long you are involved in the videotaped interactions. At the end of each session, you will be asked to complete a brief questionnaire about the interactions and whether or not these interactions were typical of similar interactions with your child. This questionnaire is expected to take less than 5 minutes to complete.

- As a part of your participation in the study, you will receive a copy of your videotaped interactions, two free children's storybooks, and a one page report summarizing your child's scores on the general developmental questionnaire, the vocabulary questionnaire, and the language assessment.

If you are interested in participating, please read and sign the attached consent form and return them in the envelope provided. I will be placing a box in your child's daycare classroom to collect your envelope. By returning the attached forms you are indicating your interest in the study and willingness to participate. However, you are not required to participate and may choose to withdraw at any time. It is possible that some consenting families will not be selected to participate in the study. In this case, you will be contacted in writing or by telephone. If you have any questions, please do not hesitate to call me at (919) 824-1263 or email me at vposton@email.unc.edu. You can also contact my dissertation advisor Dr. Elizabeth Crais at (919) 966-9458 or by email at bcrais@med.unc.edu. Thank you very much for your interest in this research.

Sincerely,

Vicky Poston Roy, M.A., CCC-SLP
Doctoral Student
Division of Speech and Hearing Sciences
University of North Carolina – Chapel Hill

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research participant you may contact, anonymously if you wish, the University of North Carolina's Biomedical Institutional Review Board at 919-966-1344 or biomed_irb@unc.edu.

University of North Carolina-Chapel Hill
Consent to Participate in a Research Study
Caregiver-Child Consent Form
Biomedical Form

IRB Study # AHS 2005-003
Consent Form Version Date: ___3-11-05_____

Title of Study: Caregivers and Children Reading Storybooks With Toy Props

Principal Investigator: Vicky Poston Roy, Doctoral Candidate
UNC-Chapel Hill Department: Division of Speech and Hearing Sciences, Department of Allied Health
UNC-Chapel Hill Phone number: 919-966-1007
Email Address: vicky-poston@med.unc.edu

Faculty Advisor: Elizabeth Crais, Ph.D.
Study Contact telephone number: 919-824-1262 Vicky Poston Roy
                                919-966-9458 Elizabeth Crais
Study Contact email: Vicky_poston@med.unc.edu

What are some general things you should know about research studies?
You are being asked to take part in a research study. To join the study is voluntary.
You may refuse to join, or you may withdraw your consent to be in the study, for any reason.

Research studies are designed to obtain new knowledge that may help other people in the future. You may not receive any direct benefit from being in the research study. There also may be risks to being in research studies.

Deciding not to be in the study or leaving the study before it is done will not affect your relationship with the researcher or the University of North Carolina-Chapel Hill.

Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. You should ask the researchers named above, or staff members who may assist them, any questions you have about this study at any time.

What is the purpose of this study?
The purpose of this research study is to examine how caregivers and their young children read storybooks with the addition of toy props.

You are being asked to be in the study because you have a child between the ages of 18 and 24 months of age who attends daycare at least 10 hours a week.

Are there any reasons you should not be in this study?
You should not be in this study if your child will not be between 18 and 24 months of age at the time of your participation in this study, your child attends a local daycare less than 10 hours per week, and/or your child has any known disorder including but not limited to any speech and/or language disorders, neurological disorders, hearing impairment, or any known syndrome (e.g., Down syndrome).

How many people will take part in this study?
If you decide to be in this study, you will be one of approximately 24 caregiver-child dyads participating in this research study.

How long will your part in this study last?
If you decide to be in this study, you will be asked to allow the primary investigator to visit you and your child in your home on two different occasions within a two-week period for approximately 30-45 minutes each visit and to complete a set of brief forms and questionnaires taking approximately 10-15 minutes to complete.

What will happen if you take part in the study?
As participants in this study, you and your child will do the following:

1. You will consent to allow your child's classroom daycare provider to fill out a questionnaire regarding your child's literacy attitudes and behaviors at daycare.
2. You will complete five brief questionnaires. One questionnaire will provide information to the researcher in order to contact you to schedule your home visits and to send you information related to your participation in this study. A second questionnaire will request some general information about you and your child including age, gender, ethnicity, education level, and estimated family income. The third and fourth questionnaires will gather information regarding the literacy practices in your home and your perceptions of your child's literacy attitudes and behaviors. The fifth questionnaire will ask you to rate your child's familiarity with a short list of children's storybook.
3. You will complete three additional questionnaires in order to document the developmental status of your child. One questionnaire assesses your child's overall development, the second questionnaire assesses your child's expressive vocabulary (the words your child can say), and the third questionnaire requests information regarding your child's hearing status.
4. The researcher will assess your child's receptive (what your child understands) and expressive (what your child can say) language skills by administering the Preschool Language Scale - 4th Edition (PLS-4), a standardized tool used for children X to Y age.
5. On two different occasions convenient to you, the researcher will come to your home and video and audio-tape you and your child engaging in a "favorite" activity and sharing two different storybooks together. Each of these home visits will take approximately 30-45 minutes. On both days, you will complete a short questionnaire about how typical the video-recorded interactions were for you and your child.

6. As a token of our appreciation, you will receive two children's storybooks, a copy of your videotaped interactions, and a brief summary of your child's scores on the developmental measures administered as a part of the study.

What are the possible benefits from being in this study?
Research is designed to benefit society by gaining new knowledge. There are no direct benefits to you or your child for participating in this study.

What are the possible risks or discomforts involved with being in this study?
There are no expected risks involved in participating in this study. However, if any should occur, you should report any problems to the Principal Investigator.

What if we learn about new findings or information during the study?
You will be given any new information gained during the course of the study that might affect your willingness to continue your participation.

How will your privacy be protected?
To protect your family's privacy, you and your child will be assigned an identification number which will be used to identify all of the information related to you and your child. All data collected as a part of this study will be stored in locked file cabinets and in password accessed computer files. Access to these files will be limited to the principal investigator, dissertation advisor, and research assistants. There will be a file stored in a separate location to link your name with your identification number. The videotapes we collect will also be stored in locked cabinets and will be identified with you and your child's identification number rather than your names. At the completion of the research, the videotapes will be securely stored in the Principal Investigator's locked archives.

No participant will be identified in any report or publication about this study. Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very unlikely, but if disclosure is ever required, UNC-Chapel Hill will take steps allowable by law to protect the privacy of personal information. In some cases, your information in this research study could be reviewed by representatives of the University, research sponsors, or government agencies for purposes such as quality control or safety.

What if you want to stop before your part in the study is complete?
You may choose not to be in the study or to stop being in the study at any time before it is over. This will not affect your child's enrollment at your local daycare provider. You will also not be offered or receive any special consideration if you take part in this research. The investigators also have the right to stop your participation at any time. This could be because you were unable to complete some part of the study or information gained from the study indicates you are no longer eligible to participate.

Will you receive anything for being in this study?
You will receive a copy of your video-recorded interactions, two children's storybooks and a brief summary of your child's scores on the developmental measures collected as a part of the study.

Will it cost you anything to be in this study?
It will not cost you anything to participate in this study.

Who is sponsoring this study?
The researcher has applied for a University Dissertation Completion Fellowship and the Smith Graduate Research Grant funded through the University of North Carolina's Graduate School to request funding for research related expenses. The status of these awards is pending.

What if you have questions about this study?
You have the right to ask, and have answered, any questions you may have about this research. If you have questions, or if a research-related injury occurs, you should contact the researchers listed on the first page of this form.

What if you have questions about your rights as a research subject?
All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject you may contact, anonymously if you wish, the

Biomedical Institutional Review Board at 919-966-1344 or biomed_irb@unc.edu.
- -

Subject's Agreement:

I have read the information provided above. I have asked all the questions I have at this time. I voluntarily agree to participate in this research study.

_____   _____
Signature of Research Subject   Date

_____
Printed Name of Research Subject

_____   _____
Signature of Person Obtaining Consent   Date

_____
Printed Name of Person Obtaining Consent

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Contact Information Form

All data collected during this study will be identified using a participant number rather than by name. The information form will be used in order to contact you while you are a participant in the study to set up your home visits and provide you with any additional information required in the study. The information you provide will also be used to provide you with a summary of your child's assessment results. This information will be kept in a locked office separate from the data collected during the study.
.

Caregiver Name: _____

Relationship to Child: _____

Child's Name:_____ Child's Date of Birth _____

Child's Gender: M   F

Contact Telephone Number:_____

Contact Address: _____

City, State, and Zip: _____

Email:_____

Child's Daycare Provider: _____

Individual Child Literacy Questionnaire

Please use the following scale to rate the attitudes you and your child have towards reading.

	Strongly Agree	Disagree	Neutral	Agree	Strongly Disagree
1. My child enjoys reading books with adults.	1	2	3	4	5
2. I feel book reading is very important in helping my child learn to talk.	1	2	3	4	5
3. I enjoy reading books with my child.	1	2	3	4	5
4. It is difficult for my child to pay attention when we read books together.	1	2	3	4	5
5. I would rather use toys to play with my child instead of reading books.	1	2	3	4	5
6. My child prefers to play with toys instead of reading books.	1	2	3	4	5
7. I enjoyed reading books with my parents when I was a child.	1	2	3	4	5

The following section will ask you to describe how often you note your child engaging in a variety of reading related behaviors. Please rate your child based on what he/she is <u>currently</u> doing at home using the following scale.

	Almost Never	Rarely or Less than 2 times a month	Sometimes or A few times a month	Frequently or A few times a week	Often or Almost daily
1. My child brings books to me to read to him/her.	1	2	3	4	5
2. My child chooses a favorite book(s) to read repeatedly	1	2	3	4	5
3. My child looks through books independently (e.g., flips through the pages, looks at the pictures).	1	2	3	4	5
4. My child pretends to "read" books either independently or while we read together (e.g., points at the words, vocalizes or says single words).	1	2	3	4	5
5. My child listens quietly to the story while I read to him/her.	1	2	3	4	5
6. My child independently labels/names pictures in the book while we read together.	1	2	3	4	5
7. My child labels/names pictures in books after I do.	1	2	3	4	5
8. My child asks questions and makes comments while we read books together.	1	2	3	4	5
9. My child points to pictures in the book independently or in response to questions.	1	2	3	4	5
10. My child points to words in the book independently or in response to questions.	1	2	3	4	5
11. My child moves around a lot during storybook reading.	1	2	3	4	5
12. My child likes to have toys or others objects to play with when we read books together.	1	2	3	4	5
13. My child and I play with the same toy/object for 5 minutes at a time or longer.	1	2	3	4	5

Caregiver Demographic Questionnaire

1. The person filling out this form is the child's
__ Mother   __ Step Mother   __ Step Father
__ Father   __ Foster Mother   __ Foster Father
__ Grandmother   __ Other *(Please describe)* _____

2. What is your child's date of birth? _____(dd/mm/yr)

3. What is your child's gender?   Male   Female

4. Please provide the age and sex of each sibling.
Age   Sex

____   ____

____   ____

____   ____

____   ____

____   ____

5. Who does your child live with? *(Check all that apply)*
__ Mother   __ Step Mother   __ Foster Mother
__ Father   __ Step Father   __ Foster Father
__ Grandmother   __ Brother(s)   ___ Other *(please describe)*
__ Grandfather   __ Sister(s)   _____

6. How many hours does your child spend in daycare each week?
__ less than 10 hours per week   __ between 20-30 hours per week
__ between 10-20 hours per week   __ more than 30 hours per week

7. How would you describe the area where you live?
__ Rural   __ Large City
__ Suburban   __ Small City

8. How would you describe your ethnic background?
__ White   __ Black/African-American   __ Hispanic/Latino
__ Asian   __ Native Hawaiian/Other Pacific American   __ Indian/Alaska Native
Other *(please specify)* _____

9. What age group are you in?
__ 20-24   __ 30-34   __ 40-44   __ 50 or older
__ 25-29   __ 35-39   ___ 45-49

10. What is the highest level of education the child's mother has completed?
__ Less than 12th grade   __ College Graduate
__ High School Graduate or GED   __ Graduate or Professional School
__ Some college

11. Does the child's mother work outside of the home?
__ No   __ Part-time   __ Full-time

If so, what is the mother's occupation: _____

12. What is the highest level of education the child's father has completed?
__ Less than 12th grade   __ College Graduate
__ High School Graduate or GED   __ Graduate or Professional School
__ Some college

13. Does the child's father work outside of the home?
__ No   __ Part-time   __ Full-time

If so, what is the father's occupation: _____

14. What is the annual family income?
__ Less than $24,999   __ $40,000 - $44,999   __ $60,000 - $64,999   __ $80,000 - $84,999
__ $25,000 - $29,999   __ $45,000 - $49,999   __ $65,000 - $69,999   __ $85,000 - $89,999
__ $30,000 - $34,999   __ $50,000 - $54,999   __ $70,000 - $74,999   __ $90,000 - $94,999
__ $35,000 - $39,999   __ $55,000 - $59,999   __ $75,000 - $79,999   __ $95,000 - $99,999
                                                                                 __ more than $100,000

Caregiver Literacy Questionnaire

1. How old was your child when you first began to read to him or her?
__ We have just started to   __ before 3 months   __ 6-12 months
   read with our child.   __ 3 and 6 months   __ 12-18 months

2. Approximately how many times <u>per week</u> do you have the opportunity to read with your child?
__ Rarely   __ 3-5 times per week   __ more than 10 times per week
__ 1-2 times per week   __ 6-10 times per week

3. Approximately how many different books do you read with your child <u>in a week</u>?
__ None   __ 3-5 different books   __ more than 10 different books per week
__ 1-2 different books   __ 6-10 different

4. How many times <u>per week</u> does another caregiver have the opportunity to read to your child?
__ Rarely   __ 3-5 times per week   __ more than 10 times per week
__ 1-2 times per week   __ 6-10 times per week

5. How often are other children taking part when you are reading storybooks with your child?
__ Never   __ Sometimes   __ Always
__ Rarely   __ Frequently

6. Approximately how many children's books does your child have at home?
__ Less than 3   __ 16-30   __ More than 50 children's books
__ 5-15   __ 30-50

7. When you do have the opportunity to read to your child, approximately how long does a "typical " reading session last?
__ Less than 1 minute   __ 6-10 minutes   __ more than 15 minutes
__ 3-5 minutes   __ 11-15 minutes

8. Which of the following are found in your home? (Check all that apply)
__ Comic books   __ Magazines for younger children (age 2-5)
__ Alphabet books   __ Instructional videos for children
__ Picture books without words   __ Books for adults
__ Books with single words on each page   __ Cookbooks
__ Number books (books about numbers/counting) __ Dictionary or Encyclopedias
__ Interactive Books   __ Telephone books
   (books with flip-flaps, things to push/pull, etc) __ Daily or weekly newspapers
__ Books with several sentences per page

9. How often does your child have the opportunity to visit the public library?
__ Rarely   __ 2-4 times per month   __ more than 10 times per month
__ 1 time per month   __ 5-10 times per month

10. How often does your child have the opportunity to visit a local bookstore?
__ Rarely   __ 2-4 times per month   __ more than 10 times per month
__ 1 time per month   __ 5-10 times per month

Storybook Familiarity Rating Form (Caregiver Form)

Please rate your child's familiarity with the following book titles using the rating scale provided.

Rating	Description
1	**Very Unfamiliar** – Child has never seen or read this book
2	**Unfamiliar** – Child has seen this book but has not read this book more than 1 time. Child has also not read any books with the same main character.
3	**Somewhat Familiar** – Child has seen this book before and/or is familiar with the main character. Child has read several other books with the same main character but has not read this book more than 3 times.
4	**Familiar** – Child has read this book approximately 5-10 times and/or has read other books with the same main character on many occasions.
5	**Very familiar** – Child has read this book at least 10 times.

Storybook Title and Author	Very Unfamiliar	Unfamiliar	Somewhat Familiar	Familiar	Very familiar
1. Wide Awake by Clara Vulliamy	1	2	3	4	5
2. When Poppy and Max Grow up by Lindsey Gardiner	1	2	3	4	5
3. Pepo and Lolo are Friends by Ana Martin Larranaga	1	2	3	4	5
4. Good Night, Baby by Clara Vulliamy	1	2	3	4	5
5. Here come Poppy and Max by Lindsey Gardiner	1	2	3	4	5
6. Pepo and Lolo and the Red Apple by Ana Martin Larranaga	1	2	3	4	5
7. Baby Loves by Michael Lawrence	1	2	3	4	5
8. Bunbun at bedtime by Sharon Pierce McCullough	1	2	3	4	5

Child Hearing Status Form

Child ID #_____   Date_____

1. Do you have any concerns regarding your child's ability to hear?   Yes __ No __

2. Does your child experience frequent ear infections?   Yes__ No__

3. If yes, approximately how many ear infections would you estimate in the last year?
    __ less than 5
    __ between 5-10
    __ more than 10

4. Has your child experienced any ear infection(s) in the past three months?
    Yes __ No __

5. If yes, please list how many and approximate date(s) of occurrence.

6. How did you typically become aware of the ear infection (e.g., routine doctor visit, child exhibited symptoms/symptomatic behavior)?

7. How was the infection treated?

8. How was the ear infection resolved (e.g., recovery with full/partial course of medication, reoccurrence, spontaneous recovery)?

9.   Have you noticed any changes in your child's hearing as a result of the ear infections?

Caregiver-Child Activity Questionnaire

Please list your child's current 3 most favorite toys or play activities.
1.
2.
3.

If different from your answer above, please list 3 activities or toys that you and your child currently enjoy playing together.
1.
2.
3.

Please list 3 toys or activities that you feel are difficult to get your child to engage with at this time.
1.
2.
3.

Approximately how long will your child engage in the following activities independently or with a caregiver without redirection or prompting.
a) Block Play (e.g., stacking, sorting, building)
__ less than 1 min __ 1-2 min __2-5 min __ more than 5 min __ does not engage in this activity

b) Outside play (e.g., swings, sliding, running)
__ less than 1 min __ 1-2 min __2-5 min __ more than 5 min __ does not engage in this activity

c) Physical play (e.g., catch, ball rolling, rough and tumble play)
__ less than 1 min __ 1-2 min __2-5 min __ more than 5 min __ does not engage in this activity

d) Toy play (e.g. trucks, cars, trains)
__ less than 1 min __ 1-2 min __2-5 min __ more than 5 min __ does not engage in this activity

e) Pretend play (e.g., dolls, action figures, cooking set, play food)
__ less than 1 min __ 1-2 min __2-5 min __ more than 5 min __ does not engage in this activity

f) Storybook reading
__ less than 1 min __ 1-2 min __2-5 min __ more than 5 min __ does not engage in this activity

Post "Favorite" Activity Rating Form

Please compare you and your child's behavior during today's "favorite" activity interaction to your observations of your child during similar play situations. Mark the response that comes closest to your typical interactions.

1. How would you rate the "favorite" activity interaction between you and your child?
   ▫ Very typical of our regular play interactions
   ▫ Somewhat typical of our regular play interactions
   ▫ Very different from our regular play interactions.
   If different, please indicate how the interaction differed. _____
   _____

2. How would you rate your child's interest and engagement during the "favorite" activity?
   ▫ very interested and engaged (greater than usual)
   ▫ typical interest and engagement
   ▫ less interested and engaged than usual
   ▫ not interested and engaged at all
   ▫ initially uninterested and/or engaged but engaged with adult prompting

3. How would you rate your child's active involvement during the "favorite" activity?
   ▫ more active than usual (e.g., talked/vocalized more, participated in the interaction more)
   ▫ typical of our regular play interactions
   ▫ less active than usual (e.g., did not talk/vocalize as much, did not participate in the activity as much)
   If less active, please describe. _____

4. How would you rate your child's overall level of alertness today?
   ▫ very alert (greater than usual)
   ▫ typical alertness
   ▫ less than usual/sleepy
   If less alert than usual, please describe. _____

Post-Storybook Interaction Rating Form

Please compare your child's behavior during today's storybook reading session to your observations of your child during similar storybook situations. Mark the response that comes closest to your regular interactions.

1. How would you rate the storybook interaction with the <u>first</u> book?
   □ Very typical of our regular book reading interactions
   □ Somewhat typical of our regular book reading interactions
   □ Very different from our regular book reading interactions Please describe _____
   _____

2. How would you rate your child's interest and engagement during the <u>first</u> storybook reading?
   □ very interested and engaged (greater than usual)
   □ typical interest and engagement
   □ less interested and engaged than usual
   □ not interested and engaged at all
   □ initially uninterested and/or engaged but engaged with adult prompting

3. How would you rate your child's active involvement with the <u>first</u> storybook?
   □ more active than usual (e.g., talked/vocalized more, pointed to more pictures, turned more pages, etc)
   □ typical of most storybook interactions
   □ less active than usual (e.g., did not talk/vocalize as much, did not point to as many pictures, did not turn the pages as much) Please describe _____

4. How would you rate the storybook interaction with the <u>second</u> book?
   □ Very typical of our regular book reading interactions
   □ Somewhat typical of our regular book reading interactions
   □ Very different from our regular book reading interactions. Please Describe _____
   _____

5. How would you rate your child's interest and engagement during the <u>second</u> storybook reading?
   □ very interested and engaged (greater than usual)
   □ typical interest and engagement
   □ less interested and engaged than usual
   □ not interested and engaged at all
   □ initially uninterested and/or engaged but engaged with adult prompting

6. How would you rate your child's active involvement with the <u>second</u> storybook?
   □ more active than usual (e.g., talked/vocalized more, pointed to more pictures, turned more pages, etc)
   □ typical of most storybook interactions
   □   less active than usual (e.g., did not talk/vocalize as much, did not point to as many pictures, did not turn the pages as much).   Please Describe _____

7. How would you rate your child's overall level of alertness today?
   □ very alert (greater than usual)
   □ typical alertness
   □ less than usual/sleepy

8. How would you rate your child's interest and engagement with the <u>toys</u> during the storybook reading?
   □ very interested and engaged (greater than usual)
   □ typical interest and engagement
   □ less interested and engaged than usual

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Child Engagement
Subjective Interval Rating Scale

To receive a Score = 1
Child refuses to participate. Child is not engaged with the book/toys/activity or the caregiver. Child can only receive a score of 1 if NO engagement behaviors are noted at all. Please see behavioral indicators of engagement below. If child demonstrates an overt disengagement behavior such as crying or using great effort to leave the interaction – Must score as a 1-2. If child demonstrates ANY active engagement in the interaction can NOT score as 1-2. To receive a score of 1 - the child must be attempting to LEAVE the interaction. If the child is verbally indicating that they do not want to do something but is staying with the caregiver...this is a 2. The only way to get a score of 1 (which is indicative of absolutely NO engagement) should be if the child is crying to the exclusion of the interaction (not occasionally stopping to check in with the interaction) or is attempting to leave the interaction (regardless if the child is successful b/c the caregiver is preventing them from leaving).

To receive a Score = 2
Child demonstrates more disengagement behaviors than engagement behaviors. Child is reluctant to participate but does so at least briefly. Child demonstrates overt disengagement but at least one behavioral indicator that the child was engaged for a brief period of time. Disengagement should represent the majority of the segment.

To receive a Score = 3
Equal number of engagement and disengagement behaviors. With the toys, child is not necessarily engaging with the caregiver but is self-directed following own agenda with the toys. (Passive engagement plus disengagement, mostly passive engagement plus one overt sign of disengagement, no active engagement at all and almost ½ disengaged)

To receive a Score = 4
Child is engaged for the most part (demonstrates more engagement behaviors listed below than disengagement behaviors) but demonstrates a few behaviors that indicate fleeting disengagement. Child is engaged in the interaction but is not actively participating. The child is sitting, listening, and generally paying attention. The child will respond to the caregiver's questions and/or comments but is not initiating any comments or questions. If the child is passively observing but does not demonstrate any ACTIVE participation, score segment as a 4. If child is engaged for the majority of the interaction (only 1 instance of subtle disengagement) then must score as 4 or 5. If child demonstrates any OVERT disengagement, can NOT score as 4-5. With the toys, the child is mostly engaging in a connected interaction with the caregiver but may demonstrate some brief disconnection or own agenda behaviors. However, these are brief and do not represent the majority of the segment.

To receive a Score = 5
Child is completely engaged in the storybook interaction. Child is ACTIVELY participating with the book and/or toys AS WELL AS the caregiver. The child demonstrates appropriate eye contact (either with the book, toy or caregiver), makes comments about the book or toys, demonstrates positive affect, and seems to be overall engaged with the interaction. Child can ONLY receive a rating of 5 if NO disengagement behaviors are noted at all. When reading the book with props - the child can still receive a score of 5 if they are focusing on the toys and shifting back to the book as long as there is at least 1 ACTIVE engagement behavior and no other disengagement behaviors. Attention to the toys is not coded as disengagement unless it is CLEARLY to the exclusion of the caregiver.

Possible Engagement Behaviors: directing eye gaze toward book, pointing to pages, making book/toy related comments (e.g., labeling toy or picture), holding book appropriately, turning pages, sitting within close proximity of caregiver, facing direction of caregiver, appropriately responding to caregiver's comments/requests, demonstrates positive affect, physically reorienting towards the caregiver.

Possible Disengagement Behaviors: Refusing to participate in the interaction, turning away from the caregiver, making off topic or irrelevant comments, not responding to the caregiver's request for information or action, crying, fidgeting with clothing or other items, gazing away from the book/toys/activity, physically orienting away from the caregiver.

*Note if child shifts gaze briefly to notice something the researcher is doing, this is not considered a disengagement behavior. However, if the child persists in this action for longer than 3 seconds, count as disengagement.
Modified from Kaderavek and Sulzby (1998a)

Book Transcripts

Pepo and Lolo and the Red Apple. By Ana Martin Larranaga

Pepo and Lolo go for a walk.
They see a red apple.
Lolo jumps to reach the apple, but it is too high.
Pepo tries to reach the apple, but it is too high.
They have a plan.
1,2,3, hop!
The apple swings.
The apple falls. Ouch!
What a yummy apple!

Pepo and Lolo are Friends. By Ana Martin Larranaga

Pepo and Lolo are friends.
They both like to run. But Pepo runs faster.
They both like to jump, but Lolo jumps higher.
They sing together.
They play together.
Oops!
Sometimes they get made at each other.
Because…
Pepo and Lolo are friends.
And they always will be.

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