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Examining the Relationship between Maternal and Child Behaviors on Literacy Activities and Resources Employed in the Home

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To the Graduate Council:

I am submitting herewith a thesis written by Eliza Gabrielle Allen entitled "Examining the Relationship between Maternal and Child Behaviors on Literacy Activities and Resources Employed in the Home." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Child and Family Studies.

Rena Hallam, Major Professor

We have read this thesis and recommend its acceptance:

Sandra Twardosz, Vey M. Nordquist

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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EXAMINING THE RELATIONSHIP BETWEEN
MATERNAL AND CHILD BEHAVIORS ON LITERACY
ACTIVITIES AND RESOURCES EMPLOYED IN THE HOME

A Thesis
Presented for the
Master of Science Degree
The University of Tennessee, Knoxville

Eliza Gabrielle Allen
December 2007

Dedication

This thesis project is dedicated to my grandmother, Mrs. Daisy Scott, and my mother, Mrs. Constance Kennedy, two hardworking women who have always believed in me and encouraged me to pursue my dreams and education.

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Abstract

The primary purpose of this study was to investigate the role of maternal (i.e., age, education, stress, depression, and self-efficacy) and toddler characteristics (i.e., temperament, dysregulation, and competence) on literacy activities and resources employed in the home. The current study was a secondary data analysis of a larger study assessing the role of infant/toddler, care, and family characteristics on preschoolers' school readiness. Ninety-five mothers of toddlers (28 – 31 months old) completed mailed questionnaires that assessed maternal depression, parenting stress, maternal self-efficacy, toddler self-regulation and temperament, and literacy activities. Instruments completed by mothers included the Center of Epidemiological Studies Depression Scale (CES-D), Parental Stress Index – Short Form (PSI/SF), Infant and Toddler Social and Emotional Assessment (ITSEA), Self-Efficacy Parenting Task Index-Toddler Scale (SEPTI-TS), and questionnaires assessing interaction, literacy, and creativity activities. In a follow-up phone interview, mothers completed the Early Childhood Behavior Questionnaire (ECBQ) and provided demographic information. Bivariate correlations and hierarchical regression revealed gender differences in the factors related to literacy activities and resources for male and female toddlers. For boys, elevated levels of physiological dysregulation significantly predicted activities and resources. For girls, mothers' age and self-efficacy, significantly predicted the amount of book reading materials and reading frequency to female toddlers compared to mothers of male toddlers.

Table of Contents

Chapter 1: Introduction	1
Chapter 2: Review of Literature	4
Theoretical Framework	4
Ecological Perspective	4
Early Literacy Development.....	8
Oral Language.....	8
Print Motivation	11
Phonological Processing Skills	14
Letter Knowledge.....	16
Home Environmental Context	18
Maternal Age	18
Maternal Education	19
Maternal Mental Health.....	20
Child Characteristics	28
Temperament	28
Self-regulation	32
Summary	35
Chapter 3: Methods.....	36
Participants	36
Procedure.....	36
Depression Measure	38
Maternal Stress Measure	39
Self-efficacy Measure	39
Home Environment Measure	40
Demographics Measure.....	41
Toddler Temperament Measure.....	42
Chapter 4: Results.....	43
Descriptive Statistics.....	43
Independent and Dependent Variable Frequencies.....	44
Correlation Analysis	46
Hierarchical Regression Analysis.....	53
Chapter 5: Discussion	58
Limitations of the Study.....	62
Contributions to the Body of Literature.....	64
Future Directions	65
References	67
Vita.....	78

LIST OF TABLES

Table 1: Descriptive Statistics for Independent Variables.....	45
Table 2: Correlations of Independent Variables with Dependent Variable for All Participants.....	48
Table 3: Correlations between Literacy Activities, Maternal Characteristics, and Child Characteristics for Boys.....	50
Table 4: Correlations between Literacy Activities, Maternal Characteristics, and Child Characteristics for Girls.....	51
Table 5: Hierarchical Regression Outcome for Boys (N = 49).....	54
Table 6: Hierarchical Regression Outcome for Girls (N = 46).....	55

List of Figures

Figure 1. Mediation model: Hierarchical regression analysis examining the mediational role of child characteristics on the amount of reading materials and frequency of daily reading in the home of toddlers.	56
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Chapter 1: Introduction

Over the past few decades, literacy has been a major focus of educators, researchers, and policymakers. Research has shown that children who do not master reading by the end of third grade continue to do poorly throughout their school careers (Education Commission of the States, 2002). A growing body of literature indicates that literacy development begins prior to traditional formal reading instruction. Therefore, opportunities that support early literacy development during children's early years are fundamental to their acquisition of literacy. Most of the research conducted in the area of early literacy focuses on preschoolers; little attention has been paid to the toddler age group.

The idea that children acquire reading and writing skills through early interactions with their environment is known as emergent literacy. According to Whitehurst and Lonigan (1998), emergent literacy consists of the skills, knowledge, and attitudes that influence young readers' later reading and writing abilities. The components of emergent literacy are language, linguistic awareness, conventions of print, knowledge of letters, phoneme-grapheme correspondence, emergent reading, emergent writing, and print motivation (Whitehurst & Lonigan, 1998). Therefore, children should be exposed to different literacy experiences, activities, and reading and writing materials before they attend school.

Ecological perspectives on early literacy highlight the need to examine how environmental exposure and individual characteristics relate to young children's early literacy development. In exploring the environmental context, the home environment is the

most relevant context. The home environment provides children with their first opportunities to develop language and literacy skills. Family members or caregivers in the home contribute to children's literacy growth by reading stories, exposing children to environmental print, and providing language rich social interaction. Despite parents' efforts to provide their children with various experiences in the home that prepares them for formal schooling, individual differences in parents' backgrounds and mental health status may account for disparities in the opportunities that children are provided. These parental factors may impact literacy if they hinder positive interactions between parent and child, such as parent-child book reading.

During the reading experience, parent and child participate in verbal exchanges that may contribute to children's literacy skills (Powell, 2004). In addition, a parent's mental health status might contribute to differences in interactions between the parent and child. For example, mothers who experience symptoms of depression may be less responsive and more hostile towards their children (Bigatti, Cronan, and Anaya, 2001). In addition to maternal characteristics, individual differences in toddlers' characteristics may account for disparities in children's preparation for formal schooling. Toddler characteristics such as engagement, verbal interaction, compliant behavior, motivation, and cognition may influence their language and literacy acquisition. Positive interactions are therefore key to children's acquisition of literacy and child and parental characteristics may impact the quality of these interactions in ways that influence later outcomes (Wasik and Herrmann, 2004).

The purpose of the present study was to investigate the role of maternal (i.e., age, education, stress, depression, and self-efficacy) and toddler characteristics (i.e., temperament, dysregulation, and competence) on literacy activities and resources in the home. More specifically, the following questions were addressed: (1) Are maternal characteristics associated with the number of reading materials and frequency of daily reading in toddlers' home environments? (2) Are child characteristics associated with the number of reading materials and frequency of daily reading activities in toddlers' home environments? (3) Do child characteristics predict the number of reading materials and frequency of daily reading activities in toddlers' home environments after controlling for maternal characteristics?

Chapter 2: Review of Literature

Theoretical Framework

During the early childhood period, children acquire the necessary foundational skills for literacy development. The acquisition of early literacy skills is impacted by the interplay between individual child characteristics and the contexts in which the child interacts. Bioecological theory provides a framework from which to study and understand early literacy development.

Ecological Perspective

Bronfenbrenner's framework of bioecology provides a framework for understanding how individuals are impacted by the environment. The theory asserts that an interplay exists between the individual and the environment. The environment not only includes those closest to the child, but also environmental contexts that surround the child. In his theory of ecology, Bronfenbrenner originally proposed four systems: Microsystem, mesosystem, macrosystem, and exosystem (Bronfenbrenner, 1986). In 1986, Bronfenbrenner added a fifth system to his model, the chronosystem. Bronfenbrenner's model of bioecology was revised again in 1994 when Bronfenbrenner and Ceci (1994) introduced genetics as a co-contributor to children's development. A discussion of Bronfenbrenner's four systems and three propositions follows in order to illustrate how they might influence young children's literacy exposure and early literacy development.

The first component, the microsystem, encompasses the immediate environment of the individual. This sub-system includes the environmental contexts such as the family, the school, church, and peers (Bronfenbrenner, 1979). Of all of the developing sub-systems,

the microsystem has the strongest influence on children because they come into contact with the features of the microsystem before any of the other sub-systems. Bronfenbrenner refers to interactions between individuals in the immediate environment as “proximal processes.” In this first proposition of his bioecological model, Bronfenbrenner asserts that development evolves through reciprocal interactions between the individual and other persons and objects in the immediate environment (Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Evans, 2000). In addition, proximal processes are the means by which genetic potentials are actualized. Over time, increases in proximal processes occur and thereby enhance genetic potentials for developmental competence (Bronfenbrenner & Ceci, 1994). For young children, the home is the primary microsystem in which interactions with persons take place. In the home environment, young children interact with persons in their immediate environment, enhancing the opportunity for genetic potentials to become actualized. Through these interactions, children gain knowledge and skills that can aid in social-emotional, cognitive, and physical development. When applied to literacy, proximal processes that increase home based positive interactions between children and parents may often promote the acquisition of early literacy development.

The second subsystem in Bronfenbrenner’s ecological theory is the mesosystem. Bronfenbrenner proposed that microsystems often interact in ways that positively influence young children. Bronfenbrenner described this component as a “system of microsystems” (Bronfenbrenner, 1979, p. 25). Sub-systems interact with one another: some sub-systems such as the home can directly and indirectly influence developmental outcomes such as academic achievement at school. Conversely, parents of young toddlers who do not value literacy in the home, may have a negative impact on children’s motivation to learn to read

and write in preschool and kindergarten settings. Bronfenbrenner's second proposition helps explain this kind of outcome. He proposed a joint effort by the developing person, the environment, and social development over time that controls the form, content, and direction of proximal processes (Bronfenbrenner & Evans, 2000).

The third sub-system, the exosystem, consists of settings in which the child is not actively involved. However, events occurring within these settings can affect the child (Bronfenbrenner, 1979). Exosystems that may affect children's development include mass media, friends, and social services. The exosystem can therefore affect children's literacy development through events and practices that affect interactions in the home. For example, if the local school board decides to offer early literacy workshops for parents, this might affect future parenting practices and how parents employ literacy instruction in the home.

The fourth sub-system, the macrosystem, consists of the broader cultural values (i.e., attitudes and ideologies) in which the child is developing. Bronfenbrenner posits that environments that extend beyond the immediate environment also affect the developing child. For example, in today's society many parents are aware that reading is one of the primary foci of public education systems. Knowledge of present day education trends may account in part for some parents trying to expose their children to reading materials at an early age.

The final subsystem in Bronfenbrenner's bioecological theory of human development is the chronosystem. In this sub-system, Bronfenbrenner acknowledges the importance of historical changes and life transitions, both normative and nonnormative, that can affect children's development. For example, the timing at which a mother

experiences depressive symptoms may have a stronger or weaker effect on the development of her child. However, other life events such as the time at which book reading begins or a family move can impact young children's development.

In his third proposition, Bronfenbrenner postulates that it is the interplay of sub-systems (i.e., the developing person, immediate environment, and the developmental outcome itself) which promotes development. Bronfenbrenner proposes that all sub-systems intermingle in ways that promote optimal development of the child. Therefore, in order for a child to have optimal language and literacy development, an interplay between the three sub-systems must work together in order for proximal processes to work effectively.

Bronfenbrenner's bioecological theory reinforces the idea that both the environment and genetics control children's developmental outcomes. Bronfenbrenner's theory asserts that interactions are relevant to development. Hence, the primary sub-system that was the focus of the present study was the microsystem of the home and the interactions that take place in this context that relate to children's development. Bronfenbrenner's propositions may be applied to literacy development since interactions through book reading, motivation, and modeling are key to literacy acquisition. In conceptualizing literacy acquisition for toddlers, Bronfenbrenner's theory suggests that parental guidance and teaching and children's characteristics (i.e., temperament and self regulatory abilities) may interplay to influence literacy development within the cultural context of the home.

Early Literacy Development

A growing body of research documents the impact of early experiences on literacy development (Whitehurst & Lonigan, 1998; Senechal & LeFevre, 2001). In 1998, Whitehurst and Lonigan proposed that emergent literacy consists of two processes: outside-in and inside-out skills. Outside-in skills consist of skills necessary to understand the context of text (i.e., oral language and print motivation). Inside-out skills consist of skills needed to translate sound and print units (i.e., phonological processing and letter knowledge). A discussion of these four types of skills is presented below.

Oral Language

Reading is a skill that is critical for children's achievement in most areas of learning. In order for young children to be competent readers, they need a strong oral language foundation because reading is built on oral language. Oral language, especially well developed, meaningful vocabulary, allows a child to decode unfamiliar words and aids in reading comprehension (Lonigan, 2004).

Reading requires children to convert small units of language to meaningful language. Research indicates that a large oral vocabulary greatly impacts children's ability to read. A large vocabulary eventually helps young children to identify words efficiently. This knowledge also is important in helping children to break down single units of words (i.e., graphemes). A large vocabulary is important for toddlers because it helps acquire pre-reading skills during the preschool and kindergarten years. Since extensive vocabularies support reading and the development of pre-reading skills in preschool and kindergarten, finding ways to support the beginnings of this development in toddlers is very important.

Lonigan (2004) identified three factors that enhance children's oral language: 1) provision of a literacy rich environment that allows children to interact with books, visit the library, and interact with reading and writing materials, 2) opportunities for children to interact with adults in ways that promote advanced language skills around both narrative and expository text, and 3) shared book reading experiences between an adult and child that provide the opportunities to engage in verbal exchanges.

Research in the field of early literacy provides empirical support that enhancing children's outside-in skills may improve toddlers oral language skills. For example, in a recent study Raikes et al. (2006) explored the relationship between mother-child book reading in 2,581 low-income families and children's outcomes during the first three years of life. Reports of maternal frequency of storybook reading and the number of children's books in the home were related to children's language and cognitive capabilities at 14, 24, and 36 months. Children's language and cognitive capacity were assessed using the MacArthur Communicative Development Inventory Short Form (MCDI-SF), Peabody Picture Vocabulary Test-III (PPVT-III), and Bayley Mental Scales of Infant Development. The findings indicated that daily readings at 24 and 36 months of age were positively associated with children's vocabulary acquisition. Storybook reading between parents and children appeared to increase oral language skills, possibly due to the fact that the time spent reading allowed children to hear and learn the meanings of many different words during the reading experiences. Storybook reading also may have permitted some forms of shared complex language which increase variations in talk between parent-child dyads during the reading experience. Complex verbal exchanges between parent and child can

also take place during dinner conversations, storybook reading, and other routines that occur throughout a toddler's and preschoolers' day.

There is other empirical evidence that parent-child interaction is a factor in children's early literacy development. For example, Dodici, Draper, and Peterson (2003), measured the association between parent-child interaction and 14, 24, and 36 month vocabulary, prereading, and phonemic awareness skills in a low-income household sample. More specifically, investigators examined the emotional tone, parental talk, engagement, and parental guidance and its association with infant/toddler language. Findings revealed that parent-toddler interactions predicted receptive vocabulary. Findings also corroborated those of Roberts, Jurgens, and Burchinal (2005) who found that a global measure of the home environment assessed by the Home Observation for Measurement of the Environment Inventory (HOME) (i.e., reading frequency, enjoyment of reading, book reading strategies, maternal sensitivity) contributed more to 72 African American children's (ages 3 to 5 years) language and literacy development than maternal reports of home literacy practices (i.e., reading frequency and child's interest in reading). More specifically, the nature of the home environment contributed to young children's receptive vocabulary and early literacy skills such as alphabet, conventions of print, and meaning construction from print.

Taken together, Dodici et al. (2003) and Raikes et al. (2006) illustrate the value of literacy rich environments that support toddlers' development of oral language skills and suggest that children's oral language development is promoted when there are (1) opportunities to interact with literacy materials, (2) adult interactions that facilitate talk around text, and (3) quality adult interactions around materials and text.

Print Motivation

The second key component to toddlers' developing emergent literacy skills is print motivation. Lonigan (1998) described print motivation as children's interests in print-related materials. When young children participate in shared reading experiences with parents and interact in literacy-related activities that involve print, their motivation to interact with print for pleasure purposes often increases. When this occurs, children's developing emergent literacy skills can increase remarkably because their internal desire to interact with print is enhanced. The internal drive to interact with print becomes even more important as children grow older and have fewer interactions with parents around literacy related activities (i.e., shared book reading, visiting the library, and interacting with literacy materials). Research indicates that literacy-related activities are highly predictive of children's later emergent literacy skills (Senechal, LeFevre, Thomas, & Daley, 1998; Evans, Shaw, & Bell, 2000; Haney & Hill, 2004).

Shared book reading is one approach that parents may use to increase toddlers' interest in print. Shared reading increases children's interest in two ways: (1) by introducing them to new information and (2) by exposing them to print through maternal labeling and talk (Lonigan, 2004). These experiences are particularly important for toddlers' emerging literacy skills. As indicated previously, research on toddlers' literacy activities, particularly shared book reading is scarce. Therefore, the impact of book reading between preschoolers and parents on toddlers' literacy development is highlighted next..

In addition to contributing to children's oral language skills, book reading also enhances children's print skills. In a meta-analysis conducted by Bus, van Ijzendoorn, and Pellegrini (1995) of 33 studies that examined how parent-preschooler storybook reading

influenced literacy and language outcomes, it was found that shared reading related to preschoolers literacy and language outcomes.

Reese and Cox (1999) also found that book reading style related to children's outcomes. These investigators assessed how three different styles of book reading affected 48 four-year-old preschoolers' emergent literacy skills. Preschoolers were pre-tested using the Peabody Picture Vocabulary Test (PPVT), Concepts About Print Test, and the Wide Range Assessment Test and then randomly assigned to one of three book reading styles, describer style, comprehender style, and performance-oriented style. The *describer style* placed emphasis on labels and pictures and required the reader to make five comments and five questions during the readings. The *comprehender style* emphasized predictions and inferences about the storyline and characters by having the reader present five questions and five comments throughout the storyline. During the *performance-oriented* reading sessions, the story was introduced using five comments and ended when the reader then requested five inferences from the child. Post-testing that followed a six week intervention period revealed that children who participated in the describer style sessions made greater gains in vocabulary and print skills than children who participated in the comprehender or performance-oriented sessions. Although storybook reading tends to increase children's oral language skills, findings from Reese and Cox (1999) suggest that book reading experiences may also enhance children's print skills when adults focus on objects and symbols in the story.

An additional factor in children's acquisition of print motivation is adult literacy modeling during the shared reading experience. For example, Horner (2004), investigated how 127 preschoolers who observed a model ask questions, then displayed questions,

attention to print, and knowledge of alphabet that was similar to the model's behavior. Horner (2004) found that children who observed print modeling during a shared book reading experience asked more print-related questions during a reading experience compared to participants in a picture questions, no-questions, and no videotape groups. Despite Horner's (2004) and Reese and Cox's (1999) different methodological approaches to investigating the impact of shared reading on children's print outcomes, both sets of investigations found that adult modeling and attention to print influenced children's acquisition of printing skills.

Exposure to literacy-related activities, as stated previously, are known to increase young children's interest in print. Additionally, reported reading frequency is significantly associated with children's print outcomes. Crain-Thoreson and Dale (1992) found that shared reading experiences for highly precocious talkers at age 24 months significantly predicted participants language outcome measured by the Picture Vocabulary Test-- Revised (PPVT-R) at age 2 ½ and 4 ½. In addition, shared reading predicted their knowledge of print at 4 ½ years.

In conjunction with shared book reading, literacy rich environments that expose children to print increase children's print motivation. Literacy activities such as (a) visiting the library, (b) singing songs, (c) telling stories, (d) attending cultural events, and (e) conversing during meals can enhance children's literacy motivation. According to Lonigan (2004), children who are interested in literacy are more likely to engage in reading experiences, notice print in the environment, and read by themselves for pleasure when opportunities are available. Purcell-Gates (1996) found that when print was used more in the homes of 20 low-income families, children interacted more frequently around print

with their mothers. Children also displayed greater knowledge of written language and concepts of print compared to families that used print less frequently. These findings suggest that children's reading proficiency and print motivation are related to early experiences with adults during book reading that (1) occurs frequently, (2) focuses on labels and pictures, and (3) involves print related questions. In addition, children need literacy rich environments which allow them to interact with literacy in various ways.

Phonological Processing Skills

The third major component of young children's emergent literacy skills is phonological processing. Phonological processing includes the ability to manipulate sounds into text. The ability to detect or distinguish units of sound is primarily developed during the preschool period. However, certain activities in a toddler's environment may help promote phonological sensitivity during the preschool years and beyond. According to Schickedanz (1999), toddlers need specific experiences to help them become phonologically aware of different aspects of language.

Two aspects of early phonological awareness that promote later reading skills are rhyme and alliteration. Rhyme and alliteration help young readers as they get older become highly sensitive to small units of sounds called *phonemes*. Children usually are exposed to these pre-phonological tasks when parents sing songs and read nursery rhymes for entertainment. As children are repeatedly exposed to songs and rhymes, they begin to develop sensitivity to sounds. During the toddler years, parents who read books with rhyme and alliteration expose children to important learning opportunities. Even parents of toddlers may purposefully point out letters and their corresponding sound during shared

book reading experiences. Inevitably, this kind of phonological knowledge will help toddler's associate letters and sounds as they become preschoolers and beginning readers. Support for this type of outcome was provided by Hayes (2001) who found that 40 children (3 to 5 years of age) performed better on a rhyming task than children who heard a non-rhyming story when they heard adults read a rhyming story.

Research on toddlers' phonological skills is very scarce probably because children at this age are not developmentally equipped to link letters and sounds. However, several researchers have examined the impact of phonological awareness on preschoolers developing phonological skills and later reading achievement. For example, Burgess and Lonigan (1998) examined the impact of phonological sensitivity on 97 4-and 5-year-old children's growth in letter knowledge and letter knowledge on phonological sensitivity. They found that phonological sensitivity was highly predictive of letter knowledge, conversely, and letter knowledge was highly predictive of phonological sensitivity. The results indicated that the ability to discriminate sounds impacts young children's reading. In a similar study Lonigan, Burgess, Anthony, and Barker (1998) examined children's ability to perform phonological tasks at 3 to 4 years of age. Findings indicated that phonological sensitivity related to children's knowledge of letters. Lundberg, Frost, and Petersen (1988) found that in addition to phonological tasks predicting children's current knowledge of letters the same tasks also predicted children's reading and spelling performance in second grade. Taken together, these studies suggest that phonological sensitivity and prior experiences with rhyme influence young children's later reading success.

Letter Knowledge

The fourth key component of young children's emergent literacy development is letter knowledge. According to Lonigan (2004), proper knowledge of the alphabet includes the ability to translate units of print (graphemes) into sound and units of sound (phonemes) into print. Children's knowledge of letters learned in the home are developed through interactions with alphabet books and games. In addition, some parents employ direct teaching methods of letters as a way to enhance children's letter knowledge. However, teaching of letter names and sounds is not essential for young children to develop proper knowledge of letter names and sounds. Instead, purposeful distinctions of letter sounds and names during literacy-related activities and materials may enhance young children's knowledge of letters. This idea is especially true for younger children.

For toddlers, interactions with alphabet books and purposeful letter distinctions made by parents during book reading episodes aid in familiarization of letters. Some preschoolers may experience direct teaching episodes of letters. However, Amos (1990) found that teaching letter names solely does not have a large effect on the acquisition of reading. Letter knowledge is acquired through the acquisition of letter names and/or sounds. Inevitably, experiences heighten both toddlers' and preschoolers' awareness of letters. Several studies have indicated a bi-directional relationship between phonological sensitivity and letter knowledge. More specifically, preschoolers' ability to discriminate between small units of sound relate to their gains in letter knowledge (Burgess & Lonigan, 1998; Lonigan, Burgess, Anthony, & Barker, 1998; Lundberg, Frost, & Petersen, 1988).

More importantly, high levels of letter knowledge seem to associate with preschoolers' reading skills and phonological sensitivity. Dodici et al. (2003) study

revealed that letter-word identification strongly related to parent-child interaction scores, which is important to children's early literacy acquisition. Haney and Hill (2004) investigated the impact of parent direct teaching activities on children's literacy skills. The authors found that direct teaching of letter sounds associated with higher vocabulary scores. Findings suggest that direct teaching methods may improve vocabulary production for young children. As previously discussed, direct teaching is associated with language growth; however, purposeful distinctions of letters during book reading may increase children's vocabulary.

In examining the research related to young children's early literacy development, several studies suggest that toddlers need abundant exposure to book reading materials and shared book reading with an adult. As indicated previously, proper knowledge of literacy consists of having well developed oral language, print motivation, phonological processing, and letter knowledge skills. For toddlers, it appears that these key skills are often developed through exposure to book reading materials and frequent story book reading. Although several literacy-related activities such as singing songs, visiting the library, and noting environmental print appear to aid in young children's acquisition of literacy skills, several studies have indicated that reading materials and frequency of reading are two components important for toddlers. Therefore, due to the limited nature of the Home Environment Questionnaire used to assess the home environment of participants, only the number of children's books and the reading frequency reported by mothers were used as the outcome variable. Therefore, literacy activities and resources were defined in the present study as the number of book reading materials and frequency of book reading.

Home Environmental Context

The home context impacts the developing child in a multitude of ways. In Bronfenbrenner's bioecological framework, the home is the primary microsystem. Parents represent the strongest influence through their transmission of ideas, interests, and cultural beliefs. Parents' play an important role in the development of children's language and literacy skills. Presently, a significant amount of research exists on the role of the home environment and parental characteristics relation to children's language and literacy outcomes. Although all caregivers in the home context eventually influence early literacy development, the present study will focus solely on maternal characteristics. In order to assess the degree to which maternal characteristics impact toddlers' language and literacy development, there is a need to examine how the role of maternal background variables (i.e., maternal age and education) might associate with the literacy-related activities and resources available to toddlers.

Maternal Age

A possible predictor of the number and frequency of literacy activities mothers may provide to their toddlers is maternal age. Mothers who are older may provide more frequent literacy interactions because of their awareness that early literacy is important to children's language and literacy development (Burgess, 2005). In addition, older mothers are more likely to view early literacy experiences as important to early school success. Research has indicated that, indeed, younger mothers tend to have children who have a greater likelihood of experiencing school failure. Burgess (2005) examined the variation in literacy environments of 493 teenage mothers and non-teenage mothers. Mothers

completed self report questionnaires and checklists to assess literacy activities and resources and parental activities (i.e., reading and television viewing). Findings indicated that teenage mothers provided less advantageous home environments by providing fewer book reading opportunities and fewer library visits than older mothers. In addition, adolescent mothers provided less interaction around magnet letters than older mothers. Furthermore, adolescent mothers watched more television and read less frequently. As discussed earlier, print motivation is a key component to young children's developing literacy skills. However, children whose mothers appear not value literacy materials and print are less likely to promote the notion that reading and literacy is important.

Neuman and Gallagher (1994) found teenage mothers who were coached to draw attention to labels and objects during shared reading and scaffold children through modeling and challenge children's interpretations had preschoolers who made significant gains in their receptive vocabulary measured by the PPVT. Burgess (2005) revealed that younger mothers provided disadvantageous home literacy environments; however, proper coaching appears to improve children's vocabulary outcomes. Therefore, younger mothers' conceptions of literacy may result in individual differences in toddlers' language and literacy development. There is a need to explore how this maternal factor influences the number of literacy activities and resources provided to toddlers.

Maternal Education

Maternal education is a second factor that may be associated with differences in children's knowledge of language and literacy. Similar to maternal age, mothers with less education may provide less verbal communication and less sensitivity during literacy

learning experiences. In addition, less educated parents may be less knowledgeable about the importance of early education experiences on children's academic outcomes. Several studies have indicated that as maternal education levels increase so does the likelihood of parents employing literacy activities and resources. The increase in opportunities to interact with materials and activities are thought to affect children's reading and academic achievement in later grades. Parents with higher education levels appeared to read more books and to make child book reading a family routine compared to parents with less education. Parental education and children's age also accounted for 29% of the variance in receptive vocabulary (Evans et al., 2000).

Raikes et al. (2006) found that maternal education correlated with daily reading at 14, 24, and 36 months. Roberts et al. (2005) also found maternal education correlated with reading frequency and maternal sensitivity. According to Roberts et al. (2005) maternal sensitivity includes providing support during mother-child interactions, encouragement, and motivation to young children during literacy-related activities. Literature assessing the contribution of maternal education to children's literacy and language outcomes revealed that mothers with more education (1) read frequently, (2) provide more books, and (3) are more sensitive or responsive to the individual needs of their child.. Therefore, maternal education and age are two maternal characteristics that may possibly predict variations in early home educational experiences of toddlers.

Maternal Mental Health

In examining the interplay between the child and the environment on children's language and literacy outcomes, maternal mental health is one factor that may contribute to

optimal literacy development of toddlers. In this study, maternal mental health factors that may predict variation in toddlers' exposure to literacy activities and resources were selected as possible predictors. Maternal mental health variables explored in this study include maternal depression, maternal stress, and maternal self-efficacy. A brief discussion of each potential predictor follows.

Maternal depression. Depression is a mental health disorder that disrupts the lives of individuals. According to Hammen (1997), the disorder is characterized by a state of dysphoria, which may last a few hours, moments, or days. Depression is manifested in several ways; however, those who experience the disorder experience some kind of disruption in their daily life and activities (i.e., sleep, work, feelings of self-worth, and attitude). These symptoms may include affective, cognitive, behavioral, and/or physical symptoms (Hammen, 1997). Individuals feeling a low or depressed mood and do not see common pastimes as pleasurable are experiencing affective symptoms. Cognitive symptoms may include feeling incompetent and critical of ones on actions. Individuals experiencing behavioral symptoms may become socially withdrawn from activities with others. Physical symptoms may include loss of appetite and reduction in energy; therefore, they may lack the stamina to complete certain activities and tasks (Hammen, 1997, p. 7). Therefore, for mothers of young children, depression may drastically impact the relationship and interaction patterns between mother and children through the manifestations of the disorder.

A growing number of studies report that mothers who exhibit depressive symptoms are less sensitive and responsive to and more hostile and withdrawn from their children. In a small sample of non-depressed and depressed mothers, Jameson, Gelfand, Kulcsar, and

Teti (1997) examined whether 14 non-depressed mothers and toddlers displayed more interactive coordination than 29 depressed mothers. The term *interactive coordination* refers to the ability of mother and child to maintain a joint focus of attention. In the event that the focus of attention is lost during interaction, the mother's role is to refocus the child on the object by maintaining and repairing the situation. In order to assess the difference in maintenance and repair between the non-depressed and depressed groups, a play setting was initiated to test differences in coordination. Results indicated that toddlers of depressed mothers maintained less coordination. Depressed mothers also provided less maintenance and repair when interactions were disrupted. Findings appear to suggest that maternal depression may affect the quality of activities between the mother-child dyad.

Depression in mothers also may have a negative impact on young children's behavior. Depressive mothers may be less aware of behavior cues of their children. Therefore, mothers are unable to use this information to keep children engaged. Leadbeater, Bishop, and Raver (1996) examined the relation between maternal depression and behavior problems in a sample of 63 African-American and Puerto Rican adolescent mothers. After assessing behavior problems at 28 and 36 months using the maternal report of the Child Behavior checklist, findings indicated that problem behaviors were significantly associated with maternal depression. In fact, at Time 5 of the study, mother-toddler interaction variables (i.e., mother-child contingent responses and conflict) and depression symptom levels, assessed by the Beck Depression Inventory, accounted for 26% of the variance in behavior problems. Although mothers' depressive symptoms have been found to impede on the nature of mother-child activities during play, it is important to recognize this relationship is bi-directional. Children who exhibit problem behaviors may

continue to foster more hostility and less sensitive behavior in depressed mothers.

Inevitably, the reciprocal nature between both maternal and child behaviors may affect the nature of activities and the duration of activities mothers are able to provide to their young children. This finding again shows how proximal processes can foster young children's development. In summary, research indicates that maternal depression may indeed impede on the ability of mothers to maintain and repair toddlers focus of attention and behavior.

In addition to affecting children's behavior, maternal depression also has been found to affect young children's language and literacy outcomes. Although a significant amount of literature is devoted to the impact of maternal depression on young children's behavior problems, few studies explore its impact on language and literacy outcomes. One need for this examination is that emergent literacy relies significantly on the rich opportunities that the adults in the children's immediate environment provide. However, mental health difficulties experienced by these adults may result in a less stimulating environment which may have great ramifications on children's reading achievements.

Pan, Rowe, Singer, and Snow (2005) examined how communication between mothers and children at ages one to three years may predict toddlers' vocabulary. Verbal and nonverbal interactions between mothers and children were videotaped in a sample of 108 low-income families. In assessing vocabulary production at 24 months, findings revealed that mothers who scored in the 90th percentile on the Centre for Epidemiological Studies-Depression Scale (CES-D) had children who produced four fewer word types than children whose mothers scored in the 10th percentile. The effect of maternal depression appeared to impact children's vocabulary production at age 36 months, as fewer word types increased from four fewer to twenty. Maternal depression relation to child language

also was assessed in an intervention study of 309 mothers of toddlers in Early Head Start who were assigned to two different programs (Robinson & Emde, 2004). In fact, maternal depression, assessed through an interview with the CES-D was found to moderate the effect of Early Head Start programs on toddlers' language.

Although maternal depression impacts oral language outcomes, the disorder also has a negative effect on family literacy routines. McLennan & Kotelchuck (2000) found maternal depression, assessed by the CES-D, related to a decrease in the frequency of daily reading of 7,537 mothers who completed the 1988 National Maternal and Infant Health Survey and the 1991 Longitudinal Follow-Up Survey. Therefore, maternal depression appears to negatively associate with children's language and literacy outcomes. Mothers seem to provide children with less verbal communication and less frequent daily reading opportunities. These experiences may have negative ramifications for toddlers because toddlers develop an interest in literacy through early educational experiences with adults. Adults who seem not provide positive and frequent interactions increase the chance that children's interest and motivation with print will diminish and not develop favorably. Therefore, the nature of maternal depressive may relate to negative experiences for young children who need proper exposure to literacy-related activities and resource. During the toddler years, young children need attention from mothers during activities in order to keep them engaged and guide them through activities that may aid in their development. The present study will provide information on how mothers who may experience elevated levels of depression engage in certain literacy-related activities with their toddlers.

Maternal stress. A second mental health factor suggested to be highly predictive of young children's development and differences in parenting practices is maternal stress.

Stress is defined as the process of “fighting back” when the body experiences environmental loads (Lazarus & Folkman, 1984, p. 3). Stressors may include illness, unfavorable conditions in one’s environment, work, school, and demands of family life (Lazarus & Folkman, 1984).

Maternal stress appears to impact literacy development through maternal-child interactions. Studies have found that toddlers’ temperament is a characteristic of children associated with differences in maternal mental health status, more specifically maternal stress. Sanders and Woolly (2005) found in a sample of 124 mothers of children (2 to 8 years of age) that maternal distress was highly related to greater levels of dysfunctional parenting practices. Parental stress also is highly predictive of greater parent-child dysfunctional interaction (Irwin, Carter, & Briggs-Gowan, 2002). When parents are provided training on how to change their own behavior in response to their toddlers’ negative behavior, maternal stress is decreased (Tucker, Gross, Fogg, Delaney, & Lapporte, 1998). Therefore, once mothers are provided parenting strategies to help deal with variations in their children’s temperament, they are able to employ more effective parenting practices.

It is important that mothers learn to handle differences in their toddlers’ behavior because it may highly affect if mothers provide literacy and language experiences for their children. It appears that maternal depression and stress may decrease positive parenting practices, maternal self-efficacy may mediate the affects of both maternal and child characteristics on children development and parenting practices employed in the home environment. In summary, the present study will help provide researchers with how maternal stress may associate with toddlers’ literacy activities and resources.

Maternal self-efficacy beliefs. A substantial body of literature exists today on parenting. More specifically, research on parenting has focused on the influence of parenting practices and its relation to child outcomes. One method to assess parental cognition regarding parenting is through assessing self-efficacy. Self-efficacy is the belief that one can successfully produce a desired outcome through their behavior (Bandura, 1977). It is believed that mothers who are more efficacious are more likely to persist in facilitating activities with their toddler, despite behavioral, cognitive, and physical challenges. Positive maternal self-efficacy is critical for mothers parenting toddlers who are in a stage of development in which substantial physical, cognitive, and emotional changes occur. Therefore, mothers need to be able to provide various experiences and opportunities for toddlers in their environment. However, variations in maternal competence and belief in one's ability to provide quality parenting may influence the extent and quality of activities that mothers provide in the home environment.

Research over the past few years has explored the role of self-efficacy and its relation to parenting practices. Furthermore, a number of studies have found that maternal self-efficacy may mediate the role of both parent and child variables on parenting practices (Teti & Gelfand, 1991). In fact, a well-documented study, Coleman & Karraker (2003) revealed that parental self-efficacy highly predicted toddlers' behavior problems. Maternal self-efficacy was assessed through maternal report using the Self-Efficacy for Parenting Tasks Index—Toddler Scale (SEPTI -TS). Machida, Taylor, and Kim (2002) investigated the extent to which maternal self-efficacy mediated the role between family characteristics (i.e., child temperament, maternal education, and stress) and the home learning activities of 306 Head Start families. Mothers reported children's temperament using the Temperament

Assessment Battery for Children. Mothers also rated the level of self-efficacy using the Parent Opinion Survey and home learning practices using the Home Learning Experiences Scale. Findings indicated that mothers who reported higher self-efficacy also reported had less stress and a less temperamental child. Furthermore, findings revealed higher maternal self-efficacy accounted for the number of home learning activities. These results highlight the fact that mothers with more efficacious beliefs are more likely to cope with the demands of raising a difficult child. Mothers who have been unable to deal with their children's temperamental characteristics tend to have less self-efficacy and less sensitivity in the maternal role (Lerkes & Crokenberg, 2002).

In their inability to soothe their children or deal with negative reactions, mothers of more temperamental children may give up easily in their efforts to provide activities. For example, mothers of toddlers who exhibit problem behaviors may provide less reading and writing activities because they believe they are unable to control their children's behavior during these literacy-related experiences. Inevitably, mothers become more discouraged and less persistent. Tucker, Gross, Fogg, Delaney, and Lapporte (1998) found that maternal self-efficacy, parenting practices, and mother-toddler interactions can improve through the use of behavioral parent training. During this training, parents of 46 toddlers were taught how to reduce negative child behaviors and reinforce positive behaviors by changing their own behavior. Results indicated that mothers exhibited less negative behaviors and more praise after completing the intervention. This finding is important considering studies have found that parents' beliefs about a children's ability may eventually affect children's own expectations for him/herself.

Despite an abundance of literature which documents the relationship between maternal self-efficacy and parenting more difficult children, few studies examine how self-efficacy relates to home learning activities. More specifically as it relates to the current study, no studies examine maternal self-efficacy relation to the literacy activities provided in the home environment for toddlers. The current study attempts to fill the gap in the literature by examining the specific role that self-efficacy plays in the number and frequency of literacy activities provided to toddlers.

Child Characteristics

A significant amount of research to date has examined the association between parental factors (i.e., stress levels, self-efficacy, and sensitivity) and home learning opportunities that are offered to young children. However, in order to obtain an accurate portrait of factors which may contribute to young children's later academic and behavioral adjustment, child characteristics also need to be explored, in addition to maternal characteristics. These child characteristics also may account for parents' lack of persistence and desire to offer home literacy learning opportunities. In this study, child characteristics that may predict variation in toddlers' exposure to literacy activities and resources were selected as possible predictors. These variables include toddler temperament (i.e., inhibition, impulsivity, and sociability) and self-regulation (i.e., dysregulation and competence). A brief discussion of each potential predictor is presented below.

Temperament

Children vary in the manner in which they react to their environment. This variation is at times due to young children's temperament. Temperament encompasses how

individuals react and regulate one's emotions (Rothbart, 1986). Rothbart (1986) identifies temperament as encompassing more than emotionality, but also motor activity and orientation and attention characteristics. Temperament is viewed as a stable construct which may affect an individual's trajectory and personality. More specifically, as it relates to the present study, a young toddler's temperament may relate to behavioral adjustment and home learning experiences. For example, a less soot able and more reactive toddler is more likely to experience a negative reaction from his or her mother than a highly reactive toddler who presents opposition to one's parent.

An abundance of literature has examined the impact of young children's temperamental characteristics on later behavioral adjustment. Research suggests that young children's behavioral adjustment may be associated with the mother-child relationship. Studies have found that young children with easy temperaments are more likely to adapt well to entering school (Cooney & Holmes, 1998). Pettit and Bates (1989), examined the association between family relationship quality and behavior problems in a sample of 29 four - year - old children and their mothers. The nature and quality of the familial relationships and maternal report of children's behavior were assessed through home observations and the Child Behavior Checklist, respectively. Results indicated that mothers who perceived their child as having greater behavior problems were less proactive, affectionate, and involved with their child than children with less aggressive behaviors, despite the child's continuous bids to be close to mother. In fact, child temperamental difficulties predicted difficulties at age four. Additionally, studies have found that mothers of toddlers are less likely to use gentler methods of behavioral control when their child exhibits high negative reactivity compared to when their child is less reactive (Braungart-

Rieker, Garwood, & Stifter, 1997). Furthermore, sex differences in maternal behavior have been found for mothers of boys and girls exhibiting negative aversive behavior. Calkins (2002) examined the relation between toddlers' aversive behavior (i.e., venting, frustration, and defiance) and maternal interactive style in a sample of 73 mothers and toddlers at age 18 and 24 months. Observations of mother-child videotaped interactions and maternal report measures (parental stress and child behavior problems) revealed that significant sex differences existed in maternal interactive style in response to their toddlers' aversive behaviors. More specifically, mothers of boys were significantly more negative and less positive in the mothering role than mothers of girls who were negative. These findings suggest temperament plays a role in toddlers' future behavior problems. In fact, the emergence of problematic behaviors depends largely on the interplay of both parent and child factors; however, as noted in several studies, this influence may depend largely on a child's susceptibility to parenting (Belsky, Hsieh, & Crnic, 1998).

Given that temperament appears to affect the nature of the mother - child relationship due to the emergence of problematic behaviors, it is important to examine the influence of temperament on young children's language and literacy outcomes. Several studies have documented the relationship between children's individual temperamental differences and language development. More specifically, several studies have found that children who are less temperamentally difficult, more soothable, and exhibit longer attention spans have larger vocabularies.

Joint attention is one aspect of children's temperament that has been found to be associated with mothers' inability to provide home learning opportunities. According to Goldsmith and Rieser-Danner (1986), temperament encompasses duration of interest.

Interest is an emotion associated with attention. Attentional focusing between mothers and children during activities has been found to relate to toddlers' language outcomes.

According to Carpenter, Nagell, and Tomasello (1998), young children learn new words through focused attention on people, sounds, and objects in their environment. However, children who are unable to refocus their attention when parents try to redirect them during activities in which learning new words are involved are less likely to learn new words.

Dixon, Salley, and Clements (2006) examined how word and non-word learning conditions were adversely affected by toddlers' degree of attentional focusing. Mothers completed the Early Childhood Behavior Questionnaire and toddlers completed both word and non-word learning tasks in a laboratory setting. Findings indicated that children low in attentional focusing learned fewer words during tasks compared to toddlers who displayed high intentional focusing. Furthermore, joint attention in infancy has been linked to toddlers' language outcomes at age 24 months (Van Hecke et al., 2007).

Several studies also have assessed how both parenting and temperamental factors predict young children's language outcomes. For example, for boys, maternal responsiveness moderated the relationship between infant temperament (smiling and laughter) and their language outcomes at age 16 months. In addition, girls were found to display longer interest expressions (Karrass & Braungart-Rieker, 2003). Temperament may affect toddlers' developing language skills by decreasing the number of new words they learn in their environment. However, maternal responsiveness seems to moderate the relationship between young children's temperamental characteristics and inability to focus their attention during activities which may facilitate language learning.

Self-regulation

Self-regulation is defined as an individual ability to monitor, evaluate, and modify emotional reactions. A toddlers' ability to regulate his or her emotions in the presence of stressful situations may drastically determine his or her ability to manage situations and develop proper emotion regulation capacities. Two factors documented in research as contributors to young children's self-regulation is dysregulation and competence. The current study examined how dysregulation and competence may predict literacy activities and resources provided to toddlers in their home environment.

Emotional dysregulation is defined as an individual's inability to properly respond to a person, place, thing, and/or event. Negative emotionality, a large component of dysregulation, is primarily characterized by anger, frustration, and hostility (Eisenberg et al., 2001). Negative emotionality also refers to the speed and intensity of a toddler's negative emotional response and to children's ability to manage that negative emotional response once aroused.

Several studies have documented the effect of young children's ability to react and modulate their emotions. One reason for the number of studies devoted to this area of self-regulation is that it is believed that young children who are highly reactive may have behavioral adjustment problems and externalizing behavior problems (i.e., aggression and hyperactivity). Several studies have discovered negative emotionality appears to predict externalizing behaviors problems during preschool and elementary school (Eisenberg et al., 2001; Eisenberg et al., 2005; Rubin, Burgess, Dwyer, & Hastings, 2003). Negative emotionality is highly predictive of young children's school readiness. Belsky, Friedman, & Hsieh (2001), examined how infant negative emotionality affected social competence,

behavior problems, and school readiness at age 3 in a sample of 1,038 children who were followed longitudinally from age 1 month to 36 months. The Strange Situation, Child Behavior Check List (CBCL), Adaptive Social Behavior Inventory, and the Bracken Scale of Basic Concepts were used to assess children's basic knowledge and behavior. Findings indicated that, when attentional persistence was low, high levels of negative emotionality predicted low social competence. Toddlers who exhibited high negative emotionality had higher school readiness, only when associated with high attentional persistence at age 15 months. Therefore, maintaining one's attention seems to buffer the effect of high reactivity on later developmental outcomes.

Although a significant amount of research is devoted to the relationship between negative emotionality and problem behaviors in toddlers, a lack of literature is devoted to highly reactive toddlers and its impact on language and literacy. Irwin et al. (2003) found that late talking toddlers rated higher in negative emotionality as assessed by the Infant and Toddler Social Emotional Assessment (ITSEA) compared to control toddlers. Toddlers who exhibited delays in language displayed a greater amount of reactivity. Furthermore, the lack of literature devoted to this area of study reveals that the field is unaware of how home language and literacy activities might be affected by highly reactive toddlers. For example, a toddler who is unable to modulate his or her emotions and return to a state of stability during a book reading episode may receive less opportunities to interact with books in the future. A lack of exposure may eventually impact toddlers' future language and literacy outcomes. Therefore, one purpose of the present study was to reveal if a possible association existed between toddlers who exhibited negative emotionality and the

number and frequency of literacy activities and resources provided in their home environments.

A second significant self-regulatory factor that studies have found to be associated with variations in children's language development is competence. Competence is defined as children's ability to attain a desired goal (Baumrind, 1998). For toddlers, variations in competencies may determine their attainment in certain developmental outcomes. However, toddlers' social competence seems correlate with late talking toddlers' expressive language. Marschick, Einspieler, Garzarolli, and Prechti (2007) examined how early neonatal complications and the parental environment influenced 62 toddlers' language development. The Austrian Communicative Developmental Inventory, Bayley Scales of Infant Development, and Griffith's Developmental Scales were used to assess toddlers' receptive language, cognitive capacity, and social competence respectively. Findings indicated that late talking toddlers scored significantly lower in social competence at age 18 and 24 months.

Studies also have found that the nature of young children's conversation or language used between toddlers is associated with better social competence. For example, toddlers who utilize the possessive pronoun "mine" are more likely to use "yours" and have better relations with peers (Hay, 2006). Attentional focusing, a competence factor, and the nature of toddlers' play relationships have been found to associate with toddlers' language production (Tamis-Lemonda & Bornstein, 1989; 1990). Therefore, toddlers' competence may predict variations in language development. Hence, competence as a possible predictor of literacy resources provided to toddlers was explored in this study.

Summary

In summary, it is evident from the review of literacy that (a) maternal and toddler characteristics or behaviors do impact young children's language and literacy development and environment and (b) there are very few studies that examine the nature of toddler home literacy environments as they relate to the association between maternal and child characteristics and the number of book materials and daily reading activities that are offered to this age group. Research appears to demonstrate consistently that factors such as maternal education, age, and maternal mental health are related to children's home learning activities. However, researchers have not examined what kinds of child characteristics may mediate the relationship between activities and resources that adults provide to their young children after controlling for maternal characteristics. Therefore, the present study represented an effort to fill this gap in literature by examining the roles of both maternal and child factors that may be associated with disparities in the book materials and frequency of daily reading.

Based on the literature that examined the association between maternal and child characteristics and young children's language and literacy outcomes, the following research questions were addressed in the present study: (1) Are maternal characteristics associated with the number of reading materials and frequency of daily reading in toddlers' home environments? (2) Are child characteristics associated with the number of reading materials and frequency of daily reading activities in toddlers' home environments? (3) Do child characteristics predict the number of reading materials and frequency of daily reading activities in toddlers' home environments after controlling for maternal characteristics?

Chapter 3: Methods

Participants

The current study is a secondary analysis of data assessing the role of infant/toddler care, and family characteristics on preschoolers' school readiness (Was, Hallam, & Moran, 2006). School readiness is the ability to regulate one's behavior in order to concentrate in a school setting (Blair, 2002). The aims of the larger study were to assess the memory, attention, and physiological characteristics (i.e., heart rate variability) of 3 month old infants. Participants were notified by phone when their child was 12 weeks to 14 weeks old to inform them of the study. In this phase, 117 infants processing speed and attention were assessed. Infants were classified as ineligible for the study if they met any of the following criteria: low birth weight, premature, and hospitalization. In the second phase, 117 eligible mother-toddler participants who previously participated in the memory and attention phase were contacted by phone to assess their interest in the second phase of the study on school readiness. The aim of the second phase was to assess the role of infant, toddler, care, and family characteristics on preschooler's school readiness assessed at a later time. Although 117 participants were eligible to participate in the current phase, a total of 95 mothers and one father of toddlers (28-31 months old) participated in the current phase. The following section outlines the procedures used to obtain possible predictive family and child characteristics on school readiness.

Procedure

A packet of questionnaires was sent to the current home addresses of mothers who agreed to participate in the study. The packet included measures of language (MacArthur-Bates Communicative Development Inventory-Short Form), self-regulation

(Infant/Toddler Social and Emotional Assessment), maternal depression (Centre for Epidemiological Studies-Depression Scale), parental stress (Parenting Stress Index-Short Form), self-efficacy (Self-Efficacy Parenting Task Index-Toddler Scale), quality of care (Quality of Care), and the home environment (Home Environment Questionnaire).

A phone interview was conducted with mothers two weeks after they completed the questionnaires. Mothers also completed the Demographic Questionnaire and a survey assessing their toddlers' temperament (Early Childhood Behavior Questionnaire). A brief discussion of each measure is presented below.

Self-regulation Measure

Toddlers' self-regulation was assessed by maternal report of the dysregulation and competence domains of the Infant/Toddler Social and Emotional Assessment (ITSEA). The ITSEA is a 170 item parent or childcare provider report measure which aids in the identification of social-emotional problems for young infants and toddlers (Carter & Briggs-Gowan, 2005). Items are rated on a 3-point scale of (0) *Not true/rarely*, (1) *Somewhat true/sometimes*, and (2) *Very true/often*. A *No opportunity* (N) referred to mothers who did not have the opportunity to observe the behavior under question. The instrument was designed to identify social-emotional areas of concerns that may be indicative of future behavioral problems. It contains four domains: externalizing, internalizing, dysregulation, and competence. However, only the dysregulation and competence subscales were used in the present study. The Dysregulation domain includes items that measure toddlers' social-emotional development in the areas of negative emotionality, sleep, eating, and sensory sensitivity. The Competence domain is comprised of items organized into six subscales: compliance, attention, mastery motivation,

imitation/play, empathy, and prosocial peer relations. Although a low score in the competence domain is indicative of a delay in competence, as children progress in age, social emotional competencies are expected to increase (Carter & Briggs-Gowan, 2005). In an examination of the internal consistency of the ITSEA using 119 families of 12 to 36 month old children, alpha coefficients demonstrated that the instrument had good internal consistency for both Dysregulation (.86) and Competence domains (Carter & Briggs-Gowan, 2005). Excellent test-retest reliability was also exhibited with Intra Correlation Coefficients (ICC) of .81 and .89 for Dysregulation and Competence, respectively. In addition, all ITSEA domains exhibited strong criterion validity (.85) with the CBCL (Carter, Briggs-Gowan, Jones, & Little, 2003).

Depression Measure

Maternal depression was assessed using the Centre for Epidemiological Studies-Depression Scale (CESD). The CESD is a 20-item self-report measure of the duration and/or frequency of depressive symptoms that a respondent experienced the previous week. Items on the instrument are rated on a Likert - typed scale with (0) indicating *rarely or none of the time (less than 1 day)*, (1) indicating *some or little of the time (1-2 days)*, (2) indicating *occasionally or moderate amount of time (3-4 days)*, (3) indicating *most or all of the time (5-7 days)*. The possible range of scores is from zero to sixty. Elevated depressive symptoms are indicated by a clinical cut off score of 16 on the instrument. Radloff (1977) identified four subscales as part of the self-report measure: depressed affect, positive affect, somatic and retarded activity, and interpersonal difficulties. The 20-item instrument has good internal consistency (alpha coefficient = .88). In a sample of middle age women,

confirmatory factor analysis revealed that Radloff's proposed four factor solution had good model fit (Knight, Williams, McGee, & Olaman, 1997).

Maternal Stress Measure

Maternal stress was assessed using the Parenting Stress Index-Short Form (PSI-SF). The PSI-SF is a 36-item self-report measure that was derived from the PSI - full length test. The measure is designed to assess the current stress levels of parents. In addition, the instrument includes measures of parent-child relationship, features that may contribute to parental stress levels. The PSI-SF consists of three subscales: Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child (Abidin, 1995). For the purposes of the present study, only the Total Stress score and the Parent-Child Dysfunctional Interaction subscale were used to examine the relationship between stress and the number of reading material and frequency of daily reading provided to toddlers. The Parent-Child Dysfunctional Interaction subscale assesses the degree to which parents feel the parent-child relationship is not reinforcing and satisfactory. Several studies have examined the reliability of the PSI-SF in various populations and socioeconomic groups. The PSI-SF has demonstrated excellent internal consistency reliability (.91) and test-retest reliability (.84) for the Total Score and moderate internal consistency (.80) and test-retest reliability (.68) for the Parent-Child Dysfunctional Interactions subscales, respectively (Abidin, 1995).

Self-efficacy Measure

Maternal self-efficacy was assessed using the Self-Efficacy for Parenting Index-Toddler Scale (SEPTI-TS). The SEPTI-TS was originally formulated from the work of

Robert Emde (1989). Emde (1989) proposed that synchronization between infant and mother biologically based behaviors promote the social relationship between mothers and children. The SEPTI-TS is a 53-item self-report instrument that is used to assess the self-efficacy of parents of toddlers. The scale includes seven subdomains: emotional availability, nurturance, protection, discipline, play, teaching, and instrumental care. Mothers indicate on a 6-point Likert – type scale the extent to which they “Strongly Agree” to “Strongly Disagree” with statements. Higher scores on the measure demonstrate a stronger sense of self-efficacy of parenting one’s toddler. The instrument has excellent internal consistency reliability (Cronbach’s alpha of .91) for the entire scale (Coleman et. al. 2003).

Home Environment Measure

Activities and events that took place in the home environment were assessed using the Home Environment Questionnaire (Wass, Hallam, Moran, 2006). The 36-item questionnaire asked mothers to indicate if certain events occurred in the home. Home environment items were obtained from the 1998 National Household Education Survey, 2001 Early Childhood Longitudinal Study-Birth (ECLS-B) parent interview questionnaire, and 1997 Head Start Family and Child Experiences Survey. Mothers provided information on areas such as literacy activities and resources, playtime, and parenting activities with the child. The current study used only two items from the Home Environment Questionnaire: *how many children’s books does your child have in your home now, including library books?* and *How often do you read books in a typical week.* The previous two items were combined into a single outcome variable because the literature suggested

that these items are often indicators of young children's reading success. Although other types of print and writing materials and literacy-related activities also are possible indicators of children's reading success, these items were used to create a single outcome variable based on limitedness of the Home Environment Questionnaire assessment of literacy activities and resources in the homes of toddlers. Given the different scales of the two items, number of books was transformed by assigning each case a quartile ranking, based upon the sample distribution, resulting in a 1-4 scale. The frequency of parental reading to the child (0 – 4 scale) and quartile book variable were summed to create the dependent variable Literacy Activities and Resources (LAR). The term LAR will be used interchangeably throughout the study with the number of reading materials and frequency of daily reading to describe the outcome variable.

Demographics Measure.

Demographic information was obtained during the phone interview using the Demographic Questionnaire, which was developed by the Infant and Preschool Predictors of School Readiness research team. The questionnaire asks mothers to report information about parental education, child medical history, work information from the past 12 months, income, and current child care arrangement. Mothers in the present study also were asked to provide information about the toddler's secondary caregiver. For purposes of this study, a secondary caregiver was someone besides the mother who spent a significant amount of time with the child, excluding a babysitter and current child care arrangement.

Toddler Temperament Measure

The Early Childhood Behavior Questionnaire (ECBQ) was used to assess the temperamental characteristics of young children in the 1.5 to 3 years age range. The scale assesses temperamental aspects of emotion, sensory, and motor systems. The ECBQ includes a total of 18 dimensions of temperament (Putnam, Gartstein, & Rothbart, 2006). However, for purposes of this study, only dimensions believed to be possible predictors of the outcome variable LAR were included in the data analyses. These subscales were chosen based on the literature recommendation that these temperamental characteristics are associated with mother-child interactions and activities: impulsivity (speed of response initiation), inhibitory control (capacity to stop, moderate, and refrain from behavior under construction) and sociability (seeking and taking pleasure in interactions with other). The scales have good internal consistency (all alphas over .80) with the exception of impulsivity (alphas below .60) (Putnam, Gartstein, & Rothbart, 2006).

Chapter 4: Results

The current study seeks to examine how both maternal and child characteristics contribute to the outcome variable, literacy activities and resources employed in the home. In addition, the study seeks to explore how child characteristics may contribute to the literacy activities and resources mothers employ in the home environment over and above maternal characteristics. Hence, hierarchical regression is the best method of data analysis. Hierarchical regression examines sequentially how much an independent variable(s) explains or predicts the dependent variable. In the first step, maternal characteristics (i.e., education level, age, and self-efficacy) were entered into the model to examine the degree to which it explains or predicts LAR. Then, child characteristics (i.e., impulsivity and dysregulation) were entered into the model in the second step to examine if these variables contribute to LAR over and above maternal characteristics entered in the first step. The following hypothesis were tested: (1) maternal characteristics associate with the literacy activities and resources employed in the home, (2) toddler temperamental behaviors and self-regulation ability associate with literacy activities and resources employed in the home, and (3) child characteristics mediate the effect of maternal mental health on literacy activities and resources employed in the home.

Descriptive Statistics

As stated previously, 95 mother-toddler dyads participated in the second phase of this study. A total of 49 male and 46 female toddler participants were included in this sample (M age = 2.46 years, SD = 0.15). Mothers ranged in age from 21 years to 43 years (M age = 33.16 years, SD = 4.85). Mothers were primarily Caucasian. Family income ranged from \$9,200 to \$375,000 (M income = \$76,095, SD = \$52,808). The median

income level was \$65,000. Fifty-one percent of mothers received a college and/or higher education degree (i.e., bachelors and/or graduate degree), while 49 percent received less than a college degree (i.e., associates, high school, GED). Presumably mothers with less education are less likely to be aware of the importance of exposing their young children to print materials. This difference in educational level may strengthen the generalizability of this study's findings. Whereas mothers with higher educational levels have been found to provide more literacy-related experiences, fewer years of education has been related to fewer opportunities to interact with print materials and reading frequency for children (Evans et al., 2000; Raikes et al., 2006)

Independent and Dependent Variable Frequencies

Table 1 provides the descriptive statistics for independent variables. Descriptive data on maternal background variables (i.e., maternal age and maternal college education) which were entered into the model as possible predictors of the outcome variable, LAR, were previously discussed. Preliminary examinations of variables revealed that two variables depressive symptomology (CESD) and parent-child dysfunctional interaction (PCDI/ITSEA) were positively skewed. Therefore, both the CESD and PCDI were log transformed to obtain normally distributed variables. Log transformation is a statistical technique used to reduce the positive skewness of data by compressing data on the upper end of the distribution (Dallal, 1999).

The CESD clinical cutoff is 16. Mothers who scored above 16 are considered to be experiencing symptoms of depression. An examination of maternal depressive symptomology scores indicated that 13.50% of participants fell within the clinical cutoff range. In regards to the Parental Stress Total Score and PCDI, mothers who scored above

Table 1

Descriptive Statistics for Independent Variables

Independent Variable	<i>N</i>	Minimum	Maximum	Mean	Standard Deviation	Clinical Cutoff
Maternal Self-Efficacy Beliefs (SEPTI-Total)	95	178.00	314.00	272.98	27.00	N/A
Depressive Symptomology (CESD)	96	0	32	7.81	6.78	≥ 16
Parental Stress: Parent Child Dysfunctional Interaction subscale (PSI/SF)	95	12.00	34.00	16.11	4.91	Total Stress ≥ 90
Parental Stress Total Score (PSI/SF)	95	38.00	113.00	62.89	18.30	≥ 90
Self-Regulation: Dysregulation subscale (ITSEA)	95	18.0	84.0	43.27	12.57	≤ 70
Self Regulation: Competence subscale (ITSEA)	95	25.0	69.0	52.74	9.39	≥ 30
Temperament: Impulsivity subscale (ECBQ)	95	3.40	6.60	5.05	.65	N/A
Temperament: Inhibition subscale (ECBQ)	95	1.83	6.25	4.38	.92	N/A
Temperament: Sociability subscale (ECBQ)	95	3.38	7.00	5.92	.90	N/A
Valid N (listwise)	94					

90 are considered to be experiencing high levels of stress. An examination of parental stress scores indicated that 9.47% of participants fell within the clinical cutoff range. An examination of parental depression and stress scores in relation to the clinical cutoffs reveals that only a small percentage of mothers in this sample actually experienced heightened levels of depression and stress. This difference may lessen the generalizability of this study's findings. In regards to the Dysregulation and Competence from the ITSEA, *T* scores were used instead of raw mean scores. A score of 70 or above is considered in the clinical range for problem behaviors for Dysregulation. An examination of toddlers Dysregulation *T* scores on the ITSEA indicated that only two toddlers fell within the clinical range; however, 6.32% of participants scored 63 to 69 which is considered in the of concern range. A score at or below 30 implies a delay for toddlers on the Competence domain. An examination of toddlers' Competence *T* scores on the ITSEA indicated that only 4.31% fell within the clinical range. This small difference may again lessen the generalizability of this study's findings.

In regards to the dependent variable, literacy activities and resources, the mean number of literacy activities and resources provided to toddlers was 5.95 ($SD = 1.44$). In fact, mothers provided girls ($M = 6.4$) with significantly more reading materials and daily reading than boys ($M = 5.5$), $F(1, 93) = 11.35, p < .01$. Fifty percent of respondents indicated they provided at least 60 children's books for their toddlers. Forty percent of respondents indicated that they read to their toddlers three to six times per week.

Correlation Analysis

In order to assess which independent variables may associate with the outcome variable, LAR, bivariate correlations were performed for maternal and child

characteristics. Therefore, a correlation table was constructed comparing each maternal and child characteristics to the outcome variable (see Table 2). Table 2 also compares each independent variable to one another. In a comparison of independent variables to one another, results revealed a possible problem of multicollinearity. Multicollinearity occurs when variables are so highly correlated it becomes difficult to obtain accurate estimates of regression coefficients.

In addition, multicollinearity suggests that variables are providing the same information. The most noted areas of concerns in this study were between the measure of (a) self-efficacy beliefs and depressive symptomology ($r = -.57$), (b) self-efficacy beliefs and parent-child dysfunctional interaction ($r = -.64$), (c) self-efficacy beliefs and parental stress ($r = -.66$). Therefore, due to the presence of these highly correlated independent maternal variables with one another, the number of maternal variables was reduced in order to include the most highly predictive variable in the regression analysis and reduce multicollinearity. Hence, the self-efficacy belief variable was chosen to be the primary maternal variable to be included in the hierarchical regression analysis because it presented the highest correlation with the outcome variable ($r = .45$).

In examining bivariate correlations, results indicated that significant gender differences existed in the literacy activities and resources toddlers were provided in the home ($r = .33, p = .00$). Additionally, the factors that predicted LAR differed by child gender so separate regression models were used to estimate the impact of maternal and child characteristics. Therefore, separate correlations of the independent variables with the outcome will be presented for boys and girls (see Table 3 and Table 4). In examining correlation analyses of all participants, findings revealed that all independent variables

Table 2

Correlations of Independent Variables with Dependent Variable for All Participants

Independent Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Literacy Activities and Resources	1										
2. Maternal age	.316(**)	1									
3. Education	.292(**)	.272(**)	1								
4. Self-Efficacy	.449(**)	.246(*)	.204(*)	1							
5. Depressive Symptomology	-.273(**)	-.177	-.062	-.567(**)	1						
6. Parent-Child Dysfunctional Interaction	-.361(**)	-.102	-.239(*)	-.636(**)	.407(**)	1					
7. Stress	-.294(**)	-.158	-.132	-.659(**)	.460(**)	.835(**)	1				

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 2 continued

Independent Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
8. Dysregulation	-.232(*)	.061	-.121	-.370(**)	.172	.329(**)	.454(**)	1			
9. Competence	.272(**)	-.030	.105	.364(**)	-.055	-.515(**)	-.464(**)	-.255(*)	1		
10. Impulsivity	-.211(*)	-.126	-.233(*)	-.119	.134	-.027	.008	.045	-.113	1	
11. Inhibition	.231(*)	.004	.114	.322(**)	-.189	-.313(**)	-.375(**)	-.211(*)	.269(**)	-.221(*)	1
12. Sociability	.208(*)	-.060	.216(*)	.201	-.044	-.291(**)	-.153	-.329(**)	.340(**)	.021	.233(*)

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3

Correlations between Literacy Activities, Maternal Characteristics, and Child Characteristics for Boys

Independent Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Literacy Activities and Resources	1										
2. Maternal age	.167	1									
3. Education	.441(**)	.295(*)	1								
4. Self-Efficacy	.363(*)	.306(*)	.192	1							
5. Depressive Symptomology	-.302(*)	-.250	-.138	-.649(**)	1						
6. Parent-Child Dysfunctional Interaction	-.347(*)	-.125	-.030	-.538(**)	.419(**)	1					
7. Stress	-.333(*)	-.185	-.026	-.596(**)	.416(**)	.842(**)	1				
8. Dysregulation	.491(**)	-.177	-.096	-.330(*)	.113	.252	.419(**)	1			
9. Competence	.330(*)	.119	-.027	.228	-.031	-.347(*)	-.283(*)	-.209	1		
10. Impulsivity	-.007	-.039	-.285(*)	.061	.091	-.217	-.217	-.103	.144	1	
11. Inhibition	.126	-.051	.110	.254	-.176	-.308(*)	-.364(*)	-.172	.156	-.023	1
12. Sociability	.193	-.064	.125	.063	.094	-.139	.007	-.220	.254	.344(*)	.080

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 4

Correlations between Literacy Activities, Maternal Characteristics, and Child Characteristics for Girls

Independent Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Literacy Activities and Resources	1										
2. Maternal age	.362(*)	1									
3. Education	.047	.174	1								
4. Self-Efficacy	.585(**)	.146	.205	1							
5. Depressive Symptomology	-.334(*)	-.202	-.028	-.462(**)	1						
6. Parent-Child Dysfunctional Interaction	-.455(**)	-.095	-.476(**)	-.764(**)	.394(**)	1					
7. Stress	-.361(*)	-.190	-.262	-.756(**)	.511(**)	.830(**)	1				
8. Dysregulation	-.042	.283	-.178	-.439(**)	.233	.405(**)	.478(**)	1			
9. Competence	.335(*)	-.131	.244	.521(**)	-.066	-.653(**)	-.592(**)	-.281	1		
10. Impulsivity	-.339(*)	-.151	-.173	-.278	.214	.133	.195	.191	-.302(*)	1	
11. Inhibition	.239	.005	.116	.389(**)	-.210	-.338(*)	-.432(**)	-.296(*)	.394(**)	-.331(*)	1
12. Sociability	.187	-.115	.288	.346(*)	-.228	-.445(**)	-.309(*)	-.457(**)	.425(**)	-.191	.348(*)

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

were significantly correlated with the outcome variable. For boys, results indicated maternal education ($r = .44, p < .01$) and maternal self-efficacy beliefs ($r = .36, p < .05$) were the maternal variables that highly correlated with the dependent variable. Results suggest that mothers with more education and positive parenting beliefs may provide more literacy activities and resources. In examining child characteristics, correlation analysis revealed that toddler boys' dysregulation ($r = -.49, p < .01$) and competence ($r = .33, p < .05$) moderately correlated with the outcome variable. Results found no significant correlations for the temperament variables with the outcome variables for boys.

In regards to girls, results indicated that maternal age ($r = .36, p < .05$) and maternal self-efficacy beliefs ($r = .59, p < .01$) correlated with the outcome variable. These findings indicated that toddler girls whose mothers are older and displayed positive self-efficacy in parenting their toddler may have provided more reading materials and daily reading. Maternal depressive symptomology, parent-child dysfunctional interaction, and maternal stress were also moderately correlated with the outcome variable (see Table 2 and Table 3). Due to the nature of their association with the self-efficacy belief variable they were not included in the regression analysis. However, results indicated that as mothers experienced more depression, parent-child dysfunctional interaction, and stress, they were less likely to provide literacy activities and resources. In examining toddler characteristics associated with the outcome variable, competence ($r = .34, p < .05$) and temperamental impulsivity ($r = -.34, p < .05$) moderately correlated with LAR. Correlations revealed no other temperamental variables associated with the outcome variable.

Hierarchical Regression Analysis

Hierarchical regression analyses were conducted to examine maternal characteristics as a predictor of the primary outcome variable (Block 1) and additional variance accounted for by child characteristics (Block 2). For boys, maternal education and self-efficacy beliefs were entered into the first step. The second step consisted of boys' competence and dysregulation scores (see Table 5). For girls, the first step consisted of maternal age and self-efficacy beliefs. The second step consisted of competence and temperamental impulsivity scores (see Table 6).

In regards to literacy activities and resources for boys, regression analyses revealed that in Block 1 that both maternal education ($\beta = .39, p < .01$) and self-efficacy beliefs ($\beta = .29, p < .05$) predicted the outcome variable. In order to test for mediation, competence and dysregulation were entered into block 2. Evidence of mediation emerged when child variables were entered into the second step as shown in Figure 1. Consistent with the third hypothesis, both competence and dysregulation predicted literacy activities and resources for males. Furthermore, dysregulation emerged as the most significant predictor of the two child variables ($\beta = -.37, p < .01$). Thus, as male toddlers exhibit more negative emotionality, mothers are less likely to provide literacy activities and resources. When competence and dysregulation was regressed onto LAR, maternal education remained significant, whereas, self-efficacy beliefs did not remain significant ($\beta = .11, p = .35$). Finally, the overall R-square value was .28 for Block 1 and .47 for Block 2, with 20% additional variance accounted for by the addition of child variables into the model. Thus,

Table 5: Hierarchical Regression Outcome for Boys (N = 49)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.098	1.714		.640	.525
	Education	1.098	.364	.386	3.014	.004
	Self-Efficacy	.014	.006	.289	2.255	.029
2	(Constant)	2.985	2.040		1.463	.151
	Education	1.112	.319	.391	3.486	.001
	Self-Efficacy	.006	.006	.112	.936	.354
	Competence	.042	.020	.238	2.085	.043
	Dysregulation	-.042	.013	-.367	-3.123	.003

a Dependent Variable: LAR

Table 6: Hierarchical Regression Outcome for Girls (N = 46)

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	-3.535	1.857		-1.904	.064
	Self-Efficacy	.027	.006	.536	4.480	.000
	Maternal age	.079	.033	.284	2.372	.022
2	(Constant)	-1.442	2.527		-.571	.571
	Self-Efficacy	.024	.007	.492	3.429	.001
	Maternal age	.074	.035	.266	2.120	.040
	Competence	.000	.018	.003	.023	.981
	impulsivity	-.272	.216	-.161	-1.262	.214

a Dependent Variable: LAR

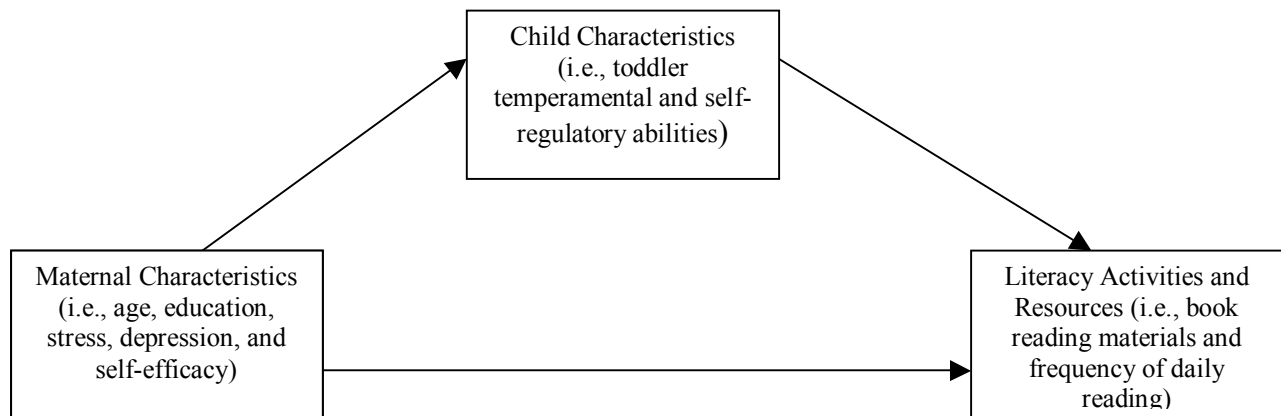


Figure 1. Mediation model: Hierarchical regression analysis examining the mediational role of child characteristics on the amount of reading materials and frequency of daily reading in the home of toddlers.

maternal education is a significant predictor of literacy activities and resources; however, toddlers' dysregulation appears to determine the literacy activities and resources over and above mothers' education for boys.

In regards to literacy activities and resources for girls, regression analyses revealed that in Block 1 that mom's age ($\beta = .28, p < .05$) and self-efficacy beliefs ($\beta = .54, p = .000$) predicted LAR. In order to test for mediation, competence and impulsivity were entered into block 2. Contrary to mediation found for boys, evidence of mediation did not emerge when child variables were entered into the second step for girls. Results indicated that competence ($\beta = .00, p = .98$) and impulsivity ($\beta = -.16, p = .21$) did not predict LAR. In fact, maternal self-efficacy beliefs emerged as the strongest predictor of the outcome. Results suggest that mothers' feelings of being competent in the parenting role may predict the reading materials and frequency of daily reading provided to toddlers. Finally, the overall R-square value was .41 for Block 1 and .44 for Block 2, with only 2% additional variance accounted for by the addition of the child variable into the model. Thus, maternal age is a significant predictor of literacy activities and resources; however, mothers self-efficacy beliefs appear to determine the literacy activities and resources.

Chapter 5: Discussion

The intent of this study was to assess how both maternal and child characteristics influence the literacy activities and resources employed in the homes of toddlers. Several studies have examined how maternal and child characteristics alone contribute to the literacy environment. However, the purpose of this study was to examine how a combination of maternal and child characteristics are related to the home literacy activities and resources of toddlers. In order to examine the possibility of their relationship, a secondary analysis of maternal report was conducted with a sample of 95 mother-toddler participants.

The findings revealed significant associations between mother and toddler characteristics and literacy activities and resources employed in the home. An initial examination of intercorrelations revealed gender differences in literacy activities and resources. One reason for this finding may stem from parental gender expectations of boys and girls. Hence, findings will be discussed as they relate to both gender groups.

In relation to the first research question, findings indicated that maternal characteristics related to literacy activities and resources that were provided to toddlers in this sample. For boys, maternal education positively correlated with the outcome variable. Studies have found that mothers with more education read more frequently to their children at a young age (Raikes et al., 2006). However, mothers' depressive symptomology and stress were negatively correlated with LAR (McLennan & Kotelchuch, 2000; Robinsion & Emde, 2004, Pan et al., 2005,). In addition, mothers' self-efficacy beliefs positively correlated with LAR for boys. Results also indicated as mothers experienced elevated levels of depression and stress; they were less likely to provide home

literacy activities and resources. More specifically, as depression scores increased, mothers were less likely to provide the necessary resources and reading time to their toddler boys. Research has indicated that maternal depression negatively affects the literacy and language development of young toddlers (Pan et al, 2005). More specifically, fewer word types spoken by toddlers were related to mothers' depressive scores. Depression also has been linked to a decline in daily reading to young children (McLennan & Kotelchuch, 2000). Other studies exploring the relationship of maternal behaviors to parenting practices have found that maternal stress leads to less conducive learning practices for young children (Sanders & Wooley, 2005).

In examining the second hypothesis, findings revealed that toddler boys' self-regulatory characteristics and not temperamental characteristics correlated with the outcome variable. Specifically, boys' dysregulation scores negatively correlated with LAR. However, toddler boys' competence scores positively correlated with LAR. The current findings suggest the more toddler boys exhibit dysregulatory capacities (i.e., heightened emotional responses and sensory sensitivity) the less likely mothers were to provide reading materials and reading time. Findings from the hierarchical regression analyses revealed that maternal self-efficacy beliefs significantly predicted the outcome variable. However, toddler characteristics, particularly dysregulation, explained additional variance in the outcome variable, LAR, even after controlling for maternal characteristics. Therefore, with regard to the third research question as it relates to toddler boys, child characteristics did significantly predict LAR after controlling for maternal characteristics. These findings suggest that mothers of toddlers who exhibit heightened emotional responses and who are unable to return to a positive state refrain from reading often to their

toddlers and provide less literacy materials or resources. Sex differences in young children's self-regulatory capacities have been a prominent finding in studies of young children. Boys more often than girls exhibit externalizing behaviors and negative emotionality (Rubin et al., 2003). In this study, boys also exhibited more dysregulatory capacities. In addition, dysregulation was highly predictive of the reading time and resources provided to toddlers. These findings support a growing body of research which shows that boys exhibit more negative behaviors than girls, which may have a negative impact on parenting practices.

The overall hierarchical regression analysis procedure demonstrated that the addition of toddler self-regulatory variables accounted for a significant amount of variance in toddlers' literacy experiences. Therefore, maternal characteristics, such as mothers' feelings of being competent in the parenting role, did not significantly predict the literacy experiences offered to toddler boys. However, boys' ability to refrain from demonstrating negative emotional responses did associate with activities. These findings may explain why some girls enter kindergarten and primary school with stronger literacy skills than boys (Ready, LoGerfo, Burkam, & Lee, 2005; Denton & West, 2002; Herbert & Stipek, 2005). For one study, Ready et al. (2005) found that boys' lack of attentiveness and task persistence contributed to less advantageous literacy skills.

With regard to the first research question for toddler girls, the findings indicated that maternal characteristics significantly predicted the number of book materials and also the frequency of daily reading activities. For girls, maternal age was positively related to the outcome variable. This finding corroborates other studies that examined the relationship between maternal age and home learning activities of young children. Younger

mothers tend to provide less book reading opportunities and literacy materials (Burgess, 2005). Less exposure to book reading may have a negative impact on young children's developing language and literacy skills because it enhances both oral language and print skills. Similar to boys, mothers' depressive symptomology and stress were negatively correlated with LAR. In addition, mothers' self-efficacy beliefs positively correlated with LAR. Correlations of maternal self-efficacy beliefs and the outcome variable appeared to be stronger for girls, indicating that maternal feelings of being competent in the parenting role may be predictive of LAR for this group.

In examining the second hypothesis, findings revealed that toddler girls' temperamental and self-regulatory characteristics correlated with LAR, more specifically competence and impulsivity. Girls' competence scores also positively correlated with the outcome variable. Studies have found that toddlers' competence appears to predict variations in toddlers' language development (Tamis-Lemonda & Bornstein, 1989; 1990). Therefore, the positive association between competence and LAR may explain why girls appear to have greater literacy skills than boys. Attentional focusing, a component of social-emotional competence, is often lacking in young boys who exhibit greater problem behaviors. In addition, toddler girls' impulsivity scores negatively correlated with LAR. Although studies often find boys are at an elevated risk of problems of impulsivity (Eisenberg et al., 2005), findings from this study found that girls were significantly more impulsive.

In answering the third research question, hierarchical regression analyses revealed that the addition of toddler girl characteristics did not add a significant amount of variance to the model. In fact, toddler characteristics only explained 2% of the variance in the

outcome variable, LAR. Therefore, an astounding 41% of the variance in literacy activities and resources was explained by maternal characteristics, primarily maternal self-efficacy beliefs. Maternal self-efficacy beliefs appear to be highly predictive of the storybooks offered and frequency of reading to toddlers. Therefore, the null hypothesis that toddler characteristics is related to with LAR over and above maternal characteristics, cannot be rejected. Hence, for girls, mothers' belief that they could exercise some influence on their toddlers' development predicted LAR. This finding may also explain girls' advantage over boys in literacy and language skills. Lynch (2002) found that mothers who held stronger beliefs in their ability to improve their young daughters reading achievement had daughters with positive perceptions of reading. Therefore, it appears that boys elevated behavior problems may impede on storybook reading time and also be related to the number of books provided in the home, while maternal competence in parenting may influence the availability literacy experiences offered to girls.

Limitations of the Study

The current study contains several limitations that should be taken into account when interpreting the results. The first limitation of the current study is the small sample size. The current sample contained only 95 participants. This number also was reduced when bivariate correlations and regression analyses were performed separately for boy and girls. The majority of participants were middle-class Caucasian mothers with a significant number holding a bachelors degree or higher. Therefore, the results are less generalizable to other more diverse populations.

A second limitation is that the current study relied solely on maternal self-report to assess maternal and toddler behaviors. Mothers completed the majority of questionnaires at

home. In addition, several items assessed home learning activities and mothers' views about parenting. Therefore, mothers desire to show a positive view of their parenting and toddler can produce may have contributed to an inaccurate portrait of the home environment.

A third limitation of the study was that only mothers participated. Although all caregivers influence the development of children, mothers were the primary participants in the study. Although the majority of participants indicated during the demographic interview that they spent the majority of time with their toddler, secondary caregivers were identified. In order to obtain an accurate portrait of young children's home environments and behaviors that may predict the amount of reading materials offered and frequency of daily reading, fathers and other primary caregivers views on the developing child are needed.

A fourth limitation of the present study was the narrow definition of the outcome variable, literacy activities and resources. Due to the limited nature of the Home Environment Questionnaire from which the outcome variable was selected, only two items were available to construct the variable. Although items that have been found previously to relate to young children's literacy development were chosen (i.e., book materials and frequency of daily reading), it must be noted that there are other relevant literacy-related materials that may enhance children's literacy development such as writing materials and family literacy-related activities such as print materials used by adults.

Contributions to the Body of Literature

Despite several limitations, the present study does make a number of important contributions to the literature. The first is the examination of the language and literacy environments of toddlers. Most studies rely primarily on the environments of preschoolers in researching literacy development (Roberts et al., 2005; Bus et al., 1998; Purcell-Gates, 1996; Burgess & Lonigan, 1998). However, in order to improve young children's reading achievement, the nature of their environment must be examined to help parents and caregivers. Research suggests we should start with infants and toddlers in understanding literacy acquisition (Dodici et al., 2003; Raikes et al., 2006). The notion that literacy begins during the start of formal education must be expelled. Children acquire the necessary skills to read from authentic interactions with literacy materials and activities (i.e., book reading and exposure to reading and writing materials) when they are infants and toddlers.

Another key contribution of findings to the literature is an extension of the importance of using an ecological perspective when examining the language and literacy environment of young toddlers. The findings of this study revealed that young toddler boys and girls are provided various number of literacy experiences. Although several studies have indicated there are disparities in males and females reading achievement, few studies have examined together the separate maternal and child factors that are associated with differences in reading achievement for males and females (Marschick et al., 2007). In addition, the nature of the experiences (i.e., reading frequency and book reading materials) may be determined by two different factors for boys and girls. Although boys' self-regulatory capacities were positively associated with their exposure to literacy materials

and activities, for girls, the primary influence on literacy materials and activities was the mother. Hence, the study contributed to the literature by showing how both maternal and child factors may associate with variations in the home literacy environment of toddlers.

Future Directions

In future work, it would be useful to identify differing pathways that may affect literacy for boys and girls. As previously noted, findings indicated that elevated levels of physiological dysregulation as measured by the ITSEA significantly predicted LAR for boys. Whereas for girls, mothers who were older and those who had greater confidence in their parenting abilities, engaged in more daily reading and provided more book materials. Therefore, future research may want to explore differing pathways that may affect literacy for boys and girls. In addition, the use of observational and qualitative techniques of research may provide a more accurate portrait of the home literacy environments of toddlers. Aspects of the home environment that may aid in young toddlers acquisition of literacy and reading, such a reading materials used by adults, print and writing materials, and talk between mother and child should be examined in the future with maternal and child factors. As discussed previously, the sample was not diverse or high risk. Therefore, in order to increase the generalizability of the present findings, future research should replicate the association found in this study with other diverse populations and high risk toddlers.

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