PARENT-CHILD SHARED READING: THE AFFORDANCES OF PRINT, DIGITAL, AND HAND-HELD ELECTRONIC STORYBOOKS

by

Ji Eun Kim

B. Sc., Chung-Ang University, 1998
B. A., Kyung Hee University, 2000
M.A., The University of British Columbia, 2006

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

The Faculty of Graduate Postdoctoral Studies (Language and Literacy Education)
THE UNIVERSITY OF BRITISH COLUMBIA (Vancouver)
November 2014
© Ji Eun Kim, 2014
Abstract

This study examines affordances of books involving different media in parent-child shared reading. Children and families increasingly use books and other literacy materials in digital format (Unsworth, 2006) in addition to those in traditional print/paper format. Although there have been studies about parent-child shared reading of digital books, the present study, by employing systemic functional linguistics (SFL) as the analytic tool, provides more in-depth and nuanced understandings of how different digital/physical features of books are related to types (e.g., questions) and processes (e.g., ways to build meanings) of parent-child interactions during shared reading.

Based on Vygotsky’s socio-historical development theory and SFL, this study examines the verbal interactions of 20 dyads and their construction and negotiation of meanings while sharing of different books (one print [PB], one electronic [LB] and two digital books [DB1 and DB2]). The analysis revealed that the dyads used certain types of talk considered to encourage expansion of children’s thinking more often in the PB and LB contexts than in the other two contexts. Also, the dyads had more sustained interactions in the PB and LB contexts, which allowed them to negotiate meanings through these conversations and discussions. Furthermore, the foci of the dyads’ talk were different across the contexts: some digital features of the LB and DB1 appeared to lead the talk more towards technical aspects rather than towards the meaning of the stories. These findings further suggest that shared reading of different formats of books provide children with different learning opportunities.

The study enhances our understanding of differences in parent-child verbal interactions, and of contextual elements, as well as the relationship between the two. These in-depth understandings suggest implications for the development of better quality digital books, and for more productive uses of digital books at home and school. Moreover, the study provides further evidence of an alternative way to examine parent-child verbal interactions (cf. Hasan, 1989; Williams, 1994) by utilizing SFL, which allows researchers to examine interactions (e.g., questioning) and contexts (e.g., focus of talk) in detail. This detailed examination, in turn, complements the analysis of language in Vygotsky’s theory.
Preface

This dissertation is original, unpublished, independent work by the author, J.E. Kim. The fieldwork reported in Chapters 5-7 was covered by UBC Ethics Certificate number H09-00701.
## Table of Contents

Abstract ........................................................................................................................................ ii

Preface ......................................................................................................................................... iii

Table of Contents ........................................................................................................................ iv

List of Tables ............................................................................................................................... xi

List of Figures ........................................................................................................................... xiii

Acknowledgements .................................................................................................................... xv

Dedication .................................................................................................................................. xvi

CHAPTER ONE: INTRODUCTION ........................................................................................ 1

1.1 Introduction to the Study ................................................................................................... 1

1.2 Rationale for the Study ...................................................................................................... 2

1.3 Purpose of the Study .......................................................................................................... 4

1.4 Research Questions ............................................................................................................ 4

1.5 Overview ............................................................................................................................ 5

CHAPTER TWO: VYGOTSKIAN SOCIOHISTORICAL PERSPECTIVE ............................ 7

2.1 Introduction ....................................................................................................................... 7

2.2 Human Development ......................................................................................................... 7

2.3 Development of Higher Mental Functions ...................................................................... 10

2.4 Mediation ............................................................................................................................ 12

2.4.1 Language as Semiotic Mediation ............................................................................... 13

2.4.2 Language in Semiotic Mediation ............................................................................... 15

2.5 The Role of Adults’ Mediation in Young Children’s Literacy Development .................... 17

2.6 Some Limitations of Vygotsky’s Theory ........................................................................... 19

2.7 Some Complementary Theories: Bakhtin and SFL ............................................................ 21

2.7.1 Similarities in Vygotsky, Bakhtin, and Halliday (SFL) ................................................. 21
4.3.2 Parent-Child Interactions Comparing Print and Digital Text Reading Contexts ...... 71
4.4 Focus of Parent-Child Interactions During Shared Reading ...................................... 74
4.4.1 Visual Attention During Parent-Child Shared Reading ............................................ 74
4.4.2 Verbal Attention During Parent-Child Shared Reading ............................................ 76
4.5 Some Gaps in Previous Studies About Parent-Child Shared Reading ...................... 78
4.5.1 Gaps in the Analysis of Verbal Interactions .............................................................. 78
4.5.2 The Analysis of Digital Texts .................................................................................... 82
4.5.3 Parent-Child Shared Reading Studies That Utilized Linguistic Theories ................. 84
4.6 Summary .......................................................................................................................... 87

CHAPTER FIVE: METHOD ................................................................................................... 88
5.1 Introduction ...................................................................................................................... 88
5.2 Participants ....................................................................................................................... 88
5.2.1 Sampling .................................................................................................................... 88
5.2.2 The Participating Families/Parent-Child Dyads ........................................................ 89
5.3 Data Collection ................................................................................................................ 89
5.3.1 Interview with the Parents ......................................................................................... 89
5.3.2 Shared Reading Sessions ........................................................................................... 90
5.3.2.1 The books .......................................................................................................... 91
5.3.2.2 The selection of the books ................................................................................ 94
5.3.2.3 Order of books in parent-child shared reading .................................................... 97
5.3.3 Technical Issues with Data ........................................................................................ 97
5.4 Data Preparation for Parent-Child Shared Reading Sessions ......................................... 99
5.4.1 Data Inclusion ............................................................................................................ 99
5.4.2 Conventions for Transcription of Parent-Child Shared Reading Data .................... 101
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>Data Analysis</td>
<td>103</td>
</tr>
<tr>
<td>5.5.1</td>
<td>Analysis of Interview with the Parents</td>
<td>103</td>
</tr>
<tr>
<td>5.5.2</td>
<td>Analysis of Audiotaped Parent-Child Shared Reading Sessions</td>
<td>104</td>
</tr>
<tr>
<td>5.6</td>
<td>Semantic Network Analysis as an Analytic Tool</td>
<td>105</td>
</tr>
<tr>
<td>5.6.1</td>
<td>Advantages of Semantic Network Analysis</td>
<td>105</td>
</tr>
<tr>
<td>5.6.2</td>
<td>Semantic Networks</td>
<td>107</td>
</tr>
<tr>
<td>5.6.3</td>
<td>Types of Semantic Networks</td>
<td>108</td>
</tr>
<tr>
<td>5.6.4</td>
<td>The Semantic Unit: Message</td>
<td>110</td>
</tr>
<tr>
<td>5.6.5</td>
<td>Progressive Versus Punctuative Messages</td>
<td>112</td>
</tr>
<tr>
<td>5.7</td>
<td>Criteria for Assessing the Quality of the Research Design</td>
<td>113</td>
</tr>
<tr>
<td>5.8</td>
<td>Ethics and Consent</td>
<td>114</td>
</tr>
<tr>
<td>5.9</td>
<td>Summary</td>
<td>114</td>
</tr>
<tr>
<td>6.1</td>
<td>Introduction</td>
<td>116</td>
</tr>
<tr>
<td>6.2</td>
<td>Findings from Interview with Parents</td>
<td>117</td>
</tr>
<tr>
<td>6.2.1</td>
<td>Children’s Home Print Literacy Activities and Practices</td>
<td>117</td>
</tr>
<tr>
<td>6.2.2</td>
<td>Children’s Home Computer Activities and Practices</td>
<td>118</td>
</tr>
<tr>
<td>6.2.3</td>
<td>Parental Perspectives on Their Children’s Literacy Practices</td>
<td>120</td>
</tr>
<tr>
<td>6.3</td>
<td>Findings from Shared Book Reading Sessions</td>
<td>123</td>
</tr>
<tr>
<td>6.3.1</td>
<td>Descriptions of Shared Reading Sessions</td>
<td>124</td>
</tr>
<tr>
<td>6.4</td>
<td>Overview of Messages</td>
<td>125</td>
</tr>
<tr>
<td>6.5</td>
<td>Expansion and Construction of Thoughts</td>
<td>126</td>
</tr>
<tr>
<td>6.5.1</td>
<td>Questions in Parent-Child Dyads’ Talk</td>
<td>128</td>
</tr>
<tr>
<td>6.5.1.1</td>
<td>Parents’ questions</td>
<td>132</td>
</tr>
</tbody>
</table>
6.7.5 Summary of the Focus of the Parent-Child Dyads’ Talk ........................................... 206
6.8 Examples: The Expansion and Construction of Thoughts in Parent-Child Discussion . 207
6.9 Summary ........................................................................................................................ 218

CHAPTER SEVEN: CONCLUSIONS, IMPLICATIONS AND FURTHER RESEARCH
..................................................................................................................................................... 219
7.1 Introduction .................................................................................................................... 219
7.2 Interpretation of Variation: Affordances of Different Formats of Books ................. 220
  7.2.1 Contexts of Situation: Texts ..................................................................................... 220
  7.2.2 Contexts of Situation: Dyads’ Interactions .............................................................. 220
7.3 Concluding Comments ................................................................................................. 225
7.4 Implications .................................................................................................................... 228
  7.4.1 Theoretical and Methodological Implications ........................................................... 229
    7.4.1.1 Social interactions and thinking during shared reading .................................. 229
    7.4.1.2 Social interactions and contexts in shared reading ......................................... 230
    7.4.1.3 The examination of social interactions within shared reading contexts
    ................................................................................................................................. 231
  7.4.2 Practical Implications ............................................................................................... 234
    7.4.2.1 Implications for families ................................................................................. 234
    7.4.2.2 Implications for educators and curriculum planners ....................................... 236
    7.4.2.3 Implications for publishers of digital books ................................................... 239
7.5 Significance of the Study ............................................................................................. 240
7.6 Limitations .................................................................................................................... 241
7.7 Further Research ........................................................................................................... 243

Bibliography .......................................................................................................................... 245
Appendices .............................................................................................................................. 258
Appendix A: Letter of initial contact ................................................................. 258
Appendix B: Parent consent form ................................................................. 262
Appendix C: Interview with the parent/primary caregiver about children’s literacy and computer experience at home ........................................................................ 267
Appendix D: Book reading instructions ......................................................... 269
Appendix E: Questionnaire for each parent-child shared book reading session 272
Appendix F: Semantic network .................................................................... 274
Appendix G: Statistical results ...................................................................... 313
List of Tables

Table 5.1: Differences in the properties of the four books ................................................... 93
Table 5.2: Comparison of the texts ....................................................................................... 96
Table 5.3: The order of books in parent-child shared reading .............................................. 98
Table 6.1: Types of books for shared reading and children’s independent reading .......... 117
Table 6.2: Types of literacy activities at home ....................................................................... 118
Table 6.3: Types of digital materials/tools in children’s home literacy activities .......... 119
Table 6.4: Commencement of computer experience ........................................................... 120
Table 6.5: Means of the dyads’ punctuative messages, progressive messages and total number of messages .......................................................................................................................... 126
Table 6.6: Means of parents’ and children’s questions ......................................................... 130
Table 6.7: Number of parents and children not asking questions in each context .......... 130
Table 6.8: Means of the dyads’ use of y/n questions and wh- questions ......................... 131
Table 6.9: Means of the parents’ and children’s questions for further information .......... 146
Table 6.10: Means of the parents’ and children’s comments providing further information 149
Table 6.11: Dyads’ comments providing further information on their own or each other’s utterances ............................................................................................................................. 150
Table 6.12: Means of the parents’ and children’s comments on each other’s utterances ... 151
Table 6.14: Means of parents’ and children’s projection of an idea with probabilities ...... 160
Table 6.15: Means of the parents’ and the children’s projection of knowledge ............... 163
Table 6.16: The parents’ and children’s messages construing [follow] ......................... 172
Table 6.17: The dyads’ messages construing [follow] ...................................................... 173
Table 6.18: Means of the parents’ and children’s operational talk ..................................... 187
Table 6.19: Means of reference to child as an effector and digital/physical-related aspects as a goal .......................................................................................................................... 188

Table 6.20: Means of reference to metalinguistic items and [being] ........................................... 199

Table 6.21: Means of parent-child dyads’ reference to character ............................................. 201

Table 6.22: Means of reference to character and [doing] ........................................................... 202

Table 6.23: Means of instances in the dyads’ talk referencing illustrations .............................. 203

Table 6.24: Means of dyads’ reference to illustrations and [being] .......................................... 205

Table 7.1: Variations in the contexts of situations in parent-child dyads’ shared reading . 225

Table F.1: The realizations and examples of each feature in [demand;information] ........... 294

Table F.2: Realizations and examples of each feature in [demand/give;goods and services] ................................................................................................................................. 296

Table F.3: The realizations and examples of each feature in [doing] ........................................ 302

Table F.4: Categories of referential significations of the options [effecting], [effector] or [purview] .......................................................................................................................... 303

Table F.5: The realizations and examples of each feature in [being] ......................................... 306

Table F.6: Sub-choices, descriptions and examples of each feature in [punctuative] ....... 308
List of Figures

Figure 2.1: Complementarity between Vygotsky’s theory and SFL .......................... 30
Figure 3.1: Context and language ........................................................................ 35
Figure 3.2: Dimensions of analytic systems of context, text and lexicogrammar .......... 44
Figure 4.1: Dimensions of analytic systems of text and lexicogrammar for messages .... 86
Figure 5.1: Example of a semantic network ........................................................... 110
Figure 6.1: Means of the parents’ selection of [confirm] (y/n questions) and [apprize] (wh-questions) ............................................................................................................ 134
Figure 6.2: Means of the parents’ use of different types of questions ....................... 136
Figure 6.3: Means of the children’s selection of [confirm] (y/n questions) and [apprize] (wh-questions) ............................................................................................................ 139
Figure 6.4: Means of the children’s use of different types of questions ................... 141
Figure 6.5: Means of the parents’ and children’s questions .................................... 143
Figure 6.6: Means of the parents’ and children’s initiation of interactions .............. 168
Figure 6.7: Means of the dyads’ talk about different references ............................. 192
Figure 6.8: Means of instances in the parents’ and children’s talk referencing metalinguistic items ................................................................................................................... 195
Figure F.1: Some choices in a network of [prefaced] ............................................. 275
Figure F.2: Some choices for [subjective] .............................................................. 276
Figure F.3: Some choices for [prefaced] and [nonprefaced] .................................... 281
Figure F.4: Some choices for [follow] ................................................................. 286
Figure F.5: Some choices in the feature [demand;information] ............................ 290
Figure F.6: Some choices for the feature [confirm] ............................................. 293
Figure F.7: Some choices for [apprize] .............................................................. 293
Figure F.8: Further features for [demand/give;goods and services] ..................... 295
Figure F.9: Some choices in the feature \textit{give;information} ............................................... 298

Figure F.10: Semantic systems and choices in experiential meaning ........................................ 304

Figure F.11: Semantic systems and choices in \textit{punctuative} messages ....................................... 310
Acknowledgements

I would like to express my sincere thanks to the following people for their intellectual and personal support for this study. First of all, to my two supervisors, Professors Geoff Williams and Jim Anderson, who provided me with crucial mentoring, advice and inspiration that encouraged me to grow academically and personally, to push myself further, and to surmount the challenges of conducting and writing this study.

I also thank Professors Ann Anderson and Nand Kishor, for their advice when I needed to further my research. Dr. Ann Anderson provided invaluable insights, and Dr. Nand Kishor supported the statistical analyses with prompt advice.

I am extremely grateful to the most important people for my study, the participating parents and children who generously provided their time and shared their book reading conversations, home reading practices and perspectives on reading.

I also owe much to the professors and colleagues at the Department of Language and Literacy Education. Professors Victoria Purcell-Gates, Theresa Rogers, Maureen Kendrick, Marlene Asselin, and Steven Talmy always encouraged and inspired my work. I would like to express a special thanks to Dr. Victoria Purcell-Gates for her continuous encouragement and academic inspiration. She also provided me with an invaluable opportunity to be part of the literacy studies’ research team (CPLS). Many friends, including Nicola Friedrich, Ryan Deschambault, Diane Potts, Kathryn Shoemaker, Marianne McTavish, Kim Lesters, Bong-Gi Sohn, Diane Collier, and Mi-Young Kim have inspired, shared their thoughts and helped me whenever I faced academic and personal challenges throughout the doctoral program. Lucía Terra provided great help editing my dissertation.

I thank the institutions and organizations who provided generous financial support in the form of awards and scholarships, including the University of British Columbia (University of BC Graduate Fellowship, Patrick David Campbell University Graduate Fellowship, and Pacific Century Graduate Scholarship), UBC Faculty of Education Graduate Studies, UBC Faculty of Education, UBC Department of Language and Literacy Education, Vancouver Korean-Canadian Scholarship Foundation, and the Embassy of the Republic of Korea.

Lastly, I would like to thank my family, who provided me with unconditional love and support throughout my years of education. A special “thank you” goes to my parents and parents-in-law, who patiently supported my study.
Dedication

This dissertation is dedicated to my husband, Joon Seok Cheon and to my son, Ryan Cheon. You two provided a home for my soul and mind in my academic and life journey. We shared joys and sorrows, enjoyed triumphs, and overcame challenges together over the years of study. Your love, patience, and unconditional support during physical and emotional challenges fulfilled my family life and allowed me to complete this journey.
CHAPTER ONE: INTRODUCTION

1.1 Introduction to the Study

Adult-child shared book reading has been considered one of the most prominent activities for young children’s literacy development, as it is thought to promote children’s interests in reading, and to contribute to their cognitive, language and literacy development. Over the last two decades many studies have examined parent-child interactions during shared reading, and their positive influences on young children’s development. One of the key findings is that adult mediation appears to play a key role in children’s learning (Meshcheryakov, 2007), although the form of that mediation and the roles of adults and children vary across social and cultural groups (Rogoff, 2005).

Research on parental mediation in shared reading has investigated the quality of parents’ talk, such as “parental style” of reading (e.g., Flood, 1977) and different levels of abstraction (e.g., Reese, 1995; van Kleeck, Gillam, Hamilton, & McGrath, 1997), and shown the importance of the decontextualization of language during shared book reading (Snow, 1983). Studies have shown positive relationships between the amount of abstract talk (e.g., De Temple, 2001; De Temple & Snow, 1996; Reese, 1995), use of open-ended questions (wh- questions) (e.g., Lonlgan & Whitehurst, 1998; Peterson, Jesso, & McCabe, 1999), and dialogic reading\(^2\) (e.g., Mol, Bus, de Jong, & Daisy, 2008; Wells, 1985) and children’s development. Those types of mediation often go beyond the current context, encouraging children’s cognitive development.

---
\(^1\) In North America, young children are defined as children from 0 to 8 years old.

\(^2\) Dialogic reading refers to shared reading between an adult or older person and a child or children that involves verbal discussion (questioning, answering, etc.) and taking turns.
(e.g., abstract thinking), and providing children with a context to rehearse verbal discussion and
to develop word meanings and phonological awareness.

As might be expected, the majority of research on parent-child shared reading has been
with traditional print texts. However, the availability of digital texts is rapidly increasing, and
they are becoming one of the major resources in young children’s reading (e.g., Kim, 2011;
Rideout, Vandewater, & Wartella, 2003; Saine, 2012; Unsworth, 2006; Wood, 2004). Moreover,
most studies have examined the interactions through a cognitive lens. In order to expand our
understanding of parent-child shared reading, the current study examined parent-child shared
reading of a print book and different types of digital texts: a hand-held electronic book, a digital
text with control icons, and a digital text with automatic play. As well, this study utilized
Vygotsky’s socio-historical theory of young children’s development and learning, and a socio-
linguistic perspective employing systemic functional linguistics (SFL). Central to SFL is the
notion that “language is understood in its relationship to social structure” (Halliday & Hasan,
1985, p. 4), and that language usages and meanings are closely related with language systems,
social systems and contexts. SFL enables researchers to systematically examine text (parent-
child interactions), context (in which the parent-child dyads interact), and the relationship
between the text and the context. Employing both Vygotsky’s socio-historical theory and SFL to
document and analyze parent-child interactions in shared reading of various formats of digital
and print texts allows for a more systematic and contemporary examination of the phenomenon.

1.2 Rationale for the Study

Literacy is increasingly being mediated by digital technology (e.g., Knobel & Lankshear,
2006), as diverse forms of electronic texts become available to children and caregivers
(Unsworth, 2006). In addition, many young children have considerable experience with computers and other forms of technology before schooling (Rideout et al., 2003). Despite the proliferation of digital texts, and the increased use of technology devices and Internet at home, there is relatively little research involving young children as they (and their parents or caregivers) interact with these new forms of texts. The few studies that have examined this phenomenon have yielded inconsistent results. For instance, in terms of the focus of talk, Smith’s (2001) study showed that the primary focus of mothers and children was on illustrations; on the other hand, Kim and Anderson’s (2008) study showed that a mother and her children focused more on story content. Furthermore, the potential effect of the multimodal features of digital texts—such as hyperlinks, animations and/or automated play—has not been closely examined in relation to parent-child verbal interactions during shared reading.

Previous studies (e.g., De Temple, 2001; De Temple, & Snow, 1996; Reese, 1995) have shown a positive relationship between parent-child shared reading and children’s development. Yet, they have not explained the ways language contributes to children’s construction of meanings during shared reading, as most of those studies did not consider language in use, that is, exchanging and building meanings during interactions. By utilizing SFL as an analytical tool to examine language in use, this study will provide a more complete understanding of how parent-child verbal exchanges or interactions contribute to children’s construction of meanings in shared reading events. Furthermore as mentioned, most studies have not examined the role of multimodal features of digital texts as this study does. Thus, this study will extend our knowledge of parent-child shared book reading in contemporary society.
1.3 Purpose of the Study

Given the inconsistent results shown in the relative dearth of studies on shared book reading of digital texts, and the lack of examination of the interactions from a language-in-use perspective, further research is needed. The current study attempts to address the gaps in the literature by furthering our understanding of the potential influences of the formats of books (print vs. electronic) on parent-child interactions during shared reading. These interactions, in turn, are related to young children’s literacy development (e.g., Reese, 1995). Specifically, the study investigates the affordances and constraints of a print book (PB), a hand-held electronic book (LeapFrog book; LB), a digital text with page turning (DB1), and a digital text with automatic play (DB2) in parent-child interactions during shared reading. To examine language use in those interactions, Vygotsky’s theory in early development and learning, and systemic functional linguistics (SFL) were utilized as analytical tools.

1.4 Research Questions

The following research questions guided the current study:

1) What are the similarities and differences in the verbal interactions as parents and their preschool children engage in shared reading of books in four different formats (PB, LB, DB1, and DB2)?

2) Are there patterns of parents’ and children’s verbal interactions during shared reading within these four types of books, and if so, what are they?

3) Do the digital/physical features of the four books appear to influence parent-child interactions and context of situation, and if so, in what ways?
1.5 Overview

This dissertation is organized as follows. In Chapter 2, I present Vygotsky’s theory, as it applies to children’s learning and development and the key role of parental mediation. Then, I discuss concerns about methodological issues that scholars (e.g., Hasan, 2005a; Wells, 1999; Wertsch, 1991; Williams, 1994) have raised about Vygotsky’s theory, in particular, in relation to examining adult-child verbal interactions. I then explain how SFL provides possibilities of addressing these issues in a manner that is complementary to a Vygotskian perspective. In the following chapter, I explain the theoretical principles of SFL, including the key interrelated concepts of culture, text, and context, different levels in language systems, and metafunctions in language systems.

In Chapter 4, I review the related literature on parent-child shared book reading through the lenses of Vygotskian theory and SFL, noting gaps, and possibilities. I describe the methods used for the current study in Chapter 5, including information about the 20 participating families, the four books used in the study, and procedures of data collection and analysis. I also explain the rationale for my decision on the inclusion of data, and advantages and definition of semantic network analysis, an analytic method in SFL used for data analysis.

In Chapter 6, I first report on the participants’ home literacy and computer practices, and shared reading sessions. Then, I present the findings from the analysis of the parent-child interactions using semantic network analysis. I report the findings of the statistical tests of the frequencies of semantic features and describe variations in parent-child interactions across the

---

3 I present all the semantic features used, with definitions, realization statements, and examples of the semantic features in Appendix F.
four book contexts. I conclude this chapter by discussing these findings in relation to findings from previous studies. In the final chapter, I draw conclusions, discuss the significance of the findings, and conclude with implications for theory, practice, and future research.
CHAPTER TWO: VYGOTSKIAN SOCIOHISTORICAL PERSPECTIVE

2.1 Introduction

From birth, children typically receive a large amount of caregivers’ attention through social interactions. Caregivers understand and respond to children’s verbal and non-verbal behaviors based on the values and norms of their community. Through the interactions, children learn socially situated meanings\(^4\) from caregivers, a phenomenon described and popularized by Vygotsky (1978; 1986).

In this chapter, Vygotsky’s basic principles of human development are examined first. Then, the development of higher mental functions, which Vygotsky considered essential mental processes in human development, is described. Next, adults’ mediation is examined as it plays a key role in the development of higher mental functions in children. The last part of this chapter focuses on some limitations in Vygotsky’s theory in understanding mediation that have been raised by some scholars.

2.2 Human Development

According to Vygotsky (1978; 1986), there are two planes in human development: *natural development* and *socially mediated development*. Natural development is considered to be related to elementary mental functioning such as “prelinguistic thought, preintellectual speech, associative memory, basic forms of attention, perception, and volition” (Bakhurst, 2007, p. 52). However, socially mediated development enables the development of higher mental functioning.

\(^4\) Here, socially situated meanings refer to the meanings representing socio-cultural values and norms within a culture that are presented in verbal and non-verbal interactions.
which uniquely exists in humans. Higher mental functions include “linguistic thought, intellectual speech, ‘logical’ memory, voluntary attention, conceptual perception, and ‘rational’ will” (Bakhurst, 2007, p. 53). In socially mediated development, mediated activities involving signs (as internal means) and tools (as external means) play an important role; for example, parent-child shared book reading (a mediated activity) involves parent-child discussion (sign) and a book (tool). These mediated activities enable children to use signs and tools in a socio-culturally appropriate way, and to develop their understanding and uses of socio-culturally situated meanings of language. These developments through mediated activities lead children to develop their abstract thinking. Vygotsky (1978) considered development as being “spiral, passing through the same point at each new revolution while advancing to a higher level” (p. 56). The spiral nature of development continuously occurs as higher mental functions are acquired.

Within a Vygotskian framework, there are four distinctive qualities that can distinguish higher mental functioning from elementary mental functioning. These are:

(1) the shift of control from environment to the individual (related to the emergence of voluntary regulation); (2) the emergence of conscious realization of mental processes; (3) the social origins and the social nature of higher mental functions; and (4) the use of signs to mediate higher mental functions. (Wertsch, 1985, p. 25)

It is understood that higher mental functioning, including some psychological processes involving abstract thinking, enables humans to be independent from the physical environment, or what is sometimes referred to as decontextualization of the environment (Vygotsky, 1978). Vygotsky’s (1978) explanations about development of memory in young children and the
transformation of memory into abstract thinking shows that young children recall specific
instances or incidents that happened to them, while adolescents utilize other cognitive functions
to produce abstract thinking. For instance, young children remember names of objects, and older
children remember objects categorized by concepts, such as colors, shapes and properties of the
objects. These are examples of the differences between elementary and higher mental functions.
Vygotsky (1978) further explained two different levels of mental functions:

In the elementary form something is remembered; in the higher form humans
remember something. In the first case a temporary link is formed owing to the
simultaneous occurrence of two stimuli that affect the organism; in the second
case humans personally create a temporary link through an artificial combination
of stimuli. (Vygotsky, 1978, p. 51)

As Vygotsky’s explanations show, higher mental functions are decontextualized, abstract aspects
of human mental development. They include certain psychological processes—such as
perception, memory, and attention—that are developed through social interactions and semiotic
mediation (Vygotsky, 1978; Lee, 1985). Semiotic mediation refers to “mediation by sign,”
(Wertsch, 1985, p. 32) such as parents’ labeling of an object, or making knots to record a number
of objects. Though sign includes any kind of sign system, language was the main focus in
Vygotsky’s work (Wertsch, 1985). The use of signs is essential to higher mental functions, as it
enables people to think about objects without the presence of those objects. The following
section further explains ways in which higher mental functions develop.
2.3 Development of Higher Mental Functions

Vygotsky (1986) emphasized the development of higher mental functions as a distinctive characteristic of humans. He postulated two key mechanisms that are closely related to the development of higher mental functions: internalization of social interactions and the zone of proximal development. Social interactions that occur during social activities greatly influence every stage in young children’s mental development, from elementary to higher mental functions. This development occurs through internalization of social interactions. Vygotsky (1978) referred to internalization in young children’s mental development as “the internal reconstruction of an external operation” (p. 56). Vygotsky (1986) argued that the development of thought occurs from inter-mental (external, social) to intra-mental (internal, individual) activity (Wertsch & Stone, 1985).

For instance, young children who recognize different colors, but do not know the names of the colors yet, will be able to build their knowledge about colors through social interactions (verbal and gestural mediation) with their parents or other caregivers. In this example, the parents’ labeling of colors would be the semiotic mediation that helps the children connect their own perception of different colors with their signs (names of colors). The interactions between the children and parents are inter-mental, and the children’s mental process of connecting their perception and names of colors is intra-mental. As this example shows, the use of signs (labeling), which first originates in external social activities, is then transmitted to internal individual activities in the formation and evolution (functional shifts) of their mental functions.

---

5 Here, social activities refer to joint activities that appear “to be mediated in three different ways: (1) by an adult (mediator), (2) by the sign (semiotic artifact), and (3) by the book (technological artifact)” (Meshcheryakov, 2007, p. 167).
(Wertsch, 1991). In this way, the sign operation, labeling, is a key aspect in the process of internalization (Wertsch & Stone, 1985). Through this process, children learn both the names of colors and a way to use them in social interactions. Moreover, in that process, parents transmit cultural values, as certain colors have different values in different social and cultural traditions. For example, red means luck in Chinese culture. The mediation carrying socially conventional expressions and cultural values encourages the children to connect those expressions and values with their own mental processes of color perception. Thus, children learn to use signs in a way that enables them to function as cultural individuals. This socialization process is the basis of cultural transmission of social aspects, such as language uses and values.

The development of higher mental functions involves intellectualization, that is, “spontaneous mental functions” that occur in interactions between external and internal activities (Meshcheryakov, 2007, p. 163). In the internalization stage, external signs are used to solve internal problems, while in the intellectualization stage, inner speech is used to solve problems. For instance, in the example given by Vygotsky (1986), in the internalization stage, the children use fingers as external aids to count objects, while in the intellectualization stage they count in their heads with inner speech—without external aids. Thus, the use of signs is crucial in children’s mental development.

According to Vygotsky (1978), there are two different levels in children’s development: actual development and the zone of proximal development (ZPD). Actual development is the level at which children can solve problems by themselves, while ZPD is the level of difficulty at which children cannot solve problems without an adult’s or expert’s guidance. Vygotsky stated that, “the only ‘good learning’ is that which is in advance of development” (p. 89). For instance,
social interactions between a teacher and his/her children enable the construction of meanings that enhances the children’s understanding of concepts they might not have obtained yet. Based on their own knowledge, the children incorporate new understanding obtained from the teacher’s mediation, so that it becomes a part of their knowledge. Thus, an adult’s or expert’s mediation within the children’s ZPD is seen as an essential aspect of children’s development of higher mental functions.

2.4 Mediation

As explained in the previous section, adults’ mediation enables the connection of “social and historical processes” and “individual’s mental processes” in the process of children’s internalization (Vygotsky, 1978, pp. 56-57). Some studies have shown that different types of mediation generate different inter-mental activities, which ultimately influence the formation of one’s intra-mental functioning. For example, Sigel’s (1984) study showed that parents’ more abstract level of mediation through their questions or comments encouraged their children’s abstract thinking.

As mentioned before, there are two mediational means: tools (technical tools) and signs (psychological tools) (Vygotsky, 1978). Signs include language and behavior, among others (gestures or physical actions) (Rogoff, 1991, 1995). However, Vygotsky (1978, 1986) mainly focused on language as a means of mediation; he considered language as the primary and crucial way adults support and encourage young children’s cognitive development, especially in western societies (Wertsch, 1991). In the following sections, I present Vygotsky’s notions on language as semiotic mediation and language in semiotic mediation.

---

6 Examples are: clapping hands means applause, and waving hands means “good bye.”
2.4.1 Language as Semiotic Mediation

Vygotsky’s focus on language as a mediational mean is related to his notions about a close relationship between language and thought (Vygotsky, 1986). In terms of the nature of language and thought, Frawley (1997) pointed out that, in Vygotsky’s theory, language and thought are opposite in terms of their origination and goals.7 Speech8 is an external aspect that originates outside of one’s mind and in a social context, while thought is an internal aspect that originates inside one’s mind. In terms of development, language develops from smaller to larger, “from the word to phrase to the sentence,” while thought develops in the opposite direction, “from the synthetic whole to the individuated analyzed concept” (Frawley, 1997, p. 91). In the course of its development, young children’s language develops from simple to complex, while thought develops from general to specific. For instance, very young children may use the word “mommy” to get food, help or a hug. Later, they use more complex forms of language, such as “mommy, food,” “mommy, help me” or “mommy, hug.” In terms of their thought, very young children may have the perception of food as being something that they can eat. Later, they can build their thoughts more specifically, identifying different kinds of food like milk, cheese, and apples.

Vygotsky regarded language and thought as being two different entities. Yet, he considered that both entities are closely related and consistently influence each other in their changes and evolution (Vygotsky, 1986; Wertsch, 2007). Bruner explained this point in

---

7 Frawley (1997) considered goals as directions of language and thought development, such as general to specific.

8 Here, speech particularly refers to verbally presented language through words in human communication (Wertsch, 2007). Language here is a general term referring to a kind of sign system in human communication involving linguistic systems and meanings.
Vygotsky’s theory:

Language is a way of sorting out one’s thoughts about things .... Thought is a mode of organizing perception and action. But all of them, each in their way, also reflect the tools and aids available for use in carrying out action. (Bruner, 1985, p. 23)

The relationship between the two and the influences on each other evolve over the course of children’s development. In the early stages of development, speech and thought develop in parallel, and in later stages of development, they fuse together (Vygotsky, 1986). The fusion of speech and thought is essential in young children’s development of inner speech through social interactions in their daily lives. This inner speech is the foundation of children’s mental development, as it enables children’s initial step of “segmentation and sequential organization on thought as it makes its way to overt expression” (Wertsch, 2007, p. 184).

In the course of children’s development of speech and thought, adults’ verbal mediation encourages the internalization of social interactions and learning within their ZPD. For instance, when a young child says, “Mommy, milk” while pointing to milk, and the mother responds by saying, “You are thirsty. You want some milk,” the mother’s response provides the name of the object and the description of the child’s condition and desire. Through this kind of social interaction, the child thinks and self-talks “I am thirsty. I want some milk.” This happens

---

9 Vygotsky differentiated external (phonetic aspect) and inner speech (meaningful, semantic aspect of speech) (1986, p. 218). He refers to inner speech as “thought connected with words” (p. 249). He further explained, “inner speech is to a large extent thinking in pure meanings. It is a dynamic, shifting, unstable thing, fluttering between word and thought, the two more or less stable, more or less firmly delineated components of verbal thought” (p. 249).

10 In Vygotsky’s theory, self-talk (private or egocentric talk) is the foundation of inner speech. Young children’s self-talk helps them regulate their behavior and emotions and solve problems. They tend to use more self-talk when they solve more complicated problems (See more details in John-Steiner, 2007, pp. 138-141).
during a stage when the child is developing his/her inner speech. Thus, the mother’s verbal mediation encourages the child’s organization and expansion of language and thoughts. Moreover, as humans use and develop language and thought through social interactions and in culturally and historically determined ways, language and thought are socio-culturally situated (Vygotsky, 1978). Thus, Vygotsky considered that children’s thinking is developed by “the linguistic tools of thought and by the socio-cultural experience of the child” (p. 89).

In short, according to Vygotsky (1986), although language and thought are different entities having their own origination and goals, they are inter-related in the children’s development. Based on this close relationship between language and thought, he considered language as an important semiotic mediation in children’s development, and the examination of language (in particular the meaning of words) as an effective way to understand children’s mental development. In this regard, it is necessary to examine Vygotsky’s views on language, which I present in the following section.

### 2.4.2 Language in Semiotic Mediation

In the consideration of language, Vygotsky (1986) differentiated between meaning and reference. Meaning\(^\text{11}\) refers to the meaning of one’s talk, and reference refers to an aspect that was presented in one’s talk. He further explained: “There may be one meaning and different referents, or different meanings and one referent” (p. 130). A meaning can be represented by different expressions. For instance, a mother can praise a child’s work by saying “good job,” “well done,” or “great work.” Yet, the utterances can have the opposite meaning depending on

---

\(^{11}\) Here meaning is close to the general term “signification” (Wertsch, 1985, p. 236). This notion has been further differentiated into sense and meaning (Wertsch, 1985). These two concepts are presented later in this chapter (Section 2.7.1).
the situation. If the mother says “great work” when the child makes a big mistake, then the utterance has an ironical expression affirming the child’s mistake. Here, the reference, the child’s work, and the expression “great work” are the same in both contexts, but the mother’s expression has the opposite meaning in each context.

Based on these two representational aspects of language, Vygotsky considered two functions of semiotic mediations\(^\text{12}\): “decontextualization of meaning or symbolic function,” and “contextualization or indicative function”\(^\text{13}\) (Wertsch, 1985, p. 95). Decontextualization of meaning occurs with language holding meaning that goes beyond current contextual and concrete aspects (e.g., a name of an object), but involves abstract aspects, such as “concept development, categorization, and syllogistic and scientific reasoning” (Wertsch, 1985, p. 95). Contextualization involves language containing meaning that is closely related to the context in which the language is used, such as labeling.

For instance, the word “mother” in the expression “mother nature” has a symbolic function, as the word “mother” is used as a metaphor of nature’s role in giving and nurturing life on Earth. The meaning of the expression “mother nature” is symbolic, and is a common one in English-speaking cultures. Yet, the word “mother” in the child’s talk “this is my mother” has an indicative function, as the word “mother” identifies a particular person. As these examples show, the former, symbolic function, is closely related to the socio-cultural context, while the later, indicative function, involves representation of concrete aspects. As has been explained in this section, Vygotsky distinguished between different semantic aspects of language (meaning and

---

\(^{12}\) Here semiotic mediation is the mediation by language among various semiotic media, such as gestures and visuals, as Vygotsky focused on semiotic mediation through language.

\(^{13}\) Lee (1985) also pointed out those two functions of semiotic mediations that were represented in Vygotsky’s notion on multifunctionality of language as “communications or social contact” and “representation” (p. 77).
reference), and functions of language (indicative or symbolic functions). These distinctions help to distinguish different types of verbal mediation.

In short, as pointed out earlier, the crucial role of semiotic mediation is the encouragement of young children’s learning through social interactions and their mental development within their ZPD, which is the basis of the development of higher mental functions (Vygotsky, 1978, 1986). For instance, parental mediation involving signs during joint activities with their young children encourages children’s development through their inter-mental activities with their parents (Meshcheryakov, 2007). Moreover, semiotic mediation enables cultural transmission in which children internalize socio-cultural values and ways to think and interact, as mediation builds “a link between social and historical processes … and individuals’ mental process” (Wertsch, 2007, p. 178). For instance, differences among the families in the three communities in Heath’s (1983) foundational study showed that parents’ verbal guidance during shared reading is socio-culturally and historically situated, and that children’s shared reading practices with their parents were internalized. Thus, in Vygotsky’s theory, parental or adults’ semiotic mediation encourages young children’s learning and development in areas such as language, literacy, and cognition within their socio-cultural settings. One of the essential areas in children’s development—young children’s literacy development—has been examined through a Vygotskian lens by several researchers. Their work is reviewed in the next section.

2.5 The Role of Adults’ Mediation in Young Children’s Literacy Development

Vygotsky considered reading and writing as “symbolically mediated forms of memorization, perception and attention” (Kozulin, 2002, p. 10). Literacy is understood as more than simple encoding and decoding skills, and involves higher mental functions (Vygotsky,
Referencing Scribner and Cole’s (1981) study about the relationship between school literacy and abstract thinking, Wertsch (1985) asserted that it is “how one uses such literacy that governs decontextualization and any consequences for higher mental functioning” (p. 40). Thus, the development of literacy should be understood through the examination of children’s internalization of literacy practices, rather than examination of encoding and decoding skills.

Adults’ mediation during literacy activities also shapes children’s literacy practices, as that mediation is transformed into young children’s mental processes. For example, Heath’s (1983) study examined literacy practices in three different communities: a white, low-socioeconomic-status (SES) community; a black, low-SES community; and a middle-class community. The study showed different parental verbal mediation (different types of verbal interaction, related to different meaning making), as well as different types of literacy activities (involvement of different literacy materials and events). Parents in the white, low-SES community read books to their children and encouraged them to talk about facts. When these children entered school, they were not able to understand thinking imaginatively about a book. In the black low-SES community, parents’ communication with their children involved a lot of imagination, and was narrative-oriented with no bedtime story reading. At school, these children were good at storytelling, but they lacked encoding and decoding skills. As the findings in Heath’s (1983) study show, young children’s literacy development seems to be based on their social interactions with adults (e.g., Mason & Sinha, 1993). Moreover, the different mediational styles or practices in different social and cultural contexts seemed to influence children’s development differently (e.g., Heath, 1983).

Vygotsky’s notion of the role of adults’ mediation provides a theoretical frame to
examine how young children’s literacy development occurs through social interactions. More generally, Vygotsky’s theory has been helpful in understanding the social nature of young children’s learning and development and how their learning and development occur. However, the theory has some limitations that have been pointed out by some scholars (Hasan, 2005a; Wertsch, 1991). The following section will present those limitations.

2.6 Some Limitations of Vygotsky’s Theory

Based on the close relationship between language and thought, and between inter- and intra-mental processes, Vygotsky (1978) emphasized the social use of language as mediation in children’s development within their families and communities. However, Vygotsky’s theory mainly contributes to our understanding about the “dialectic of language and mind”, focusing on human mental life rather than “the dialectic of language and society” (Hasan, 2005a, p. 156). That is, Vygotsky’s theory provides explanations about how language and the human mind are inter-related, but its theorization of social context is insufficient for understanding the meaning of language within a social context. Vygotsky’s restricted view seems to start with his analysis of data based on words as the units of analysis. According to Vygotsky (1986),

[w]e found this unit of verbal thought in word meaning. Word meaning is an elementary “cell” that cannot be further analyzed and that represents the most elementary form of the unity between thought and word. The meaning of a word represents such a close amalgam of thought and language …. (p. 212)

Based on this notion, Vygotsky mainly focused on the evolution of word meaning in children’s development (John-Steiner, 2007; Vygotsky, 1986). He saw language as a system rather than a
process (Hasan, 2005a). In particular, Vygotsky’s view on language does not include the interpersonal meanings of verbal interactions.\(^{14}\) That is to say, Vygotsky did not consider changes of meanings and forms in language when it is used in different contexts involving different relationships among people, such as between friends, between a mother and a child, or between a teacher and a child. For instance, the utterance “I love you” contains a different interpersonal meaning when said by a mother to her child or by a young couple. In the former case, the utterance’s meaning contains a mother’s love to her child giving warm, caring and nurturing messages, while in the latter, the utterance’s meaning contains a love between a boyfriend and a girlfriend. Moreover, people use different forms of expression depending on the relationship: a mother may ask her child to “close the door,” while she would ask a stranger “would you please close the door?”

In the analysis of language use, Vygotsky mainly focused on referential meaning\(^{15}\) and on a very micro level of language structure (word), even though he emphasized the role of social interactions in children’s mental development. However, it is necessary to examine language in social situations and understand it in the chains of verbal interactions, because the same sentence can represent different meanings depending on a listener’s response (Bakhtin, 1986). For instance, if a child says, “that is not fair” and the mother responds, “that’s true,” the child’s utterance represents the true condition of the situation. If the mother’s response was a different one—for example, “you are nagging”—, then, the child’s talk does not represent the condition of the situation, but his complaining behavior. Thus, despite Vygotsky’s emphasis on socio-cultural

\(^{14}\) Interpersonal meaning is a term from SFL. It considers meanings of language used in interactions, based on the relationships of interlocutors. More details are presented in Section 3.2.3.

\(^{15}\) Referential meaning is similar to Vygotsky’s notion of “reference” presented in Section 2.4.1.
mediation in young children’s development, his analytical approach was not fine-grained enough to examine parents’ mediation through the use of language, nor did it provide sufficient tools (or systems) to analyze mediation. In this regard, weaknesses in Vygotsky’s theory are his lack of attention to the meanings of language in use, and to the relationship between language and social aspects (e.g., culture). These weaknesses resulted from his very limited theorization of language and its relationships to social systems in the examination of mediation (Hasan, 2005a).

2.7 Some Complementary Theories: Bakhtin and SFL

As indicated in the previous section, several scholars have identified some limitations in Vygotsky’s perspectives and examination of language (e.g., Wertsch, 1991; Hasan, 2005a). Those scholars have suggested some complementary theories, such as Bakhtin’s theory and SFL, to overcome the limitations in Vygotsky’s theory. I first present some similarities among the three theories: Vygotsky’s, Bakhtin’s and SFL. Then, I will explain the differences in the examination of language used in social interactions in the three theories, and suggest a possible way to overcome what are seen as the limitations in Vygotsky’s theory. Although Bakhtin’s theory was not utilized in the analysis of data in the current study, it was included in this chapter because it provides a theoretical view on the connection between language and social aspects (Hasan, 2005a). It has also been considered to be a complementary theory to analyze mediation as language in Vygotsky’s theory (Wertsch, 1991).

2.7.1 Similarities in Vygotsky, Bakhtin, and Halliday (SFL)

There are some similarities in Vygotsky’s, Bakhtin’s, and Halliday and his colleagues’ theories. Both Vygotsky’s and Bakhtin’s theories hold a similar notion about the role of language
in the development of higher mental functions. According to Threadgold (1986), in both theories, higher mental functions are driven from a social plane, and the importance of social interactions in the development of higher mental functions is emphasized. Similarly, Halliday (1995/2003) considered higher-order consciousness as semiotic consciousness, which implies that higher mental functions are semiotic, based and grounded in social contexts. For instance, there can be several concepts around “women.” If a professor says “We have many women in an urban area today” at an undergraduate sociology class, there are several possible concepts the students can think of, such as women’s social position or women’s social rights. However, if a nurse said “We have many women today” at the waiting room of a hospital, we would assume the word “women” indicates female patients. Thus, higher mental functions consist of semiotic concepts that are closely related to social contexts.

In considering higher mental functions as socially based, all three theories posit the relationship between context and text. In Vygotsky’s theory, this relationship has been presented in his explanations about understanding meanings exchanged in social interactions involving semiotic mediation\(^\text{16}\) (Vygotsky, 1978; Wertsch, 2007). Vygotskian socio-historical theory emphasized the socio-cultural environment in young children’s development. According to Vygotsky (1978), socio-cultural aspects (context) such as values are closely related to adults’ mediation (text), which eventually influences children’s cognitive and language development. Vygotsky (1986) more explicitly asserted the relationship between context and text when he

\(^{16}\) As defined earlier, semiotic mediation refers to mediation by signs (Section 2.2). Some scholars also used “sign mediation” (Wells, 1999, p. 257).
distinguished between sense and meaning.\(^{17}\) Sense is obtained from context and is related to “contextualized aspects of signification and linguistic organization,” while meaning is considered as “cross-contextual, stable aspects” (Wertsch, 1985, p. 124). In other words, sense is a context-bounded semiotic that guides one’s understanding of word and use of language, while meaning is bounded with words (referential meaning of a word). Furthermore, Vygotsky (1986) presented bidirectional relationships between word and sense\(^{18}\) in his statement, “Words can change sense ... sense can change words,” (p. 245). Other (post) Vygotskian theorists (Rogoff, 1991; Sigel, 1984, 1993) expanded this notion of a close relationship between context and text. For instance, Rogoff (1991) showed that there is variance in parent-child verbal and non-verbal interactions in different socio-cultural groups. Sigel (1993) proposed the potential of contextual aspects of parent-child interactions to influence children’s cognitive development.

In regards to discourse, a relationship between context and text is also posited in Bakhtin’s (1986) theory of speech genre, even though Bakhtin did not provide explicit explanations about the relationship (Hasan, 2005a). He proposed that there are different genres of speech (verbal interactions) in different social events or places. He also argued that meanings of verbal interactions should be understood as language in use (in dialogic mode rather than

\(^{17}\) Here, meaning corresponds “to the relatively stable meanings of lexical items, as they are defined in dictionaries,” and sense corresponds “to their significance for the user of the word” (Wells, 1999, p. 257).

\(^{18}\) “Words” here refers to actual wording in one’s talk. Vygotsky’s notion of “sense” is similar to Halliday’s notion of “text.” In SFL, “text” is considered as a semantic unit. The term “text” is explained in Section 3.2.3.
monologic mode\textsuperscript{19}) that is embedded in certain social contexts. Thus, context is an important aspect in understanding text (language) in Bakhtin’s (1986) theory.

Similar to Vygotsky’s and Bakhtin’s theories, Halliday’s theorization as represented in SFL also holds the notion of a close relationship between context and text. Halliday asserted that there is “the functionally motivated relationship between the grammar of language and the semantic system which encodes the social system” (Threadgold, 1986, p. 123). Furthermore, Halliday provided systematic explanations about the close relationship between the text and the context of situation, which were not systematically theorized in either Vygotsky’s or Bakhtin’s theories (1986). Halliday explained the relationship through three features of the context of situation (field, tenor, and mode of discourse) and of meanings of language (experiential, interpersonal, and textual) (for a more detailed explanation of these concepts, please see Chapter 3). According to Halliday (1978), the variables of the context of situation are encoded in the functions of language when a speaker produces meaning, and those variables help a listener to decode the meaning in those functions of language. For example, two professors who are close friends would talk to each other formally at a conference, while they would talk to each other casually at a party. In terms of decoding the meaning, when a speaker says, “protect the plant,” the meaning can be “do not cut the flower” to the listener who attempted to do so, or “water the plant” to the listener who waters the plants. Thus, text cannot be produced or understood without considering the context of situation.

\textsuperscript{19} The notion of “dialogic” is considered as opposed to “monologic.” “Dialogue characterizes the role that the text plays in its context as being based on an ongoing exchange between two or more interactants” (Matthiessen et al., 2012, p. 82). Thus, a “dialogic” view of language holds the notion that one’s talk is closely related to its context, and should be understood based on continuous interactions. A “monologic” view of language understands meanings of language based on the meanings present in words, without considering meanings constructed in interactions through verbal turn taking.
In short, Vygotsky’s and Bakhtin’s theories, as well as SFL, hold similar perspectives on the relationships between thought and language, and between context and text. However, the three theories present some differences that I will discuss in the following section.

### 2.7.2 Differences in Vygotsky, Bakhtin, and Halliday (SFL)

One of the major differences between Vygotsky’s theory and the other two is their perspectives on language. Vygotsky (1978, 1986) analyzed language based on the referential meaning of words, as explained earlier. In the examination of interactions, the referential meaning of a word in one’s talk can be analyzed without considering the responses of another speaker. In contrast to this, both Bakhtin’s theory and theorists in SFL view language as dialogic. That is, meanings of talk are actualized by verbal language exchanges between two or more speakers, rather than one’s talk by itself (Bakhtin, 1986). Based on this notion, Bakhtin (1986) differentiated between an utterance as “a unit of speech communication,” and a sentence as “a unit of language.” He argued that a unit of language is inappropriate to analyze communication, as a sentence (or word) is lacking in the following aspects:

1) [demarcation] on either side by a change of speaking subjects; 2) direct context with reply (with an extraverbal situation) [or] a direct relation to others’ utterances; 3) semantic fullness of value; and 4) capacity to determine directly the responsive position of the other speaker, that is, it [can] evoke a response. (p. 74)

These aspects are sufficient in an utterance, though. Bakhtin considered an utterance as “a unit of speech communication,” containing the meanings of one’s talk in the interactions within a social context. Thus, meanings in an utterance are closely related with context and an interactant’s
response to the person’s talk. These aspects of meanings in an utterance enable an interactant to respond to the other person’s talk.

Based on the semantic properties of utterances in interactions, Bakhtin (1986) asserted that an utterance is the appropriate unit to analyze communication. He emphasized examinations of meanings in language use (i.e., in exchanges of talk) in social interaction. Thus, in Bakhtin’s theory, language is viewed as a process, that is, meanings are constructed through verbal language exchanges, rather than as a system where one’s talk represents static sets of meanings. Moreover, Bakhtin (1986) asserted that there are different meanings and forms in language use in different social contexts, such as shopping-related talk or political speech (speech genres). These notions show the close relationship between language uses and social context, a connection that was underdeveloped in Vygotsky’s analysis of language.

Although Bakhtin’s (1986) theory provided a theoretical view on language uses in social contexts that can complement the limitations in Vygotsky’s theory, Bakhtin’s notion of utterance appeared to be ambivalent in its boundaries (Hasan, 2005a). According to Bakhtin (1986), an utterance as the unit of analysis in ongoing interactions can be determined by the following aspects:

This finalized wholeness of the utterance, guaranteeing the possibility of response (or of responsive understanding) is determined by …: 1. semantic exhaustiveness of the theme; 2. the speaker’s plan or speech will; 3. typical compositional and genetic forms of finalization. (p. 76)

As this citation shows, Bakhtin’s notion of utterance exists around “the possibility of response.”
However, “in a dialogue then the possibility of response must be characterized by both ‘utterance’ in the sense of individual turns and ‘utterance’ in the sense of the over-all verbal interaction” (see more details of this argument in Hasan, 2005a, pp. 87-89). Thus, as Hasan (2005a) indicated, the notion of utterance in Bakhtin’s theory is unclear because it appeared to be used in both senses, as individual turns and as discourse and/or text. Yet, Bakhtin’s theory provides a theoretical view on language as dialogic, which is important to be presented before detailing SFL.

According to Hasan (2005a), this ambivalent notion of utterance in Bakhtin’s (1986) theory is due to the lack of theorizing of the following three aspects. First, even though Bakhtin was aware of the potential relationship between context and text—he argued that there are different genres of speech in different contexts or social events (Hasan, 2005a)—, he did not develop an analytic tool to examine semantic functions of contexts and texts, such as purposes of the context,20 relationships among speakers,21 and channels or modes of text.22 For instance, a conversation between a clerk and a customer has different genres of speech involving different meanings and types of talk than a conversation between a mother and a child, as those two conversations happen in different contexts, have different purposes of talk, and involve different relationships between speakers. Next, Hasan (2005a) pointed out that Bakhtin’s (1986) theory does not use a systematic account of language, as it is missing the theoretical basis of linguistic structure. For instance, Bakhtin (1986) did not provide explanations about lexicogrammar (linguistic structure) and how it is related to text and context. Finally, even though Bakhtin

20 Field in context of situation and experiential functions in text from SFL (more details in Section 3.2.5).
21 Tenor in context of situation and interpersonal functions in text from SFL (more details in Section 3.2.5).
22 Mode in context of situation and textual functions in text from SFL (more details in Section 3.2.5).
(1986) implicitly posited that processes can be systems,\textsuperscript{23} there were no systematic explanations about how those two are related and influence each other in his theory (Hasan, 2005a). According to Hasan (2005a), these shortcomings seem to keep researchers from applying Bakhtin’s (1986) theory more effectively and fully, even though it provides a broader perspective on dialogic language that can complement Vygotsky’s notion of semiotic mediation (Wertsch, 1991).

The concerns about the definition and analysis of “utterance” in Bakhtin’s theory are overcome by Halliday and his colleagues’ systemic functional linguistic (SFL) perspectives. SFL provides theoretical principles on the notion of an utterance/text, a social context, and the relationship between the two that serve as systematic analytic tools to examine language in social contexts. According to Halliday and Hasan (1985), an utterance/text is:

an instance of the process and product of social meaning in a particular context of situation. Now the context of situation, the context in which the text unfolds is encapsulated in the text … through a systemic relationship between the social environment on the one hand and the functional organization of language on the other. (p. 11)

Thus, those working within an SFL framework view language as both a process and a system. That is, among various linguistic resources (\textit{langue}),\textsuperscript{24} certain instances (\textit{parole})\textsuperscript{25} are

\textsuperscript{23} Here, processes refer to incidences of verbal interactions, and systems refer to available resources of interactions. In this regards, incidences of interactions (processes) are part of resources of interactions (system).

\textsuperscript{24} In SFL, linguistic resources refer to the system of language.

\textsuperscript{25} In SFL, instances refer to the process of language.
actualized based on the context of situation (based on the three functions), which includes both “what people can do,” resources, and “what people actually do,” instantiations. Moreover, the relationship between system and process of language is bidirectional, as the two influence each other (resources of language influence the use of language in a certain context of situation; and instantiations of language constitute the resources of language).

In short, Halliday systematically theorized the limited view and focus only on representational meaning in Vygotsky’s analysis, and Bakhtin’s view of language as process. First, considering language from both a process and a system perspective is important in order to understand semiotic mediation (Hasan, 2005a) because it shows not only what kinds of semiotic mediation are available to people, but also what kinds of semiotic mediation are actually used in certain contexts. Moreover, the three meta-functions of language in SFL describe semiotic mediation more fully. The meta-functions explain experiential meaning—“a component in the social context for text (e.g., goal, motivation, purpose, action orientation)”—, interpersonal meaning—“the social relations and the positioning of the interactants”—, and textual meaning—“the nature of semiotic and material contact between the discursive participants” (Hasan, 2005a, p. 146). These three meta-functions cover all of the four aspects of semiotic mediations: a mediator, a mediatee, objects to be mediated, and circumstances (time and place) of mediation (Hasan, 2005a). Last, Halliday’s SFL provides a systematic tool for the analysis of contexts, texts, and the relationships between the two, based on its theory about the relationship between resources (system) and instantiations (process) of language, and between context and text. Vygotsky’s and Bakhtin’s theories did not provide analytic tools, even though both implicitly posited the potential relationship between context and text. In this regard, Halliday’s and his followers’ SFL complements Vygotsky’s theory. SFL, as a linguistic perspective, allows the
thorough examination of semiotic mediation in adult-child interactions (Byrnes, 2006; Wells, 1999; please see Figure 2.1).

**Figure 2.1: Complementarity between Vygotsky’s theory and SFL**

![Diagram]

- **Development of children’s higher mental functions through internalization (in Vygotsky’s theory)**
  - Inter-mental activity
  - Internalization
  - Intra-mental activity
  - Parent-child interactions in joint activities (involving parental mediation)
  - Text (parent-child verbal interactions)
  - Ideational, interpersonal, textual meaning

- **Understanding parental mediation in relation to socio-cultural aspects (in SFL)**
  - Context of situation (Field, tenor, mode)
  - From socio-cultural cognitive scope
  - From socio-cultural linguistic scope
2.8 Summary

In this chapter, I presented theoretical perspectives or orientations that contribute to understanding the role of adults’ mediation in young children’s literacy development. In particular, based on Vygotsky’s socio-historical perspectives, the roles of parents’ mediation in young children’s development were highlighted. These perspectives postulated fundamental mechanisms of the development of children’s language and cognition. According to Vygotsky (1978, 1986), young children’s learning and development occur based on their biological developmental level and through interactions involving an expert’s guidance that enables them to be part of their socio-cultural group. Thus, Vygotsky emphasized not only the biological aspects in children’s development, but also the role of adults’ mediation. Because adults’ mediation is embedded in its socio-cultural environment, it influences the development of children’s socio-culturally meaningful use of tools and signs, which ultimately influences the formation of children’s mental dispositions and their knowledge (e.g., literacy and cognitive development).

Despite the thorough theoretical basis Vygotsky’s theory provides for the understanding of children’s learning and development, it does not provide a systematic explanation about the relationships between the linguistic and social aspects of verbal interactions, nor does it provide tools to do a systematic analysis of linguistic aspects of verbal interactions in relation to social contexts. Bakhtin’s theory has been considered a possible complement to overcome the limitations in Vygotsky’s theory, as it provides further understandings about the essential role of socio-cultural aspects of language in use. However, Bakhtin’s theory does not provide systematic

---

26 Biological aspects in children’s development were the main focus of the Piagetian perspective, which provided a deep understanding of the biological stages involved.
analytic tools to analyze text and context. Those limitations in the analysis of text and context in both Vygotsky’s and Bakhtin’s theories can be overcome by SFL. SFL provides systematic explanations about text, context, and the relationship between the two, as well as analytic tools to examine them. As Hasan (2005a) proposed, utilizing SFL to examine language use of parents’ mediation would contribute to a deeper understanding of the role of parents’ mediation in children’s development. The following chapter will examine the basic principles of SFL.
CHAPTER THREE: SFL, CONTEXT AND TEXT

3.1 Introduction

Despite its many advantages, Vygotsky’s theory does not provide theoretical foundations for, nor an analytic tool to, systematically examine the three aspects in language use: context, text, and the relationship between the two. Due to those limitations, a complementary theory is needed in order to examine parents’ semiotic mediation more effectively (Hasan, 2005a). According to Hasan (2005a), systemic functional linguistics (SFL) provides a theoretical frame and analytic resources to examine the linguistics aspects in Vygotsky’s theory, as it provides detailed theoretical explanations for the three aspects in language use. In fact, perspectives on socio-culturally situated language use in SFL are consistent with those in Vygotsky’s theory, such as socio-culturally situated adults’ mediation.

For instance, in Vygotsky’s theory, children’s development occurs through interactions that involve adults’ mediation in a particular cultural, historical and social context. Similarly, in SFL, language use in parent-child interactions is interrelated with context of situation, which is also influenced by culture. Thus, both theories consider that human development and adults’ mediation are socio-culturally situated. In addition, SFL provides resources for a linguistically-based analysis, which enable us to explain contextual aspects (e.g., purposes of interactions and relationships among speakers), verbal interactions, and how those two influence each other in parent-child interactions during shared book reading. For example, if shared book reading were aimed to teach a child to decode words, there would be a lot of parents’ drilling and children’s repeating in the dyads’ talk. However, if shared book reading were aimed to entertain, the parent-child talk might involve more conversation around a story.
Besides SFL, multimodality\textsuperscript{27} can be used to further analyze children’s digital texts that influence a context of parent-child shared reading. The notion of multimodality provides a theoretical foundation to examine how different aspects of digital storybooks influence the representations of the meanings in those books (New London Group, 1996).

In this chapter, major principles in SFL will be examined: the theoretical foundations of the notions of context, text, and the relationship between the two; and the notions of multimodality in relation to children’s digital storybooks. Lastly, based on those theoretical foundations, contextual aspects of digital storybooks that may influence parent-child interactions during shared reading will be examined.

3.2 **Context, Text, and Register in SFL Perspectives**

3.2.1 **Context and Language**

Four aspects are considered in understanding and examining language use from the SFL perspective: context of culture, language (as system), context of situation, and text (language as text) (Figure 3.1). Through a social semiotic perspective, those four aspects were differentiated based on their functions in language use (Halliday, 1999). The notion of context can basically be considered as “with text,” meaning something that goes with text, and “goes beyond what is said and written”\textsuperscript{28} (Halliday & Hasan, 1985, p. 5). There are two different levels of context, context of culture within a broad level, and context of situation within an immediate level (Ghadessy, 1999). In terms of language, Halliday (1999) distinguished language as system and as text.

\textsuperscript{27} Multimodality is the notion that meaning making is achieved through multiple modes, including linguistic, visual, audio, gestural, and spatial. The definition of multimodality is provided in Section 3.3.2.

\textsuperscript{28} Definitions of context of situation and context of culture are provided in Section 3.2.2.
Language as system is the language resource available to people to use within their socio-cultural surroundings. Language as text is an instance of language that is used in a particular social setting, such as a teacher’s book reading. The close relationships between the four aspects are explained with two essential principles, *instantiation* and *realization* (Halliday, 1999).

**Figure 3.1: Context and language**

![Diagram illustrating context and language with instantiation and realization](image)

The notion of instantiation explains a relationship between context of culture and context of situation, and a relationship between language as system and language as text. The four aspects are categorized as *system* and *instance* in the process of instantiation (Figure 3.1). *System* refers to resources that are potentially available to a person, and *instance* refers to an instance that is actualized by a person from the resources available. According to Halliday (1991/2005, 1999), the system has unlimited possibilities in terms of size and contents included since a person adds new instances to the system. The system and the instance are not different entities, but “they are the same thing seen from different points of view” (Halliday, 1999, p. 8). Figure 3.1 shows that context of culture and language as system are two different *systems*, and context
of situation and language as text are two different types of instances. Context of culture is instantiated in context of situation, and language (as system) is instantiated in text. For instance, a teacher and her students’ talk during shared book reading in a classroom setting is an instance of language among diverse types of talk (language resources) that the teacher and the student can use in a classroom setting. The teacher’s and the student’s context of situation is book reading, that is, an instance of culture.

The second essential principle is the realization that occurs between context and language (Figure 3.1). When a person produces language, the selection of certain language is constituted by his/her surroundings (i.e., context, from a semiotic point of view). Moreover, when a person reads/listens to another person’s text, the person understands the text based on its semiotic context. According to Halliday (1999), the relationship between context and language is “a semiotic relationship” rather than a cause-and-effect relationship. They do not exist in an orderly sequence, but “context and language come into being together” (p. 15). This semiotic relationship between context and language is explained with the notion of realization, as I’ll elaborate in the following section.

Context of culture is realized in language as system, and context of situation is realized in language as text. As text realizes context of situation, the semiotic aspect of situation is represented in text that is produced by a speaker. This represented semiotic aspect of situation enables a listener to interpret the text produced. Furthermore, based on this bidirectional relationship between context and language, context construes language as text. For instance, in verbal conversations, the initial talk of the text construes the setting for the ongoing talk, and sometimes the talk shifts the setting from one to another, such as joking to discussion. Besides
the relationship between the context and text, realization also occurs between different levels of language, grammar, phonology, and so on, which will be thoroughly explained later in this chapter. In the following three sections, context of situation and text, and the relationship between the two, will be examined individually.

3.2.2 Definition of Context (of Situation and Culture)

Context should be examined first since “contexts precede texts” (Halliday & Hasan, 1985, p. 5). Originally, the concept of context in relation with meanings in discourse evolved from Malinowski’s notion of context of situation. This notion considers context as “the environment of the text,” including both the immediate and broad cultural environment (cited in Halliday & Hasan, 1985, p. 6). Based on Malinowski’s notion of context, Firth (cited in Halliday & Hasan, 1985) developed the notion of context of situation that is based on “the functional nature of language,” including “participants in situation,” “action of participants,” “other relevant features of the situation,” and “the effects of the verbal action” (p. 8). Similar to Firth, SFL theorists (Halliday, 1976, 1978; Halliday & Hasan, 1985) focused on the effects of context in meaning exchange.

In terms of context of situation, there are two key aspects: filtered reality and interactant. Filtered reality refers to the reality that is generated by interactants through their active meaning exchange with their specific attention on certain aspects of their environment (for more detailed explanations please see Hasan, 1996, p. 37). In meaning exchanges, intersubjectivity or shared understanding comes into play. Intersubjectivity is enabled by conventionally coded messages. Coded messages enable the representation of the speaker’s perception of reality, and the filtering of this perception by the listener (see Hasan, 1996, p. 38). The following conversation about
weather between two people shows an example of filtered reality enacted in a conversation. Speaker A says, “The weather is very nice these days.” Then, speaker B replies, “Yes, it’s sunny today, but it’s been too dry.” Speaker A replies, “Right, climate changes seem to occur here too.” The two speakers talk about weather, commenting on local weather and its changes. The two speakers’ intersubjectivity focus was first on local weather (nice and sunny), and moved to weather and climate change. Thus, filtered reality enables the achievement of intersubjectivity in conversation. This notion of filtered reality was included in the term “context of situation,” as “situation” refers to the filtered reality (Hasan, 1996).

There are three dimensions in the context of situation that influence the exchange of meaning: field, tenor, and mode:

*The field* is the social action in which the text is embedded; it includes the subject-matter, as one special manifestation. *The tenor* is the set of role relationships among the relevant participants; it includes levels of formality as one particular instance. *The mode* is the channel or wavelength selected, which is essentially the function that is assigned to language in the total structure of the situation; it includes the medium (spoken or written), which is explained as a functional variable. … They are a conceptual framework for representing the social context as the semiotic environment in which people exchange meanings. (Halliday, 1978, p. 110, emphasis added)

These three dimensions of the context of situation comprise social actions, interaction between participants, and medium, and cover all aspects explaining what is going on in the text.

As a broad level of context, the context of culture refers to the resources available to a
person (Figure 3.1). According to Halliday and Hasan (1985),

[the context of situation, however, is only the immediate environment. There is also a broader background against which the text has to be interpreted: its CONTEXT OF CULTURE. Any actual context of situation, the particular configuration of field, tenor, and mode that has brought a text into being, is … a totality — a package, so to speak, of things that typically go together in the culture. (p. 46)

Within one culture, there are various contexts of situation in different occasions and places. As explained earlier, context of culture refers to the many resources for bringing about various social contexts, while context of situation is an instance of context among various contexts available in context of culture.

3.2.3 Definition of Text

In SFL, text is constructed by meaning, so it is considered a semantic unit (Halliday, 1978; Halliday & Hasan, 1985). In the construction of text (text as process), a speaker selects semantic features available from semantic resources that constitute the meaning systems in the focal language. Halliday (1978) posits that text is “the actualization of meaning potential, the process of semantic choice” (p.122). A text as the largest semantic unit contains several verbal turns in oral language or several paragraphs in written language. A message is the smallest semantic unit, typically realized by a ranking clause29 (Williams, 1994).

Halliday and Hasan (1985) argued that text should be understood and examined based on

---

29 An example of a ranking clause would be “I studied math last night.” Crucially, it includes a verb (studied) functioning as a Predicator, which enables a proposition to be construed.
its functions in meaning exchanges, since “function will be interpreted not just as the use of language but as a fundamental property of language itself, something that is basic to the evolution of the semantic system” (p. 17). Based on this functional perspective, four metafunctions of language as text were defined in SFL, namely, experiential meaning (“language of representation” representing reality), interpersonal meaning (“language of action” between speaker and listener), textual meaning (representing “different aspects of the texture of the line”), and logical meaning (“expression of fundamental logical relations”) (Halliday & Hasan, 1985, pp. 19-23). Those metafunctions are closely related to each other in language use in a social context, such as at a shop, a bank or a classroom (Halliday, 1999). They are also closely related to the three features of context of situation, including field, tenor and mode.

Texts have been classified as oral and written texts based on differences in the elements in the mode of context of situation30 existing in the texts, such as the involvement of different channels (aural or written). In the current study, oral texts are the parent-child interactions, and written texts are the texts on the storybooks. Some scholars have explained that an oral text consists of messages and the messages are cohesively tied to each other (e.g., Halliday & Hasan, 1985; Martin, 2009). Different from written texts, which have a visual layout showing a start and an end, in oral texts, the physical stopping does not necessarily signal the end point of the texts. Messages separated by pausing of talk but cohesively tied can be considered to belong to one oral text. The most important aspect that signals the end point of an oral text is a change in social activity.31 In the current study, the social activity is parent-child book reading. Thus, text and

---

30 The mode of context of situation is detailed in Sections 3.2.2 and 3.2.5.

31 See further explanations on the notion of social activity in Sections 3.2.5 and 3.2.6.
context influence each other, not only in terms of the meanings in both strata, as explained earlier, but also in terms of the classification of oral and written texts and the partition of the boundaries of the texts. I explain this relationship between context and text in next section.

### 3.2.4 The Relationship Between Context, Text and Register

There is a close relationship between context and text, as semiotic aspects in context of situation and semantic features in text are interrelated and influence each other. This relationship was explained earlier as “realization” (Halliday, 1975/2004, 1978, 1999). Halliday (1978) explained the relationship in detail:

The semiotic components of the situation (field, tenor and mode) are systemically related to the functional components of the semantics (ideational, interpersonal and textual): field to the ideational component, representing the ‘content’ function of language, the speaker as observer; tenor to the interpersonal component, representing the ‘participation’ function of language, the speaker as intruder; and mode to the textual component, representing the ‘relevance’ function of language, without which the other two do not become actualized. There is a tendency, in other words, for the field of social action to be encoded linguistically in the form of ideational meanings, the role of relationships in the form of interpersonal meanings and the symbolic mode in the form of textual meanings. (p. 123)

Thus, semiotic aspects of context of situation influence choices of meaning in each metafunction. Selection of meaning in each metafunction of text constitutes the context of situation (Halliday, 1999). Thus, in SFL, the relationship between context and text is bidirectional rather than mono-
directional (Unsworth, 2000). Based on those notions, Halliday (1978) argued that language use varies according to context of situation; people tend to use certain configurations of language in certain contexts. This selection of a range of language features for a certain type of context can be understood through the notion of register. According to Halliday and Hasan (1985), “registers are the semantic configurations that are typically associated with particular social contexts” (p. 42). Halliday (1978) further explained:

[T]he register is recognizable as a particular selection of words and structures. But it is defined in terms of meanings; it is not an aggregate of conventional forms of expression superposed on some underlying content by ‘social factors’ of one kind or another. It is the selection of meanings that constitutes the variety to which a text belongs. (p. 111)

As the citation explains, different registers exist in various contexts that are configured by the contextual aspects of field, tenor, and mode. Moreover, a register is a descriptive resource for connecting selections of variables in context of situation and with selections of features in the language metafunctions (Hasan, 2005b).

Figure 3.2 shows the relations between variables in context of situation and metafunctions in the three levels of the linguistic system: semantics, lexicogrammar and phonology/graphology (Halliday, 1978; Halliday & Matthiessen, 2004; Threadgold, 1996). In the analysis of a metafunction, those three levels are based on levels of “delicacy,” from macro to delicate (i.e., micro) levels. Semantics is “the stratum of meaning” (p. 189); lexicogrammar is “the stratum of wording,” including grammar and lexis (p. 131); and phonology/graphology is the “stratum within the expression plane of language” (p. 189) (Matthiessen, Teruya, & Lam, 2010). Selections made in those three levels of the linguistic system realize each metafunction of
a text. The relationship among selections made in each system is considered as “one realization” (Halliday, 1999, p. 15). An explanation about the relationship between the semantic stratum and the lexicogrammar stratum is provided here:

In the clause, for example, the ideational function is represented by transitivity, the interpersonal by mood and modality, and the textual by a set of systems that have been referred to collectively as ‘theme.’ Each of these three sets of options is characterized by strong internal but weak external constraints; for example, any choice made in transitivity has a significant effect on other choices within the transitivity systems, but has very little effect on choices within the mood or theme systems. Hence the functional organization of meaning in language is built in to the core of the linguistic system, as the most general organizing principle of the lexicogrammatical stratum (Halliday, 1978, p. 113).

Meanings represented in a text are realized by the lexicogrammatical aspects of a text. Thus, according to Halliday (1978), the selection of certain lexicogrammatical forms of language represents semantic aspects of language as text. The semiotic relationship between context and text consisting of semantic, lexicogrammar, and phonology/graphology is a “realization.”32

32 A principle explained in Section 3.2.1.
Thus, as the context of situation (field, tenor, and mode) influences language use (ideational, interpersonal, and textual functions in interactions), having a deeper understanding of those aspects is crucial, and needs to be examined.

### 3.2.5 Context in Text (Variables in Context of Situation)

As context and text influence each other, not only does context influence a speaker’s talk
but also context emerges from the text. Meanings constructed through interactions influence field, tenor, and mode\textsuperscript{33} of context of situation (Halliday & Hasan, 1985; Hasan, 1994, 1995; Williams, 1994). There are some further sub-variables within each of those three general variables, as I’ll discuss next.

First, the \textit{field} of the context of situation consists of the following four aspects: subject matter, social activities, and long- and short-term goals. \textit{Subject matter} is similar to “referential domain,” as it refers to aspects that interactants are talking about. Subject matter is semiotic reality\textsuperscript{34} that was referred to by language within a context. \textit{Goals} are the purposes of the social activity. \textit{Social activity} refers to “the nature of culturally determined action of the interactants,” that is, actions and events occurring during interactions (Williams, 1994, p. 137). For instance, in parent-child interactions during shared book reading, the \textit{subject matter} would be the story and other related aspects, such as illustrations in the book. The \textit{social activity}\textsuperscript{35} would be the parent-child book reading. The \textit{short-term goal} would be to encourage the child’s interest in reading or having a relaxing time with the child (e.g., Williams, 1994). Some other short-term goals would include enjoying books, bonding with the child, fostering reading, stimulating their child’s development and soothing their child (Audet, Evans, Williamson & Reynolds, 2008). The \textit{long-term goal} would be to prepare the child for school literacy.

The \textit{tenor} of context of situation comprises three variables: status relation, agentive roles, and social distance (Williams, 1994, p. 138). The \textit{status relation} is the relation between the

\textsuperscript{33} Basic notions of field, tenor and mode of context of situation were briefly explained earlier in Section 3.2.1.

\textsuperscript{34} Semiotic reality can be understood based on the notion of “filtered reality” explained in Section 3.2.2. Meanings exchanged by two interactants construct semiotic reality.

\textsuperscript{35} Further details on the notion of social activity in relation with other variables will be explained in Section 3.2.6.
interactants, shaped by their roles. The interactants’ roles are determined by institutions in which a certain social activity exists. For instance, the roles of teachers and students are determined mainly by the school. Based on those roles, specific verbal interactions are expected during activities at school. For example, during class discussion, a teacher might ask questions to students, and students might answer only when allowed by the teacher.

Agentive role refers to the degree of control or effect one interactant has over the other during their interactions.\(^{36}\) Social distance can be considered as a continuum (Hasan, 1985); the social distance can be less if frequent contact and greater familiarity exist between interactants. For instance, during parent-child shared reading, the status relation is that of parent and child within the institution of family. The parent takes the agentive role when providing guidance, and the social distance between the parent and the child is minimal (Williams, 1994).

The mode of context of situation consists of three elements: language role, channel, and medium (Hasan, 1999; Williams, 1994). Language role exists in a continuum between “constitutive” and “ancillary,” depending on which role the language plays in verbal interactions. When language falls in the “constitutive” end of the spectrum, language plays a major role in a social activity in which interactions occur. When language is more ancillary, language plays an assistance role in a social activity in which interactions occur. For instance, language plays a constitutive role during discussion on a topic, and it plays an ancillary role in verbal interactions that take place while assembling furniture.

\(^{36}\) Hasan originally considered agentive role depending on the degree of institutionalization, considering “the degree of control (or power) one participant is able to exercise over the other(s), almost by virtue of their agent role relation” (Halliday & Hasan, 1985, p. 57). Williams (1994) also defined “Agentive relation refers to the respective positioning of Participants as effectors of a social activity” (p. 138).
Language is delivered by a *channel*; the channel can be either aural—for phonic-based language—or visual—for graphic-based language. While channel is a material-based aspect in the language delivery, *medium* is concerned with “the patterning of wording themselves … the degree of grammatical complexity or of lexical density” (Hasan, 1985, p. 58). The degree of grammatical complexity or of lexical density depends on whether the medium is spoken or written; a higher degree of lexical density is present in the written medium.

In the case of parent-child shared reading, the language role is more likely constitutive, based on the great amount of verbal negotiations and information exchanges existing around a story, as was shown in Williams’ (1994) study. Parent-child dyads use verbal interactions, the phonic channel in their communication. The medium of the parent-child talk during shared reading is the spoken medium. Thus, parent-child shared reading involves constitutive language, a phonic channel, and a spoken medium. These variables are often shown in verbal discussion (Hasan, 1999).

### 3.2.6 Relationships among Variables in Context of Situation

This section will discuss the relationships among the variables in metafunctions and how they influence each other. Thus, it is not a simple combination of values in the variables, but an integration of them that constructs the context of situation (Hasan, 1995; Williams, 1994). In other words, configuration of variables in the field (social activity-related) permeates variables in the tenor (social relation-related) and mode (mode-related) (Hasan, 1994). For instance, a social activity can influence interactants’ social relation and their choice of mode in their social interactions. As another example, a mother and her child’s social relation can be different when reading a book at home from when the mother delivers a lesson for the child’s class. The status
relation between mother and child changes from mother-child to teacher-student. Also, a mother and her child’s choice of mode can differ depending on their social activity. A mother’s verbal guidance during book reading tends to involve constitutive language, while a mother’s instruction during Lego play tends to involve ancillary language.

The further exploration of the ways contextual variables are mutually implicated was captured in the extended description of social activity by Hasan (1995) and Williams (1994). Most recently, Matthiessen et al. (2010) developed extended features in socio-semiotic activities, such as expounding, reporting, recreating, sharing, recommending, enabling, and exploring. However, those features are still under development in regards to details that can be applied in analysis. Thus, only social activities (action-, relation-, and reflection-based) from Hasan’s (1995) abstract notion of a social activity were applied in this study. The examination of each social activity based on Hasan’s definition is presented below with examples from parent-child shared reading.

Hasan (1995) defined an action-based activity as an activity that:

reflects the fact that many of the social practices of a community are essentially of a physical nature. Languaging enters into these activities almost as an extra limb with which the actants can engage in the activity, and bring it to its completion. (p. 251)

In an action-based activity, physical actions are the major part, while verbal interactions assist the completion of the activity. The following example (Example 3.1), taken from the current

---

37 An “abstract notion” for a social activity means that social activities are not considered by physical activities, but by the functions and meanings of language used in interactions.
study, shows an action-based activity between a mother and her daughter during shared reading of the LB.

**Example 3.1: Dyad 6 (mother and 5-year old daughter), LB**

A\(^{38}\): When you play a game, touch this button to answer yes.
2. This is giving you instructions.
3. Ok?
4. Let's start reading the story.
5. Here we go.
   A: Moo.
7. Do you want to read?
8. C: That's not the one.
10. C: ***
11. M: If we want to read the whole story,
12. we press this one.
13. Then you listen.

In this shared reading, the mother guided verbally the activity of operating a pen to read the page (lines 2, 6, 7, 9, 11, 12, and 13). In line 4, the mother shifted their focus from icons to the reading of the story. However, the child clicked a word (the second A) instead of clicking the reading icon. In the next part (lines 6-13), the physical action to click the reading icon is assisted by the mother’s verbal guidance. Thus, the language is ancillary in the engagement and completion of the activity.

The second type of social activity is the relation-based activity. Hasan (1995) explained that,

\(^{38}\) “A” indicates audio narration; “M” indicates mother; “C” indicates child.
the role of language in this sort of activity is constitutive; a relation-based activity depends on languaging, though paralinguistic modalities such as facial expression, voice quality, eye contact, and so on, could be relevant to its inception and manifestation. This activity is essentially an enactor of personal relationships, influencing the quality of human interactions, no matter what their nature. (p. 252)

In the current study there are very limited incidences of relation-based activity in parent-child shared reading. However, the following (Example 3.2) is one example of such activity.

**Example 3.2: Dyad 9 (mother and 4-year old son), LB**

1. C: What does that say?
3. C: I am hungry.
5. I mean let's eat. Good-bye.

In this parent-child exchange, the child asked a question (line 1) and the mother answered (line 2). Then, in line 3, the child described his condition, “hungry,” and in line 5, the mother responded by uttering, “let’s eat.” This pair of interactions in lines 3 and 5 presents the mother as a person in a caregiver position and the child as a person being cared for, that is, a relation-based activity.

The third type of social activity defined by Hasan is the *reflection-based social activity*. Hasan (1995) asserted that,

[t]his kind of activity is construed by wording meaning …, so the role as language
is constitutive…. its nature is entirely semiotic .... Certain rhetorical modes
become associated with certain reflection-based activities, so much so that terms
such as exposition, argumentation, explanation, and so on, appear to name the
activity one is actually engaged in … . (p. 253)

Reflection-based social activities appeared most frequently among the three types of social
activities in Williams’ (1994) study on parent-child shared reading. The following parent-child
talk during shared reading shows an example of reflection-based social activity from the current
study.

Example 3.3: Dyad 6 (mother and 5-year old daughter), PB

M: The noon sun glows, when along hops Hare,
1.   What kind of animal is the hare?
2.   C: The bunny rabbit.
4.   That's right.
5.   C: Why is it a hare?
6.   M: It's just another name for bunny rabbit.
7.   Kind of a wild rabbit.

In this example, the mother initiated a discussion about the hare in line 1. The child requested
further information on the word “hare” by asking the reason for using a different word for rabbit
(line 5). The mother explained that the reason for using different words for rabbit is to
distinguish different types of rabbits (lines 6-7). The language role in this example is constitutive.
The rhetorical mode is clarification (lines 1-4) and explanation (lines 5-7).

Hasan’s extended distinctions of social activities in the context of situation provide a
theoretical and descriptive foundation for examining the variables in parent-child shared reading.
For instance, it enables researchers to examine the presence of different types of social activities across contexts. Moreover, it makes it possible to examine and describe in detail variations in the types of social activities, agentive roles, and language roles in parent-child reading across the four different book contexts.

3.3   Extending the Notion of Context and Text: Multiliteracies, Multimodality and Digital Storybooks

In addition to SFL providing theoretical principles on context and text, the notions of multiliteracies and multimodality provide further understanding on meaning making when using texts involving multiple modes. These notions help examine meaning exchange in digital book reading, as digital books involve representation of meanings through multiple modes, such as sounds, animations, and narration. In the following section, I will explain the notions of multiliteracies and multimodality. Then, I will review studies of digital storybooks and digital storybook reading to explain how those notions can be applied in examining digital storybooks and digital storybook reading.

3.3.1 Multiliteracies

The advancement of digital technology generates socio-cultural changes that include different and new types of texts (oral and written) involving multiple channels. The existence of diverse texts has generated a diversification of literacy practices reflected in the notion of multiliteracies (Cope & Kalantzis, 2000; New London Group, 1996). The concept of literacy has been broadened (New London Group, 1996) to “the multiplicity of communications channels and media” and “increasing salience of cultural and linguistic diversity” (Cope & Kalantzis,
Literacy is evolving, gaining more variety, and expanding through the emergence and development of diverse communication devices, such as iPads, computers, DVD/CD players, digital games, and digitalized toys, generating books involving multiple communication channels, such as visual and aural channels. Moreover, people communicate through those digital devices in various social settings, such as schools or homes (e.g., Kim & Deschambault, 2012). Those multiliteracies entail multiple modes in meaning making (Cope & Kalantzis, 2000), which I will explain in the following section.

### 3.3.2 Multimodality

As stated in the previous section, diverse types of digital texts have become a part of daily literacy practices. Those digital texts involve diverse modes, such as visual and linguistic, in the representation of meanings. The meaning exchange with multimodal texts has been theorized in the notion of **multimodality**. The New London Group (1996) posited that there are five modes of meaning in general: linguistic, visual, audio, spatial, and gestural. In addition to those modes, there is the notion of multimodal meanings, which “relates all the other modes in quite a remarkably dynamic relationship” (New London Group, 1996, p. 80). Multimodal meanings would be influenced by meanings of intra-mode (various aspects within each mode) and inter-mode (the relationship among modes). There have been some theories about meaning making in each mode (intra-mode). For instance, linguistic theories provide theoretical principles and analytic tools to examine meaning in verbal interactions that are considered as meaning making only in the linguistic mode. Such is the case of SFL, which is based on a multimodal perspective. Another example would be the visual grammar developed by Kress and Leeuwen (1996). They asserted that the gazes, positions and postures of characters in pictures represent
different meanings. Thus, theories like SFL and visual grammar provide tools to analyze (intra-mode) meaning making from a multimodal perspective.

There have been several principles developed to examine multimodality in meaning making (inter-mode) when using digital texts, such as: (1) relationships among different modes (Kress, 1997) and in terms of overall structure of digital texts, (2) degree of multimodality (Unsworth, 2006), and (3) interactivity (Kress, 2003). First, different relationships among various modes provide different meanings to readers. The influence that the relationship between modes exerts on the meaning of texts has been represented in Kress’s (1997) notion of the process of synaesthesia. Kress (1997) defined the process of synaesthesia as “the transduction of meaning from semiotic mode in meaning to another semiotic mode, as activity constantly performed by the brain” (p. 76). He pointed out differences between “illustration” and “image.” In the notion of illustration, the linguistic mode (written texts) plays a major role, but the visual mode (illustration) plays an assistant role in the representation of meaning. In contrast, in the notion of image, pictures present important information, and texts (linguistic mode) assist visual representation. This distinction shows that even though different modes construct and represent meaning together, relationships among them may vary in different texts, which ultimately influence their meanings.

Unsworth (2006) indicated that texts present varying degrees of multimodality—involving more or fewer aspects of modes of meaning—in a continuum “from mono-modal (print only) to multimodal” (p. 5). The different degrees of multimodality in a digital text influence the representation of meanings in that digital text, which would influence one’s meaning making during shared book reading. For instance, a digital text A with print texts
(linguistic mode), illustrations (visual mode), sound (audio mode), and animation (gestural mode) provides more information on what is going on in the texts through additional modes (audio and gestural modes) than a digital text B with only print texts and illustrations. Moreover, as the notion of synaesthesia presented previously suggests, if sound and animation in the digital text A are dominant and provide a greater amount of information, a reader would rely more on those modes than other modes (e.g., linguistic mode by written texts). Thus, based on the close relationship between the notion of synaesthesia (relationships among modes) and the degree of multimodality (the number of types of modes), in different texts, these two aspects would influence one’s meaning making during reading the texts.

The notion of interactivity (including interpersonal and hypertextual interactivity) provides a basis for further examination of multimodal texts existing on digital devices (Kress, 2003). According to Kress (2003), literacy practice with the new media can involve “interactivity” between text and the person who reads or writes. Interpersonal interactivity refers to an activity in which a person can provide feedback by writing back (for example, on a website). Hypertextual interactivity is an activity in which a person can move to other pages that exist online. Similarly, Unsworth (2006) utilized degrees of hypertextualization in the examination of digital texts in children’s e-literature. In that study, digital texts were distinguished as being either in a linear format containing no hyperlinked pages or in a hyperlinked format containing hyperlinked pages (Unsworth, 2006). Regardless of the format (e-books, CD-ROMs, digital books, etc.) texts/books differ in the number of hyperlinks they

---

39 E-books are hand-held electronic books that contain electronic features, such as sounds, narrations, games, etc.

40 Digital books are books that are accessed through a computer and controlled by a mouse, and which contain digital features, such as sounds, narrations, hyperlinks, etc.
include. For instance, some digital books don’t have hyperlink features, while other digital books do provide them, for example, to give definitions of vocabulary. Further details about multiliteracies, multimodality and digital storybooks will follow in the next section.

3.3.3 Digital Storybooks Through the Notions of Multiliteracies and Multimodality

3.3.3.1 Multiliteracies, multimodality and digital storybooks

The advancement of digital technology appears to have strongly influenced young children’s literacy practices (Labbo & Reinking, 2003). There has been an increase in the availability of various types of digital storybooks and texts that young children use, such as CD-ROM books and Internet games (e.g., Unsworth, 2006). Scholars have classified the existing digital literature for children in genres or text types. For instance, Unsworth (2006) distinguished three categories of texts: 1) electronically augmented literacy texts,41 2) electronically re-contextualized literacy texts, and 3) digitally originated texts. Electronically augmented literacy texts refer to texts published in print book format, and “augmented with online resources that enhance and extend the story world of the book” (Unsworth, 2006, p. 3). Electronically re-contextualized literacy texts refer to texts that are originally published in a print book format and later re-published in a digital format, such as online or as a CD-ROM. Last, digitally originated texts are texts originally published in a digital format, such as online texts, a CD-ROM, or digital games.

Unsworth (2006) developed an organizational framework to categorize the 1) levels of

---

41 The term “literacy text” is used by Unsworth (1996) to refer to any text that involves literacy development activities, such as reading and writing. Thus, according to him, “literacy text” includes storybooks, blogs, webpages, and games.
multimodality, 2) variance in linear or hyperlink formats, and 3) game or story structure. These three aspects enable researchers to describe “the articulation of book and computer-based literature” (Unsworth, 2006, p. 5). Using this framework, Unsworth (2006) examined digital texts that re-contextualized the original print texts in digital format. He compared both sets of texts in order to observe any differences in patterns of language and image use. He also examined specific uses that only exist in the digital format, such as analyzing games based on the grammatical analysis of language (e.g., Halliday & Hasan, 1985) and visual images (Kress & van Leeuween, 1996) based on SFL. Unsworth’s (2006) study showed meanings are construed through both language and images as multimodal aspects used in the texts. Similarly, Williams’ (1998) study showed that both linguistic and visual modes in children’s literature influence children’s reading process. Thus, those two modes have been often examined in previous studies.

Though Unsworth (2006) considered only two modes, digital storybooks for young children often include features involving five modes: audio (musical sound), linguistic (narration and/or written texts), spatial (hypertexts or hyperlinks), visual, and gestural (animated images) (Please see New London Group [1996] for more details). Even though the examination of each mode involved in a digital text and the relationships among them can provide a thorough understanding about multimodal meanings of digital texts, there are currently some limitations. First, the systematic analysis of audio (other than phonology), gestural, and spatial modes has not been developed enough to analyze texts. Moreover, the relationship between different modes in digital texts can be complex and variable. For instance, the audio mode can play a supplementary (non-dominant) role in representation of meaning in a digital (and/or print) storybook at the beginning, and can shift to a dominant role at another point in the text. Because of those limitations, I utilized the notions of multimodalities in a broader sense, in order to capture
representation of meanings through multiple modes rather than examining each mode in detail—except in the case of the linguistic mode in parent-child verbal interactions.

### 3.3.3.2 Examination of multimodality in digital storybooks

As Unsworth’s (2006) study shows, there are various types of digital texts for children, involving diverse digital features containing different modes. Here, I will examine multimodality in digital storybooks as presented in previous studies through the three aspects stated earlier: synaesthesia, degree of multimodality, and interactivity.

**Synaesthesia in digital storybooks.** In digital storybooks, the visual mode often appears to be more dominant than in print books, as many digital storybooks contain animated images that provide important information, and bigger-sized images\(^\text{42}\) that draw our attention (Smith, 2001). The audio mode in digital books seems to expand the notion of synaesthesia. For instance, the background music (audio mode) in the digital texts used in Kim and Anderson’s (2008) study appeared to complement the overall progress and mood of the story. Even though the audio mode influences the representation of meanings in the text, it is more likely to be used as background. Thus, there were different relationships among modes, as different modes play different roles in the delivery of information, with which people make meanings.

In addition to the relationship among modes, the involvement of different channels\(^\text{43}\) within a mode (intra-mode) seems to influence the representation of meanings within the mode

\(^{42}\) Here, “image” is distinguished from “illustration,” based on its role in the delivery of information, as explained in Section 3.3.3.2.

\(^{43}\) The notion of channels was explained in Sections 3.2.2 and 3.2.5. Channels include aural or visual channels in the delivery of language during reading.
and the relationship with other modes (inter-mode). As Kress (1997) pointed out, there are new representation practices due to the development of technology. For instance, in terms of the linguistic mode, most digital storybooks include a narration feature providing the oral version of the written text, so readers often seem to listen to the story rather than read the written text (e.g., Doty, Popplewell, & Byers, 2001; Kim & Anderson, 2008). This suggests a shift to the oral channel when reading with digital books, that is, a shift away from the written channel that traditionally dominated in the reading of print books. Moreover, provision of both oral and written channels in a digital storybook may increase its impact on meaning representation when compared with the linguistic mode present in a traditional print storybook. In short, previous studies suggest that both types and roles of modes, and channels in a mode, are related with meaning representation in a text.

**Degree of modality in digital storybooks.** One of the earlier papers on digital storybooks (McKenna, 1998) indicated that talking books (digital storybooks) typically had nine features in their text structure, namely, play options, response options, networked titles, embedded tasks, more sophisticated resources, visual transformations of text, voice-activated feedback, labeled illustrations, and animation. Depending on the involvement of those features, the degree of modality varies among digital storybooks, as different digital features involve different modes. For instance, Kim and Anderson (2008) used two electronic books with different features; one with static illustrations (visual mode), sound (audio mode), and narration (linguistic mode); and the other with animated illustrations (visual and gestural modes), sound (audio mode), and narration (linguistic mode). Some studies have shown the degree of multimodality may also influence the relationship among modes (e.g., Bus & de Jong, 2012; Kim & Anderson, 2008; Unsworth, 2006). For instance, the use of the gestural mode (movements of characters and
objects by animated illustrations) in the digital storybook used in Kim and Anderson’s (2008) study would provide readers more opportunities to understand the story, and make them less dependent on the linguistic mode. Another study by Bus and de Jong (2012) that examined school-aged children’s eye-tracking revealed the children’s different focus of attention during reading of two books with different modes. One book contained written texts and static illustrations, while the other book contained a narrator who presented and read the written text. The children in this study paid more attention to the written text in the first digital storybook, while they paid more attention to the narrator (a human storyteller) in the second book. They also found that the children’s written text recognition improved more with the first storybook, while their reading comprehension improved more with the second one. Thus, studies show that the involvement of different digital features influences the relationships between modes, which ultimately influences the overall meaning making during reading (Kress, 1997; New London Group, 1996).

**Interactivity in digital storybooks.** Interactivity (including interpersonal and hypertextual interactivity) in young children’s digital storybooks can influence the children’s meaning making while reading. Some websites allow children to write back about what they have read (e.g., Unsworth, 2006), providing an opportunity to reflect on the story. Moreover, some digital storybooks (e.g., Sesame Street website, in Fisch, Shulman, Akerman, & Levin’s study, 2002) allow children to construct their own story by selecting among events to construct a storyline. This digital feature would lead children to build the notion that storylines in storybooks are flexible, and to consider different consequences of events. Thus, both interpersonal and hypertextual interactivity in digital storybooks seem to provide opportunities for young children to engage in diverse literacy practices.
In short, digital storybooks involve various modes, including linguistic (written texts and/or narrations), visual (illustration), audio (sound), and gestural modes (animation). The relationships between the modes, the degree of multimodality, and the interactivity, all influence readers’ meaning making during reading digital storybooks. Therefore, it is conjectured that different types of digital storybooks may influence parent-child interactions during shared book reading.

3.4 Summary

The main principles of SFL, including context of situation, text and register, and notions of multiliteracies and multimodality in understanding meaning making with diverse modes have been presented in this chapter. The theoretical principles of context, text, and register from SFL enable us to understand meanings of language in use in relation to social contextual aspects. This in-depth understanding of language in use in relation to social context is essential to understand variables and dynamics of parent-child talk during shared reading. The concept of multiliteracies has enabled us to recognize different types of literacies made possible by digital technology. Multimodality permits us to understand meaning exchanges with digitalized literacy texts, and enables us to examine digital storybooks through (1) the relationship among different modes,44 (2) the degree of multimodality,45 and (3) the interactivity of the digital text. Together, the utilization of SFL and multimodality in the examination of parent-child talk during shared reading can overcome some limitations in the systematic analysis of text and context in

---

44 The relationship among different modes is considered through the different dominance of modes in delivering meanings (see details in Section 3.3.2).

45 The degree of multimodality refers to the number of modes involved in a text (see details and examples in Section 3.3.2).
Vygotsky’s theory, as SFL and multimodality provide analytical tools for the examination of verbal interactions and story books. Further descriptions about semantic networks, a specific analytical tool under SFL for parent-child shared reading, will be presented in Chapter 5 and Appendix F.
The definitions of transitivity, projection, mood, modality, and theme in the Figure 3.2 (p. 43) are:

1) **Transitivity** refers to a model in which “a process is acted out by one participant, the *Actor* … and it may extend (‘transcend’) to impact another participant, the *Goal* …, and it may be initiated by yet another participant, the *Initiator*” (Matthiessen et al., 2010, p. 232). In the example “The boy hit the ball,” “the boy” is the Actor and “the ball” is the Goal.

2) **Projection** involves two clauses and “one clause as the representation of linguistic content of another either as *ideas* in mental clause of sensing or *locutions* in a verbal clause of saying” (Matthiessen et al., 2010, p. 165; see details in Appendix F.1.1). In the example “He thought that his teacher is nice,” the clause “he thought” projects this idea on this teacher in the projected clause “his teacher is nice.”

3) **Mood** is considered with Subject (usually noun group) and Finite (verbal group). It is defined as “the grammaticalization of the semantic system of SPEECH FUNCTION in the clause in adopting and assigning speech roles such as questioner and (designated) answerer. … two primary grammatical categories of the *indicative* … used to exchange *information* and also the *imperative*, … used to exchange *goods-&-services*.” (Matthiessen et al., 2010, p.146). As an example, the clause “This story is about cars” contains a Subject + Finite complex presenting indicative mood, while the clause “Put this in the bag” contains only Finite presenting imperative mood.

4) **Modality** refers to “all positioning by speakers about probability, usuality, typicality, obviousness, obligation and inclination. … by a Modal Finite, by an adverbial group or prepositional phrase …, with an interpersonal grammatical metaphor” (Butt, Fahey, Feez, Spinks, & Yallop, 2000, p. 113; see details for grammatical metaphor in Appendix F.1). Modal Finite includes “might,” “would,” “could,” and so on. In the example “Cats are usually calm, but rarely obedient,” the adverb “usually” presents great possibilities of cats’ calm personality and the adverb “rarely” presents minimal possibilities of cats’ obedient personality.

5) **Theme** is a “Textual system for organizing the clause as a message, … the point of departure is the process of interpreting the clause. This is Theme of the clause as message; the non-thematic part is the Rheme” (Matthiessen et al., 2010, p. 223). In the example “This book talks about the life of Einstein,” “This book” is the Theme of the clause, and the rest of the clause is Rheme.
4.1 Introduction

As noted previously, in many cultures, young children\textsuperscript{46} participate in various kinds of joint activities with their parents or caregivers. Those activities involve adults’ mediation (Meshcheryakov, 2007), which is thought to play a key role in young children’s language, literacy and cognitive development (Vygotsky, 1978). In many Western countries, one kind of joint activity, parent-child shared book reading, has been considered by many educators and theorists to be one of the most important activities for young children’s cognitive and literacy development (e.g., Flood, 1977; Fayden 1997; Haden, Reese, & Fivush, 1996; Mason, Kerr, Sinha, & McCormick, 1990; Reese, Cox, Harte, & McAnally, 2003; Sillinskas et al., 2012; van Kleeck, Gillam, Hamilton, & McGrath, 1997; Wells, 1982). Shared book reading involves various types of parental mediation and various levels of abstraction (e.g., Reese, 1996; van Kleeck et al., 1997). As noted in previous chapters, Vygotsky (1978) emphasized that young children’s language and cognitive development within their ZPD is encouraged by adults’ mediation during joint activities. For example, shared book reading involves four aspects: parents (‘‘mediator’’), children (mediatee\textsuperscript{47}), the parents’ talk and the stories in the book (sign or ‘‘semiotic artifact’’), and the book (tool or ‘‘technological artifact’’) (Meshcheryakov, 2007, p. 167).

Various aspects of parent-child shared book reading have been studied, such as ‘‘parental

\textsuperscript{46} As defined earlier in Section 1.1, in the literature review presented in this chapter, ‘‘young children’’ refer to children aged 0 to 8.

\textsuperscript{47} The element ‘‘mediatee’’ was presented by Hasan (2005a, p. 149).
4.2 Parent-Child Shared Reading, and Children’s Language and Literacy Development

Many researchers have identified the potential of shared book reading in supporting children’s language development. Sénéchal et al. (1998) found different effects of reading a storybook in a home environment on kindergarten (n=110) and Grade 1 (n=47) children’s oral and written language development. They found that the storybook exposure at home was closely
related to their oral language development, including vocabulary, listening comprehension, and phonological awareness, which is consistent with results in Sénéchal and LeFevre’s study (2001; 2002). Gest et al.’s (2004) study, conducted with 76 kindergarteners and their caregivers, also showed a strong relationship between the frequency of shared book reading at home and children’s language comprehension skills. A study conducted by Hindman et al. (2008), involving 130 families in 33 preschool classrooms, examined parent-child and teacher-child interactions during shared book reading. They found positive influences of parents’ and teachers’ decontextualized talk during shared reading on the children’s vocabulary development. Another study showed that parents’ labeling during shared reading positively influenced their preschooler’s receptive word learning (Justice, 2002).

Early language development appears to be foundational for later literacy abilities (e.g., McCardle, Scarborough, & Catts, 2001; Snow, 1983; Storch & Whitehurst, 2001, 2002). McCardle et al. (2001) found a significant correlation between verbal abilities in children aged 2 and 4, and later reading achievement in kindergarten. According to Sénéchal and LeFevre (2001), there is a relationship between children’s shared book reading experience and various aspects of language skills. These language skills help literacy development in the long term. Thus, it is speculated that shared book reading during early language development, ultimately, has a positive influence on children’s literacy development.

Besides language development, other studies have shown positive influences of parent-child shared reading on literacy development (e.g., Bus et al., 1995; Evans et al., 2000; Hall, 49 The authors examined language comprehension skills that summarized children’s expressive and receptive vocabulary and syntax skills (Gest et al., 2004). They measured and computed children’s language comprehension skills by averaging children’s (z-transformed) scores on “Expressive One-Word Vocabulary (EOWPVT), Sentence Imitation (TOLD-SI), and Grammatical Understanding (TOLD-GU)” (Gest et al., 2004, p. 324).
Burns, & Pawluski, 2003; Lachner, Zevenbergen, & Zevenbergen, 2008; Lynch, Anderson, Anderson, & Shapiro, 2008; Sénéchal & LeFevre, 2002; Sénéchal, Pagan, Lever, & Ouellette, 2008; Sheets, & Buyer, 1999; Silinskas et al., 2012). In many studies on shared reading, children’s literacy development is viewed from an emergent literacy perspective. The concept of emergent literacy, originally developed by Clay (1967, 1998), is based on the notion that many young children develop foundational understandings about literacy before formal instruction in school (Goodman, 1990; McLane & McNamee, 1990; Sulzby & Teale, 1991). Evans et al.’s (2000) study involving 66 families with kindergarten children showed a positive relationship between shared reading at home and the children’s literacy skills, such as knowledge of the names and sounds of letters (after controlling for child age, parent education, and child ability). Lachner et al.’s (2008) study involving 44 parent-preschooler dyads found that parents’ references to letters during shared reading were positively related to their children’s knowledge of letters.

In terms of school literacy, early literacy achievement is related with later academic achievement (e.g., Phillips, Norris, & Mason, 1996; Sénéchal, 2006; Sénéchal & LeFevre, 2002). Sénéchal and LeFevre’s (2002) study conducted with 168 children from upper middle-class families showed positive relationships between children’s exposure to storybooks and their listening comprehension and vocabulary development. This language development was positively related with their reading abilities at Grade 3. Also, there were positive relationships between their word reading abilities by the end of Grade 1 and their reading comprehension.

---

50 The authors measured this by the number of authors and book titles parents recognized from a list. They conjectured that parents’ recognition is more likely based on their sharing of the books with their children. This research method was based on previous studies.
abilities in Grade 3. Furthermore, the development of young children’s early literacy, which is positively related with early language development and adult-child shared reading, is seen as beneficial for their later school literacy learning. According to Wells (1985), shared book reading experiences involving narration and discussion of stories before schooling encourages development of children’s oral language abilities that are essential in school literacy practices. Furthermore, Wells asserted that adults’ mediation during shared reading is important for children to develop the decontextualization abilities that are crucial for literacy learning.

4.3 Parental Mediation During Parent-Child Shared Reading

According to Wells, adult mediation during shared reading helps children relate their current knowledge to the written text, thereby supporting children’s meaning making. This is consistent with Vygotsky’s perspective of children’s development through social interactions. Wells (1999) further asserted that dialogic inquiry is important in children’s learning and development, as children construct knowledge through a dialogic process of exchanging meanings with an adult or a peer. Studies that have examined the relationship between different forms of talk in shared book reading and children’s language and literacy development are presented next.

4.3.1 Types of Parental Talk

Certain types of verbal interactions in parent-child talk during shared reading are positively related with young children’s language and literacy development. Intervention studies have shown that children’s language development improved when parents were taught to increase certain types of talk during shared reading (Lever & Sénéchal, 2011; Lonlgan &
Whitehurst, 1998; Mol et al., 2008; Peterson et al., 1999). For instance, Lonlgan and Whitehurst’s (1998) intervention study with 114 children aged 3 and 4 from low income families and their primary caregivers showed that children whose parents received training in shared reading had a greater gain in their language development at the post-test than the children in the control group. The shared reading training included asking more wh- questions to a child, following answers by the child with other questions, repeating a child’s talk, supporting the child’s responses if necessary, using praise and encouragement, following the child’s interests, and expanding on the child’s talk.

Another study by Peterson et al. (1999) examined 20 mothers and their 3-year-old children’s shared reading. Mothers in the intervention group were encouraged to use several verbal strategies during shared reading, such as taking a longer time in narrative conversation, using more open-ended and context-eliciting questions, and using longer narratives through back-channel responses. Children in the intervention group showed instantly a significant improvement in vocabulary, and in narrative skills one year after the intervention. Lever and Sénéchal (2011) also found that parental dialogic reading style during shared reading, involving encouragement of children’s talk by asking questions, following children’s interests and talk, expanding on the children’s talk and so on, enhanced their children’s language development.

Several scholars (e.g., De Temple, 2001; De Temple & Snow, 1996; Haden et al., 1996) have studied the relationship between types of verbal interactions, including contextualized versus decontextualized talk during shared reading and young children’s literacy development.

---

51 Back-channel responses include adults’ responses maintaining ongoing turn taking by providing short acknowledgements that do not have subject or verb, such as “‘uh-huh,’ ‘yeah?,’ ‘really?’” (Peterson et al., 1999, p. 52).
Contextualized or immediate talk refers to talk about the “illustrations or works in the text that had just been read” (De Temple, 2001, p. 36). Decontextualized or non-immediate talk refers to “recollections of personal experience, comments, or questions about general knowledge or for drawing inferences and making predictions” (De Temple, 2001, p. 37). Based on those two notions, De Temple and Snow (1996) examined shared book reading of two books by 39 parent-preschooler dyads. The children’s language and literacy abilities were measured when they were 5-year-olds, by the Peabody Picture Vocabulary Test (PPVT), the Comprehensive Assessment Program for Emergent Literacy and Print Skills, the Early Childhood Diagnostic Instrument, story comprehension with *The Snowy Day*, and narrative production with *The Bear Story*. They found positive correlations 1) between decontextualized talk in parent-child shared book reading with the children aged 3 and a half, and the children’s composite score on the print and emergent literacy tasks of the Comprehensive Assessment Program at the age of 5; 2) between decontextualized talk with the 3-year-olds and their ability to answer comprehension questions about *The Snowy Day* at the age of 5; and 3) between decontextualized talk with the 3-year-olds and their composite score on the print and emergent literacy tasks of the Comprehensive Assessment Program at the age of 5.

Davidson and Snow (1995) found that the middle-class parents whose 6-year-old children were early readers used decontextualized language significantly more than parents of children who were still pre-readers, suggesting a positive relationship between children’s levels of literacy development and parents’ use of decontextualized talk. Similarly, De Temple’s (2001) study showed that mothers whose kindergarten children had the highest scores in the kindergarten measures of language and literacy skills used a greater amount of decontextualized talk than contextualized talk in shared book reading.
Thus, studies of parents’ decontextualized talk during shared book reading have consistently shown a positive, bi-directional relationship between parents’ decontextualized talk and young children’s literacy development. Those findings are consistent with Vygotsky’s notion of the essential role that symbols play during the development of higher mental functions in enabling one’s representation of meanings beyond the current context (Vygotsky, 1978; Wertsch, 1991).

4.3.2 Parent-Child Interactions Comparing Print and Digital Text Reading Contexts

The digital technology revolution has meant that an array of digital texts is now available to families (Anderson, Anderson, Friedrich, & Kim, 2010; Kim, 2011; Marsh, 2006, 2011). Researchers have begun to compare the different types of parent-child talk during shared reading with print and digital storybooks (e.g., Fisch et al., 2002; Kim & Anderson, 2008; Parish-Morris et al., 2013; Worden, Kee, & Ingle, 1987). Worden et al. (1987) found that the 20 dyads of parents and 3-year-olds in their study used labeling much more frequently in an alphabet book in a traditional print format than they did while sharing an alphabet book in a digital format on a computer. The authors anticipated that the parent and child would make predictions while waiting to view the upcoming images in the digital format. However, they found the parent and child only talked about images or words after the image was presented. The absence of the participants’ talk while waiting for images might have influenced the amount of labeling; in addition, only the first 12 minutes of each session were analyzed. In another study that included all the data from the whole sessions, Kim and Anderson (2008) compared a mother and her 3- and 7-year-old’s sharing of a print storybook and two digital texts (one with static illustrations
and page turning, and the other with automatic play of a video-clip). Results indicated more labeling in the print book context than in the two digital book contexts. They found that the speed with which scenes changed in the digital book with automatic play seemed to discourage the dyads’ labeling.

In terms of levels of abstraction in parent-child talk, Kim and Anderson’s (2008) study showed more decontextualized or abstract talk in the digital book contexts than in the traditional print book context. In the digital book contexts, a greater amount of mother-child talk occurred as one mother and her 2 children after the reading rather than during the reading. During the reading of the digital book with the auto-play feature, it appeared that the mother-child dyad had limited time to discuss each scene (including written texts and illustrations), so, they had to limit the amount of talk and the number of topics they discussed. Kim and Anderson conjectured that the fast-paced reading influenced by the auto-play feature might lead the mother-child dyad to prioritize talking about certain details of a story rather than about illustrations during reading of the actual texts, and to review more details of the story afterwards. This reading strategy appeared to contribute to a greater use of decontextualized talk in digital than in print contexts.

However, Parish-Morris et al.’s (2013) study comparing digital and print books yielded different results. They compared 46 parents’ shared reading of a print book and an e-book with their children aged 3 to 5. The e-book was the Fisher-Price Power Touch electronic console that works with story cartridges that “permit a typical page-turning reading experience” and with

52 One had static illustrations and a page-turning icon. The other had minimal animation and auto-play.

53 The researchers offered five print books and e-books, and the participants selected one of each type for their shared reading.
some other digital features, including “buttons to hear letters, words, music and other
surprises,” and which provides “over 60 activities focused on spelling, vocabulary, telling time, reading comprehension and problem-solving” (Parish-Morris et al., 2013, p. 203). The authors examined three different types of contents in the parent-child dyads’ reading of the two types of books: behavior-related, story-related, and distancing prompts. Behavior-related talk included their talk about physical actions (e.g., push the button), story-related talk included their talk about the story (e.g., “Look, Clifford jumped into the soup!”) (Parish-Morris et al., 2013, p. 203), and distancing prompts included utterances related to the children’s emotions, life experience outside texts, past or future experiences associated with the story, and making inferences from the story. The authors found that the parent-child dyads utilized more dialogic reading involving greater use of distancing prompts in the print book context than in the e-book context. In the e-book context, they found greater use of behavior-related talk. They argued that digital features in e-books appeared to hinder the parent-child dyads’ dialogic reading of the books, as their talk focused more on managing the physical activities than on discussing aspects of the stories.

Of course, the finding from Parish-Morris et al.’s study may also be particular to the specific format and texts used, a point made by Worden et al. (1987). They identified features of texts that promote or prohibit different types of verbal interactions during shared reading. For instance, the digital texts in Kim and Anderson’s (2008) study did not have features for games nor for clicking letters or words to listen, which might have led the dyads’ talk to be more focused on the story rather than on illustrations or the digital features. This might have encouraged the dyads to talk more on abstract aspects. However, e-books in Parish-Morris et al.’s (2013) study did have those features, which could have distracted the dyads from discussing the story and might have led them to use more behavior-related talk. Indeed, the New London
Group (1996) posited that multimodality influences the representation of meaning in a text. It would follow that parent-child interactions would be affected when sharing digital texts that employ modes other than print (See details in Section 3.3). It should also be noted that the amount of data analyzed might have influenced the contradictory findings across studies. Similar to Worden et al. (1987), Parish-Morris et al. (2013) included only five minutes of each parent-child shared reading session. However, Kim and Anderson (2008) included all verbal interactions of the shared reading sessions, as well as the interactions during reviewing of the story afterwards.

4.4 Focus of Parent-Child Interactions During Shared Reading

4.4.1 Visual Attention During Parent-Child Shared Reading

Vygotsky asserted that voluntary attention during young children’s language and cognitive development is foundational in order to move on to higher levels of thinking. Similarly, Rogoff’s (1991) notion of participatory learning emphasized the role that young children’s participation in cultural activities within their surroundings plays in their development. The basis of participatory learning is joint attention between an adult and a child; thus, attention is considered the basal aspect in children’s learning and development.

Recent studies of parent-child shared reading have also examined the focus of children’s attention during shared reading. These studies consistently showed that parents and children paid little attention to print\(^{54}\) (e.g., Evans & Saint-Aubin, 2005; Evans, Williamson, & Pursoo, 2008; Roy-Charland, Saint-Aubin, & Evans, 2007). For instance, Evans and Saint-Aubin’s (2005)

---

\(^{54}\) Here, “print” refers to written texts in a book.
study with 4- and 5-year-old children using an eye-tracking instrument showed that shared book reading provided the children with only minimal exploration of print. This finding was also confirmed in Roy-Charland et al.’s (2007) study with preschool children. Similarly, Evans et al.’s (2008) study examined children’s attention in a no-pointing group (shared reading without pointing to print) and in a pointing group (pointing to words)\(^{55}\) during shared book reading of a storybook. The study included 76 3- and 5-year-old children and their parents. The study revealed that the children in the no-pointing group paid attention to print less than 6% of the time on average during shared reading while the children in the pointing group paid attention to print less than 25% of the time on average. Roy-Charland et al.’s (2007) study involving 30 parent-child dyads, with children between Grade K and Grade 4, examined the children’s visual attention with texts of different levels of difficulty. They found that the children’s attention to print appeared to increase when the difficulty of the text they read was compatible with their reading abilities, but decreased when the text’s difficulty was greater than their reading abilities.

One thing that should be noted here is that, although these studies stated the books used in the studies were print format books, those books should be considered as a kind of digital book. The books were on a screen, not on paper, since the eye-tracking device only can be utilized on a computer screen. Thus, based on the notion of multimodality, those texts can broadly be considered as digital books that contain static illustrations (visual mode), print text (linguistic mode), and page-turning features. However, the finding that parents and children paid little attention to print is consistent with earlier studies employing texts in traditional print (paper) format (e.g., Shapiro, Anderson, & Anderson, 1997; Yaden, Smolkin, & Conlon, 1989).

---

\(^{55}\) The parents in the no-pointing group did not point to any print on the texts they read, while the parents in the pointing group did so.
A recent study done with digital books and an eye-tracking device showed that 8-year-old children’s visual attention to print was greater while they read a digital book containing highlighted text (Bus & de Jong, 2012). However, while they read a digital book in which, in addition to written texts, there was a human narrator telling the story, children paid more attention to illustrations and the narrator. Taken together, these studies’ findings suggest that young children tend to pay little attention to print during shared reading. Attention to print can be possibly increased by utilizing specific types of parents’ mediation (e.g., pointing to print on texts), and reading certain types of texts (e.g., reading a text that offers levels of difficulty compatible with the children’s reading abilities or that has digital features highlighting written text).

4.4.2 Verbal Attention During Parent-Child Shared Reading

As stated earlier, parent-child talk during shared book reading has been analyzed through two broad categories, print-related talk and comprehension-related talk (van Kleeck & Schuele, 2010). Some studies have shown that the focus of parent-child discussions during shared reading was more on comprehend ing the content or concepts in the story than on decoding skills or written texts (e.g., Hindman et al., 2008). In a longitudinal study with 130 preschool children and their parents and teachers, Hindman et al. (2008) found that both parents and teachers focused on meaning-related talk rather than print-related talk (focusing on letters and letter-sounds during shared reading). This finding is consistent with the studies on visual attention presented in the last section (e.g., Evans & Saint-Aubin, 2005).

Studies that compared parent-child verbal interactions during shared reading of digital texts and traditional print texts have reported mixed results in terms of the foci of parent-child
talk. Smith’s (2001) study of a mother-child dyad reading print books and CD-ROM books, and engaging in a form of Language Experience Approach (LEA), showed their talk focused more on illustrations, hypertext, and negotiations of routines while sharing the CD-ROM, whereas it focused more on word meaning and storyline while sharing the print books. During the LEA, their talk focused more on print and reading strategies. According to Smith (2001), the lack of focus on print in mother-child talk during sharing of the CD-ROM seemed to be influenced by the small font size and the multiple lines of text on each page. However, Kim and Anderson (2008) also found that a mother and her children focused more on the storyline than on illustrations in the digital text contexts, but more on illustrations than on the storyline in the print text context, even though they did pay attention to comprehending story content or concepts in the stories during shared reading of both print and digital books.

An explanation for the contradictory findings in Smith’s (2001) and Kim and Anderson’s (2008) studies may be the different features in the digital storybooks used in the two studies. The CD-ROM books in Smith’s (2001) study contained the following digital features: narration of written texts, highlighted text, hypertext features (characters’ singing, talking phrases, and movement by clicking), and turning pages. In contrast, the two digital books in Kim and Anderson’s (2008) study lacked hypertext features, but had narration of written texts and highlighted text. Moreover, one of the books had a page-turning feature and the other did not. The hypertext feature that generated a greater degree of multimodality in the CD-ROM book in Smith’s study might have influenced the parent-child dyad’s talk, so that they focused less on the storyline and more on other aspects (e.g., illustrations, hypertext, and negotiations of routines). For instance, when the dyad used the hypertext features, they talked about what the characters sang and said and about the characters’ movements. Thus, digital texts with different features
that may generate varying degrees of multimodality might influence the foci of parent-child talk. It should be noted that the dyads in both studies were from different ethnic groups, which may also have had an influence.

In sum, findings in previous studies of visual and verbal attention during shared reading consistently show that, though parent-child shared book reading provides the opportunity to focus on print, parents and children tend to focus mainly on the storyline or comprehending the text. Thus, their talk tends to be more meaning-related (e.g., comprehension of events in a story or illustrations) than code-related (e.g., encoding and decoding of written words or texts). Furthermore, studies have shown possible relationships between different features in digital books and readers’ visual and verbal attention.

4.5 Some Gaps in Previous Studies About Parent-Child Shared Reading

4.5.1 Gaps in the Analysis of Verbal Interactions

Previous studies of parent-child shared reading have provided some understanding and insights into relationships between parents’ mediation and young children’s language and literacy development. However, as noted earlier, these studies focused on certain areas of meaning exchanges without using a systematic analysis that could potentially provide a deeper insight into language use in shared reading. Examining linguistic elements in parents’ mediation (Williams, 1994) can help explain how different linguistic forms of parents’ mediation function in children’s literacy development. For example, in Williams’ (1994) study, parents’ talk involving projection of thoughts56 during shared reading encouraged children to build their own

56 The projection of thoughts is involved in parents’ talk containing a semantic feature [prefaced], as defined in Appendix F.1.1. Some examples are “I think he liked the food” or “Did you know he liked the food?”
or others’ perspectives on aspects that they discussed with their parents. This building of understanding would encourage the development of the children’s individuated thought processes during book reading.

A study by Hasan (1990/2009, 1991/2009)\(^5\) showed the role of different linguistic forms of parents’ mediation in the development of children’s mental dispositions based on the examination of the parents’ and children’s everyday talk by semantic network analysis.\(^6\) Thus, using linguistic analysis to examine parent-child verbal interactions can provide a further understanding of parent-child exchange of meanings (e.g., maintaining a topic and constructing a logical flow of talk), and functions and forms of their language.

Many previous studies about parent-child shared reading did not utilize linguistic analysis. Those studies often examined verbal actions,\(^5\) but they did not explore functions of utterances.\(^6\) Moreover, even though they explored certain functions of meanings in language\(^6\) in experiential functions of verbal interactions,\(^6\) they did not study interpersonal functions (e.g., demanding

---


\(^6\) Semantic network analysis is explained in Section 5.6, and semantic networks are presented in Appendix F.

\(^5\) Some examples of verbal actions are questioning, describing, and explaining.

\(^6\) Functions of utterances include demanding information, or goods/services. One’s talk demanding information is a kind of question requesting information from a listener, while one’s talk demanding goods/services is a kind of question requesting a listener to offer services or an object. See further explanations of the terms in semantic network analysis in Appendix F.2.3.

\(^6\) An example of a function of meaning would be referential meaning (e.g., an examination of print talk). Referential meaning refers to understanding meanings of one’s utterance based on references (focus of the talk) in the utterances. See definition in Section 2.6.

\(^6\) An example of experiential functions of verbal interactions is representing properties or conditions of a reference in one’s talk. For instance, “This room is cold” represents the condition (cold) of the room.
Based on interpersonal functions in SFL, a question can be used to demand either information or goods/services, but that distinction has not been made in previous studies. For instance, Reese (1995) categorized maternal and child’s talk as follows:

a) descriptions or labels of the pictures … , b) predictions or inferences about the story … , c) print talk, either about letters or words … or whole book concepts … , and d) other, including general knowledge comments and relations to child’s own experience. (p. 386)

Those verbal categories cover certain verbal actions (e.g., descriptions and predictions) and foci of their talk (e.g., labels), but are missing the linguistic forms and interpersonal meanings in mother-child interactions. For instance, category b) did not account for what linguistic form (interrogatives or declaratives) or for what interpersonal purposes (demanding or provision of information) were they used.

Similarly, studies of parent-child shared book reading with digital books (e.g., Kim & Anderson, 2008; Fisch et al., 2002; Parish-Morris et al., 2013; Worden et al., 1987) tended to focus on referential meaning, in particular, levels of abstraction in parent-child verbal interactions. For instance, in Fisch et al.’s (2002) study, even though they distinguished textual and logical meaning of talk as initiating and responding, they used a coding scheme based on referential aspects, such as talk related to different abstract levels: “1) designating/labeling,” “2) story/comprehension related,” “3) external references,” “4) medium-specific references,” and

---

63 See more details in Section 3.2.3.
64 Here, referential aspects are aspects talked about in one’s utterance.
Another study, by Parish-Morris et al. (2013), distinguished between behavior-related and story-related talk based on references rather than functions. For instance, their examples “do you like that sound?” and “what’s this what’s the noise” (p. 211) were coded as behavior-related talk. From an SFL perspective, those questions can function either as requests for one’s services or goods (i.e., demand goods and services), or information (i.e., demand information).65 However, it is not clear how or why those questions were considered as behaviors rather than as questions asking a child’s preference for sound (i.e., demand information). If those questions functioned as demanding information, they can be understood as a kind of distancing prompts, as asking a child’s preference for sound can encourage the child to connect her own thoughts and the sound provided on the book. It seems that the analysis of those questions as behavior was done based on references to digital features (e.g., sound and noise) without considering the function of the parent-child’s talk.

As noted, many previous studies did not utilize linguistic descriptions, such as forms of talk (e.g., projection,66 and Processes67), in their analysis to examine verbal patterns. Instead, they utilized verbal actions (e.g., questions, explanations and directives) and/or categories representing referential meaning. In interactions, a verbal action can be actualized by different

---

65 Further explanations and distinction between demands goods and services, and demand information are stated in Appendix F.2.3.

66 As briefly explained in an earlier footnote, an example of a question containing projection is “Did you know he liked the food?” (see further explanations in Appendix F.1.1).

67 The term “Processes” realizes Predicator (verbal group after auxiliaries) and construes experiential meanings in the semantic network (details of the terms in Appendix F.3). The capitalization of the terms (e.g., Processes, Predicator, etc.) is based on SFL principles; lexicogrammatical terms are capitalized.
forms of talk. For instance, questions can contain a projection and different types of processes (e.g., verbs about action, thoughts, behaviors, and so on). Moreover, one utterance is related with other utterances, as some introduce a topic (i.e., initiate), provide further information or ask follow-up questions (i.e., follow other utterances). However, the categories used to represent referential meaning do not take into account relationships among utterances between a speaker and a receiver, nor those diverse variables in language forms and functions in the analysis of parent-child talk. However, as Bakhtin (1986) posited, language is best understood as being dialogic. That is, the meaning of one’s utterance is understood in relation to another person’s response to the utterance, or in other words, as language in use. Halliday and his colleagues developed SFL as a means to analyze language in use. It consists of three meta-functions: 1) experiential and logical, 2) interpersonal, and 3) textual meaning (e.g., Halliday & Hasan, 1985). Halliday (2003) emphasized the understanding of interpersonal meanings—which can take into account both the speaker’s and listener’s perspectives—in understanding language use, rather than studying meanings of words or sentences by themselves (referential meanings of talk). Thus, the utilization of a linguistic theory (e.g., SFL) is necessary in the analysis of shared book reading in order to extend our understanding of meaning in parents’ mediation, beyond the referential meaning considered in most previous studies.

4.5.2 The Analysis of Digital Texts

The digital texts used in previous studies ranged from texts with static illustrations and

68 More details on Bakhtin’s notion on language in use can be found in Section 2.7.3.

69 Meaning can be experiential (“language of representation” representing reality), interpersonal (“language of action” between speaker and listener), textual (representing “different aspects of the texture of the line”), and logical (“expression of fundamental logical relations”) (Halliday & Hasan, 1985, pp. 19-23; see Section 3.2.3).
texts similar to print books, to computer software programs (Unsworth, 2006). Previous studies tended not to apply the notion of multimodality, even though the researchers found a relationship between digital features in digital books and parent-child interactions (e.g., Smith, 2001). However, the notion of multimodality enables detailed examination of digital texts. For instance, some digital texts contain only a picture (visual mode) and alphabet letters as written texts (linguistic mode with a written channel) (e.g., Worden et al., 1987), while others involve multiple modes, including animation (visual and gestural modes), hypertexts (spatial mode), written texts (linguistic mode), and sound effects (audio mode) (Smith, 2001). Thus, the notion of multimodality enables a fuller examination of digital texts.

From an SFL perspective, differences in multimodal aspects of a storybook can influence parent-child conversation, as context and text influence each other. In particular, different features of texts involving multiple modes of meanings would be closely related with the three meta-functions of context of situation, including the field, tenor and mode of context within a context of shared reading (Hasan, 1985; Williams, 1994). Thus, in order to systemically examine the influence of digital texts as a contextual aspect on parent-child shared book reading, parent-child conversation should be examined based on the notion of multimodality and the three meta-functions of context in SFL.

---

70 The notion of multimodality provides definitions of five modes in meaning making. Furthermore, multimodal meanings relate “all the other modes in quite a remarkably dynamic relationship” (New London Group, 1996, p. 80; see details in Section 3.3.2); that is, meanings from multiple modes are related to each other.

71 Field of context refers to “the social action in which the text is embedded”; an example includes different kinds of referential domain. Tenor of context refers to “the set of role relationships among the relevant participants”; an example is parents’ different agentive roles. Mode of context refers to “the channel or wavelength selected, which is essentially the function that is assigned to language in the total structure of the situation”; an example is use of different channels (Halliday, 1978, p. 110; See more details in Section 3.2.2).

72 See more details about this point in Section 3.4.
4.5.3 Parent-Child Shared Reading Studies That Utilized Linguistic Theories

Previous studies have examined parents’ mediation based on the view of language as one kind of social semiotics (e.g., Hasan, 1983; Williams, 1994, 1999). Williams’ (1994, 1999) study investigated parent-child interactions in 20 dyads (10 from high-autonomy professions [HAP] and 10 from low-autonomy professions [LAP]73). The author utilized semantic network analysis for the examination of the functions of parent-child verbal interactions, and Bernstein’s sociological theory for the examination of the influences of social systems on variations of meanings (registers) in parents’ mediation in LAP and HAP groups. He found that variations of meanings in parental mediation in HAP families were similar to teachers’ talk (pedagogic registers) at school, while variations of meanings in parental mediation in LAP families were not. In particular, the semantic network analysis showed differences in the functions (e.g., demand information) and linguistic forms of parents’ mediation between the two groups of families. For instance, parent-child talk involving higher cognitive functions (e.g., the use of projection, and wh- questions) was more frequently shown in HAP than in LAP families. Based on these findings, this study also showed which linguistic forms of parents’ mediation play what kinds of roles in the development of children’s ways of thinking (e.g., individuation of consciousness through the use of prefaced talk, “I think he will sleep”) that are crucial for literacy development.

In terms of analysis of parental mediation, semantic network techniques involve mapping of meanings in conversation during parent-child shared reading, and analyzing parent-child verbal interactions based on their roles in their shared book reading interactions. For instance, it

73 Low-/high-autonomy profession is a classification of jobs based on the involvement of more abstract meaning exchanges and construction during work.
is possible to map the parent-child’s questions by semantic network beginning with demands for information and furthering to more detailed levels [demand;information;confirm;verify;reassure] with lexicogrammatical realization statements “[major:indic:declarative:tagged:reversed]” (Williams, 1994, p. 159). In particular, two utterances might have the same linguistic form (lexicogrammatical structure), but their functions realized by semantic features in a semantic network in parent-child meaning exchanges can be different. For example, the parent’s question, “He hid under the tree, didn’t he?” can be analyzed as the semantic feature #1 (shown in Figure 4.1). The parent’s question, “You need to turn the page, don’t you?” would be analyzed as the semantic feature #2 (shown in Figure 4.1). Although both examples can be generally considered as questions, semantic analysis distinguishes between demanding of information (the first example) and demanding of goods and services (the second example). Thus, the semantic features provide details on the function of the utterance, and the lexicogrammatical structure provides details on linguistic forms used in the utterance.

74 Definitions and further details of each semantic feature are explained in Appendix F.2.2. Following SFL conventions, semantic feature should be printed using bold fonts.

75 See further details in Appendix F.2.2. Following SFL conventions, lexicogrammatical statements should be printed using bold fonts.

76 See further details in Appendix F.2.1.
In short, previous studies about parent-child shared reading showed different types of parents’ talk (contextualized and decontextualized talk) and subsequent differences in children’s development (e.g., Reese, 1995; van Kleeck, 2004). Moreover, studies which examined parent-child interactions that were analyzed based on SFL (e.g., Williams, 1999) suggested that parents’ semiotic mediation during shared book reading had varied functions in exchanges and construction of meanings that eventually influenced children’s development. Together, the findings of studies in both areas suggest that parents’ mediation influences the construction of

\[ \text{1: demand; information: confirm: verify: reassure} \]

\[ \text{2: demand; goods and services: non-suggestive: nonexhortative: assertive} \]

[content]
young children’s meaning making in reading books (Williams, 1999), which in turn influences their development of decontextualization of a text (object), a process that is crucial for achievement in school literacy (e.g., Heath, 1983).

### 4.6 Summary

The literature review on parent-child shared reading suggests positive relationships between parental mediation in shared book reading and young children’s language, literacy, and cognitive development. Many studies that examined abstract levels and referential meanings (what was talked about) in parent-child verbal interactions showed positive influences of certain types of interactions (e.g., decontextualized talk and dialogic reading) on children’s development. However, very few studies utilized fine-grained analysis (e.g., semantic network analysis), examined language-in-use systematically, or provided detailed understandings of parent-child constructions of meaning, such as explanations of how parents’ talk functions in verbal exchanges between parents and children. For example, they did not distinguish between demanding and giving information, or between demanding information and demanding goods/services. Moreover, even though some studies have suggested potential influences of different text features (involving different modes) of digital storybooks on levels of abstraction and foci in parent-child talk during shared reading, systematic analysis of the digital texts based on the notion of multimodality was not utilized. Thus, there are some gaps in the literature in terms of analysis of language and multimodal meanings of digital books. The utilization of linguistic theories and the notion of multimodality in the examination of shared reading with different formats of digital books would provide a more thorough understanding of parent-child verbal interactions and contextual aspects in parent-child shared reading.
CHAPTER FIVE: METHOD

5.1 Introduction

In this chapter, the participants, tasks, data collection, data analysis, and research design are described. As well, procedures for data preparation and transcription conventions are provided.

5.2 Participants

5.2.1 Sampling

Participants were selected by convenience and snowball sampling. To recruit participants for the study, (1) I contacted preschools in an urban area in British Columbia, Canada, by letter, requesting them to distribute letters to parents; (2) interested families were provided with a letter explaining the study, a letter of consent, and pre-addressed, stamped envelopes with which to return the letter; and (3) the families that consented were contacted by phone to arrange a follow-up meeting with the researcher. When the initial sampling did not attain the required number of 20 families, a snowball sampling procedure was followed and families who had already agreed to participate were asked to introduce additional potential participants.\footnote{The initial letter and the consent form are found in the Appendices B and C.} Criteria for the selection of the participants were: middle-class families with parents who (1) spoke English as a first language, and (2) had a child aged 4-5. The criteria for the selection of participants in this study allowed to observe more “natural” interactions, since middle-class families more typically engage in shared book reading (van Kleeck, 2004), and own a home computer (NCES, 2003). English speaking families were examined in this study as English is one of the two main
languages in Canada. Families with preschoolers were chosen since preschool children are not usually conventional readers, but they do share books with their parents.

5.2.2 The Participating Families/Parent-Child Dyads

This study involved 20 English-speaking middle-class families with a child aged 4 or 5 living in a metropolitan area in Western Canada. Eighteen children were preschoolers, and 2 children were kindergarteners. Ten children were boys, and 10 were girls. Nineteen parents were mothers, and 2 were fathers. One of the families involved both parents. All of the families lived in a middle-class or upper middle-class community. Some of the families were friends or knew each other, as some of the children attended the same preschool. Parents were well educated, and had diverse occupations such as business owner, nurse, teacher, and computer engineer.

5.3 Data Collection

I used different sources that allowed the triangulation of data, including semi-structured interviews with parents, the analyzed transcriptions of audio recorded sessions, and the parents’ post-session questionnaire reports.

5.3.1 Interview with the Parents

Initial interviews help to understand “how informants structure their physical and social world” (Gall, Gall, & Borg, 2003, p. 238). Thus, initial interviews were conducted with the parents in order to obtain information about the family’s literacy practices and the child’s experiences with computers and electronic books. The semi-structured format used was based on an interview protocol from Kim and Anderson’s (2008) study (Appendix C).
After being contacted by parents by e-mail, I scheduled an initial meeting—time and place were selected at their convenience to provide for a more comfortable interview context. At the initial meeting, I explained the study, answered the parents’ questions, and received their consent forms. Each interview took about 30 minutes to complete, was audio recorded, and transcribed for the analysis. After the interviews were completed, I provided the families with materials for the shared reading sessions, including the four books with guideline notes, an audio recorder, and post-session questionnaires.

5.3.2 Shared Reading Sessions

After giving the books and other materials to the families, I explained the guidelines for the shared reading. In order to ensure the technical quality of the audio recording, guideline notes (a basic manual) were provided to the participating parents. Participants audio recorded shared-book sessions at their homes at a time they decided, so that they could share the books as naturally as possible, following their usual daily routine. They also decided the order in which to read the books (see details in Section 5.3.3) and the number of books read at any one session, within a 2-week time frame. Lastly, in order to understand the overall context of the reading sessions, the parents were asked to fill out a questionnaire (modified from interviews in Mansell, Evans, and Hamilton-Hulak’s [2005] study, see Appendix E) at the end of each session within the 2 weeks. The questionnaire asked for short descriptions of the overall atmosphere (whether it was typical or not), the number of times each book was read, and any events before shared reading that might have influenced the reading. The final number of questionnaires depended on the number of sessions they had. For example, if a parent-child dyad read two books at each of

---

79 A copy of the guidelines is shown in Appendix D.
two sessions, the parent filled only two questionnaires and reported about the books read during each of those two sessions. However, because of concerns with reliability and validity, the results from the questionnaires are not reported.

5.3.2.1 The books

The participating parent-child dyads were asked to share one print book, two different types of digital books, and one hand-held electronic book (i.e., LeapFrog book) (Table 5.1). One of the books provided was a traditional print storybook (PB), entitled “The Bear Wants More.” This book included written text and illustrations, and involved linguistic and visual modes. A second book was a hand-held electronic storybook (LB), entitled “Click, Clack Moo.” The LB could be operated via an electronic system, which includes written texts, illustrations, narration, and audio effects, and incorporates linguistic, visual, and audio modes. Readers were able to operate the electronic system in this book by pointing at words or iconic pictures in the book with a handheld pen. Moreover, there was an icon for playing the narration of all the texts on each page, playing games, answering yes/no, and repeating and stopping the narration or questions. A third book was a digital storybook (DB1), titled “When Pigs Fly.” This book, accessed via the Internet, had to be operated on a computer, and had page-turning, forward and backward icons. This digital book included written text, illustrations (some images had minimal animation, but others spun and zoomed in and out), narration, and audio effects such as background music and other sounds (sounds of characters’ actions, talking or animal sounds). It involved linguistic, visual, and audio modes. The fourth book was also a digital storybook (DB2),

---

80 Digital books on a computer were used since iPads, iPods or iPhones were yet not widely used at the time the data were collected in early 2010.

81 Some pages or sections had a few images and/or scenes.
entitled “The Bear Snores On.” This book, accessed via the Internet, had to be operated through a computer, and had an auto-play feature and icons to play, stop, rewind, and advance the book reading. This digital book included written texts, animations (animated images), narration, and audio effects such as background music or sounds of some actions or characters. These digital features involved the same linguistic, visual and audio modes that were present in the DB1, but, in addition, they included gestural and spatial modes presented electronically. For instance, in the DB2, video-like animated images provide the movement or gestures of characters in illustrations (gestural mode). Moreover, automatic changes of background scenes in the DB2 provide information about the setting of the story (spatial mode).

In addition to considering the different modes across the four books, it is also important to consider four of their properties: materiality, physical accessibility, physical control of pages, and delivery of linguistic mode (Table 5.1). These four concrete aspects based on the material and physical properties of the books tended to generate differences in the use of each book, even when two books involved the same modes. For instance, although the LB and the DB1 involved the same types of modes—linguistic, visual, and audio modes—in delivering the meaning of their texts, there were several differences between the two books. The LB allowed the user to point to icons using the digital pen to obtain extra information, such as sounds related to the pictured icons, while the DB1 did not. Moreover, the LB allowed parents and their children to use their hands or fingers to hold the book or turn a page, while the DB1 did not allow manipulation to the same extent.
Table 5.1: Differences in the properties of the four books

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multimodality</strong></td>
<td>Visual and linguistic</td>
<td>Visual, linguistic, and audio</td>
<td>Visual, linguistic, audio, and some gestural</td>
<td>Visual, linguistic, audio, and some gestural</td>
</tr>
<tr>
<td><strong>Physical control of pages</strong></td>
<td>Full control of reading - page turning for each page and shifting to earlier or later parts of the story - full control in the reading of the text (reading by the reader)</td>
<td>Medium control of the reading - page turning for each page and shifting to earlier or later parts of the story - less control in the reading of the text due to the narration of the texts</td>
<td>Low control of the reading - page turning, only immediately preceding or following pages (no page shifting to earlier or later parts of the story) - less control in the reading of the text due to the narration of the texts</td>
<td>Minimal control - only controlled through pause, forward, rewind functions on the auto-play book - less control in the reading of the text due to the narration of the texts</td>
</tr>
<tr>
<td><strong>Delivery of linguistic mode</strong></td>
<td>Parents positioned as deliverers of the reading of the texts. Children positioned as listeners of the parents’ reading of the texts.</td>
<td>Both parents and children positioned as listeners of the narration delivered by the book.</td>
<td>Both parents and children positioned as listeners of the narration delivered by the book.</td>
<td>Both parents and children positioned as listeners of the narration delivered by the book.</td>
</tr>
</tbody>
</table>

Note. PB indicates print book; LB indicates Leap Frog book; DB1 indicates digital book 1; DB2 indicates digital book 2.

In terms of the next two aspects, materiality and physical accessibility, the PB and LB were paper-based books that could be handheld, and placed on the lap or close to the readers. The DB1 and DB2 were computer-based books that were generally used by the participating parents on a desktop or other computer device placed on a desk or table. This difference in accessibility appeared to influence the parent-child dyads’ position during shared reading. The
participants reported that they read the PB and the LB mostly in bed as part of their bedtime routine. However, the two digital books were read while sitting in front of a computer (either desktop or laptop), even though some dyads read those books as part of a bedtime routine.

The physical control of pages\textsuperscript{82} was an important element because it allowed the parent-child dyads to control when and where to review or preview information. For instance, in the PB and LB contexts, the dyads were able to turn pages at any time and go to any page they wanted to read or review. The limited physical control of pages in the DB2 only allowed the dyads to pause, forward or rewind the video play of the book, and the DB1 only allowed to turn one page at a time.

In terms of the delivery of the linguistic mode, the LB, DB1, and DB2 provided narration of the texts; only the PB required the readers (mostly parents) to read the texts. As the parents or the children read the texts, they were able to decide when to pause their reading to discuss about the content. Moreover, when children interrupted parents’ reading of the PB with a question, parents could easily pause their reading and resume wherever and whenever they wanted.

In Chapter 7, I will discuss in detail the possible association between the four properties and modes of the books and the context of situation.

5.3.2.2 The selection of the books

In addition to format, I selected the four books based on the comparability in language, complexity (van Kleeck, 2003), format (Pellegrini, 1991; Pellegrini et al., 1994), and genre

\textsuperscript{82} The physical control of pages considers the degree of control over the turning of a page to the preceding or following pages, and to earlier or later parts of the story.
(Table 5.2). All books were in English, and had anthropomorphized animal characters. In terms of complexity, I made the initial selection of the storybooks in accordance with advice from experts in children’s literature and literacy education. Based on the SFL perspective on the complexity of written language, I examined the lexical density of the four texts (i.e., ratio of lexical items per clause)\(^8\) (Halliday, 1975/2004). SFL distinguishes two types of language items in language use: grammatical (i.e., function words such as “is” or “should”) and lexical items (i.e., content words such as words that can be substituted by synonyms or expressions containing similar meanings, such as “happy,” “pleased,” and “joy”). I calculated the number of lexical items per clause in each book, and compared them across the four books in order to ensure comparability in the complexity of the texts. Lastly, in terms of genre, I selected narrative texts, as narrative is one of the most familiar genres that middle-class families use during shared reading (e.g., van Kleeck, 2004). It was also important to use a genre with which parents in the study were more likely familiar (Pellegrini, 1991).

---

\(^8\) Lexical density is considered as the typical complexity measure in written language (Halliday, 1985).
Table 5.2: Comparison of the texts

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genre</td>
<td>Narrative</td>
<td>Narrative</td>
<td>Narrative</td>
<td>Narrative</td>
</tr>
<tr>
<td>Characters</td>
<td>Animals (Bears)</td>
<td>Animals (Cows)</td>
<td>Animals (Cows)</td>
<td>Animals (Bears)</td>
</tr>
<tr>
<td>Animation</td>
<td>No</td>
<td>No</td>
<td>Yes (minimal)</td>
<td>Yes (major)</td>
</tr>
<tr>
<td>Music</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Manual page turning</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Length</td>
<td>Words in text: 365</td>
<td>Words in text: 403</td>
<td>Words in text: 494</td>
<td>Words in text: 404</td>
</tr>
<tr>
<td></td>
<td>Av. sentence length (in a text): 7.44</td>
<td>Av. sentence length (in a text): 6.83</td>
<td>Av. sentence length (in a text): 10.7</td>
<td>Av. sentence length (in a text): 7.34</td>
</tr>
<tr>
<td>Lexical Density</td>
<td>Lexemes (^{84}) per sentence: 4.34</td>
<td>Lexemes per sentence: 4.28</td>
<td>Lexemes per sentence: 6.58</td>
<td>Lexemes per sentence: 4.34</td>
</tr>
<tr>
<td></td>
<td>Lexemes % of text: 58.35%</td>
<td>Lexemes % of text: 62.77%</td>
<td>Lexemes % of text: 61.33%</td>
<td>Lexemes % of text: 59.15%</td>
</tr>
</tbody>
</table>

Note. PB indicates print book; LB indicates Leap Frog book; DB1 indicates digital book 1; DB2 indicates digital book 2.

In short, all the books were narratives and contained animal characters. They were similar in terms of length, text complexity, and lexical density. However, among the four books, the DB1 appeared to be slightly more complex than the other three, as it contained more words, longer sentences, and a greater number of lexemes per sentence. Other differences were availability of animation, music, and manual page-turning features.

\(^{84}\) Lexemes refer to lexical items.
5.3.2.3 Order of books in parent-child shared reading

As was indicated earlier, the families decided when, where and the order in which to share the books in order to provide a natural setting for the shared reading sessions. Fourteen families read the four books in the following order: PB, LB, DB1 and DB2 (Table 5.3). Among these parent-child dyads, nine read the PB and the LB on the first day, and then read the DB1 and DB2 on the second day. Three dyads read the PB on the first day, the LB on the second day, and the two digital books on the third day (dyads 6, 12, and 14). One dyad read one book a day for four days (dyad 19), and another dyad read the four books in one day (dyad 3).

The other six dyads read the books in different orders. Two dyads read the PB and LB on the first day, the DB2 on the second day, and the DB1 on the third day (dyads 5, and 17). One dyad read all the books on different days (dyad 19). One dyad read all the books except the LB on the first day (dyad 2); another read all the books except the DB2 on the first day (dyad 13), and yet another read all four books on the first day (dyad 3). Overall, parent-child dyads read the four books over two or three days.

5.3.3 Technical Issues with Data

Even though most parents handled the digital audio recorder, the LeapFrog (LB) and the two digital books without problems, some parent-child dyads had problems with those digital devices. In two cases, the last part of a shared book reading session was missing because either the batteries ran down or the recorder ran out of recording space (dyad 3 in the LB context, dyad 17 in the DB2 context). Low battery issues with the digital pen in the LB prevented four dyads (5, 12, 19 and 20) from utilizing that feature during the shared reading. However, the missing data
do not appear to have had any major effects on the findings of this study, so the data from these families were included in the analysis.

Table 5.3: The order of books in parent-child shared reading

<table>
<thead>
<tr>
<th>Dyad</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PB, DB1, DB2</td>
<td>LB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PB, LB (1st session) and DB1, DB2 (2nd session)</td>
<td>DB1</td>
<td>DB2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>LB, PB</td>
<td>DB1</td>
<td>DB2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PB, LB</td>
<td>DB2</td>
<td>DB1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PB</td>
<td>LB</td>
<td>DB1, DB2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>PB</td>
<td>LB</td>
<td>DB1, DB2</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>DB1, PB, LB</td>
<td>DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>PB</td>
<td>LB</td>
<td>DB1, DB2</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>LB, PB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>PB, LB</td>
<td>DB2</td>
<td>DB1</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>PB</td>
<td>LB</td>
<td>DB1</td>
<td>DB2</td>
</tr>
<tr>
<td>20</td>
<td>PB, LB</td>
<td>DB1, DB2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Dyad 3 appeared to have read the PB and LB first, and the DB1 and DB2 after, based on their reporting in the post-session questionnaire. The time lapse between the two sessions seemed to be minimal, such as moving to another room in order to use the computer. However, as the participants did not report the actual time of their shared reading session, the exact time lapse between the sessions is unknown.
5.4 Data Preparation for Parent-Child Shared Reading Sessions

5.4.1 Data Inclusion

Initially, all the data gathered from parent-child shared reading were included. After several readings of the data, I developed the criteria for the inclusion and exclusion based on Halliday and Hasan’s (1985) notion of context of situation. I also incorporated other aspects that were not equivalent across or within the contexts, such as participants’ oral reading of written texts in the LB, DB1 and DB2 contexts, number of readings, and shared reading with different parents. The criteria to exclude data were 1) verbal interactions outside of the discussion of the story; 2) parts of the discussions where the dyads shifted the reading context from one mode to another; 3) second readings of the text during the same session; 4) talk by a sibling of a participating child; and 5) families whose contexts of situation differed greatly from the other families. These criteria are further explained next.

In a small number of instances, the participants deviated from their discussion and talked about aspects that were not relevant to the stories. For instance, a few children asked their parents about the audio recorder. Another example was the comments about the low battery status of the digital pen of the LB (dyads 5, 12, 19, and 20). This type of talk was considered as external to, and not connected with the discussion about the text. For this reason, these verbal interactions were not included in the data analysis.

In a few cases, the reading context was entirely shifted by using different modes. For

---

85 Some dyads listened to the narration in the LB and/or the digital books in the beginning, but decided to turn off the narration and continue by having the parents read the rest of the text. I included the data from the initial part when the dyads were using the narration, but excluded the part where they read the book themselves.
instance, a parent-child dyad (dyad 20) read the first half of the LB with the digital pen. Then, the mother read the last half without using the digital pen. This last part was very similar to their reading of the print book, as there was no difference in modes between their reading of the LB and PB. It was also different from the other dyads’ reading of the LB. Thus, the part where dyad 20 changed the mode was not included in the data analysis.

In some families, the dyads read the books twice in one session, as the children wanted to do so. The second reading was not included in order to keep an equivalent number of readings across the contexts and families for data comparison purposes.

Two families read the books with two children, the focal child and a sibling (dyads 2 and 3). In another family (dyad 4), a second child interrupted the dyad’s reading. In those cases, the siblings’ talk was not included in the data analysis. However, the parents’ responses to the siblings’ questions and comments were included, as those responses also provided information to the focal children.

Last, the examination of the shared reading sessions revealed that the sessions of two dyads were not equivalent to the other 18 dyads, so, they were not included in the quantitative examination. In one family (dyad 17), the child read the text in all four reading contexts. The mother asked her to read every word on the texts, providing prompts and teaching her how to read words, as the daughter still needed help reading. From an SFL perspective, the context of situation\footnote{It consists of field, tenor, and mode.} in this mother and her daughter’s shared book reading was different from the context of situation in the other dyads. For instance, in terms of the tenor of the context of situation, the relationship between the mother and the daughter appeared to be that of an instructor and a pupil.
in a hierarchical relationship. Another family (dyad 15) involved both parents in the readings: the mother shared the PB and LB, while the father shared the DB1 and DB2. The involvement of parents of different genders across the contexts in family 15 made their shared reading contexts incompatible with the other families’ shared reading. Because, the data from those two families (15 and 17) differed from the other families, they were removed in the quantitative comparison.

Besides these exclusions, in this section, it is important to explain the inclusion in the analysis of data generated by a specific feature of the LB. As mentioned before, the four books contain a similar amount of written texts. However, while the other three books provided only written texts telling a story, the LB provided extra verbal texts in game questions, instructions, and some extra sounds and narrations of pictures provided by the digital pen. If a reader clicked on game icons, the pen asked questions about the story, written texts or pictures on a page. If a reader clicked on the pictures, the pen played some sounds or provided a narration related to the picture. The parent-child dyads’ talk about the written story and the other extra oral texts generated by the pen during sharing of the LB were also included in order to examine the dyads’ talk with this unique type of text.

5.4.2 Conventions for Transcription of Parent-Child Shared Reading Data

The parent-child shared reading data were transcribed for the data analysis. When transcribing, consistent and accurate recording of data is important, as it can influence the analysis. For instance, information such as whose talk it is, how to represent incomplete talk, how long a time interval is considered as pausing, how to represent inaudible talk, and so on, is key to understand verbal interactions (text) and what is going on in the interactions (context). In order to have a clear and consistent representation of the data, the following conventions for
transcription were employed:

1) The parent-child verbal interactions were transcribed in a plain text form.

2) Some non-verbal interactional aspects, including sounds and gestures (e.g., laugh, child operation of the pen), were included within parentheses.

3) The interactive messages were presented in a section by interactants’ turn. The interactant of each turn was identified as Mommy = M; Daddy = D; Child = C; and Audio narration = A.

4) Incomplete interactive messages were marked with IC.

5) The pauses during verbal talk that were longer than usual (i.e., a verbal turn was not taken by any interactant for three seconds or more) were marked with three dots. Pauses longer than 10 seconds were marked with two square brackets [].

6) Messages that were somewhat audible but contained some inaudible segments were transcribed in square brackets [what was that?]. Messages that were completely inaudible were identified with ***.

7) Simultaneous talk between the two interactants or between an interactant and the audio narration was presented as =.

The following examples represent the transcription conventions (Examples 5.1 and 5.2).

**Example 5.1: Dyad 6 (mother and 5-year-old daughter), LB**

1. M: I heard chickens too. What do they sound like?
2. C: (making chicken sound)
In this example, A represents the audio talk from the LB digital pen. In lines 2 and 3, descriptions in parentheses show contextual aspects from the audio mode (sounds of the iconic illustrations) in addition to the linguistic mode (parent-child talk and story book text). Line 4 contains *** representing the inaudible part of the talk.

**Example 5.2: Dyad 18 (mother and 4-year-old daughter), DB2**

A: An itty-bitty mouse, pitter-pat, tip-toe, creep-crawls in the cave from the fluff-cold snow.

1. =C: ***
   A: Mouse squeaks, “Too damp, too dank, too dark.” So he lights wee twigs with a small, hot spark.

2. =C: Oh! [*** so cute.

This example shows the child’s spontaneous talk with audio narration from the DB2 marked with =. In line 2, the child’s talk contains a long pause represented with two square brackets [].

5.5 Data Analysis

5.5.1 Analysis of Interviews with the Parents

First, I transcribed the audio recordings of the interviews with the parents. Then, I used thematic analysis to identify existing themes about the use of print and digital literacy materials (e.g., types of materials, frequency of use of print and digital material, etc.). Next, I developed categories of materials and categorized the data in order to identify any tendencies among the 20 families. Finally, I examined parental perspectives based on the tendencies presented in the thematic analysis (e.g., no use of computer for children’s home literacy). The coding was done
with the program ATLAS.ti. After the coding, MS Excel files were generated by the ATLAS.ti to see the frequencies and tendencies of the children’s literacy and computer activities and materials. I present these findings in Chapter 6.

5.5.2 Analysis of Audiotaped Parent-Child Shared Reading Sessions

To answer the major research questions about any differences and/or similarities in parent-child interactions across the four contexts, I transcribed all parent-child interactions. Then, I divided them into messages, the unit of analysis, based on the SFL model. I coded the data using the WAG coder, based on semantic network analysis in SFL (Hasan, 1989, 1992; see more details in Section 5.6 and Appendix F). During the semantic network analysis, the realization statements guided the coding of each clause. Whenever there were some unclear clauses by the realization statements themselves, those were solved through consultation with Dr. Geoff Williams, an expert in SFL and former student of Hasan and Halliday, the main developers of SFL. After the consultation, I checked again all the data that had been processed up to that point to find whether any alteration was required. Then, I resumed the semantic network analysis for the unraveled data. This discursive data analysis involving data coding and consultation with the professor continued until completion of the analysis in order to ensure its quality and accuracy within the SFL framework.

After the semantic network analysis was completed, I compared the frequencies of different semantic features in the parent-child shared readings across the four contexts. I used

---

87 Some examples include dealing with ellipsed clauses, and distinction between features [demand; information] and [demand/give; goods and services].
statistical analyses, such as paired t-tests, contrast comparisons, and within-subject ANOVA. All the statistical tests were guided by a UBC professor specialized in measurement in education. In addition to quantitative comparisons, I conducted a qualitative examination of different types of talk regarding the different features available in the books. Lastly, I examined the potential relationships between variances in texts and in contexts based on SFL (presented in Section 7.2).

5.6 Semantic Network Analysis as an Analytic Tool

In this section, I explain key notions of semantic network analysis and the rationale for its use in a shared book reading study. In Appendix F, I present a detailed description of each feature and system in the semantic network used in this study.

5.6.1 Advantages of Semantic Network Analysis

There are two advantages of using this approach. First, it provides a way of describing choices in meaning exchanges and relationships among different meanings of language. That is, it provides a way of describing a range of potential meanings of language in parent-child interactions during shared reading, including all metafunctions of meaning. In the following example, the mother-child’s questioning and answering pairs can be examined through all meaning metafunctions. The semantic network analysis of the child’s question in line 1 captured that the talk initiated an interaction (logico-textual meaning), involved a Material Process (experiential meaning), and demanded information (interpersonal meaning). Moreover, the semantic network analysis of the mother’s utterance “He is sleeping” (line 2) captured that the utterance was replying (logico-textual meaning), involved a Behavioral Process (experiential meaning), and gave information (interpersonal meaning).

88 More details on report of statistical tests are presented in Section 6.3.
Example 5.3: Dyad 16 (mother and 4-year old son), DB2

A: Bear Snore On.
1. C: Is all his friends watching him?
2. M: Yeah. He is sleeping.
3. C: Why?
4. M: Tired. He is tired in winter time.

Thus, semantic networks can provide a fuller understanding of parent-child interactions during shared reading than previous studies, which often only provided understandings about experiential (referential; representational) meanings.89 Second, semantic network analysis provides researchers with an analytic and theoretical basis to describe differences in contexts (due to effects of the type of book) by describing systematic differences in the language choices. Such theoretical examination of contexts through the examination of language use is possible because the descriptions of meaning potentials of language through semantic networks are derived from, and are closely related to, contextual aspects (details in Chapter 3). For instance, the distinction between demanding information and demanding goods and services90 helps to explain contextual differences or similarities. In particular, one of the contextual variables, social activity, can be described by different language choices. As shown in Chapter 3, while an action-based social activity is more likely to involve “demanding goods and services” (requesting one to do something) than “demanding information,” a reflection-based social activity is more likely to involve “demanding

89 However, there are some important exceptions, such as Heath’s (1983) study.

90 Semantic network analysis enables researchers to distinguish functions of interrogative utterances based on their functions realized by lexicogrammar, either demanding information or demanding goods and services (see more details in Appendix F.2.1-3).
information.” Thus, semantic networks provide researchers with analytic tools to systematically examine parent-child interactions and the relationships between the meaning potential in those interactions and the contexts in which parents and children share reading. They also provide essential information to describe different contexts that appear in parent-child interactions during shared reading due to the influences of print, digital, and hand-held electronic books (different modalities and interactivities).

5.6.2 Semantic Networks

The term “semantic” refers to semantics in the spectrum of different levels of language,\(^{91}\) as seen in Figure 3.2. “Networks” signifies systematic connections among semantic features (different meanings that are realized by lexicogrammar). Halliday (1972/2003) defined a semantic network as follows:

A semantic network is a hypothesis about patterns of meaning, and in order to be valid it must satisfy three requirements. It has to account for the range of alternatives at the semantic stratum itself; and it has to relate these both “upwards”, in this instance to categories of some general social theory or theory of behavior, and “downward”, to the categories of linguistic form at the stratum of grammar. (p. 327)

Moreover, Halliday (1972/2003) asserted that semantic networks provide descriptions about “the range of alternative meanings available to the speaker in given social contexts and settings, and form a bridge between the two” (p. 347). Based on Halliday’s assertion, semantic networks can

---

\(^{91}\) As explained earlier (Section 3.2.3), the semantic stratum consists of four meaning metafunctions (experiential, logical, interpersonal, and textual). Meanings in the semantic stratum are realized by other strata of language, lexicogrammar, and phonology/graphology.
be considered as an analytic tool that can show not only variations of potential meanings of language but also relationships among them (in terms of the three metafunctions of meaning, and among different levels of language\textsuperscript{92}). Thus, semantic networks provide descriptions about the relationships of those meanings selected within the contexts in which actual conversations (or interactions) occur.

### 5.6.3 Types of Semantic Networks

Two types of semantic networks have been developed: a context-specific semantic network, initially developed by Halliday; and a context-independent semantic network, subsequently developed by Hasan (Hasan, 1992; Williams, 1994). Hasan’s contextually-open semantic network was developed to analyze mother-child interactions, yet it is not constrained by a specific context, so, it can be used in similar contexts, such as teacher-child interactions (Hasan, 1992). Williams (1994), for example, adapted it for his study of joint book reading that occurred at home between a parent and a child, and at a Kindergarten classroom between a teacher and students. The current study is similar to Hasan’s (1989) in terms of analyzing parent-child interactions and to Williams’ (1994) in terms of analyzing parent-child interactions in a joint reading context. Thus, the current study will use Williams’ (1994) semantic network to analyze parent-child interactions during shared reading.

Figure 5.1 presents an example of a semantic network used by Williams (1994). At the entry level, on the right side of the network, there are choices of [progressive] versus [punctuative] (details in Section 5.6.5). The [progressive] message has simultaneous options in the six semantic systems of prefacing, supplementing, turn taking, give/demand information,

\textsuperscript{92} Details are presented in Sections 3.2.3 and 3.2.4.
give/demand goods and services, and experiential meaning. For instance, a mother’s initiating talk “I think he is sleeping” is a [progressive] message. This [progressive] message contains the semantic features [prefaced:non-supplementing:initiate:give;information:doing:behavioral]. As Figure 5.1 shows, [progressive] is the first feature of one of the systems; each system dependent on it has further options. The following sections will present definitions of a message, as a unit of analysis, [progressive] and [punctuative] messages.

---

93 The message “I think he is sleeping” is a [progressive] message, as it contains Participant (I) and Process (think).
Figure 5.1: Example of a semantic network

Note. Diagram is generated based on Williams’ (1994) study. Further details of each semantic systems and features are explained in Appendix F.

5.6.4 The Semantic Unit: Message

In the semantic stratum, the message is the smallest unit that constitutes text (Cloran, 2010; Hasan, 1996; Matthiessen et al., 2010). The message in the semantic stratum is realized by

94 Further details were explained in Section 3.2.4.
a ranking clause that is not embedded or projected at the lexicogrammatical stratum (Hasan, 1989, 1992, 1996; Williams, 1994), as semantics are realized by lexicogrammar (See details in Section 3.2.4). A clause at the lexicogrammatical stratum includes, from an experiential perspective, Participants (indicating who or what is involved in the Process), Process (indicating doing or being) and Circumstances (indicating how the Participants were situated in time, place, manner, etc.) (Halliday & Matthiessen, 2004). For instance, in the utterance “the bear is sleeping in a den,” “the bear” is the Participant, “is sleeping” is the Process, and “in a den” is the Circumstance in the clause. This whole clause realizes the message at the semantic stratum. Furthermore, a message can also be construed by two ranking clauses that have the logico-semantic relation of projection (Cloran, 2010; Williams, 1994). An example would be “I think he is going to find more food.” Here, two clauses exist: 1) “I (Participant) think (Process),”95 and 2) “he (Participant) is going to find (Process) more food (Goal).” The first clause “I think” (a projecting clause), projects the second clause “he is going to find more food” (a projected clause96). The projecting clause explicitly shows that the idea in the projected clause was generated from a person’s perspective (“I” in this example) (Cloran, 2010). The metarepresentation97 of the message is realized by the projecting clause (Williams, 1994). Further details of projecting clauses in messages in semantic networks will be detailed in Appendix F.1.1.

95 Further details were explained in Figure 3.2 in Section 3.2.4.

96 Based on the notion of “projection” explained in Figure 3.2 in Section 3.2.4, a projecting clause represents “the linguistic content of” a projected clause (Matthiessen et al., 2010, p. 165; see details in Appendix F.1.1).

97 Here, metarepresentation refers to “representation” by a projecting clause of “representation” by a projected clause.
5.6.5 Progressive Versus Punctuative Messages

The primary level of the semantic network system of messages has options of [progressive] and [punctuative]. The distinction between [progressive] versus [punctuative] is based on the potentials of metafunctions. These [progressive] messages select features from the four metafunctions⁹⁸ (Williams, 1994). In contrast with [progressive] messages, [punctuative] messages typically are realized by minor clauses that do not select Predicator⁹⁹ in the clause in the lexicogrammatical stratum. These [punctuative] messages do not exchange information nor do they deliver new information, but are often used as routinized activities. To describe the [punctuative] messages, instead of metafunctions, “a separate network with some simple systems of choice” was used (Hasan, 1983, cited in Williams, 1994, p. 155). Details of the systems for the [punctuative] messages are illustrated after the description of metafunctional systems for [progressive] messages (in Appendix F.4).

The following example shows some [progressive] and [punctuative] messages.

Example 5.4: Dyad 6 (mother and 5-year-old daughter), LB

A: (sound)
1 M: Here we go.
  A: Duck knocked on the door early the next morning. He handed Farmer Brown a note: Dear Farmer Brown, We will exchange our typewriter for electric blankets.
2  C: What is exchange?
3  M: Exchange means trade.

Note. “A” indicates audio elements within the LeapFrog and the digital books, including sounds and narration of the

---

⁹⁸ Four metafunctions include experiential, logical, interpersonal and textual meaning.

⁹⁹ Predicator “is realized by a verbal group or a verbal group complex, excluding only the Finite element. For instance, I’ll be seeing you, …” (Matthiessen et al., 2010, p. 163). In the example, “’ll” is Finite.
texts. “M” indicates a mother, and “C” indicates a child.

In this example, the mother’s and the child’s talk in lines 2 and 3 are [progressive] messages, as those messages are major, ranking clauses and include a Predicator (e.g., “is” in line 2 and “means” in line 3). In contrast, the mother’s talk in line 1 is [punctuative], as the message is a routinized saying realized by a minor clause, which does not select a Predicator. It just signals the starting point of the reading of the page with the electronic pen.

[progressive] messages are realized by the following lexicogrammatical features:

(1) preselect option major at clause rank;

(2) insert element Predicator in clause;

(3) preselect (an instance of) verbal group at Predicator (Hasan, 1992 cited in Williams, 1994, p. 154)

With this distinction of different types of messages, each message was analyzed based on further systems and features available in the parent-child verbal interactions. Those further systems and features are explained with diagrams in Appendix F.

5.7 Criteria for Assessing the Quality of the Research Design

In order to ensure the validity and reliability of the findings in this study, I used triangulation with multiple data-collection methods, data sources, and analysis (Gall et al., 2003). Data sources included data from pre- and post-interviews, audiotaping of shared reading, and questionnaires about shared reading sessions. They complemented each other and helped with understanding parent-child interactions during shared reading. For instance, pre-session
interviews provided information about participants’ backgrounds and home literacy practices, including utilization of print and digital books. This information was important to understand the participants’ familiarity with and use of those materials in their daily lives. The questionnaires about shared reading sessions provided extra information about contextual aspects, such as atmosphere during the book reading session. The multiple data sources and the triangulation of analysis of these data sources ensured the validity and reliability of the qualitative research findings in this study.

5.8 Ethics and Consent

In terms of ethical issues in conducting the current study, I strictly followed UBC ethical research guidelines and procedures approved by the UBC Behavioural Research Ethics Board (see Appendix A). This included the provision of information letters to early childhood education institutions and families before contacting the participants, obtaining consent from the participants before gathering data, and informing them that they could withdraw at any time during the study (see Appendices B and C). As stated in the ethics form, all the paper materials are kept in locked storage, and all digital files, including audio records and word files, are secured with password protection. In terms of identification of individuals and families, all names in the data files are pseudonyms, and the families are identified by numbers.

5.9 Summary

In this chapter, I presented the details about the research methods used in this study. I described the participants and the books used for shared reading, including detailed explanations on the properties of the books. Moreover, I explained the procedures of each data collection
method, including semi-structured interviews with parents, audio recording of shared reading sessions, and post-session questionnaire. Details about the data preparation included the rationale for the data exclusion criteria and conventions of transcription of the audio recording. In terms of the data analysis, I explained the methods and procedures used, including thematic analysis for data from the interviews and semantic network analysis for the data from the shared reading sessions. The utilization of multiple data sources and multiple data analyses ensured the quality of the research design of this study. Appendix F presents the definitions and lexico-grammatical realization statements\textsuperscript{100} of the semantic features used for the analysis of parent-child shared reading.

\textsuperscript{100} Realization statements represent the realizational relationships between different contexts and texts consisting of semantics, lexicogrammar, and phonology/graphology. As lexicogrammar realizes texts consisting of semantics, lexicogrammatical realization statements realize semantic features.
CHAPTER SIX: FINDINGS AND DISCUSSION:

PARENT-CHILD DYADS’ EXTRA-TEXTUAL TALK ACROSS THE CONTEXTS

6.1. Introduction

In this chapter, I first present the findings from the interviews with the parents regarding the children’s literacy practices and their own perceptions of these practices. The interviews showed that the participating children engaged in different types of activities at home, including using digital tools, and that parents had a range of perspectives on their children’s print and digital literacy practices.

Then, I present the findings from the semantic network analysis of the interactions during shared reading of the four books. The semantic network analysis of the dyads’ talk showed that there were contextual differences in the parent-child’s construction and focus of talk during the shared reading of the four books. In particular, the expansion of thoughts through questioning and commenting differed across the contexts. Moreover, the dyads’ operational talk related to the manipulation of physical and digital aspects of the books was different in the four contexts. The foci of the talk—which seemed to be influenced by the books’ features and devices—were also different across the contexts. I include the results of statistical tests of the frequencies of dyads’ selection of semantic features (e.g., paired t-tests) and conclude with examples of parent-child interactions in each context.
6.2. Findings from Interview with Parents

6.2.1 Children’s Home Print Literacy Activities and Practices

In terms of the literacy materials and shared reading activities, 16 of the 20 parents indicated that they engaged in shared reading with their children every day, while four parents read with their children occasionally (2-3 times per week). All of the parents reported they shared picture storybooks with their children (Table 6.1). However, some parents reported they shared informational books and chapter books. Besides print books, two parents said their children read CD/Audio books.

Table 6.1: Types of books for shared reading and children’s independent reading

<table>
<thead>
<tr>
<th>Types of books</th>
<th>Number of families</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture storybooks</td>
<td>19</td>
</tr>
<tr>
<td>Informational books</td>
<td>5</td>
</tr>
<tr>
<td>Chapter books</td>
<td>7</td>
</tr>
<tr>
<td>CD/Audio books</td>
<td>2</td>
</tr>
<tr>
<td>Nursery rhymes</td>
<td>1</td>
</tr>
</tbody>
</table>

In regard to the types of literacy-related activities at home, all of the parents reported their children read every day, and most of the children wrote or did writing-related activities, such as drawing, painting, and coloring (Table 6.2). Interestingly, gender differences were apparent in the type of writing activity chosen. From the parents’ responses, girls seemed more interested than boys in writing letters, words, and sentences. Some parents of boys (n= 3) said their sons had poor handwriting and did not enjoy writing.
Table 6.2: Types of literacy activities at home

<table>
<thead>
<tr>
<th>Types of literacy activities</th>
<th>Number of families</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>20 (10/10)</td>
<td>100%</td>
</tr>
<tr>
<td>Writing (with/without assistance; spelling; inventing words)</td>
<td>16 (10/6)</td>
<td>75%</td>
</tr>
<tr>
<td>Drawing</td>
<td>11 (6/5)</td>
<td>55%</td>
</tr>
<tr>
<td>Alphabet/ letters/ sounds/ phonetic words/ rhymes</td>
<td>8 (4/4)</td>
<td>40%</td>
</tr>
<tr>
<td>Crafts</td>
<td>4 (3/1)</td>
<td>20%</td>
</tr>
<tr>
<td>Worksheets</td>
<td>3 (0/3)</td>
<td>15%</td>
</tr>
<tr>
<td>Coloring</td>
<td>2 (1/1)</td>
<td>10%</td>
</tr>
<tr>
<td>Painting</td>
<td>2 (2/0)</td>
<td>10%</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses show (girl/boy).

6.2.2 Children’s Home Computer Activities and Practices

Because digital books are central to this study, it was considered important to ascertain how the families were utilizing digital resources at home. In terms of types of digital materials, the families mostly used children’s websites (Table 6.3); 12 parents reported websites as the major digital resource for their children’s literacy activities. This is a somewhat greater percentage than that in Calvert et al.’s (2005) study with children aged from 6 months to 6 years, in which 42% of the children had had computer experience. In the current study, CBC and PBS websites for young children with famous TV animation characters, such as Dora and Diego, were most often accessed. Those websites typically contain games, videos, TV shows, and stories that focus on math and literacy skills such as matching, counting, and letter recognition. Interestingly, only four parents had bought computer programs or games for handheld mobile devices (e.g., smart phone) and only two parents reported they bought computer items or programs regularly. The rest of the parents who said their children used the computer regularly (n= 15), indicated that
their children used online resources only, as those are often free and/or easy to access. Thus, among children who used a home computer regularly, online resources (i.e., websites) were the major digital resource.

Table 6.3: Types of digital materials/tools in children’s home literacy activities

<table>
<thead>
<tr>
<th>Types of digital materials</th>
<th>Number of families</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Websites</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>Leap-pad/ Tag</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Leapster</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>iPod/ iPhone/ iPad</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>MS word</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>Leapfrog magnet (Word Whammer)</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>Play laptop (toy)</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>Computer game (general)</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>Educational computer program</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>Wii</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>Game boy</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Webcam</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>E-mails</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Parents also reported the time of their children’s first exposure to and/or operation of computers. Many of the children had their first experience with digital games or operating the computer when they were around 3-4 years old (Table 6.4). Eight of the 14 parents who replied to this question said that their children were exposed to computers before age 2. Moreover, 5 of the 16 parents said that their children started to use the computer by themselves before age 2. Thus, many of the participating children had considerable experience with computers at home.
Table 6.4: Commencement of computer experience

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of families</th>
<th>Age</th>
<th>Number of families</th>
</tr>
</thead>
<tbody>
<tr>
<td>Since birth</td>
<td>5 (25%)</td>
<td>Birth-1</td>
<td>None</td>
</tr>
<tr>
<td>1-2</td>
<td>3 (15%)</td>
<td>1-2</td>
<td>6 (30%)</td>
</tr>
<tr>
<td>2-3</td>
<td>3 (15%)</td>
<td>2-3</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>3-4</td>
<td>2 (10%)</td>
<td>3-4</td>
<td>5 (25%)</td>
</tr>
<tr>
<td>4</td>
<td>1 (5%)</td>
<td>4-5</td>
<td>4 (20%)</td>
</tr>
<tr>
<td>No answer</td>
<td>6 (30%)</td>
<td>No answer</td>
<td>4 (20%)</td>
</tr>
</tbody>
</table>

6.2.3 Parental Perspectives on Their Children’s Literacy Practices

In addition to information on the children’s print and digital practices at home, the interview with the parents revealed some parents’ perspectives about their children’s print and digital literacy practices. Although no questions or prompts were focused on the parents’ beliefs or perspectives, some of them expressed a range of beliefs about children learning to read and write. One of the mothers (Jenny, 101 dyad 11) said that she did not want her 4-year-old daughter to learn words by memorization but by “phonetics.” After the shared reading sessions, Jenny reported that her daughter was very interested in learning words and that her daughter’s reading with the LB appeared to assist the child’s learning of the words by sight. However, Jenny said she did not want to give her child the LB, as she did not want her child to memorize the words. Moreover, she strongly indicated that she did not want her child to learn all of the words and be able to read before the child entered kindergarten, because it would reduce her child’s interest in learning there.

101 All names are pseudonyms.
In contrast, Kathie (dyad 14), a mother of another 4-year-old girl, was not concerned about her daughter learning to read words before receiving formal instruction in school, or about her learning words through memorization. She felt that her daughter learned a lot from the Word Whammer toy. Thus, the parents held varied parental perspectives on their children’s literacy learning at home, such as favoring a strict phonics approach or embracing both the phonics and the whole word approaches to word recognition. Moreover, parents appeared to hold different values on learning to read words before starting school: at one end of the spectrum, some parents strongly encouraged it; at the other end, some tried to prevent it.

Parents held different beliefs about digital resources and their children’s access to and use of them. In four families, children did not have access to computers at home; however, the reasons for the absence of home computer activities differed across families. Cyndi, a mother of a 5-year-old boy (dyad 13), said that her children returned home around 5 in the afternoon and there was no time for computers. The other three of the four parents said they did not allow their children to use the computer at home. One mother (Robin, mother of a 4-year-old boy, dyad 16) said that she did not want her children to break her laptop, as she needed it for work. The other two mothers who did not allow their children to use computers at home (Kelly [dyad 10] and Mary [dyad 12], mothers of 4-year-old daughters) believed computers were only appropriate for older children and young children did not need them. However, both allowed their children to watch TV, as did Cyndi and Robin. These examples demonstrate different parental perspectives on the use of different types of digital resources and media.

---

102 The Word Whammer toy requires children to put three-letter words into slots on the toy and then the toy provides the children with the pronunciation of each letter and of the word. It can promote a child’s recognition and memorization of letters in words as well as sounds of words and letters.
Some parents shared anecdotes about their children’s literacy practices with different media. For instance, Kathie, a mother of a 4-year-old girl (dyad 14), said that one day her daughter Amy used three different media in her writing activity at home: a piece of paper and a pen, the Word Whammer toy, and a laptop with MS Word. Kathy told of how on one occasion, Amy wrote a three-letter word on a piece of paper, then she put the three letters into the Word Whammer, and then typed them in the MS Word document. This writing activity involved Amy’s handwriting, which promotes fine motor skills; audio sounds of Word Whammer, which provides the sound of the word; and typing the word on the computer, which involves computer writing skills. In sum, it was a literacy event involving the use of three different media and multiple modes (e.g., linguistic, visual, aural, and spatial).

Susan’s 6-, 4-, and 2-year-old children (dyad 3) had LeapPad books (an old version of LeapTag books) and used them as part of their daily home literacy activities. However, she said that she had not seen the children actually read the LeapPad books with the pen that provides the oral reading of the written texts. Instead, the children used the pen to play games that asked readers questions about the story or the illustrations. Indeed, based on this observation of her children’s use of LeapPad books for playing games, she doubted the utility of the LeapPad as a tool for helping children to learn to read.

To summarize, the interviews with the families revealed that some of the children had access to a range of digital texts and technological tools, as Kress (2003) and other scholars (e.g., Unsworth, 2006) posited. However, some children did not have access to computers and/or the Internet. In addition, parents held different perspectives about digital texts and technological tools, and while some parents embraced them, others had trepidations and withheld these from
their preschool children. That there was considerable diversity within this homogeneous socio-economic group suggests the need for caution when making assumptions about families’ literacy practices at home.

6.3 Findings from Shared Book Reading Sessions

In this section, I briefly describe the 20 parent-child dyads’ shared book reading sessions. Then, I explain the three broad aspects (expansion and construction of thoughts, operational talk and focus of talk) shown in the analysis of semantic networks. Finally, I present the parent-child dyads’ interactions across the four reading contexts with explanations and descriptions of the differences, statistical comparison (paired t-tests, Mixed ANOVA and contrast comparisons103), descriptive statistics with means, and examples of actual interactions. The statistical tests were done on data from 18 dyads (dyads 15 and 17 were excluded due to inequality across the contexts, as explained in Section 5.5.4). Paired t-tests involve the comparison of two means. Based on this, a total of six t-tests were done to examine any statistical differences across the four contexts: paired t-tests of 1) PB and LB, 2) PB and DB1, 3) PB and DB2, 4) LB and DB1, 5) LB and DB2, and 6) DB1 and DB2.

I report the largest p value from among the t-tests rather than report all p values of the t-tests in order to maintain the succinctness and flow of the information. For instance, if six paired t-tests showed significances in the dyads’ use of questions in the LB context compared to the other three contexts, I present the findings as questions that were asked more frequently in the LB than in the other contexts (p<.05) rather than providing the results of each context separately: in the LB than PB (p=.05), in the LB than DB1 (p=.011), and in the LB than DB2 (p=.023). The

103 Details of statistical analysis were presented in Chapter 5.
detailed values of t-tests are presented in Appendix G.

6.3.1 Descriptions of Shared Reading Sessions

In the PB context, 18 parents read the written texts and two children read the written texts (dyads 13 and 17). While the child in dyad 13\textsuperscript{104} could read the text without any help, the child in dyad 17 still needed help. In all the 20 parent-child dyads, the shared reading of the PB included reading of text and some extra-textual talk, including questions and comments. In the LB, 19 children operated the digital pen for reading the text, gaming, and playing with some other sounds on the book. One mother (dyad 15) did not allow her daughter to use the pen, even though the daughter asked to do so. In the DB1, all the children operated the page-turning feature in the book. The children used the mouse to turn pages with or without parents’ prompts while reading the DB1.

In the shared reading of the DB2, there were some differences among dyads. Most parents did not pause the video-play, but asked questions and made comments while the video was playing. However, four parents (dyad 3, 15, 17 and 20) did pause the video-play to ask their children questions and/or to discuss details in the story. In those families, pausing appeared to lead them to take their own time to discuss the story without the interruption of the narration in the video. Only the mother in dyad 10 did not ask any questions when sharing the DB2; all other parents asked at least one question during sharing of that book. Both the mother and the daughter of dyad 10 appeared to assume a passive stance, not talking to each other, but just watching the video-play of the DB2.

\textsuperscript{104} This child was 5-years-old and attended kindergarten.
6.4 Overview of Messages

Many studies have shown that parent-child shared reading provides a context where parents encourage verbal discussion of aspects of a book, such as events, settings, and characters (e.g., Mason et al., 1990; Pellegrini, 1991; Reese, 1995; Snow, 1983; van Kleeck, 2003; van Kleeck & Schuele, 2010; Wells, 1982; Williams, 1994, 1999). The extra-textual talk provides the children with a context for clarification, exploration, and elaboration of meanings during shared reading (e.g., Heath, 1983; Teale, 1986; Wells, 1981, 1985). Similar types of extra-textual talk were found in the participating dyads’ shared reading of the four books.

Systematic analysis of the extra-textual talk was conducted utilizing semantic network analysis (see Chapters 3 and 5). The extra-textual talk was divided into messages, the smallest unit in the semantic stratum (see definition in Section 5.6.5). Then, the messages were further differentiated into two types, progressive and punctuative. Progressive messages involve the exchange of propositions in exchanging information (asking and answering questions, and providing information), and the exchange of proposals in exchanging goods and services (giving and demanding services). Punctuative messages are routinized talk to maintain interactions through continuatives (e.g., yeah, where “yeah” is not a response to a question or statement), frame the verbal interactions (e.g., “that’s it” as a concluding routine comment) and so on (see Appendix F.4 for more details on this distinction).

The analysis showed that the dyads tended to produce more messages \((p<.022)\) that contained more verbal discussions during shared reading in the LB than in the other contexts (Table 6.5). Moreover, the dyads uttered more punctuative messages \((p<.037)\) and progressive
messages ($p<.024$) in the LB than in the other contexts (Appendix G.1, Table 6.5). Even though the differences were not great or statistically significant, the means of each type of message were greater in the PB than in the DB1 and DB2 contexts. Overall, there were more interactions in the LB than in the other three contexts. Further details of what aspects appeared more in the dyads’ verbal exchanges will be presented in subsequent sections.

Table 6.5: Means of the dyads’ punctuative messages, progressive messages and total number of messages

<table>
<thead>
<tr>
<th>Semantic option</th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>[punctuative]</td>
<td>16.444</td>
<td>34.500</td>
<td>10.722</td>
<td>10.333</td>
</tr>
<tr>
<td>[progressive]</td>
<td>44.444</td>
<td>98.056</td>
<td>29.833</td>
<td>36.111</td>
</tr>
<tr>
<td>Total</td>
<td>61.000</td>
<td>134.167</td>
<td>40.778</td>
<td>46.722</td>
</tr>
</tbody>
</table>

6.5 Expansion and Construction of Thoughts

More detailed examination of extra-textual talk was completed through a comparison of progressive messages across contexts, as these messages involved exchanges of information (i.e., delivery and reception of information). The examination of the progressive messages showed diverse types of verbal activities, such as questioning, commenting and so on, that are realized by semantic features in the four contexts. The following four types of verbal activities showed most often in the four contexts and presented the most differences across contexts: 1) the dyads’ use of wh- questions, 2) questioning for further information on the other’s talk, 3) projecting ideas,

---

105 The number indicates the section in Appendix G where the results of t-tests are reported.

106 Here, questions only include talk demanding information, realized by the semantic feature [demand:information] (explained in Appendix F.2.2).
thoughts or knowledge,\textsuperscript{107} and 4) commenting for further information on their own or the other’s comments. Semantic features\textsuperscript{108} that realize those activities and a brief description of each activity are as follows:

1) wh- questions construe the semantic feature \textit{[demand;information:apprize]}, eliciting apprizing information, and requiring more thought processes to search for information than y/n questions, which construe the semantic feature \textit{[demand;information:confirm]}, eliciting confirming information;

2) questioning for further information construes the semantic feature \textit{[... :develop: ... :demand;information: ...]}, requesting further information or thoughts on information presented in a previous utterance;

3) projecting ideas, thoughts or knowledge construes the semantic feature \textit{[prefaced]} involving provision of one’s own thoughts, or request to generate one’s own thoughts, and showing who possessed the ideas, thoughts, or knowledge that can be further negotiated; and

4) commenting for further information construes the semantic feature \textit{[maintain topic: ... :give;information]} providing related information, or the semantic feature \textit{[maintain topic: ... :give;information:rejoin]} providing comments on previous speaker’s comments, adding information or thoughts.

\textsuperscript{107} The projection of ideas, thoughts and knowledge is realized by semantic feature \textit{[prefaced]} (explained in Appendix F.1.1). More detailed discussions and descriptions about the dyads’ projection of ideas, thoughts and knowledge are presented in Section 6.5.3.

\textsuperscript{108} The semantic features are explained in detail in Chapter 5 and Appendix F.
In the following sections, I present details of the dyads’ selections of those semantic features across the contexts by focusing on how they project and expand meanings in their discussion. In particular, the details include frequencies of each feature, agentive role of parents and children, and references of their talk across contexts.

6.5.1 Questions in Parent-Child Dyads’ Talk

Previous studies in linguistics (Hasan, 1991, 2009) and literacy (Heath, 1983; Wells, 1982, 1999) have shown the importance of questioning in developing children’s thinking through social interactions. In Hasan’s (1991/2009) study, children’s learning and socialization occurred through variations of meaning in exchanges of parents’ and children’s questioning and answering in their daily conversation. Similarly, Wells (1999) emphasized dialogic modes of interactions through questioning-answering in young children’s language and literacy development, as a critical practice in school-based learning. During discussions, questions often provide opportunities to exchange thoughts, ideas, and knowledge. Through questioning, parents can confirm children’s understanding, or find out their need for further information on a topic. Children can request information they do not have, and confirm their understanding of information. During shared reading, questions enable participants to discuss and negotiate meanings of information. As noted previously, questioning and answering are socio-culturally specific and vary among different cultural groups and among different social groups within a culture (Heath, 1983; Hasan, 2009; Williams, 1994).

As stated earlier, there were differences in question types and frequencies across the
contexts. In the semantic network, questions\textsuperscript{109} construe the semantic feature [demand;information], and are realized by questions that request information (e.g., what is this color?), not actions\textsuperscript{110} (e.g., can you close the door?). Overall, the dyads asked more questions in the LB than in the other contexts with statistically significant differences between the LB and the PB, and between the LB and the DB1 ($p<.021$) (Appendix G.2, Table 6.6). The parents’ questions occurred less in the DB2 than in the other contexts, although the difference was not great and paired t-tests did not show any statistical significance. Statistical differences in parents’ questions were only shown between the PB and LB, $t(17)=-2.118$, $p=.049$ (Appendix G.3).

However, when excluding the talk generated by families who paused the video (families 3 and 20), significant differences were found between the LB, and the DB1 and DB2 contexts ($p=.029$) (Appendix G.4).

Children asked fewer questions in the DB1 than in the other contexts. Both the means and range of the number of children’s questions in Table 6.6 show that the children’s use of questions was statistically less frequent in the DB1 than in the other contexts ($p<.024$) (Appendix G.5). Moreover, only in the DB1 did the children ask significantly fewer questions than their parents, $t(1)=3.520$, $p=.002$, while there were no statistical differences between parents’ and children’s questions in the other three contexts.

\textsuperscript{109} I have stated the differences between the [demand;information], and [demand;goods and services] in Appendix F.2.1.

\textsuperscript{110} Request of actions construe semantic feature [demand;goods and services].
Table 6.6: Means of parents’ and children’s questions

<table>
<thead>
<tr>
<th>Agent</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>(1-37)</td>
<td>(1-74)</td>
</tr>
<tr>
<td>Parent without pausing DB2</td>
<td>10.563</td>
</tr>
<tr>
<td>(1-37)</td>
<td>(1-74)</td>
</tr>
<tr>
<td>Child</td>
<td>4.389</td>
</tr>
<tr>
<td>(0-24)</td>
<td>(0-35)</td>
</tr>
<tr>
<td>Total</td>
<td>14.278</td>
</tr>
</tbody>
</table>

Note. Numbers inside parentheses show the range of the number of questions.

In the DB1 context, only half of the children asked questions (Table 6.7), and even those who asked, used questions less frequently than in the other contexts. In terms of parents’ questions, one parent did not ask any questions in the DB2. This did not happen in the other three contexts.

Table 6.7: Number of parents and children not asking questions in each context

<table>
<thead>
<tr>
<th>Agent</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>Parent</td>
<td>0</td>
</tr>
<tr>
<td>Child</td>
<td>6</td>
</tr>
</tbody>
</table>

Note. This table contains the number of parents and children who did not ask questions rather than who did. Questions are considered important in shared book reading and thus it was thought important to point out contextual differences.

The nature of the questions was further explored by examining semantic features [confirm] (y/n questions) and [apprize] (wh- questions) (Appendix G.6, Table 6.8). Dyads

---

111 Agent refers to a person, either a parent or a child, who spoke in the discussion.
asked y/n questions more frequently in the LB than in the other contexts; however; the only statistically significant difference was between PB and LB (Appendix G.7). Although the mean of the dyads’ y/n questions in the DB1 was less than in the PB, there was no statistical difference between the LB and DB1. A closer examination of each dyad’s use of y/n questions showed that 7 dyads asked the same or a greater number of y/n questions in the DB1 than in the LB (3 dyads asked the same number of questions, 4 dyads asked more), while 3 dyads asked more y/n questions in the PB than in the LB (there were no dyads with the same number of questions).

Table 6.8: Means of the dyads’ use of y/n questions and wh- questions

<table>
<thead>
<tr>
<th>Semantic option</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>[demand;information:confirm] (y/n questions)</td>
<td>5.556</td>
</tr>
<tr>
<td>[demand;information:apprize] (wh- questions)</td>
<td>8.722</td>
</tr>
<tr>
<td>Total</td>
<td>14.278</td>
</tr>
</tbody>
</table>

The dyads’ use of wh- questions was significantly more frequent in the PB and LB contexts than in the DB1 \( (p<.022) \) (Appendix G.8) and DB2 contexts. Kim and Anderson (2008) also found that there were a greater number of wh- questions in the print book context than in the two digital book contexts.\(^{112}\)

Overall, the dyads appeared to ask both types of questions most often in the LB than in the other contexts. In terms of the ratio between the two types of questions, the means showed

\(^{112}\) One digital book contained a page-turning feature, and the other digital book had an auto-video play feature.
that the dyads asked wh- questions more often than y/n questions in the PB and LB contexts, while the reverse occurred in the DB1 and DB2 contexts.

Based on the findings that showed differences in parents’ and children’ use of questions, and the different frequencies of y/n and wh- questions across the contexts, further analyses were conducted to find each agent’s use of different types of questions. These different uses provided more details on what kind of information each agent requested in the four contexts.

6.5.1.1 Parents’ questions

As was explained previously, parents’ questions often encourage the children to think beyond the information provided and to participate in the discussion (e.g., Hasan, 1991/2009; Wells, 1981, 1999; Wertsch, 1991; Vygotsky, 1987). Specifically, wh- questions encourage children to relate information in the current context to that acquired previously, and to think beyond the information given in the questions. Parents’ y/n questions often seek to confirm their children’s understanding of information delivered in the parents’ questions, and whether they agree with the ideas that are presented. Answering wh- questions generally involves more thought processes (e.g., tracing information obtained previously or making inferences) than y/n questions. Therefore, wh- questions are generally considered of a higher level or more cognitively demanding than y/n questions. Studies of dialogic reading (Whitehurst, 1988) have shown a stronger relationship between parents’ wh- questions and children’s expressive language development than that of y/n questions. Previous studies have also shown a positive relationship between parents’ wh- questions and their children’s vocabulary development (Loigan & Whitehurst, 1998; Wasik & Bond, 2001). Thus, it appears that different types of parents’ questions encourage different kinds of children’s cognitive and language development and
The examination of the parents’ questions in the current study also showed that the parents used wh- and y/n questions to encourage the children to specify words or illustrations in the books, to make inferences, to identify words in the texts, and so on. The comparison of the parents’ use of questions across the four contexts showed that both types of questions occurred more often in the LB than in the other contexts (Figure 6.1), with statistical significances between LB and PB contexts in y/n questions, $t(17) = -2.245, p = .038$, and between LB and DB2 contexts in wh- questions, $t(17) = 2.331, p = .032$ (Appendix G.9).

In terms of the ratio between wh- and y/n questions, the parents’ use of wh- and y/n questions showed similar frequencies in the PB and LB, but the use of y/n questions was greater than the use of wh- questions in the DB1 and DB2. Overall, since parents’ wh- questions (except where-questions) generally require more information and thought processes than y/n questions, the children would be encouraged to think further more frequently in the LB than in the other contexts.

---

113 Statistical significances were not shown in the contrast comparisons between parents’ y/n and their wh- questions in the four contexts.
As explained previously, semantic network analysis made it possible to study different kinds of questions within the two broad categories of wh- and y/n of questions. There are four types of semantic features under [demand;information:confirm] (i.e., y/n questions): [reassure], [probe], [ask], and [check]; there are five types under [demand;information:apprize] (i.e., wh-questions): [explain], [circumstance], [event], [actant], and [tentative] (see definitions in Appendix F.2.2). From those nine features, [ask] and [actant] were more frequently selected in the four contexts. The parents selected the feature [ask] significantly less often in the PB than in the LB and DB1 contexts ($p<.025$) (Appendix G.10). However, they selected the feature [actant] significantly more often in the PB than in the DB1 ($p=.043$), and significantly more
often in the LB than in the DB1 and DB2 contexts \( (p<.029) \) (Appendix G.10). Even though other features showed different frequencies across contexts, the differences are very small (means of less than one utterance).

The graph of the means shows that, in the PB and LB contexts, among different semantic features under \[ \text{[demand;information]} \], the parents selected \[ \text{[demand;information:apprize:actant]} \] (questions about what/which) most often, and \[ \text{[demand;information:confirm:ask]} \] (in the form “Is that Max?”) second most often (Figure 6.2). However, in the DB1 and DB2 contexts, the parents selected \[ \text{[demand;information:confirm:ask]} \] most often, and \[ \text{[demand;information:apprize:actant]} \] second most often (Appendix G.10). This tendency is consistent with the trend shown in the parents’ y/n and wh- questions. As \[ \text{[actant]} \] is one type of wh- question, \[ \text{[demand;information: apprize]} \], the parents’ more frequent selection of \[ \text{[actant]} \] might have contributed to their greater use of wh- questions than of y/n questions in the PB and LB contexts. In a similar way, as \[ \text{[ask]} \] is one type of y/n question, \[ \text{[demand;information:confirm]} \], the parents’ more frequent selection of \[ \text{[ask]} \] among different types of questions might have contributed to their more frequent use of y/n questions than of wh- questions in the DB1 and DB2. Thus, parents tended to ask more wh- questions—encouraging children to think beyond the current context—in the PB and LB.
To further understand the differences in the parents’ questions across contexts, examples are discussed next (Examples 6.1 and 6.2).

**Example 6.1: Dyad 6 (mother and 5-year old daughter), LB**

1. M: Who is making that noise?
2. C: The barn.
3. M: The barn?
4. C: Who is in the barn?
5. M: The animals.
6. M: What animal’s sounds do you hear?
7. C: What animal’s sounds do you?
8. M: Tell me first what you can hear.
11. M: What do they sound like?
In this example, the mother selected [demand:information:apprize:actant] (what/which questions) in lines 1, 4, 6, 8, and 11, and the child replied to the mother’s demand for information (lines 2, 5, 7, 9, and 12). The mother initiated the interaction by demanding information on who made the noise (line 1). The noise played when the child clicked on an icon on the barn, so, the child needed to think who was making the noise inside the barn. The child’s answer at first indicated that the picture made the sound (line 2), and the mother asked several questions to prompt the child to specify which animal made the noise inside the barn (lines 4, 6 and 8). Those wh-questions led the child to think about more specific information, as the child’s answers changed from more general (e.g., barn in line 2 and animals in line 5) to more specific (e.g., chicken in line 9 and sound of chicken in line 10) information. Thus, the mother’s wh-questions and the child’s answers (lines 2-9) appeared to help the child to find the information initially sought in line 1. As in this example, parents used this approach—wh- questions that made the children think about related and further information (e.g., relationship between barn and animals, between animals and chickens, and between chickens and how they sound) presented in the book—more often in the PB and LB contexts than in the DB1 and DB2 contexts.

The following excerpt presents an example of parents’ use of y/n questions in the DB1.

Example 6.2: Dyad 6 (mother and 5-year old daughter), DB1

A: Ralph thought about that.
1. M: When pigs fly?
2. Can you imagine that?

A: Then one day, while playing with some friends, he had an idea. But first he had to learn how to fly a helicopter.
3. M: Do you think this cow has strange ideas?


The mother selected [demand;information:confirm:ask] (y/n questions with interrogative form, e.g., Did you do that?) in lines 2 and 3. More descriptively, the mother initiated the interaction with a question that was presented in the story with a doubtful voice (a rising intonation at the end of the utterance, line 1), and asked the child to confirm if she could imagine that (line 2). However, the child did not reply to the mother’s questions on lines 1, 2, and 3, even though these y/n questions could have been answered with a short utterance, yes or no, showing agreement or disagreement. As in this example, parents tended to demand more confirming than apprizing information in the DB1 and DB2 contexts, and children appeared to be less responsive in the DB1 and DB2 contexts than in the PB and LB contexts.

In short, parents’ asked more wh- and y/n questions in the LB than in the other contexts. Since wh- questions, which go beyond the information given, are seen as positively influencing young children’s cognitive, language and literacy development (e.g., Whitehurst, 1988), the greater number of parents’ wh- questions in the LB context suggests the LB context may provide children in these families with more opportunities to develop their abstract thinking.

6.5.1.2 Children’s questions

According to Wells (1999), children’s questions provide a context where parents can teach things that the children do not know or need more information about, and thus, it follows that when children ask more questions, they have more learning opportunities. As stated earlier,
different kinds of questions may provide children with opportunities to learn various aspects of the stories and illustrations, such as names of objects, reasons for a character’s feelings, and so on. Moreover, through asking questions during shared reading, children are able to practice and learn the discursive practices valued in school (Heath, 1983). Children’s questioning as a kind of verbal discussion skill is one of the crucial verbal skills in their school learning (Hasan, 1991/2009).

The children in this study asked their parents questions about the stories and illustrations, —such as the names of objects in the illustrations, word meanings, and reasons for events that occurred in the story—across all four books. The differences in children’s questions across the contexts were examined further through their semantic choices under

[demand;information:confirm] y/n questions and [demand;information:apprize] wh-questions. The means of the two types of questions showed that children used y/n and wh-questions less often in the DB1 context, and most often in the LB context (Figure 6.3). The t-tests also showed that the children’s use of y/n questions was significantly less in the DB1 than in the DB2 ($p<.046$), and their use of wh- questions was significantly less in the DB1 than in the other contexts ($p<.044$) (Appendix G.11). In terms of the ratio between the two types of questions, the children asked more wh- than y/n questions in all four contexts, even though the difference between the two types of questions was small in the DB1 due to the reduced number of questions asked in that context. The ratio between the children’s wh- and y/n questions differs from the ratio between parents’ wh- and y/n questions in the four contexts.
Further analysis of the children’s questions was conducted to examine any contextual differences in the children’s use of the nine types of y/n and wh-questions. Across the four contexts, children asked [actant] (what/which questions) and [explain] (why questions) more often than the other types of questions (Figure 6.4). Semantic network analysis showed that the children selected [actant] significantly more often in the LB than in the other three contexts ($p<.042$) (Appendix G.12). They selected [explain] at similar frequencies in the PB, LB, and DB2 contexts, but least frequently in the DB1, with a significant difference between LB and DB1 contexts, $t(17)= 2.365, p=.030$. 

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>[confirm]</td>
<td>0.889</td>
<td>1.667</td>
<td>0.444</td>
<td>0.944</td>
</tr>
<tr>
<td>[apprize]</td>
<td>3.500</td>
<td>5.222</td>
<td>0.722</td>
<td>2.778</td>
</tr>
<tr>
<td>Total</td>
<td>4.389</td>
<td>6.889</td>
<td>1.167</td>
<td>3.722</td>
</tr>
</tbody>
</table>
In short, the children asked both wh- and y/n questions more frequently in the LB context, and least frequently in the DB1 context. Moreover, they asked wh- questions more often than y/n questions in the four contexts. Among wh- questions, they asked questions construing [actant] (what/which questions) and [explain] (why questions) more often than other types. These findings seemed to show that, although children used different types of questions similarly across contexts, they asked questions more often in the LB. Thus, given the greater number of the children’s questions in that context, it was conjectured that the children could have greater opportunities in the LB than in the other contexts to learn about information that they wanted to know and/or did not know.
6.5.1.3 Similarities and differences in parents’ and children’s selection of types of questions

Further comparison between parents’ and children’s questions across contexts showed that the parents asked significantly more y/n questions than their children in the four contexts \((p<.015)\) (Appendix G.13). As Figure 6.5 shows, parents’ use of wh- questions was greater than the children’s in the four contexts, although the differences were not statistically significant, except in the DB1 context, \(t(17)= 2.468, p=.019\). In terms of the ratio between the two types of questions, the parents asked more wh- questions than y/n questions in the PB and LB contexts, while children did so in all four contexts. This trend is consistent with parents’ use of questions, construing [ask] (y/n questions with an interrogative form) and [actant] (what/which questions) most often in the four contexts, and the children’s use of questions, construing [actant] and [explain] (why questions) most often in the four contexts except the DB1 context.

Overall, parents tended to ask certain types of questions (e.g., wh- or y/n questions) more frequently in some books than others, while children tended to asked similar types of questions regardless of context. Thus, it seems that parents preferred to adjust the type of question to the context, while children tended not to.
6.5.1.4 Parent-child dyads’ questions for further information

Most dyads asked questions that required expanding on information presented in the previous speaker’s message. These questions allowed the children to ask for explanations as to why events occurred, additional information about a topic, and so on. The questions also served as feedback on previous talk. These questions are considered crucial in instructional discourse at school (Williams, 1994). Formally, the dyads’ questions for further information construe the semantic feature \([\text{demand};\text{information};\text{develop}]\) (details in Appendix F.2.2). The following sequence exemplifies this form of questioning.
Example 6.3: Dyad 9 (mother and 4-year old son), LB

A: Let’s play. The cows are working together to write a new note. Touch all four cows.
1. M: (yawning)
   A: One. (child answered to the game question with the electric pen), two, three, four. Mooo. Mooo.
   A: Touch the game button to play again.
3. M: How many girl cows are there?
4. C: How do you know they’re girls?
5. M: Hu-Um... It’s a trick question.
6. All cows are girl cows.
7. And boy cows are called BULLS.
8. Because all girl cows can have baby calves and have milk, see, this is kind of like their breast, right?
9. They have teats on here and
10. then it fills up with milk.
11. That’s how they feed the baby, or they give milk to people.
12. C: These are only girls?
14. C: And there is no... Is that a girl?
16. C: Um... Where are the boys?
17. M: I don’t know.
18. Often the boy cow, the bull, stays out in the field.
19. He doesn’t get to sleep with girls.

The exchange presented above occurred during a game the dyad played on the LB, after reading it. The mother initiated the interaction by asking a question (line 3). In response to the mother’s question, the child asked questions for further information (lines 4, 12, and 16). By asking those questions, the child obtained information beyond the information presented in the previous utterances by the mother (lines 4 and 16), and confirmed his understanding of information presented in the previous utterances (lines 12 and 14). Moreover, the questions and answers in
lines 3 to 19 provided information about characteristics of bulls and cows and about the
categorization of the animals by sex, thereby expanding the child’s knowledge. The following
excerpt provides more examples of questions that ask for further information.

**Example 6.4: Dyad 3 (mother and 4-year-old son), LB**

A: The barn is very cold at night. We’d like some electric blankets. Sincerely, The Cows.

1. C: They need an electric blanket.
2. M: What’s an electric blanket?
3. C: One that’s electric?
5. What do they do?
6. C: I don’t know.
7. M: Keep you warm, yeah?

The mother’s question for further information demanded the child to identify the meaning of the
word “electric blanket” (line 2). Then, she asked the child to think about the functions of the
blanket (line 5). In response to the child’s disclaimer (line 6), the mother asked the child a further
confirmation question that provided the child with information about the function of an electric
blanket (lines 7). These questions required the child to think about the properties and functions of
an electric blanket. Such questions would encourage the child to extend his thinking, and to make
connections between the information presented in the story and that external to the story (e.g., the
child’s background knowledge in line 3 and a scientific fact in line 7).

In terms of contextual differences, questions requiring further information occurred
significantly more frequently in the LB than in the PB and DB1 contexts ($p<.021$) (Appendix
In the DB1, these questions occurred the least often, apparently because the children asked fewer questions that required further information. Instead, the children appeared to focus on turning the page with the mouse on the screen. Further discussion on the dyads’ verbal participation and responsiveness in sustaining interactions will be provided later in this chapter (Section 6.5.4).

Table 6.9: Means of the parents’ and children’s questions for further information

<table>
<thead>
<tr>
<th>Agent</th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent</td>
<td>2.333</td>
<td>3.889</td>
<td>2.389</td>
<td>2.167</td>
</tr>
<tr>
<td>Child</td>
<td>1.389</td>
<td>2.278</td>
<td>0.333</td>
<td>1.222</td>
</tr>
<tr>
<td>Total</td>
<td>3.722</td>
<td>6.167</td>
<td>2.722</td>
<td>3.389</td>
</tr>
</tbody>
</table>

With a greater number of questions for further information in the LB context, the children would have more opportunities to think about related information and to be involved in further discussion on a topic. This kind of construction of meanings would encourage children’s logical reasoning, which is an important mental disposition for later learning at school (Halliday & Matthiessen, 1999; Hasan, 1991/2009; Wells, 1982, 1999).

In sum, the findings from the examination of the dyads’ questioning showed some distinctive differences across the contexts. In particular, the dyads’ use of wh- and y/n questions, and questions for further information, was significantly greater in the LB context than in the other three contexts. With a greater number of questions in the LB context, the dyads engaged in

---

114 The differences in the means of utterances in the parents’ and the children’s questions for further information were so small (around one or two utterances) that they might not be significant in real practice. Thus, statistical examination was not conducted for each agent’s utterances for this type of question.
more discussion, through questioning and answering routines. Furthermore, given that wh-questions are seen as important in promoting children’s language and literacy development with shared reading (Wells, 1982, 1985; Whitehurst et al., 1988), it follows that the LB may provide children with a better context than the other books to develop their language and literacy abilities. Those opportunities appeared the least in the DB1 context.

In terms of agent, as stated earlier, parents played the lead role in questioning in every context. Children’s questions were the least frequent in the DB1 context. Further discussion on role differences is presented later in this chapter (Section 6.5.4).

### 6.5.2 Parent-Child Dyads’ Provision of Further Information

The parents and the children provided further information on their own or in response to each other’s comments, making connections between the information presented and related information either in or beyond the text. This related information provided extra information on comments, questions and requests, or when a child did not know an answer. The information included scientific facts, recalling previous experiences, evaluation of events or characters, and more concrete aspects, such as descriptions of events or characters in the story or illustration.

Comments that provided additional information on a previous utterance (either the speaker’s own or the other person’s) always maintained a topic presented in the previous talk. The function of maintaining a topic in those comments construes the semantic feature [follow:maintain topic] in logical-textual meaning in a semantic network, and the provision of the comment construes the semantic feature [give:information] in interpersonal meaning in a semantic network.

---

115 Details in Appendix F.1.2
Thus, the comments about further information construe the co-selection of the semantic features \[\text{follow:maintain topic}\] and \[\text{give:information}\]. However, those comments do not include one’s reply to the other speaker’s questions, as the replies are prompted by a question in a previous turn from the other speaker, and only provide information requested in the question. The following section from Example 6.3 shows those semantic features.

6. M: All cows are girl cows.
7. And boy cows are called BULLS.
   \[\text{follow:maintain topic: ... :give:information}\]
   ...
12. C: These are only girls?
   \[\text{follow:maintain topic: ... :give:information:reply}\]

In this mother-son exchange, the mother’s talk in line 7 provided further information on her own talk in line 6. However, the mother’s talk in line 13 is her response to the child’s question in line 12. The former talk provides additional information on a topic of their discussion without being prompted by questions, while the latter provides an answer to the child’s question.

6.5.2.1 Comments on previous utterances

Across the contexts, the dyads’ provision of further information occurred more frequently in the LB than in the other three contexts \((p<.049)\), and less often in the DB1 \((p<.026)\) (Appendix G.15, Table 6.10). Parents’ comments about further information occurred significantly more frequently in the LB \((p<.042)\) and least frequently in the DB1 \((p<.038)\) (Appendix G.16). Similarly, children’s comments about further information were the least

---

116 Details in Appendix F.2.4
117 The replies to questions construe the semantic feature \[\text{give:information:reply}\] (details in Appendix F.2.4).
frequent in the DB1 ($p<.017$) (Appendix G.17). As shown in Table 6.10, the differences in the means of the comments about further information across the contexts were greater in the parents’ than in the children’s talk.

Table 6.10: Means of the parents’ and children’s comments providing further information

<table>
<thead>
<tr>
<th>Agent</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>Parent</td>
<td>11.278 (1-69)</td>
</tr>
<tr>
<td>Child</td>
<td>2.778 (0-13)</td>
</tr>
<tr>
<td>Total</td>
<td>14.056 (1-71)</td>
</tr>
</tbody>
</table>

Note. Numbers inside parentheses show the range of the number of questions. The ranges marked with * excluded families 3 and 20 because they paused the video play in the DB2 context, and so were able to exchange a greater number of messages than other families in that context.

Additional analysis on the dyads’ comments about further information was conducted by distinguishing between the comments that added information to the speaker’s previous utterance and those that added information to a previous utterance from the other person. Providing further information on a speaker’s own utterance construes the semantic feature [maintain topic:continue:give;information], and further information responding to the other’s utterance construes the semantic feature [maintain topic:response:give;information]. The dyads’ comments about further information on their own utterances were significantly greater in the LB than in the other three contexts ($p<.034$), and were significantly less in the DB1 than in the PB contexts.

\[118\] Here, [maintain topic:response:give;information:reply] was not included.
and LB contexts \((p<.012)\) (Appendix G.18, Table 6.11). Similarly, the dyads’ comments about further information on each other’s utterances were significantly less in the DB1 \((p<.029)\) (Appendix G.19).

**Table 6.11: Dyads’ comments providing further information on their own or each other’s utterances**

<table>
<thead>
<tr>
<th>Semantic option</th>
<th>Book contexts</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
<td>LB</td>
<td>DB1</td>
<td>DB2</td>
</tr>
<tr>
<td>[maintain topic:continue:give; information] (on their own utterance)</td>
<td>7.556 (0-43)</td>
<td>14.222 (0-69)</td>
<td>2.389 (0-11)</td>
<td>4.667 *(0-12)</td>
</tr>
<tr>
<td>[maintain topic:response:give; information] (on each other’s utterance)</td>
<td>6.500 (0-28)</td>
<td>7.444 (0-28)</td>
<td>1.889 (0-6)</td>
<td>4.000 *(0-17)</td>
</tr>
<tr>
<td>Total</td>
<td>14.056 (1-71)</td>
<td>21.667 (0-87)</td>
<td>4.278 (0-14)</td>
<td>8.667 *(0-27)</td>
</tr>
</tbody>
</table>

*Note. Numbers inside parentheses show the range of the number of comments about further information. [maintain topic:continue:give; information] is construed by comments about further information on the speaker’s own utterance while [maintain topic:response:give; information] is construed by comments providing further information in responding to each other’s utterance. The ranges marked with * excluded families 3 and 20 because they paused the video play in the DB2 context, and so were able to exchange a greater number of messages than other families in that context.*

### 6.5.2.2 Comments providing further information on the other’s utterances

Sometimes the provision of information included evaluation, correction, and other related factual and non-factual information to previous comments from the other person, and was not always in response to questions. These comments on the other speaker construe the semantic feature [follow:maintain topic:reponse:give;information:rejoin].

The statistical comparison of these comments across the four contexts showed that the means of the dyads’ selection of the feature [give;information:rejoin] were significantly more
frequent in the PB and LB contexts than in the DB1 ($p<.026$) (Appendix G.20) and DB2 contexts (Table 6.12). Similarly, the number of parents’ comments on the children’s comments was significantly greater in the PB and LB than in the DB1 ($p<.030$) (Appendix G.21). The children also commented on the parent’s comments significantly more often in the LB than in the DB1 context, $t(17)=2.406, p=.028$. Moreover, the parents instantiated this feature significantly more frequently than the children in the LB, $t(17)=2.166, p=.043$.

Table 6.12: Means of the parents’ and children’s comments on each other’s utterances

<table>
<thead>
<tr>
<th>Agent</th>
<th>Book contexts</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
<td>LB</td>
<td>DB1</td>
<td>DB2</td>
</tr>
<tr>
<td>Parent</td>
<td>2.444</td>
<td>2.833</td>
<td>0.944</td>
<td>1.333</td>
</tr>
<tr>
<td>Child</td>
<td>1.000</td>
<td>0.778</td>
<td>0.333</td>
<td>0.667</td>
</tr>
<tr>
<td>Total</td>
<td>3.444</td>
<td>3.611</td>
<td>1.278</td>
<td>2.000</td>
</tr>
</tbody>
</table>

In short, the examination of the dyads’ comments about further information on their own or the other’s utterances showed that those comments were most often present in the LB context, and the least often in the DB1 context. Although the means of those comments were not statistically significant, they showed the comments appeared the second most often in the PB, and the third most often in the DB2. Those differences across the contexts were further examined qualitatively based on logico-semantic relations in SFL, as this analysis can show how the differences occurred. Next, I explain three theoretical principles of logico-semantic relations in SFL, and present some examples.
6.5.2.3  Logico-semantic relations of the dyads’ comments about further information

The comments about further information maintain a topic in on-going conversations; so, information in those comments is related to each other. As those comments are related to each other, they often form a message complex\(^{119}\) that contains several messages on a topic. The logico-semantic relations that exist in a message complex between those comments about further information and previous messages can be further examined with the SFL notions of projection and expansion (Halliday & Matthiessen, 2004). The messages projecting ideas construing the semantic feature [prefaced] involve the projection of ideas in the secondary clause by the primary clause. [Prefaced] messages will be discussed in Section 6.5.3. The other type of logico-semantic relation is expansion between two adjunct messages, that is, a preceding message is expanded by a subsequent message. Under the expansion, there are three sub-types of logico-semantic relations: elaborating, extending or enhancing. Elaboration involves specification or description, including exposition, exemplification, and clarification. Extension involves addition, replacement, and alteration of the information provided in the first clause. Enhancement involves using qualifications, including “reference to time” (e.g., same or later time), “place” (e.g., same place), “manner” (e.g., means or comparison), or “cause or condition” (e.g., cause-effect, or positive, negative or concessive condition) (Halliday & Matthiessen, 2004, p. 410; examples of those are presented in Section 6.5.4.2).

An example of the elaboration of meanings is when a mother commented “Bear is in a cave” and the child clarified what the bear was doing, “he is sleeping.” Extension of meaning is

\(^{119}\) A message complex refers to a chunk of messages that maintain a topic in interactions.
shown in this mother’s talk, “1. And there his butt’s hanging out in the forest 2. and his head’s inside his cave!” The mother maintained the topic by providing additional information (in message 2) to what she had presented in her previous utterance (in message 1). On some other occasions, comments about further information enhanced ideas on a topic. For instance, a mother commented on an event that happened in the story, “Bear is sleeping,” and then provided further information, “During winter time, Bears are hibernating,” going beyond the information given in the illustration. As those comments add information (either abstract or concrete) on a topic in the discussion, it is conjectured that they encourage the development of children’s abstract thinking (e.g., van Kleeck, 2003) and help children cluster and expand information. Next, I present examples of how the dyads added further information to their own or each other’s utterances.

The following dialogue between a mother and her 4-year-old son (dyad 9) in LB is from Example 6.3, and demonstrates logico-semantic relations in an on-going conversation.

5. M: Hu-Um... It’s a trick question.
6. All cows are girl cows.
7. And boy cows are called BULLS.
8. Because all girl cows can have baby calves and have milk, see, this is kind of like their breast, right?
9. They have teats on here and
10. then it fills up with milk.
11. That’s how they feed the baby, or they give milk to people.

The mother provided further information on her previous utterance four times (line 7, 9, 10, 11). Those comments provided essential information related to the topic (distinction of the sex of animals), such as a name (line 7) and information about body parts (lines 9, 10, 11). In those comments, the mother presented some of the information in logical relations. The mother
provided a name for male cattle (line 7), thereby extending the information she provided earlier. Her explanations of the cows’ body parts (line 9) and their use (line 11) elaborated on the information she previously gave. Moreover, her explanations on what the body parts could be used for enhanced the meaning of information she previously provided (line 10). As this example shows, the dyads’ comments on their own talk enabled the provision of more detailed information and logical connections and explanations.

Next, I present an example of a dyad’s comments on the other speaker’s utterances, construing the semantic feature [give; information; rejoin].

**Example 6.5: Dyad 18 (mother and 4-year-old daughter), DB1**

A: Millie looked a little surprised. “Umm... Bill can,” she said, “but... cows don’t fly helicopters.” “Not yet they don’t,” Ralph smiled.

C: (laugh)

1. M: Look at that sheep going. (laugh)
2. C: (laugh) I know where she's going.
3. M: It looks like she has an airplane hair clip.
5. M: I think so.

In this example, responding to the mother’s initiation, the child explicitly stated that she knew where the character in the illustration was going (line 2). The mother added her thoughts (line 3), and the child stated her thought on the character’s personal preference (line 4). The mother agreed with the child’s comment (line 5). The comments (lines 4-5) involved the elaboration of meaning. Such interactions not only help the child to understand the characteristics of the character in the story, but also help her to learn and practice how to classify characters. In other words, the construction of meaning through the verbal interactions encourages the development
of the child’s thinking.

In short, in the PB and LB contexts, elaboration, extension, and enhancement of information through parents’ provision of further information occurred more frequently than in the other books, providing the children with the opportunity to classify and connect concepts, and to expand their thoughts. As explained earlier, parents’ comments about further information and children’s use of these comments encourage the development of the children’s narrative skills in explaining or describing different characters and events, and of their knowledge and understanding of the story and the ideas in it (Hasan, 1991/2009). Moreover, such comments involve logico-semantic relations and are thought to help children build logical ways of thinking and talking (Bruner, 1986; Vygotsky, 1978; Wells, 1999). Thus, given the greater number of instances of providing further information in the PB and LB contexts, valuable cognitive and linguistic resources were more available to the children in those contexts than in the DB1 and DB2 contexts.

6.5.3 Projecting of Thoughts and Knowledge

Another important aspect of parent-child talk was the projection of ideas (including perception, knowledge, and reaction\(^{120}\)). The utterances with projections contain explicit statements of one’s subjectivity (e.g., I thought…, I know…, or I like…). These statements show the origination of the ideas (Hasan, 1991). The presence of the origination of the ideas demonstrates the children’s recognition of, and understanding about the subjective condition of

\(^{120}\) Detailed definitions and realization statements for these semantic features are presented in Appendix F.1.1. Although projection can be done with ideas (including perception, knowledge, and reaction) or locution (i.e., verbal utterance), this chapter only focused on the dyads’ use of the projection of ideas, as this type of projection is considered to be important in children’s cognitive and language development.
one’s ideas, and their understanding about people’s possession of similar or different ideas. According to Hasan (1991/2009) and Williams (1994), these understandings encourage the children’s individuation of thought in the course of their development of consciousness (Hasan, 1991/2009; Williams, 1994). The individuation of thought encourages children to realize the need to negotiate the different thoughts generated by different people. For example, the messages “what do you (i.e., child) think he is going to do?” and “I (i.e., child) think he is going to catch fish” are co-selections of the semantic features [child] and [preface]. The co-selection of the two features indicates the statement of a child’s individuated experience projected in the message. Like these examples, messages with the projection of ideas make one’s experience or thought visible, and they help verbal negotiations. This meaning negotiation through exchanges of messages with projection of ideas in parent-child discussions would be one of the critical ways to achieve discursive knowledge, that is, constructing knowledge through interactions (Wells, 1999). Thus, the examination of the projection of ideas in parent-child interactions is necessary to understand children’s development of consciousness through interactions (Williams, 1994).

In the current study, there were differences in the dyads’ projection of ideas across the contexts. In particular, their subjective states of consciousness, the projection of ideas with probabilities, and the projection of knowledge showed significant contextual differences. Findings from the examination of those aspects are presented in the following sections.

6.5.3.1 Subjective states of consciousness built through linguistic interactions

During shared reading, the parents often explicitly stated their children’s subjectivity of thoughts, ideas, and knowledge in their talk involving projection. These parents’ statements construe the semantic feature [prefaced:subjective:other:child] (details in Appendix F.1.1).
The children also represented their own subjectivity in their projection of thoughts, ideas, and knowledge. This representation of subjectivity construes the semantic feature \([ \text{prefaced:self:exclusive} ]\) (details in Appendix F.1.1). One of the most common types of talk with this semantic feature was the parents’ questioning and the children’s answering. For instance, a mother asking her 5-year-old daughter “Do you know what demand means?” is realized by the semantic feature \([ \text{prefaced:subjective:other:child: ... :demand:information} ]\).

In this question, the mother’s statement “do you know” explicitly stated the child as the subject in the child’s projection of the thoughts (knowledge). The knowledge was represented in the clause “what demand means.” Then, her daughter responded “Nope” (recovered as “Nope, I do not know what demand means”), which construes \([ \text{prefaced:self:exclusive} ]\). Based on the principles of recovery of the ellipsed talk (details in Appendix F.5), the child’s ellipsed talk (“Nope”) was recovered with a clause in the mother’s question that contained the child’s subjective state of knowledge (“do you know what demand means”). The recovered form of the child’s response showed the child’s statement of her subjective state of knowledge (“I do not know what demand means”). As this example shows, parents’ selection of \([ \text{prefaced:subjective:other:child} ]\) was closely related to the children’s selection of \([ \text{prefaced:self:exclusive} ]\).

The comparison across the four book contexts showed that both the parents’ selection of \([ \text{prefaced:subjective:other:child} ]\) and the children’s selection of \([ \text{prefaced:self:exclusive} ]\) occurred most often in the LB context compared to the other three contexts (in the dyads’ talk \(p<.025\); in the parents’ talk \(p<.034\); in the children’s talk \(p<.033\), Table 6.13, Appendix G.22). Thus, the children’s subjective state of consciousness was involved in the parents’ talk, and was represented in the children’s talk most often in the LB. It follows that, in the LB, children would
have more opportunities to recognize and understand the subjective condition of their ideas. These opportunities would encourage the development of the children’s individuation of consciousness, which would further encourage their learning through interactions (Vygotsky, 1978; Wells, 1999; Williams, 1994).


<table>
<thead>
<tr>
<th>Semantic option</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>Parents’ [prefaced:subjective:other:child]</td>
<td>2.556</td>
</tr>
<tr>
<td>Children’s [prefaced:self:exclusive]</td>
<td>0.444</td>
</tr>
<tr>
<td>Total</td>
<td>3.000</td>
</tr>
</tbody>
</table>

6.5.3.2 Aspects projected in the parent-child dyads’ talk

Among aspects\textsuperscript{121} that are projected in a message, the projection of ideas with the explicit statement of probabilities and the projection of knowledge (e.g., know, remember) were further examined. Those aspects were frequent in parent-child discussions (a finding that is consistent with Williams’ [1994] findings), and are considered as important semantic features in extratextual talk during shared reading (Williams, 1994).

First, messages with an explicit statement of probabilities in the projection of an idea are formally realized in the semantic feature [prefaced:interpersonal:modal]. As an example, in

\textsuperscript{121} As stated earlier, a message with projection involves the projection of ideas (including perception, knowledge, and reactions) or locutions (saying). In messages with projection, aspects such as knowledge (e.g., know, remember), reaction (e.g., preference), perception (e.g., perceived by the five senses), and verbal report can be projected.
the utterance “I don’t think that would work.”

“I don’t think” implies probabilities on the projected idea, “that would work.” This is different from the utterance “that does not work,” an absolute statement. Probabilities give the listener more possibilities to negotiate the idea than when the idea is presented as an absolute statement.

Messages involving projection of knowledge are formally stated as [prefaced: experiential:knowledge] in the semantic network. An example would be a mother’s question “do you remember what the bear did?” As the example shows, messages involving the projection of knowledge show one’s possession of the knowledge, which encourages children to recognize and understand their own knowledge.

As greater possibilities of verbal negotiation and representation of one’s knowledge in those two types of messages encourage the development of children’s learning, those types of messages have been considered important verbal resources in children’s cognition and language development (Williams, 1994). Next, I discuss the messages construing [prefaced: interpersonal:modal] and [prefaced:experiential:knowledge] in parent-child shared reading.

The statistical analysis showed that the parents’ selection of [prefaced:interpersonal:modal] was significantly more frequent in the LB than in the DB1 and DB2 contexts ($p<.047$).

---

122 In the message “I don’t think that would work,” the clause “I don’t think” is projecting the second clause “that would work.” The projecting clause “I don’t think” contains probabilities. This lexico-grammatical feature realizes as [prefaced] in a semantic network (details in Appendix F.1.1).

123 In the message “do you remember what the bear did?,” the projecting clause “do you remember” requests the child’s knowledge on the projected clause “what the bear did.” The projection of knowledge is realized by certain mental processes (i.e., verbs) that are related to one’s cognition, such as remember, know or think (details in Appendix F.1.1).
Comparing means across the contexts showed that parents stated probabilities in the projection of ideas the least often in the DB2 (Table 6.14). As mentioned earlier, the parents’ statement of probabilities in the projection of ideas provides greater possibilities of verbal negotiation by taking verbal turns. In the DB2, the verbal negotiation through the parents’ statement of probabilities appeared to be hampered, as the synchronization of the parent’s talk with the narration of the book interrupted verbal turns in the parent-child discussion. This is further explained below, in Example 6.7. In contrast to parents, children rarely stated probabilities in the projection of ideas in their interactions with their parents during shared reading, which is consistent with Williams’ (1994) findings.

Table 6.14: Means of parents’ and children’s projection of an idea with probabilities

<table>
<thead>
<tr>
<th>Agent</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>Parent</td>
<td>3.000</td>
</tr>
<tr>
<td>Child</td>
<td>0.167</td>
</tr>
<tr>
<td>Total</td>
<td>3.167</td>
</tr>
</tbody>
</table>

The following examples show the contextual differences in the dyads’ projection of thoughts with probabilities. Both examples are from the same mother and her 4-year-old son’s shared reading (family 9).

Example 6.6: Dyad 9 (mother and 4-year-old son), LB

A: (Farmer's talk)***. Now look in the story and find his

---

124 Since most of these projections were used by the parents, the results of the paired t-tests for the dyads’ projections are similar to the parents’ projections. Thus, here, only the findings from the paired t-tests of parents’ projections are presented.
In this example, the child initiated the interaction by asking a question to the mother (line 2). In response to the child’s question, the mother asked a question with projection about what the boy thought the first letter of Farmer Brown’s name was (line 3). The child replied to the mother’s question with projection126 (line 4). As the child was responsive, the mother asked questions involving the projection of thoughts with probabilities several times after this episode. This occurred infrequently in their reading of the DB2, as the following example illustrates.

Example 6.7: Dyad 9 (mother and 4-year-old son), DB2

1. M: How many animals are there, do you think?
2. =M: (Friend?) five, six, seven friends and bear.
3. C: That makes eight.

... 

A: And the bear WAKES UP! BEAR GNARLS and he SNARLS. BEAR ROARS and he RUMBLES! BEAR JUMPS and he STOMPS. BEAR GROWLS and he GRUMBLES!

---

125 This message is an ellipsed message, and was recovered as “I think it starts with B,” based on the principles of recovery of ellipsed messages presented in Appendix F.4.

126 Here, the child's talk “B” was recovered as “I think it starts with B” (details in the previous footnote). The recovered message “I think it starts with B” contains a clause “I think” that projected the other clause, “it starts with B.”
4. M: Oh-oh. What’s he gonna do?
   A: “You’ve snuck in my lair and you’ve all had fun! But me? I was sleeping and … I have had none!”
5. M: Is he angry?
   A: And he whimpers and he moans, he wails and he groans … And the bear blubbers on!

During sharing of the DB2, the mother initiated interactions with her son by asking him to think about or guess the number of animals represented in the illustration (line 1). This was the only occurrence in their reading of the DB2 when the mother’s question involved the projection of thoughts with probabilities. The mother provided an answer for the question even though it was synchronized with the narration (line 2). Then, the child added his reply to the mother’s answer (line 3).

In their reading of a part of the DB2 that came much later, the mother asked questions in a simple form (lines 4 and 5), which did not involve the projection of thoughts with probabilities. Again, the child did not provide responses to the mother’s questions (after lines 4 and 5); rather, the narration came after the mother’s questions. It appeared that the automatic play of the narration did not provide the dyads with an opportunity to take questioning and answering verbal turns. This lack of responsiveness seemed to discourage the dyads’ use of projection of thoughts with probabilities, more so in the DB2 context than in the other three contexts.

The other aspect that was frequently projected in the parent-child dyads’ talk was knowledge realized by certain mental processes (i.e., verbs), such as “know,” “remember,” and “think.” Similar to the dyads’ projection of thoughts with probabilities, the projection of knowledge in the dyads’ talk occurred the least often in the DB2 context, even though there was
not a great difference in their selection of the feature across the contexts (Appendix G.24,
Table 6.15).

Table 6.15: Means of the parents’ and the children’s projection of knowledge

<table>
<thead>
<tr>
<th>Agent</th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent</td>
<td>2.444</td>
<td>3.111</td>
<td>2.444</td>
<td>1.611</td>
</tr>
<tr>
<td>Child</td>
<td>0.222</td>
<td>0.222</td>
<td>0.167</td>
<td>0.167</td>
</tr>
<tr>
<td>Total</td>
<td>2.666</td>
<td>3.333</td>
<td>2.611</td>
<td>1.778</td>
</tr>
</tbody>
</table>

The Examples 6.8 and 6.9, from Family 9, show the differences in the mother’s projection of knowledge in her questions in the LB and DB2 contexts.

Example 6.8: Dyad 9 (mother and 4-year-old son), LB

A: Let’s play. Touch someone you think is warm.
1. C: Somebody who’s warm? Who is warm?
2. M: Well, they all got electric blankets on.
3. Do you know what electric blanket is?
4. C: Something that you plug in.
5. And then, And then, you turn it ...

In this example, initially, the child asked the mother to give the answer for the question asked by the digital pen (line 1). Instead of providing the answer immediately (line 2), the mother asked the child if he knew what an electric blanket was (line 3). This question involved the projection of the child’s knowledge on what an electric blanket is. The projection of the question by the mother explicitly acknowledged the child as the subject in the projection of his own knowledge.

Paired t-tests showed no significant differences in the dyads’, parents’, and children’s projection of knowledge across the contexts.
This kind of explicit query concerning the child’s possession of the knowledge would encourage the child to consider his knowledge as individualized, and to build his own knowledge.

**Example 6.9: Dyad 9 (mother and 4-year-old son), DB2**

A: a hare hops in.

1. =M: What's a hare?
   A: “Ho, Mouse!” says Hare. “Long time, no see!”

2. =C: That's mouse (and that's the hare?)

Different from Example 6.8, the mother asked a question in the simple form “What’s a hare?” (line 1), rather than asking the question with the projection of the child’s knowledge in her question (e.g., “Do you know what a hare is?”). The child responded by labeling characters in the illustration without providing further explanations on what a hare was (e.g., he could have added “a big, hairy bunny”). Comparing the mother’s questions and the child’s responses in Examples 6.8 and 6.9, it appears that even though those two questions are similar in terms of their reference to objects in the illustrations and requests for identification of the objects, they differ in that the involvement of the projection of the child’s knowledge in the mother’s question, and the child’s provision of detailed explanations occurred in the LB context, but not in the DB2. In fact, this mother never projected the child’s knowledge in her questions during reading of the DB2 book, even though she did project the child’s knowledge in other contexts, as Example 6.8 shows. This is similar to the mother’s question in line 1 in Example 6.9. Thus, as the examples and means show, the dyads projected knowledge more often in the LB context, but less in the DB2.

Overall, in the LB context, the dyads’ interactions showed the greater number of subjective statements of the children’s thoughts in the parents’ and the children’s talk, and greater projection with statement of possibilities and projection of knowledge in the parents’ talk.
and questions. On the contrary, in the DB2, those types of talk were the least frequent, especially in the parents’ questions. These findings suggest that there were greater linguistic and cognitive resources for the children to build individuation of thoughts, projection of ideas with various possibilities, and projection of knowledge in the LB than in the DB2. The individuation of thoughts and the modalities of possibilities and knowledge are essential aspects in meaning negotiation, as explained earlier (Williams, 1994). In conclusion, the LB context, and to a lesser extent, the PB and DB1 contexts, seemed to provide the children with a more supportive context to develop meaning negotiation skills that would enable discursive knowledge construction through interactions.

### 6.5.4 Parents’ and Children’s Agentive Roles

In this section, contextual differences in the parents’ and the children’s verbal participation and agentive role are examined in relation to the different types of talk across the contexts. Here, verbal participation refers to the frequency of each agent’s verbal talk. As explained in Chapter 3, interactants’ agentive role is “the degree of control or (power) one interactant” has over the other during interactions (Halliday & Hasan, 1985, p. 57) and is a part of tenor in the context of situation. Such influence of one interactant over the other is related to mode (monologic or dialogic) in the context of situation. For instance, in a monologic mode, one interactant talks and the other/s listen/s: the speaker plays a dominant agentive role over the listener/s in the interaction. However, in a dialogic mode, the two interactants talk and they each actively play an agentive role in the interaction. In this case, one interactant may lead the interaction more than the other one by initiating or commenting on the other’s talk. An example would be the mother’s questioning and providing of explanations (Example 6.3). In a semantic
network, each agent is realized by a speaker, either parent or child, and their initiating and following questions or comments are realized by [initiate] and [follow] in logico-textual meanings.

A closer examination of parent-child interactions showed that different features in different books appeared to influence the parents’ and the children’s agentive role in their interactions, and their generation of different kinds of talk, wh- questions, questions for further information, comments about further information, and prefaced talk. Here, their different kinds of talk were realized by interpersonal meanings, and their participation of interactions was realized by [initiate] and [follow] in logico-textual meanings. Thus, formally speaking, interpersonal meanings and logico-textual meanings in semantic network of the parent-child dyads’ talk are closely related to each other, and appeared to be influenced by different features of the four books they shared.

In the following sections, I present the differences between the parents’ and the children’s initiation of interactions, and their responses to each other’s talk in the construction of meanings across the four contexts.

6.5.4.1 Initiation of interactions

The initiation of interactions shows an agent’s involvement in shared book reading discussion (Williams, 1994). It provides a topic to discuss, and often opens discussions about various topics. In particular, parents’ initiation of interactions often guides their children to think about or to pay attention to certain aspects of the book or text. By initiating interactions, children may express their interest or curiosity, or present their knowledge about aspects in the story.
Previous studies have shown children’s initiation of interactions guides further discussion with their parents, as parents provide more information or ask for further information based on their children’s initiation (e.g., Kim & Anderson, 2008; Rogoff, 1991; van Kleeck, 2004). Thus, the initiation of interactions is important as a foundation for discussion.

As mentioned earlier, the dyads’ initiation of interactions are realized by the semantic feature [initiate] in the logical-textual meanings of a semantic network. The messages construing [initiate] are the messages that are uttered just after the reading of the text.

Both parents and children initiated interactions significantly more often in the LB than in the other three contexts (dyad’s talk, \( p < .006 \); parents’ talk, \( p < .017 \); children’s talk, \( p < .048 \), Appendix G.25, Figure 6.6). While parents’ initiations were slightly more frequent in the DB1 than in the PB and DB2 contexts, the children’s initiations were significantly less in the DB1 than in the other three contexts \( (p < .021) \) (Appendix G.25). Moreover, the comparison between parents’ and children’s initiations showed that parents initiated interactions significantly more often than their children in the PB, LB, and DB1 contexts \( (p < .042) \) (Appendix G.26), but not in the DB2. Thus, overall, in the DB1, the children’s initiation of interactions was minimal, while the parents’ was significantly more frequent.

128 The semantic feature [initiate] is realized by the “first primary clause in a stretch of interactive text” in textual and logical meanings (Williams, 1994, p. 184), as explained in Appendix F.1.2.
The following example illustrates the more frequent occurrences of parents’ initiation over children’s initiation in the DB1 context (Example 6.10).

**Example 6.10: Dyad 9 (mother and 4-year-old son), DB1**

A: Ralph learned to fly up and down and backwards and forwards. He even learned to fly in circles.
1. M: Have you ever been in a helicopter?
2. C: No.
3. M: Would that be fun?
4. C: Yeah.
6. Just leave that alone there, bud.
A: It was a very exciting week for Ralph. Sometimes it was exciting for Bill, too.
In this episode, the mother initiated interactions during the reading of the DB1 while the audio played (lines 1 and 71). She asked questions (lines 1, 3, 7, and 9), and her son replied (lines 2, 4, 8, and 10). The boy did not initiate any interaction nor did he ask questions in this example that contained 10 messages between mother and son.

In interactions, initiation is important in introducing a topic. After the initiation, dyads often develop the discussion. This is important as the exchange and construction of meaning encourage children’s learning (Wells, 1985, 1999). The process of maintaining discussions during parent-child shared reading is presented in the following section.

### 6.5.4.2 On-going discussion

As described earlier, parents and children asked questions and provided comments on the information presented in previous utterances (questions for and comments about further information). In this on-going discussion, parents’ and children’s agentive roles differed across the four contexts. For instance, in the DB1 and DB2 contexts, parents’ attempts to extend their discussion by asking for more details often were unsuccessful because, as examples later in this section show (Examples 6.12 and 6.13), the children often turned pages without noticing or responding to their parents (in the DB1), and verbal turns were interrupted by the narration (in the DB2). These features of the digital books seemed to make it difficult for the dyads to

---

129 Messages 1 and 7 select the semantic feature ![initiate](https://example.com/initiate).
maintain a topic. Moreover, contextual differences in the dyads’ maintaining of a topic seemed to be related with their agentive roles. Those roles were enacted through questions for, and comments about, further information.

Before presenting the findings about on-going discussion, I provide some explanations about the semantic feature [follow] in the logico-textual meaning and its relationship with other semantic features in interpersonal meaning presented earlier in this chapter. In the semantic network, the generation of questions for and comments about further information is closely related with the possibility of maintaining a topic in their own or the other’s talk. Questions for further information are realized by [follow:maintain topic:develop:demand;information], and the comments about further information are realized by the co-selection of [follow:maintain topic] and [give;information]. Those two types of messages involve the mandatory selection of [follow:maintain topic]. Thus, [follow:maintain topic] in the logico-textual meaning is a vital semantic feature when generating questions for and comments about further information. Here, the semantic feature [follow] realizes an interactant’s utterance following his/her own or the other’s talk. Moreover, the semantic feature [maintain topic] is one of the choices under [follow]. Based on the semantic networks related to [follow:maintain topic], the possibilities of maintaining a topic can be compared with the semantic feature [follow], which allows an interlocutor to further select the semantic feature [follow:maintain topic]. That is because a greater number of messages construing [follow] to their own and the other’s talk increases the possibilities of maintaining a topic (formally construing [follow:maintain topic]) that enables the utterances to be questions for and comments about further information. In other words, if an interactant talks more after her own or another person’s talk ([follow]) in a context, then there are greater possibilities that she asks for or comments about further information on a topic in an
on-going discussion ([follow:maintain topic]).

The analysis revealed that there were greater possibilities of maintaining a topic in the LB than in the other contexts. The dyads took more turns and exchanged more messages in their turns in the LB. The means of the dyads’ selection of the semantic feature [follow] also showed the dyads produced statistically significant more messages that followed their own or each other’s utterances in the LB than the other contexts ($p<.048$) (Appendix G.27, Table 6.16). Parents’ [follow] of children’s talk appeared significantly more often in the LB than in the other contexts ($p<.026$) (Appendix G.28), and children’s [follow] of parents’ talk appeared significantly more often in the LB than the DB1, $t(17)= 2.326, p=.033$ (Appendix G.29). In terms of parents’ and children’s [follow] of each other’s talk, contrast comparisons showed that there were significant differences in parents’ and children’s use of [follow] only in the LB, $t(1)= 2.082, p=.049$ (Appendix G.30). Thus, because the dyads followed each other’s talk most often in the LB, second most often in the PB, and the least often in the DB1 and DB2, possibilities of maintaining a topic were different across the contexts. Moreover, the parents’ agentive role in furthering discussion tended to be greater than their children’s in the four contexts, although the difference was statistically significant only in the LB.
Table 6.16: The parents’ and children’s messages construing [follow]

<table>
<thead>
<tr>
<th>Agent</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td></td>
<td>23.444</td>
</tr>
<tr>
<td>Parent</td>
<td>(4-228)</td>
</tr>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Child</td>
<td>(0-37)</td>
</tr>
<tr>
<td></td>
<td>34.444</td>
</tr>
<tr>
<td>Total</td>
<td>(4-171)</td>
</tr>
</tbody>
</table>

*Note. Numbers inside parentheses show the range of the number of messages. The ranges marked with * excluded families 3 and 20 because they paused the video play in the DB2 context, and so were able to exchange a greater number of messages than other families in that context.*

Based on the greater possibilities of maintaining a topic in the LB context, the dyads’ [follow: … :give:information] (i.e., comments and reply) were most frequent in the LB, and least frequent in the DB1 (Table 6.17). Paired t-tests showed statistically significant differences between the LB, and the PB and DB1 (p<.019), and between the PB and the DB1 (p=.038) (Appendix G.31) in the dyads’ selection of the semantic feature [follow: … :give:information]. Under this semantic feature, two major semantic choices were comments on their own or each other’s talk (realized by [follow: maintain topic: … :give:information]) and replies to their own or the other’s questions (realized by [follow: maintain topic: … :give:information:reply]). In interactions, the comments on their own or each other’s talk occurred without prompts by questions, while replies occurred more with prompts by questions. The comparisons between the two types of talk showed that the dyads’ voluntary comments occurred more frequently than the
replies in the PB, LB, and DB2 contexts, while the opposite happened in the DB1. In terms of questioning ([follow: … :demand;information]), the dyads asked questions following their own or the other’s talk most often in the LB, but least often in the DB1, \( t(17)= 2.291, p=0.035 \) (Appendix G.32). Thus, as they provided more comments and asked more questions after their own or the other’s talk in the LB, the dyads’ talk was also sustained longer there. Moreover, the dyads responded to each other more frequently in the LB —by commenting, replying and questioning—, but appeared to be more passive in the DB1.

**Table 6.17: The dyads’ messages construing [follow]**

<table>
<thead>
<tr>
<th>Semantic feature</th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>[follow: … :give;information]</td>
<td>22.944 (3-117)</td>
<td>34.389 (2-147)</td>
<td>10.167 (0-28)</td>
<td>16.167 (0-58) * (0-28)</td>
</tr>
<tr>
<td>[follow:maintain topic: … :give;information:reply]</td>
<td>8.444 (0-42)</td>
<td>11.611 (1-58)</td>
<td>5.667 (0-22)</td>
<td>6.944 (0-30) * (0-14)</td>
</tr>
<tr>
<td>[follow: … :demand;information]</td>
<td>9.778 (0-46)</td>
<td>14.444 (1-81)</td>
<td>6.556 (0-28)</td>
<td>7.278 (0-37) * (0-16)</td>
</tr>
</tbody>
</table>

*Note.* Numbers inside parentheses show the range of the number of messages. The ranges marked with * excluded families 3 and 20—which paused the video play in the DB2 context, and so was able to exchange a greater number of messages than other families in that context.

In the PB and LB contexts, the dyads provided a greater amount of information and asked further questions, as they could discuss whatever amount of information they wanted for how

---

130 There were no statistical differences shown in the contrast comparisons between the comments about further information and reply.

131 This semantic feature has been also shown in Table 6.8 about comments on their own or each other’s talk. Here, the means do not include [maintain topic:response:give;information:reply].
long they wanted (Example 6.11).\textsuperscript{132} However, in the DB1 and DB2, the children appeared to be unresponsive to the parents’ questions or comments, and the dyads’ on-going discussion was less successfully achieved due to the children’s turning pages by clicking a page-turning icon with a mouse in the DB1, and due to the interruption of narration in the flow of the dyad’s discussion in the DB2 (Examples 6.12-13).

**Example 6.11: Dyad 6 (mother and 5-year-old daughter), PB**

M: ... but he still wants more!
1. C: Could he eat that?
2. M: You know what?
3. They just eat that all up.
4. They don't cook it on stove or barbecue like we do.
5. They just gobble it all up.
6. Do you think that looks tasty?
7. C: ...
8. M: No. But the bear thinks it's tasty.
M: Meanwhile ... back at the big bear’s den wait Gopher and Mole with Raven and Wren.
10. C: Raven and Wren.
11. M: Will you ...
12. raven kind of looks like a crow.
13. Which one do you think is Raven?
14. C: (pointing sound)
15. M: That one.
16. Which one do you think is Wren?
17. The wren is a little bird.
18. C: (pointing sound)
19. M: No, not there.
20. Where is the Wren?
22. Little teeny bird.

\textsuperscript{132} The differences between PB and LB were also shown. These differences are explained later in this chapter (in Section 6.8).
23. There.
24. Which...
25. C: Why is that one wren?
26. M: It's the name of the bird.
27. C: Who is this?
28. M: Some birds are Robin, some birds are crows.
29. C: What is this?
30. M: That's called a mole.
31. Another animal that we don't see very often.
32. This one is a gopher.

In this example (family 6), which occurred in the PB context, the child initiated the discussion with a question (line 1). To the child's question, the mother responded with three messages (lines 3, 4, and 5) providing a series of pieces of information related to the eating habits of bears. After that, the mother asked a question with projection eliciting the child to reflect on the taste of the food the bear eats in the illustration (line 6). Then, the mother, with “extension of idea” (line 8), provided extra information about what the bear would think about the taste of the food. After reading another sentence, the mother initiated a discussion by providing information through comparison of the appearance of a raven, an animal presented in the story, and a crow, an animal outside the story with “enhancement of idea” (line 12). She then asked the child to identify which animal fitted with the information she just provided with “elaboration of idea” (line 13). The mother also asked the child to specify “wren,” the other animal the child mentioned in line 10 (line 16), and then provided a description of the animal with “elaboration of the information” (line 17). The child answered the mother’s question by pointing to an animal (lines 14 and 18). The mother further reinforced the child’s attempt to find the right animal by asking another question (line 20) and providing information with elaboration and extension of idea (lines 19, 22, and 23). Then, the child asked other questions to identify other animals (lines 27 and 30) and the
mother provided the labels of animals and further information on an animal with elaboration and extension of idea (lines 28, 29, 31, 32, and 33).

In lines 1 to 8, the child’s question about a character’s eating behavior on an illustration was expanded to the talk about the eating habits of bears and varied preferences on taste in different animal groups through the mother’s explanations and question. In the second part of the interaction (after line 9), the mother led further discussions on the animals (that the child initially stated in line 10) by asking the child to find the animals and providing further related information (lines 11-33). The mother’s additional information involving “expansion of ideas,”133 allowed the child to build her knowledge. Apparently, the mother was able to provide that amount of rich information because there were no distractions from digital features—as did the other books. As in this example, the parents’ provision of a greater amount of information and questions on a topic appeared to occur much more frequently in the PB and LB contexts. There were further differences in the dyads’ interactions in the PB and LB, which I explain in the last section of this chapter.

The dyads commented or asked questions following their own or the other’s talk the least often in the DB1, as shown in the following example (Example 6.12).

**Example 6.12: Dyad 6 (mother and 5-year-old daughter), DB1**

A: Ralph thought about that.
1. M: When pigs fly?
2. Can you imagine that?

A: Then one day, while playing with some friends, he had an

---

133 The notion of expansion of ideas has been explained in Section 6.5.
idea. But first he had to learn how to fly a helicopter.

3. M: Do you think this cow has strange ideas?


4. C: But why do they have shoes?

A: Ralph explained “My dad said he’ll buy me a bike when pigs fly.” “but Ralph,” Morris said, “pigs don’t fly.” “Not yet they don’t,” said Ralph.

5. M: What was your question again?
6. C: What?

A: Morris looked even more puzzled.

8. I want to know.
9. Let’s just pause.

A: Ralph laughed.

10. M: What was the question?
11. C: Ah...
12. M: What?
13. C: Why do pigs don’t fly?
14. M: What do you need to fly?
15. What do birds use to fly?
16. C: Wings (soft voice)
17. M: Wings. That’s right.
18. So the reason that pigs don’t fly is because they don’t have the right body parts.
19. So, do you think Ralph believes that it could happen if he tried hard enough?
20. I think so.
21. He’s a bit of a dreamer, isn’t he?
22. Ok. Can you press play again?

In this example, the mother asked questions to the child right after the narration of the text (lines 1 and 3). Then, the child asked a question about a picture on the screen (line 7). Neither the
mother nor the child responded to each other’s questions in lines 1-4. Then, the mother appeared not to hear or remember the child’s question in line 4, as she asked the child about her question (line 5). To the mother’s question (line 10) requesting clarification about the child’s previous question, the child did not answer right away, but maintained her turn by uttering a punctuative message134 (line 11). This first section of the example shows that questions asked during reading/watching of the DB1 were not responded to, apparently due to the listener’s lack of attention to the questions, the unsuccessful delivery of the questions, or both (lines 1-6). This kind of channel repair resulting from the narration of the text appeared in some families in the DB1 and DB2 contexts.

After the mother’s and the child’s channel repair, the mother stopped the child from clicking the page-turning icon (line 7), to pause their reading. To the mother’s question about the child’s question (lines 10 and 12), the child replied (line 13) by providing a different question from her original one in line 4. In response to the child’s question, the mother asked further questions about a body part required to fly (lines 14 and 15). The child replied to the mother’s question correctly (line 16). Then the mother provided further explanations as to why the pigs cannot fly (line 18), and asked confirmation questions about the character’s belief (line 19) and his characteristics (line 21). After finishing her explanation and questions for further information, the mother allowed the child to resume playing the DB1.

Pausing the page turning of the DB1 allowed the mother-child discussion on pigs flying to occur successfully. In many families, the parents let their children operate the page-turning icon, and the children, rather than pausing, tended to turn the page right after each section was

134 The semantic feature [punctuative: maintain] was explained in Appendix F.4.
finished. Moreover, the children tended to focus more on turning the page than on the discussion (Example 6.12), which is further discussed in the section about operational talk (Section 6.6).

In the DB2 context, the dyads did not pause the video play, and the parent-child interactions appeared to be less dialogic, as shown in the following example (Example 6.13).

**Example 6.13: Dyad 6 (mother and 5-year-old daughter), DB2**

A: But the bear snores on.
1. M: Looks like they’re having a nice, cozy party.
2. M: (snoring sound) That’s what I sound like if I was gonna snore.

A: In a cave in the woods, a slumbering bear sleeps through the party in his very own lair.
3. M: Do you know what slumber means?
4. That means sleeps.

A: Hare stokes the fire. Mouse seasons stew.
5. M: That means he’s keeping the fire going!
6. Seasoning means putting spices, salt and pepper and ...

A: BEAR GNARLS and he SNARLS. BEAR ROARS and he RUMBLES!
BEAR JUMPS and he STOMPS. BEAR GROWLS and he GRUMBLEs!
7. M: Do you think he’d be grumpy when he wakes up?
8. Uh, do you think they're scared?
9. Oh-oh. Oh. They all look a little bit worried, don't they?

A: “You’ve snuck in my lair and you’ve all had fun! But me?
I was sleeping and … I have had none!”
10. C: Was he mad?
11. M: No, he’s sad.
12. C: Who is?
13. M: The bear, because he thinks that he missed out on the
The dyad in this example was the same as in Example 6.12. Similar to the DB1 context presented in Example 6.12, here, the mother initiated interactions by commenting on events in the illustration or in the story (lines 1 and 2). When a possibly challenging word for the child appeared, the mother asked the child whether she knew the meaning of the word (line 3), and immediately answered her own question by providing the meaning (line 4). In this questioning and answering pair, the mother’s immediate answer to her own question seemed to be the result of the limited time available for the dyad to discuss, as another narration was automatically played right after the mother’s questioning and answering. Then, the mother provided further explanations on the meaning of the narration (line 5). Later in the reading, the mother asked more questions about what happened in the story (lines 7, 8, and 9). In this reading (lines 1-9), even though the mother commented, explained, and asked questions to the child several times, the child did not initiate interactions or provide any further comments or explanations to the mother’s talk.

However, in line 10, the child asked the mother about the character’s emotional status. The mother explained the character’s emotion and why he was sad (lines 11 and 13). In lines 8-13, as opposed to what happened during their earlier talk, mother and child discussed the character’s emotion and reason for it. However, their discussion occurred with only two turns, and they did not discuss further aspects (e.g., either another character’s feelings or reactions) as the continuous narration cut their discussion short. Turn takings and verbal discussions in the DB2 tended to be shorter than the discussion of a character in the DB1 example, where they took 7 verbal turns and uttered over 10 messages (Example 6.12). The main difference between the
two digital books seemed to be the time available to the dyads to discuss.

The examples of the same dyad in the three contexts show different patterns of turn taking and different ways to construct discussions. While the mother-child’s talk in the PB context (and also in the LB context) tended to be more dialogic, in the DB1 and DB2 contexts, their talk did not involve a lot of exchanges and often appeared to be monologic, as one interlocutor’s utterances were often not responded to by the other. Topic maintenance based on joint focus on the topic in parent-child interactions is thought to be important in supporting children’s knowledge construction, as it enables children to extend their thoughts on the topic (Bruner, 1986; Wells, 1999; Wertsch, 1985, 1991; Vygotsky, 1978). As shown in the examples, the dyads’ agentive roles in extension of their thoughts appeared more frequently in the PB and LB. Thus, it seems that the children would have greater opportunities to extend their thoughts (and consequently develop their ways of thinking) in the PB and LB than in the two digital books.

### 6.5.5 Summary of the Extending of Thoughts

Overall, there were contextual differences in the four types of interactions considered most important in shared reading: the dyads’ use of wh- questions, questions for further information, projection of ideas, and comments about further information (Wells, 1999; Williams, 1994, 1999). Moreover, the findings showed the close relationship between interpersonal meanings that examined those different types of talk, and textual-logical meanings that considered the dyads’ verbal turns, verbal participation, and responsiveness. For instance, with the dyads’ more frequent following of their own and each other’s talk,\(^{135}\) expansion, elaboration,

\(^{135}\) This was shown with the semantic feature [follow] in the textual-logical meanings.
and enhancement of meaning by providing further information\textsuperscript{136} occurred more frequently in the LB. This relationship between interpersonal and textual-logical meanings is consistent with notions on inter-relationship among three different metafunctions—experiential, interpersonal and textual meanings—in the semantic stratum in the SFL (Halliday, 1978; Halliday & Hasan, 1985; Hasan, 1996) (details in Sections 3.2.3 and 3.2.4). The examination of textual-logical meanings in the dyads’ interactions showed that there were greater opportunities for the dyads to maintain the topic of the on-going discussion in the PB and LB than in the DB1 and DB2. The former contexts appeared to enable them to discuss a topic in detail through more utterances of wh- questions, questions and comments about further information, and prefaced talk. The possibilities of maintaining a topic realized by the semantic feature \textbf{[follow]} were also greater in the PB and LB. In the DB1, the children’s operation of the page-turning feature appeared to contribute to less participation in discussion, and it is speculated that in the DB2 the narration of the text had a similar effect. These differences will be explained further later in this chapter (Section 6.8) and discussed in Section 7.2.

Through exchanges of thoughts, shared knowledge can be achieved and discursively constructed. In shared reading, through responding to each other’s talk, parent-child dyads’ shared knowledge can be explicitly presented and made more accessible and obvious to the child. The exchanges of thoughts allow parents to guide their children within the children’s ZPD, as parents can find out what the children know and encourage them to think further. Many scholars have emphasized the importance of the dialogic mode in parent-child talk, because it enables the construction of discursive knowledge and encourages children’s development within their ZPD

\textsuperscript{136} This was realized by the co-selection of semantic feature \textbf{[follow:maintain topic]} in the textual-logical meanings and \textbf{[give:information]} in interpersonal meanings.
(e.g., Bruner, 1986; Wertsch, 1991; Wells, 1999; Vygotsky, 1991). Furthermore, in the discursive construction of knowledge, cohesive building of logic, such as contrast and linking (Wells, 1981), occurs through social interactions. The sequential flow of the dyads’ talk that involved the construction of cohesion and logical movement during shared reading would guide the children to develop their thinking and talking (Hasan, 1991/2009; Heath, 1983). Thus, through verbal exchanges with parents during shared reading, children internalize the linguistic and cognitive tools that construct their social disposition of thoughts (Hasan, 2005a; Wertsch, 1991; Vygotsky, 1978).

The more dialogic mode of talk—with the dyads’ verbal participation and following of each other’s talk—appeared to enable the extension of their discussion more often in the PB and LB than in the DB1 and DB2 contexts. This more dialogic mode of talk in the PB and LB would provide the children more opportunities to construct their knowledge discursively and improve their cognitive, language and literacy development within their ZPD and would ultimately enhance their abstract thinking (Wertsch, 1991; Vygotsky, 1978). Moreover, with more verbal exchanges in the PB and LB, children would have more chances to rehearse how to ask and how to tell, which are verbal and cognitive skills that are important in school education (Hasan, 1991/2009; Wells, 1999). From the SFL perspective, the configuration of the semantic features involved in dyads’ wh- questions, questions for further information, projection of ideas, and comments about further information would lead children to orient meanings as more negotiable and expandable. Given the greater frequencies of those types of talk in the PB and LB, the parent-child discussion in those contexts involved negotiation of meanings and extending of thoughts more often than in the other contexts. Thus, the four books offered different affordances in terms of the meaning orientation of dyads’ talk and ways to exchange information.
6.6 Operational Talk

Operational talk refers to the parent-child talk involved in the operation of the digital features and physical attributes of the four books. As noted previously, three of the books in this study—LB, DB1, and DB2—contained digital elements. As it would be expected, the dyads used some distinctive types of talk related to the digital elements, such as requests or offers to perform operational actions, for example, using the digital pen or mouse to play games, read pages, turn pages, and so on. For instance, one mother sometimes asked her daughter to click the page-turning icon during reading of the DB1 (e.g., family 6). Sometimes a child offered to operate a game in the LB context (e.g., family 9). This kind of verbal interactions also appeared in the PB context, when the dyads asked each other to turn a page. Thus, even though the PB context did not contain any digital elements, some operational talk was present.

The operational talk is formally realized by the semantic feature \([\text{demand/give};\text{goods and services}]\) in the interpersonal meanings described through the semantic networks. The semantic feature \([\text{demand/give};\text{goods and services}]\) occurred most frequently in the LB context, and second most often in the DB1 context (Table 6.18). In the LB, the dyads used operational talk during game play, while reading texts, and in the exploration of sounds of illustrations and words on the texts. In the DB1, the dyads also operated a mouse to click a page icon to turn pages. In both the LB and DB1, the most dominant talk related to operational actions

---

137 Operational talk is realized by the semantic feature \([\text{demand/give};\text{goods and services}]\) (see details in Appendix F.2.3). This talk either requests or offers the interlocutor goods or services about the operation of digital and physical aspects.

138 The semantic feature \([\text{demand/give};\text{goods and services}]\) is one of the semantic systems in the interpersonal meanings in the semantic network. The findings from two other semantic systems \([\text{demand};\text{information}]\) and \([\text{give};\text{information}]\) were explained in Section 6.5.
was the parents’ requests for their children to operate digital devices. In contrast, while reading the DB2, most families just watched the automated play and tended not to attend to the operational features. An extreme example was family 10: they did not talk at all during the reading of the DB2 and used the mouse only to start, stop, and pause the video play (which rarely occurred) of the book. The following example shows a dyad’s requests and offering to operate digital aspects in the DB1.

**Example 6.14: Dyad 18 (mother and 4-year-old daughter), DB1**

1. M: Do you think it’s a pig?
2. C: No.
3. That’s cow.
5. Let’s find out.
6. Click this button,
7. so we are gonna move next page, ok?
   A: Ralph wanted his dad to buy him a bicycle. “But Ralph,”
   his dad said, “cows don’t ride bikes.” “Not yet they
don’t,” Ralph replied.
9. =M: So that was Ralph.
10. M: Ok Press the button.
    A: Ralph asked and asked and asked his dad for a bike, but
    his dad said no and no and no.
11. M: Um... Ok. Press that again.
12. C: What does he think about?
13. ***
14. M: That’s what he wants, isn’t it?
15. C: Yeah.

In this example, the mother requested the child to click the page-turning icon in lines 6, 10, and 11. The mother’s “demands for services” were very straightforward, oriented to the operation of digital devices. These demands are similar to parental verbal guidance provided to children...
during physical activities such as cooking, with the child playing the role of apprentice and the mother playing the role of guide. In the DB1 context, all 20 children operated digital devices under the parents’ verbal guidance during the page-turning operations. Parents’ roles and verbal guidance were similar in the LB.

The dyads’ operational talk was significantly more frequent in the LB than in the other three contexts (dyads’ talk: $p<.006$; parents’ talk: $p<.006$; children’s talk $p<.039$) (Appendix G.33, Table 6.18). As it would be expected, parents’ operational talk tended to occur more frequently than the children’s in the four reading contexts$^{139}$ (Table 6.18). Based on Rogoff’s (1991) notion of guided participation and learning, the parents’ verbal guidance on the digital/physical operation during shared reading provided the children with apprenticeship learning. In this apprenticeship learning, those digital/physical aspects of the books are cultural tools, and the dyads’ operational talk with the operation of digital/physical aspects is a cultural practice with tools. Given the more frequent operational talk about digital/physical aspects in the LB and DB1, these books appeared to provide the children with greater opportunities for apprenticeship in the operation of digital/physical aspects during reading.

---

139 Contrast comparisons showed significant differences between the two agents in the PB context, $t(1)= 2.856$, $p=.011$, in the LB context, $t(1)= 2.572$, $p=.017$, and in the DB1 context, $t(1)= 3.612$, $p=.002$. 

186
Table 6.18: Means of the parents’ and children’s operational talk

<table>
<thead>
<tr>
<th>Agent</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>Parent</td>
<td>2.833</td>
</tr>
<tr>
<td>Child</td>
<td>0.333</td>
</tr>
<tr>
<td>Total</td>
<td>3.167</td>
</tr>
</tbody>
</table>

6.6.1 Reference to Child as Agent for Operation of Digital/Physical Aspects

As the children were major agents who operated digital/physical aspects during shared reading, those aspects were further analyzed for the kinds of digital/physical aspects the children operated. From an SFL perspective, in the verbal exchanges, the children were actors who operated digital/physical-related objects, and the objects they operated were the goal of the operation. Talk involving children as actors operating digital/physical-related objects is formally realized as the dyads’ talk construing [doing:material] in experiential meaning, with two references: 1) a child as an [effecter] and 2) digital related references as a [goal]140 (see Table 6.19).

140 Material processes (i.e., verb in a sentence) represent actions, as “material clauses construe doings (actions-doing to/with a participant or creating one)” (Matthiessen et al., 2010, p. 135). An [effecter] is a person or something whose action affects something. A [goal] is an aspect that the effecter acts on. These terms and features have been presented in Appendix F.3.1.
Table 6.19: Means of reference to child as an effector and digital/physical-related aspects as a goal

<table>
<thead>
<tr>
<th>Goals</th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical objects</td>
<td>0.111 (0-2)</td>
<td>4.611 (1-13)</td>
<td>1.444 (0-10)</td>
<td>0.111 (0-1)</td>
</tr>
<tr>
<td>Digital-icon</td>
<td>0.000</td>
<td>3.444 (0-18)</td>
<td>3.222 (0-13)</td>
<td>0.444 (0-6)</td>
</tr>
<tr>
<td>Sound</td>
<td>0.000</td>
<td>0.333 (0-3)</td>
<td>0.000</td>
<td>0.056 (0-1)</td>
</tr>
<tr>
<td>Game</td>
<td>0.000</td>
<td>2.222 (0-15)</td>
<td>0.056 (0-1)</td>
<td>0.000</td>
</tr>
<tr>
<td>Video-play</td>
<td>0.000</td>
<td>0.000</td>
<td>0.111 (0-2)</td>
<td>0.278 (0-3)</td>
</tr>
<tr>
<td>Reader</td>
<td>0.000</td>
<td>0.056 (0-1)</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Total</td>
<td>0.111</td>
<td>10.667</td>
<td>4.833</td>
<td>0.889</td>
</tr>
</tbody>
</table>

The dyads’ talk about the children’s operation of digital/physical aspects occurred most often in the LB (M=10.667), and the second most frequently in the DB1 (M=4.833) (Table 6.19). As Table 6.19 shows, in the LB, there was considerable talk about the children’s operation of a digital pen (i.e., a physical object; M=4.611), digital icons on the pages (M=3.444), and games (M=2.222). Similarly, in the DB1, the dyads often talked about the children’s use of the mouse

---

141 Definitions of each reference are presented in Appendix F.3.1.
(i.e., physical objects; $M=1.444$) and icons ($M=3.222$). Although the DB2 involved digital features, the automatic play made it unnecessary for dyads to use icons, as was the case in the LB, or to turn pages as in the DB1, hence the absence of references to digital features. Moreover, the DB2 offered only four types of icons (pause, play, forwarding and rewinding), whereas other types of icons were available in the LB (e.g., game, answering, and repeating icons). Thus, it seems that the dyads’ talk about children’s operation of digital/physical aspects was related to the digital features available in a book.

The following example shows that verbal talk involved the children as actors to operate a digital/physical-related aspect during shared reading.

**Example 6.15: Dyad 6 (mother and 5-year-old daughter), LB**

A: Let’s play. Look at the notes. Touch the last line of the note.
1. C: This one?
3. Click on it.
   A: The cows. The cows. That’s whose note it’s from. Touch the game button to play again.
   A: (sound)
5. C: …

In this example, in lines 3, 4, and 6, the mother requested the child (actor) to click on a digital icon (a goal of the child’s action) using the digital pen. As in this example, the parents often requested the child to operate digital devices.

In short, the types of activities (e.g., operation of digital/physical aspects) required by the
materials (e.g., books) were related to the parent-child’s operational talk. In that talk, the children were actors in the operation of the digital/physical-related aspects. For instance, in the LB context, as the pen was used to click on the icons to play the narration of the text and to play games, the dyads’ talk focused greatly on the physical object (pen) and the digital icons.

### 6.6.2 Summary of the Parent-Child Dyads’ Operational Talk

As stated earlier, the parent-child operational talk occurred in the LB and DB1 contexts. The dyads’ physical operation of digital devices and physical aspects was more frequent in those contexts as well. Parents played the role of leaders, directing the operation of digital devices, and children were the actors who physically performed the required actions. This apprenticeship process in the operation of the digital/physical aspects during reading of the four books is consistent with Rogoff’s (1991) notion of guided participation and learning.

### 6.7 Focus of Talk

Previous studies have shown different foci in parent-child dyads’ discussion during shared reading of print and digital books (e.g., Kim & Anderson, 2008; Parish-Morris et al., 2013; Smith, 2001). Moreover, some studies have indicated the potential influence of different foci on children’s language, literacy, and cognitive development (e.g., Bus & de Jong, 2012). For instance, parent-child talk about personal experiences related to story contents encouraged the children’s comprehension of a story and expansion of their thoughts (van Kleeck & Schuele, 2010).

In the current study, the focus of the dyads’ extra-textual talk was examined through the analysis of frequencies of different types of references and their classification. The classification
of the references was based on processes\textsuperscript{142} that are associated with the references. For instance, in the utterance “birds are a kind of animals,” the Predicator “are” is a Relational Process that realizes [\textbf{being:classification:group}]. In another utterance, “birds are eating,” the Predicator “eating” is a Material Process that realizes [\textbf{doing:material}]. Thus, while both utterances are focused on birds, the classification of the references was different: the former presents what group the reference belongs to and the latter presents the action of the reference.

This linguistic analysis of experiential meanings has not been examined sufficiently, as Williams (1994) indicated. The examination of experiential meanings provides understanding of how references were classified in verbal interactions. For instance, in the two utterances about “birds” in the previous paragraph, the first classifies them as a kind of animal, while the second describes their action. This kind of classification of experiential meanings is thought to guide children’s classification of things in the world, and their conceptual development. Thus, the classification of references in addition to types of references in the dyads’ talk was examined in order to obtain further understandings of the dyads’ foci and associated experiential meanings.

The examination of the dyads’ interactions showed various references during shared reading, and a total of 21 different types of references were defined and coded (see details in Appendix F.3.1). In all four books, references external to the story (external references), metalinguistic items, character, and illustration predominated. Thus, these references were closely examined in order to understand the dyads’ focus of talk and their classification of experiential meanings.

\textsuperscript{142} The term “processes” realizes predicator (verbal group after auxiliaries) and construes experiential meanings in the semantic network (details of the terms in Appendix F.3).
The parent-child dyads’ talk referenced similar aspects across the contexts, but with different frequencies (Figure 6.7). Dyads tended to reference illustrations and external references most often in the PB context. By contrast, the dyads talked about metalinguistic items most often in the LB. In both digital book contexts, dyads talked more about characters and illustrations than other references. Besides these general trends, the following sections explain contextual

<table>
<thead>
<tr>
<th>Referential significations</th>
<th>Definitions of the referential significations</th>
</tr>
</thead>
<tbody>
<tr>
<td>character</td>
<td>a character in an object-text, including personified characters</td>
</tr>
<tr>
<td>metalinguistic items</td>
<td>an element referring to language itself at any stratum</td>
</tr>
<tr>
<td>exophoric reference to a feature / illustration</td>
<td>reference to a feature of the visual semiotics of an object-text</td>
</tr>
<tr>
<td>references external to the story / external references</td>
<td>references from outside the story but related to aspects of the content of the story or graphically-related to a character on the object-text</td>
</tr>
</tbody>
</table>
6.7.1 References External to the Story

Consistent with previous studies, the families in this study engaged in talk about external references. In general, external references are considered important in young children’s language, literacy and cognitive development, as these references lead children to relate the text to their life and vice versa (e.g., Chamber, 1996; Meek, 1988), and to expand their thoughts beyond the information provided in the stories (e.g., Reese, 1995; Snow, 1983). The dyads’ talk about external references occurred more often with the PB (M=5.722) than with the LB (M=3.056), DB1 (M=1.167) and DB2 (M=1.333), even though statistically significant differences were only found between the PB and DB1 ($p=.036$) (Appendix G.34, Figure 6.6). The following excerpts are examples of the dyads’ talk about external references.

**Example 6.16: Dyad 18 (mother and 4-year-old daughter), PB**

M: He snuggles in the grass And he snores big snores. He is full, full, full … But… his friends want more.
1. M: (Laugh) Why do you think the bear was so skinny at the beginning of the story? Do you know?
2. C: No.
3. M: Do you know why is he so skinny? (with showing the page)
4. C: No.
5. M: Bears, they sleep all winter long.
6. And they don't eat at all.
7. C: And that's why they get skinny.

In the example above, the mother initiated a discussion about the reason for the size of a bear shown in an illustration (lines 1-4). Then the mother provided information about bears’
hibernation (lines 5-6), and the child related that information to the bear in the illustration (line 7). The mother’s explanations in lines 5 and 6 referenced scientific facts (i.e., external references).

**Example 6.17: Dyad 11 (mother and 4-year-old daughter), DB1**

A: The very next morning Ralph took Julia and Margaret for a ride in a helicopter. The circles made Julia a little dizzy and Margaret liked going up better than down, but they both had fun.

1. M: Would you like to go in a helicopter?
2. C: Yes. Probably not.
3. M: Probably not? (laugh)
4. I've been in a helicopter.
5. That's quite fun.
6. C: Then I wanna go in a helicopter.
7. M: Ok.

In Example 6.17, the dyad made external references by sharing their own experiences and ideas about riding a helicopter (lines 1-6).

As these examples show, dyads’ external references went beyond information given in the books. External references are thought to encourage children’s learning and thinking. With the dyads’ more frequent talk about external references in the PB, the PB appeared to provide the children more opportunities to develop their language, literacy and cognitive abilities, especially in comparison to the two digital books.

**6.7.2 Reference to Metalinguistic Items**

Parents and children’s talk about metalinguistic items, including word meanings, phonemic awareness, letter recognition, letter sounds, etc. (definition in Appendix F.3.1), is
thought to play an important role in children’s language and literacy development (Deckner et al., 2006; Olson, 1991; van Kleeck, 2004; van Kleeck & Schuele, 2010). Referencing to metalinguistic items occurred most frequently in the LB context \( (p<.020) \), and least frequently in the DB1 context (Appendix G.35, Figure 6.8). Both parents and children talked about metalinguistic items more frequently in the LB than in the other contexts (parents’ talk: \( p<.014 \); children’s talk between LB and PB, and between LB and DB1: \( p<.041 \), Appendix G.36).

**Figure 6.8: Means of instances in the parents’ and children’s talk referencing metalinguistic items**

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent</td>
<td>1.667</td>
<td>4.344</td>
<td>0.167</td>
<td>1.278</td>
</tr>
<tr>
<td>Child</td>
<td>0.778</td>
<td>2.833</td>
<td>0.056</td>
<td>0.500</td>
</tr>
<tr>
<td>Total</td>
<td>2.447</td>
<td>8.059</td>
<td>0.235</td>
<td>1.882</td>
</tr>
</tbody>
</table>

In the LB context, the parent-child dyads often talked about a word in the text, or a word asked by the game question that came from the digital pen. Example 6.18 shows a mother and her
4-year-old referencing certain metalinguistic items, including word meaning and a word asked by the game question (family 9).

**Example 6.18: Dyad 9 (mother and 4-year-old son), LB**

A: Duck was a neutral party, so he brought the ultimatum to the cows.
1. M: Do you know what ultimatum is?
2. That’s a really big word.
3. C: ...
4. M: The ultimatum means you are not gonna get what you want and you have to give me what I want.

... A: The cow uses different language Moo. Try to find a word Moo in the story.
5. M: Oh...
6. C: Wasn’t it O. Ma... Ma... Ma.
7. C: I’m looking for M.
8. A: Moo. (The child operated.)
9. C: Yes!

Here, the mother provided the child with opportunities to think and learn about the meaning of the word “ultimatum” (lines 1, 2, and 4). First, the mother asked the child whether he knew the word (line 1), commented on the word (line 2), and provided its meaning (line 4). Later, the child indentified the first sound of the word “Moo” (line 6), and recognized the associated letter M (line 7).

The following excerpt is an example of a dyad’s talk referencing other aspects of metalinguistic items, including a word in the written text and a word asked by the game question in the LB.
Example 6.19: Dyad 6 (mother and 5-year-old daughter), LB

A: Farmer Brown has a problem. His cows like to type. All day long he hears click, clack, moo. Click, clack, moo. Clickety, clack, moo.

1. M: So it’s finished the page. Can you find the spots where it says Moo?
   A: Moo. Moo... Moo. Moo.

2. M: Good job!

3. C: Moo. Moo?

4. M: Do you think any other words here that you can read?

5. C: This one.

6. M: What this one say?
   A: Brown.


...

A: Let’s play. Who is cold besides the cows? Look at the picture and touch the answer.

A: The hens (chicken sound). That’s right.
   A: This time you find a word hen.

8. =C: Why are they cold?

9. =M: It must be really cold at the barn. Can you find it?

10. C: Where’s it say hens?


12. You had the right idea. Look for the letter makes the Ha sound.

13. What letter is that?

14. C: Ha... Ha... Ha...


17. M: You can do it.

18. Keep looking.

19. C: Who’s going down the path ...


21. Is this one start with H?

22. C: D.


24. C: t.
In this last example, the mother asked the child to read a word in the text, and helped the child to find the word. In the first part of the example, the mother asked the child to find a word twice (lines 1 and 6). In reply to the mother’s questions, the child first clicked the words (Moo and Brown) and then repeated them (lines 3 and 7). In the second part of this excerpt, the child played a game and answered the game question. Then, the mother asked the child to find the word “hen,” which was asked for by the digital pen (line 9). At first, the child did not seem to know the word (line 10). The mother asked more specific questions, focusing on the sound of a letter (lines 12, 13, 15, and 21). Together with those questions and the mother’s encouragement (lines 11 to 23), the child finally found the word (line 24). As shown in this example, both the parents’ questions referencing metalinguistic aspects and the game questions that asked the readers to find a word appeared to encourage the child to engage in extended discussions on various metalinguistic aspects. The game questions also contributed to the more frequent use of metalinguistic terms in the LB than in the other books.

6.7.2.1 References to metalinguistic items and [being]

Further analysis was done on the parent-child dyads’ classification of experiential meanings. As explained in Appendix F.3.2, the first level of the semantic system under experiential meanings contains features of [effecting] realized by verbs representing physical actions or mental activities (e.g., “jump,” material process; “think,” mental process; “said,” verbal process; and “sleep,” behavioral process), and of [being] realized by verbs representing conditions, locations, possessions, classifications, and the existence of things (e.g., “is,” “has,”
“means,” etc.). The dyads referred to metalinguistic items with [effecting] in 13 messages, and with [being] in 351 messages. Given the small number of messages with [effecting], only talk referencing metalinguistic items with [being] was examined. Under the semantic feature [being], there are five further semantic features available: [being:equating] (identification), [being:grouping] (categorizing), [being:state] (condition), [being:pertinence] (possession or purpose), and [being:location] (location).

As was the case in Examples 6.18 and 6.19, the dyads more frequently identified certain metalinguistic items, including word meaning, letter sound, letter name, and word. These metalinguistic items are realized by the semantic feature [being:equating] (Table 6.20). The semantic feature [being:equating] was used most often in the LB context ($p<.034$), and least often in the DB1 context (Appendix G.37). As we have seen in Example 6.18, the following messages construe the semantic feature [being:equating]:

1. M: Do you know what ultimatum is?
4. M: The ultimatum means you are not gonna get what you want and you have to give me what I want.
6. C: Wasn’t it O. Ma... Ma... Ma...

Table 6.20: Means of reference to metalinguistic items and [being]

<table>
<thead>
<tr>
<th>Semantic option</th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td>[being:equating]</td>
<td>2.111</td>
<td>5.333</td>
<td>0.111</td>
<td>1.389</td>
</tr>
<tr>
<td>[being:grouping]</td>
<td>0.056</td>
<td>0.222</td>
<td>0.056</td>
<td>0.222</td>
</tr>
<tr>
<td>[being:state]</td>
<td>0.059</td>
<td>0.346</td>
<td>0.003</td>
<td>0.012</td>
</tr>
<tr>
<td>[being:pertinence]</td>
<td>0.111</td>
<td>0.722</td>
<td>0.000</td>
<td>0.167</td>
</tr>
<tr>
<td>[being:location]</td>
<td>0.000</td>
<td>0.278</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>
In short, the dyads’ talk referencing metalinguistic items occurred most often in the LB context, in which both, the parents’ and the game’s questions, encouraged the children to focus on metalinguistic items construing the semantic feature [being:equating]. Developing metalinguistic knowledge (e.g., words, letters, letter sounds, and word meanings) is considered an important part of school readiness (e.g., Evans et al., 2000; Hindman et al., 2008). The LB context provided significantly more opportunities for the children to develop such metalinguistic knowledge.

### 6.7.3 References to Character

Discussion of characters is one of the major features of adult-child shared reading and school literacy practices (Chamber, 1996). Characters in stories engage in activities, have conflicts or present problems, and demonstrate or share their emotions, their relationships, and so on. Characters provide readers with a context and content for discussion, for example, readers’ describing, explaining, and evaluating characters’ actions and motives. Extra-textual talk about characters helps children understand the storyline (e.g., reasons for the occurrence of activities, ways the problem was solved, etc.).

The dyads talked often about characters and, in all four reading contexts, they described what the characters did, commented on the characters’ conditions, asked questions about events that occurred, and explained why and how the events occurred. Discussing characters occurred most often in the PB context and the least often in the DB1 context, although the means were similar across all books (Table 6.21). Further analysis revealed more focus on the characters’ actions (including physical, mental, verbal, and behavioral actions) construing the semantic feature [doing], than on the characters’ conditions or properties construing the semantic feature
[being] (Appendix G.38, Table 6.21).

Table 6.21: Means of parent-child dyads’ reference to character

<table>
<thead>
<tr>
<th>Semantic option</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>doing</td>
<td>7.556</td>
</tr>
<tr>
<td>being</td>
<td>2.667</td>
</tr>
<tr>
<td>Total</td>
<td>9.889</td>
</tr>
</tbody>
</table>

A more detailed analysis of the dyads’ talk about characters was conducted on talk that referenced characters’ actions construing [doing]. In the four contexts, the dyads talked more about the characters’ physical actions, such as eating (PB), typing (LB), riding (DB1), and sleeping (DB2),144 than other actions. However, statistical examination across the contexts by a 4-by-4 mixed ANOVA revealed significant differences in how dyads selected different semantic features under [doing] across the contexts ($p=.001$) (Appendix G.39). As shown in Table 6.22, further examination of each semantic feature under [doing] across the contexts showed that the semantic feature [material] was most frequent in LB (no statistical differences), [mental] in PB (statistical significances between PB, and DB1 and DB2, $p<.014$), [verbal] in DB1 (statistical significances between DB1 and DB2, $p=.028$), and [behavioral] in DB2 ($p<.013$) (Appendix G.40, Table 6.22).

144 The verbs for the actions “eating,” “typing,” and “riding” realize [material] processes, while the verb for the action “sleeping” realizes a [behavioral] process.
Comparisons across the four books revealed that in the PB, LB, and DB1 the dyads selected [material] most frequently, while in the DB2 they selected [behavioral] most often. As explained in Appendix F.3.1, the feature [material] represents a person’s external actions or actions that affects another person or object (e.g., jumping and hitting a ball), while the feature [behavioral] represents a person’s internal behaviors or behaviors that do not affect others (e.g., sleeping). Thus, the dyads tended to talk more about characters’ actions, “doing to/with a participant or creating one” (Matthiessen et al., 2010, p. 135) in the PB, LB, and DB1, while they tended to talk more about the characters’ own behaviors in the DB2.

In short, although the total amount of talk that referenced characters was similar across the books, the dyads tended to classify different aspects of the characters in each context. For example, in the PB, they focused more on the characters’ thoughts and feelings. Talking about actions or behaviors is considered to involve more concrete thinking than talking about thoughts or feelings, as the former often contains information given in the story. However, as talking about thoughts or feelings encourages thinking more about the inner aspects of the characters, that is, aspects that go beyond the information provided in the book, thinking about thoughts or
feelings is considered abstract thinking. In this regard, the PB appeared to provide more opportunity for the children to develop abstract thinking.

### 6.7.4 References to Illustrations

Illustrations provide extra information about the story than that available from the written text. Illustrations often give parents and children opportunities to discuss events and activities tied to the storyline. This visual information is more crucial for younger children, as they are not conventional readers yet.

Previous studies have shown relationships between different types of books and parent-child’s focus on illustrations during shared reading (e.g., Kim & Anderson, 2008). For instance, Kim and Anderson’s (2008) study, conducted with books similar to the PB, DB1 and DB2, found that mother-child dyads focused more on illustrations in print than in digital book contexts. This finding is consistent with a finding in the current study, that is, the dyads also referenced illustrations most frequently in the PB context\(^{145}\) (Appendix G.41, Table 6.23). Both Kim and Anderson’s and the current study showed that parent-child dyads focus more on illustrations in the print context, while they focus more on the story content in the digital books.

**Table 6.23: Means of instances in the dyads’ talk referencing illustrations**

<table>
<thead>
<tr>
<th>Semantic option</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>[doing]</td>
<td>2.222</td>
</tr>
<tr>
<td>[being]</td>
<td>10.667</td>
</tr>
<tr>
<td>Total</td>
<td>12.889</td>
</tr>
</tbody>
</table>

\(^{145}\) Statistically significant differences were found between the PB and DB1 \(t(17)= 2.565, p=.020.\)
In the current study, some contextual differences with different book features appeared to be related to the dyads’ talk about illustrations. In the DB2, the illustrations/scenes change automatically and, apparently, there was less time or opportunity to talk about the illustrations. In the DB1, with the page-turning feature, the dyads could have had time to discuss the illustrations, but they tended to focus more on the operation of the page-turning device than on the illustrations.

Further examination of the classification of experiential meanings in talk about illustrations showed the dyads selected the semantic feature [doing] more often in the PB and DB2 than in the LB and DB1 contexts,\(^{146}\) while they selected the semantic feature [being] significantly more often in the PB than in the DB1 and DB2 contexts \((p<.018)\) (Appendix G.42, Table 6.23).

Regarding choices between [doing] and [being], in the PB, LB and DB1 contexts the dyads tended to talk more about the conditions or properties construing [being] than about actions in the illustrations construing [doing] \((p<.032)\) (Appendix G.43). Therefore, a more detailed examination was conducted on different aspects of the semantic feature [being].

Overall, labeling, that is, construing the semantic feature [equating], was used most often in the four contexts (Table 6.24). Labeling is thought to be important in shared reading with younger children (Ninio, 1980; Ninio & Bruner, 1978), as labeling facilitates children’s vocabulary building and development of further knowledge. In the PB context, the dyads labeled

\(^{146}\) Paired t-tests showed there was a statistical significant difference only in the PB and DB1 contexts, \(t(17)= 2.848, p=.011\).
objects or people in the illustrations ([equating]\textsuperscript{147}) and stated their condition construing the semantic feature [state]\textsuperscript{148} more often than in the other three books (Table 6.24). This happened as they talked about the names of animals in the illustrations and their conditions (e.g., hungry and surprised). Even though the animals in the PB and DB2 were the same, the dyads labeled the animals in the PB four times more frequently than in the DB2. They seemed to have more time to label each animal in the PB, while the automatic play feature in the DB2 limited their time for labeling.

Table 6.24: Means of dyads’ reference to illustrations and [being]

<table>
<thead>
<tr>
<th>Semantic option</th>
<th>Book contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB</td>
</tr>
<tr>
<td>[being:existing]</td>
<td>2.056</td>
</tr>
<tr>
<td>[being:clarifying:equating]</td>
<td>4.833</td>
</tr>
<tr>
<td>[being:clarifying:grouping]</td>
<td>0.556</td>
</tr>
<tr>
<td>[being:describing:state]</td>
<td>1.833</td>
</tr>
<tr>
<td>[being:describing:relation: pertinence]</td>
<td>1.056</td>
</tr>
<tr>
<td>[being:describing:relation: location]</td>
<td>0.333</td>
</tr>
<tr>
<td>Total</td>
<td>10.667</td>
</tr>
</tbody>
</table>

Overall, the static nature of the illustrations in the PB appeared to provide a greater opportunity to talk about the illustrations. Although in the LB the illustrations were also static and there was no automatic page-turning feature, the narration, the sounds the illustrations made

\textsuperscript{147} Paired t-tests showed there were no statistically significant differences in the dyad’s selection of [equating] across the contexts.

\textsuperscript{148} Paired t-tests showed there was a statistically significant difference in the dyad’s selection of [state] only between the PB and the DB2, $t(17)= 2.383$, $p=.029$.

205
when clicked by the digital pen, and other digital/physical-related aspects\textsuperscript{149} may have discouraged references to the illustrations.

### 6.7.5 Summary of the Focus of the Dyads’ Talk

To reiterate, findings showed that extra-textual talk varied across the books. The four types of references (external references, characters, illustrations, and metalinguistic items) appeared more often in the PB and LB than in the DB1 and DB2. Extra-textual talk about characters and personal experiences or scientific facts related to stories is thought to help children’s comprehension of stories, as the talk provides more explanations and bridges aspects in the stories with the children’s own knowledge or experience. Labeling helps children develop their vocabulary, and a focus on metalinguistic items encourages children’s literacy skills. All those four types of references are considered to promote children’s language and literacy development (van Kleeck & Schuele, 2010).

In the PB context, the dyads talked more about characters’ feelings or thinking, labeling of objects in illustrations, and “text to life” and “life to text” references (Cochran-Smith, 1984, pp. 174, 236) that connected children’s experiences with story content. In the LB, there was great focus on metalinguistic items. Thus, based on the dyads’ frequent talk about story-related references in the PB and LB, it would seem that these books provide greater affordances for young children’s literacy learning and development through discussions during shared reading.

One of the interesting differences in the foci of the dyads’ talk between the PB and LB contexts was their attention to meaning-related talk (e.g., comprehending story concepts) and

\textsuperscript{149} Please see the dyads’ talk on digital/physical-related aspects in Section 6.6.1.
print-related talk (e.g., letter names). In the PB, the dyads tended to focus more on meaning-related aspects. For instance, they used more external references than in the other books. This finding is consistent with Hindman et al.’s (2008) study, which showed that parent-child verbal exchanges often focused more on meaning-related talk than print-related talk.

In contrast to the PB, DB1 and DB2 contexts, in the LB, the dyads talked about metalinguistic items more frequently. As indicated earlier, previous studies have shown that parent-child dyads tended to pay relatively little attention to print during shared reading (e.g., Evans & Saint-Aubin, 2005; Evans et al., 2008; Roy-Charland et al., 2007). However, in this study, in the LB, the dyads often talked about letter sound, words on the page, and word meaning. In particular, families who played the game tended to discuss words or letters, prompted by the questions in the game.

Finally, shared reading of different types of books involved different activities (such as operation of digital-devices or game play) that appeared to influence the focus of the dyads’ talk. For instance, in the LB context, game questions and reading of a word with the digital pen seemed to guide the dyads’ talk towards metalinguistic items. Thus, it seems there is a close relationship between types of texts and focus of parent-child talk, which is consistent with results in previous studies comparing shared reading of print and digital books (Parish-Morris et al., 2013) and children’s independent reading of print and digital books (Bus & de Jong, 2012).

6.8 Examples: The Expansion and Construction of Thoughts in Parent-Child Discussion

In this section, I present examples of a mother and her 4-year-old son’s shared reading in order to further explain how contextual differences are related to the dyads’ talk. The examples
show a dyad’s expansion and construction of thoughts through their talk, and the different foci of their talk across the contexts. The family was upper middle class, the mother worked full-time at a research-related office at a large university, and the son attended a daycare full-time. The mother said her son started to talk early and did home computer activities several times a week. She read books to the child every night. This dyad was selected for the examples in this section because of the variation in the extra-textual talk across contexts. One example from each of the four reading contexts is provided in the following order: PB, LB, DB1, and DB2. I also present another mother-son’s shared reading of the DB2 to show their discussion with pausing of the automatic play.

**Example 6.20: Dyad 9 (mother and 4-year-old son), PB**

M: His friends yell “SURPRISE!” when he gets to his den. But Bear is SO big ... that he can’t fit in! Bear wails, “What luck! I am STUCK, STUCK, STUCK ... in my own front door!”

1. M: See?
2. This is the front part of the cave I think.
3. And there his butt’s hanging out in the forest
4. and his head’s inside his cave!
5. What’s he gonna do?
6. C: I don’t know.
7. M: What if they gave him a big boot in the butt?
8. Would that work?
9. C: What’s a “boot”?
10. M: Like a kick.
11. C: That wouldn’t do anything.
12. M: You don’t think it would help?
13. Ah..! What’s that?

Here, the mother read a page and directed the child’s attention to a problem that occurred in the illustration (line 1). She explained details of the illustration, such as the cave (line 2) and the
bear’s position (lines 3 and 4), which helped the child understand a problem that the bear was having. After explaining the problem, the mother asked her son how the bear would solve the problem (line 5). At first, the child did not know the answer (line 6), so, the mother asked more specific questions containing information on a way to solve the problem (lines 7 and 8). The child did not know one of the key words in the mother’s question, and asked her about its meaning (line 9). After the mother gave the meaning of the word (line 10), the child replied to the earlier questions from lines 7 and 8. In response, the mother again asked the child to confirm his thoughts (line 12). Then, she asked a question re-directing the child’s attention to an object in the illustration that provided information (line 13), enabling the child to answer the question (line 14) and also answering the original questions from lines 5 and 7.

In this example, the mother’s reinforcement by asking questions, from more general (line 5) to more specific questions (lines 7, 8, and 14), guided the child to think about further related information (e.g., possibilities of attempts and other options). These questions required the child to attend to the information in order to answer the first question (lines 5-14). Moreover, the mother helped the child to connect information about the bear’s problem (lines 2, 3, and 4), and information about a way the animal could solve the problem (lines 5-14). These dialogic verbal interactions appeared to encourage the child to learn not just about information on the topic, but also about ways to relate information from different sources. This kind of mapping of thoughts through relating information on solving the problem would further influence the development of the child’s ways of thinking. This was possible in the PB because the dyad was able to sustain an on-going discussion without interruptions,150 and this sustained discussion allowed for more

150 For instance, interruptions came from the automatic play of a story.
learning opportunities.

**Example 6.21: Dyad 9 (mother and 4-year-old son), LB**

A: Duck knocked on the door early the next morning. He handed Farmer Brown a note: Dear Farmer Brown, We will exchange our typewriter for electric blankets. Leave them outside the barn door and we will send Duck over with the typewriter. Sincerely, The Cows.

1. C: Oh my god! No.
2. M: what do you wanna do here?
3. C: OK, I have to do three of these.
   A: Let’s play. Touch someone you think is warm.
4. C: Somebody who’s warm? Who is warm?
5. M: well, they all got electric blankets on.
6. Do you know what electric blanket is?
7. C: Something that you plug in.
8. And then, And then, you turn it on,
9. you have a switch and
10. you turn it on, and then, and then, and then, and then,
   and then, and then, and then,
11. it takes one minute the electric goes up
12. and then it’s super warm.
14. so who do you think is warm? in this picture.
15. C: Who?
16. Can you tell me?
17. M: I don’t know.
18. Looks like they’ve all got electric blankets on them.
   A: the cows and hens look warm. Touch someone you think is warm.

*Note:* This exchange was presented before in Example 6.8. The exchange provided good examples of the semantic feature [projected] (in Example 6.8), and the dyad’s distinctive on-going verbal discussion (in Example 6.21) in the LB. Thus, I utilize the interaction here again in order to provide the best examples of the dyad’s interactions in LB, and to highlight different types and ways of interactions presented across the contexts.

After reading the page, the mother asked the child what he wanted to do (line 2), and he replied that he wanted to play some games (line 3). After the child touched a game icon that
generated a question, the child asked the mother a related question (line 4). The mother did not provide the answer immediately, but described the animals’ condition (line 5). Then, in line 6, she asked a question about the meaning of “electric blanket,” a key object related to the animals’ condition she had mentioned in her previous turn. The meaning of the word is crucial to answering the question in the game, as it contains essential information about the animals’ condition. The child answered the mother’s question with detailed explanations about the word (lines 7-12). He stated the key property of the object, which is the core information needed to answer the question (line 12). In responding to the child’s explanation, the mother confirmed (line 13), and then related his information to the game question by rephrasing the game question slightly (line 14), but the child asked the mother to provide an answer (lines 15 and 16). The mother intentionally did not answer the child’s question (line 17), but explained the animals’ condition again (line 18) and the child responded correctly with the pen (line 19).

The mother explicitly guided the child to pay attention to the key information needed to answer the game question through asking a question on the key object (line 6), relating the child’s knowledge of the object with the game question (line 14), and explaining the animals’ condition (line 18). The mother’s guidance encouraged the child to use his knowledge about the electric blanket to make an inference about the animals, and gave the child a chance to express verbally his knowledge about the electric blanket (lines 7-12). The discussion in lines 4-18 was prompted by the game question. As in this example, game questions often prompted parent-child discussions in most families who played games in the LB.151

---

151 In the LB context, 8 of the families did not play games. From the 12 families who did play games, 9 discussed the game questions.
Example 6.22: Dyad 9 (mother and 4-year-old son), DB1

A: Ralph thought about that. Then one day, while playing with some friends, he had an idea. But first he had to learn how to fly a helicopter.

1. M: What do you think his idea is?
2. C: I don’t know.
3. M: What would your idea be?
4. C: I don’t know.
5. M: Let’s say I wanted to buy, you wanted me to buy you a bike.
6. And then I say Ok when pigs fly.
7. What would you do?
8. C: I would say, pigs fly, pigs fly.
9. M: Do you think that would work?

A: “Why do you want to learn to fly a helicopter, Ralph?” asked his friend Morris. “Cows don’t fly.” “Not yet they don’t,” Ralph replied. Morris looked puzzled. Ralph explained “My dad said he’ll buy me a bike when pigs fly.” “But Ralph,” Morris said, “pigs don’t fly.” “Not yet they don’t,” said Ralph.

10. M: Next page?
11. C: Yeah.
12. M: What is this blue thing?
13. C: A tie.
14. M: Oh!

... 

A: It was a very exciting week for Ralph. Sometimes it was exciting for Bill, too.

15. M: What’s happening now?
16. C: Now Ralph riding it.
17. M: What was happening?
18. C: He is like Oh~~
20. Do you think that Ralph is a little bit too close to the buildings?
In this example, the mother asked the child questions about the main character’s plan (line 1). Then, she asked about what he would have thought had he been the character (line 3). These questions required the child to make inferences from the character’s previous actions. The child did not know the answers (lines 2 and 4), so, the mother provided a more detailed explanation of the main character’s situation by giving an example of a situation between the mother and the child that reflected the parent-child relationship in the story (lines 5 and 6). The mother then asked the child what would he do based on the explanations given in lines 5 and 6 (line 7). The child answered based on his logic (line 8). The mother again asked the child if he really thought that would work (line 9). The child did not reply to the mother’s question, but instead turned the page. The mother was surprised that the child turned the page without replying to her question in line 9 (line 10). However, she did not go back to their discussion on the character’s thoughts, but asked a question about an object in the illustration (line 12).

In lines 15-21, the discussion consisted of question/answer pairs. The mother’s questions were about events happening in the illustration (lines 15, 17, and 20) and focused mainly on what the character was doing. However, she did not relate the information from the child’s answers to more abstract aspects, nor did she have the child make predictions or explicitly connect information from outside the story with the events within it.

Although the narration did not interrupt the dyad’s talk, the child’s page turning by clicking the icon with the mouse appeared to contribute to them discontinuing the discussion (after line 9). To the mother’s question that focused on more abstract aspects, the child appeared to respond by disengaging, as he did not ask any further questions nor provide any comments (lines 1-9). After the child’s lack of response (after line 9), the mother shifted her questions to
more concrete aspects, which required less verbal discussion; the child was responsive to those questions (lines 12-21). As in this example, other children’s page turning in the DB1 context occasionally appeared to have hindered, interrupted, or terminated the discussion with their parents, even though, on many occasions, the children turned the pages after getting their parents’ agreement.

**Example 6.23: Dyad 9 (mother and 4-year-old son), DB2**

A: A gopher and a mole tunnel up through the floor. Then a wren and a raven flutter in through the door!

1. M: How many animals are there, do you think?


2. =M: (Friend?) five, six, seven friends and bear.

3. C: That makes eight.

A: They tweet and they titter. They chat and they chitter. A: But the bear snores on.

4. =C: snores on.

5. M: (snoring sound)

A: In a cave in the woods, a slumbering bear sleeps through the party in his very own lair.

6. =M: (snoring sound, loud)

7. C: No. Mom, don’t do that.

A: Hare stokes the fire. Mouse seasons stew. A: Then a small pepper fleck makes the bear …… Rhaa Choo.

8. M: Rha Choo.

A: He blows and he sneezes, and the whole crowd freezes …

9. M: What does he sound like, when he sneezes?

A: And the bear WAKES UP! BEAR GNARLS and he SNARLS. BEAR ROARS and he RUMBLES! BEAR JUMPS and he STOMPS. BEAR
GROWLS and he GRUMBLEs!
11. what’s he gonna do?
   A: “You’ve snuck in my lair and you’ve all had fun! But me?
   I was sleeping and … I have had none!”
12. M: Is he angry?
   A: And he whimpers and he moans, he wails and he groans ...
   And the bear blubbers on!
13. =M: What is he doing?
14. =C: ...
15. =M: Is he crying?
16. M: What is they gonna do?
17. C: ...
   A: Mouse squeaks, “Don’t fret. Don’t fuss. Look, see? We
   can pop more corn! We can brew more tea!”

In this example, the mother asked questions occasionally (lines 1, 9, 11, 12, 13, 15, and 16). In
lines 13 to 17, the mother asked a wh- question first (line 13), then asked a y/n question (line 15),
and a further question to predict the characters’ action (line 16). However, the child appeared to
be responsive only once (line 3) to the mother’s questions. The child reacted to the mother’s
action (line 7), but he did not provide comments on the story nor did he ask questions. The
child’s minimal verbal participation in this example is very different from his active verbal
participation in the other contexts.

Overall, there was minimal (lines 1-3) or no turn taking (lines 4-17). Some of their talk
was synchronized with the narration of the book (lines 2, 4, 6, 13, 14, and 15),\(^\text{152}\) and there was
limited time to talk or take turns between the narrations (lines 2, 13, and 15). The automatic play

\(^{152}\) The synchronization between one person’s talk and the narration, or between two speakers’ talk was marked with
“=,” as explained in Section 5.2.2 about conventions of transcription.
feature appeared to hinder discussions in other families as well. Another interesting aspect in this example is that the child seemed to focus on watching the video play, rather than talking with the mother. This behavior was also apparent in other families. The children showed resistance to pausing the video play; indeed, only 4 of the 20 families paused the video. Next, I present an example of this resistance (Example 6.24).

**Example 6.24: Dyad 3 (mother and 4-year-old son), DB2**

A: Then a wren and a raven flutter in through the door! Mole mutters, “What a night!” “What a storm!” twitters Wren. And everybody clutters in the great bear’s den.

1. M: Here,
2. good.
3. Ok.
4. So tell me, what is happening while bear is snoring?
5. C: I don't know.
6. M: Is the bear sleeping through the winter?
7. C: Yeah.
9. C: Yeah.
10. M: And so are other animals visiting?
11. C: U-hum. um, 'member?

A: They tweet and they titter. They chat and they chitter. But the bear snores on.

12. M: Ok
13. so now.
14. C: Hum!
15. M: I just stop for a second,
16. so we can talk about it.
17. Now you don’t want me to stop it?
18. C: Hum.
Just prior to this segment, the child was not responding to the mother’s questions, so here, the mother paused the reading (line 1). The mother inquired about the bear’s hibernating with a general (line 4) and a specific question (line 6). The child responded to the mother’s questions (lines 5 and 7). Then, the mother provided a scientific word for the bear’s sleeping in winter (line 8), and asked a confirmation question about events that occurred (line 10); the child was responsive (lines 9 and 11). However, when the mother paused the video again (line 13), the child expressed his dissatisfaction with the pause (lines 14 and 18). After line 19, the child restarted the video play, and did so again later, after the mother had paused the video play. After the video was finished, they discussed details of the story more in depth, as the mother reviewed the animals in the story, bears’ habits, and so on. A previous study (Kim & Anderson, 2008) on digital books also observed more discussion after the video play was finished than during the sharing of the book.

In sum, the examples of parent-child interactions in this section showed contextual differences in the types of the dyads’ talk (also shown in Section 6.5). In particular, the parent-child talk involving negotiation of meanings and extending of the children’s thoughts occurred more often and in more discursive ways in the PB and LB contexts than in the DB1 and DB2 contexts. As in the examples presented here, the dyads’ verbal participation was greater in the PB and LB, while the children participated less in the DB1, and were less responsive in the DB2. As stated earlier, the differences in verbal participation and responsiveness tended to be related to digital features in the books. While game questions in the LB often encouraged further discussion, the children’s operation of the mouse to turn pages in the DB1, and the synchronization of narration and the dyads’ talk in the DB2 frequently distracted from their discussion. Thus, the PB and LB appeared to provide the dyads with a context in which they
could further discuss various aspects of the stories and illustrations, which in turn seemed to encourage the dyads’ verbal participation and responsiveness.

6.9 Summary

Many scholars have emphasized the importance of parent-child talk during shared reading in young children’s literacy development (Snow, 1983; Teale, 1986; Wells, 1999; Williams, 1994). They have consistently asserted that children’s acquisition of “language use in a decontextualized way” before school is critical for success in school (Snow, 1983, p. 187). The findings in the current study show greater occurrences of parent-child dyads’ talk that entail negotiation of meanings and extension of children’s thinking in the PB and LB than in the other books. It is theorized that the dyads’ verbal exchanges would be internalized as part of the children’s literacy acquisition. These discourse patterns or routines are replicated in school and children socialized into their use are more successful in making the transition there (Heath, 1983). Thus, the PB and LB contexts tended to provide the children with richer and greater opportunities to develop their literacy acquisition. The next chapter will present interpretations of contextual variations based on parent-child interactions during shared reading of the four books, conclusions drawn from the study, and theoretical and practical implications.
CHAPTER SEVEN: CONCLUSIONS, IMPLICATIONS AND FURTHER RESEARCH

7.1 Introduction

This study investigated shared reading of a print book, a hand-held electronic book, a digital book with a page-turning option, and a digital book with no page-turning option by 20 middle-class parents and their four- and five-year olds. In particular, this study examined how the parents and the children exchanged and built meanings during shared reading. In the previous chapter, I presented the variations of meanings in the parents’ and the children’s talk in the four contexts. Based on those findings, in this concluding chapter, I first present the contextual variations existing in parent-child interactions. Next, I discuss the major findings, including different parent-child interactions and different contexts of situation in their verbal discussions across the four contexts, based on SFL and Vygotsky’s theory. I then present theoretical implications of the study, as well as practical implications for families, educators, curriculum developers, and publishers of digital books for children. Finally, I acknowledge the limitations of the study and suggest avenues for future research.

It is also important to remind the reader that this study focuses on parent-child interactions, and inferences are drawn about how these interactions contribute or not to children’s learning and development. The potential impact on the affective dimension was not examined. For example, it might be the case that children develop positive attitudes toward books and reading, even without interaction between them and their parents. Furthermore, from a Piagetian perspective, children also learn on their own through interactions with objects and tools in their social environment without the support of others.
7.2 Interpretation of Variation: Affordances of Different Formats of Books

As mentioned previously, this study furthers our understandings of the affordances of different formats of books. In SFL, context of situation is interrelated with text (e.g., text in a storybook, or parent-child interactions during shared reading), as context of situation and text help each other in terms of interlocutors’ understanding and how these understandings are constructed or generated (details in Chapter 3). The contexts of situation in parent-child interactions across the four reading contexts were examined. The analysis showed some distinctive differences in the field, tenor, and mode of the context of situation.

7.2.1 Contexts of Situation: Texts

As stated earlier, there are two different contexts of situations in parent-child shared reading (the parent-child interactions and the texts read) and they consist of three metafunctional meanings (field, tenor, and mode) (see Sections 3.2.4 and 3.2.5). The field and tenor of context of situation are similar across the four books in that they are narratives about incidents or events involving characters (field) with close social distance\(^{153}\) (tenor). However, the mode is different in the four texts, as they utilize different modes to convey meaning. As explained in Chapter 5, the print book conveys meanings through visual (illustration) and linguistic (texts) modes, while the LeapFrog and the two digital books involve additional modes (e.g., an audio mode with music and some sound effects, and a gestural mode with animated graphics).

7.2.2 Contexts of Situation: Dyads’ Interactions

The examination of contexts of situation in parent-child interactions showed some

---

\(^{153}\) The relationships among characters in the stories were friends, family, and a farmer and his animals.
differences in all three metafunctions (shown in Table 7.1). In terms of the *field*, there are differences in subject-matter and social activities across the contexts (see Section 3.2.5). As explained earlier, subject-matter refers to aspects that interactants reference in their conversation. The subject-matter in the parent-child shared reading was the texts, as the focus of the discussion was the books they read. This finding—texts as subject-matter in parent-child talk—is consistent with findings in Williams’ (1991) study of parent-child shared reading of print books. However, Williams utilized print texts, and the digital or technical features in the digital texts in the current study appeared to influence interactions. For instance, the dyads’ talk referenced digital features such as games embedded within the LB, and page-turning icons in the DB1, in addition to the texts and the illustrations.

As explained in Chapter 3, Hasan (1995) identified three different types of social activities in context of situation represented in verbal interactions: action-, relation-, and reflection-based (see explanations and definitions in Section 3.2.5). Although all three types of social activities were present in verbal interactions in the four books, their frequency varied across the contexts. In the PB and DB2 contexts, as in Williams’ (1994) study, reflection-based activities were dominant. For instance, mothers mainly asked questions about story contents or illustrations in the PB and DB2. Reflection-based activities were less prominent in the LB and DB1, and talk centered on the page turning and icon features of those books. The semantic network analysis showed that the dyads tended to talk about operation of those digital features by selecting [demand/give: goods and services]. In the DB2, many dyads did not pause the automated readings; rather, they appeared to prefer watching the video and, as a consequence, action-based activities were infrequent. Thus, different social activities tended to occur more or less frequently depending on the digital features. This finding suggests a relationship between the features in
digital books and the extra textual talk during shared reading.

Other aspects in the field of contexts of situation include short- and long-term goals (see Section 3.2.5). Several short-term goals were evident in pre-reading interviews and in the shared reading transcriptions. These included: to provide family time, to support children’s learning at home, to entertain, to generate interest in book reading, to prepare for school, to have a relaxing time with the child, and so on. The long-term goal of parent-child shared reading is generally considered to be school literacy preparation (Williams, 1994), in addition to other goals such as building parent-child relationships. Moreover, different factors related to school literacy preparation were apparent in the participating parents’ talk, such as labeling, naming letters, decoding words, reading comprehension, and defining word meaning.

The tenor of contexts of situation considers the relationships between or among interactants—the social distance, and the agentive roles\footnote{Please see Section 3.2.5 for more explanations on social distance and agentive roles.} (Table 7.1). As would be expected, the social distance between the parents and the children was minimal in their shared book reading of the four books, as the parents are the primary caregivers of their children.

In terms of agentive roles, there were two: one during the dyads’ extra-textual talk and one during the reading of texts. The first agentive role took place during discussions about the story (i.e., extra-textual talk), while the second agentive role took place during reading of texts in the books. In previous studies with print books (e.g., Williams, 1994), the agentive role was only considered in terms of extra-textual talk. In this study, the agentive role in the reading of the texts in the books was also examined, as there were different agents across the contexts, including parents, children, and certain digital features, such as narration in the LB, DB1 and
In terms of extra-textual talk, the parents appeared to be the main agents in the four contexts, as they often led the discussion. The children usually followed the parents’ lead. However, the parents’ agentive role tended to be more dominant in the DB1 than in the other contexts as children’s verbal participation and their initiation of interactions were significantly less frequent there. For instance, the children’s initiation of interaction and selection of the semantic feature [demand;information] was distinctively less in the DB1 than in the other contexts. As indicated in Chapter 6, the children tended to focus on page turning, rather than on verbally interacting with their parents, so, parents took a greater lead in the DB1.

The second agentive role in the delivery of written texts was different in the four book contexts. To reiterate, the PB only provided written texts, while the LB, DB1, and DB2 provided narrations of the texts along with written texts. As expected, most parents read the text in the PB, except two parents who let their children read (dyads 13 and 17). However, in the LB, DB1, and DB2, most parents did not read the texts but listened to the text narrations along with their children, even though a few parents attempted to read or partly read texts in those books. Thus, as the parents were the readers of the texts in the PB, but were listeners of text narrations in the other three contexts, the parents’ roles in the reading of texts were different across the contexts. Moreover, although the children were listeners in the four contexts, the primary resource for them to obtain information about the story was different in the PB and the other three contexts. In the PB, parents appeared to be sensitive to continuing or pausing their reading in order to discuss details or to respond to children’s comments or questions. In the other three contexts, both parents and children were listeners who had less ability to control the pace of reading. Thus,
the differences in parents’ roles tended to influence their control of pacing in reading and discussing.

Examining the mode of contexts of situation showed that, although there were similarities in the modes of context of situation, including medium (verbal), channel (aural), and language (spoken), there were differences across contexts (details in Section 3.2.5) (Table 7.1). In particular, the level of dialogic mode\textsuperscript{155} was noticeably different in the DB2, as the dyads were less responsive and took fewer verbal turns there. The automatic video play appeared to hinder discussion, thus, a more monologic mode of language use was more apparent in the DB2 than in the other contexts. As the monologic mode of language use provides fewer possibilities in which to construct meanings than the dialogic mode, there was less opportunity for children to expand their thoughts and acquire or develop their ways of thinking.

Overall, the variations of meanings in parent-child talk appeared to be related to the formats of the books. In particular, digital features appeared to be related with context of situation in parent-child talk, including the focus of their talk and social activities in their talk (referential domain, and action based talk in the field); leading of discussion, and verbal participation (agentive roles and verbal participation in the tenor); and verbal turns generating follow-up discussion (degree of dialogic mode of talk in the mode). These findings suggest that the different features of the books engender different affordances in terms of parent-child’s exchange and construction of meanings.

\textsuperscript{155} A dialogic mode of language use occurs with verbal turn taking to discuss a topic in an ongoing discussion, such as a classroom discussion on social issues. A monologic mode of language use occurs without verbal turn taking, such as political speech. The level of dialogic mode refers to the degrees of dialogic mode in language.
Table 7.1: Variations in the contexts of situations in parent-child dyads’ shared reading

<table>
<thead>
<tr>
<th>Variations in the contexts of situations</th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
<th>DB2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field</strong></td>
<td><strong>Referential domain</strong></td>
<td>Text (illustration, character, external references)</td>
<td>Text (digital aspects, character, illustration, metalinguistic items)</td>
<td>Text (digital aspects, character, illustrations)</td>
</tr>
<tr>
<td><strong>Social activities</strong></td>
<td><strong>Reflection based</strong> Relation based Action based</td>
<td>Reflection based Action based Relation based</td>
<td>Reflection based Action based Relation based</td>
<td>Reflection based Relation based Action based</td>
</tr>
<tr>
<td><strong>Goals</strong></td>
<td>• Short-term goals: Appeared to be varied (entertainment, enjoyment, creating interest in reading, preparing for school literacy) • Long-term goal: Prepare for school literacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tenor</strong></td>
<td>Social distance</td>
<td>Minimal</td>
<td>Minimal</td>
<td>Minimal</td>
</tr>
<tr>
<td></td>
<td>Agentive role</td>
<td>Parents lead and children follow parents’ lead</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verbal participation</td>
<td>More follow-up comments and questions</td>
<td>The most follow-up comments and questions Low in children’s talk</td>
<td>The least follow-up comments and questions</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>Mode</td>
<td>Highly dialogic</td>
<td>Highly dialogic</td>
<td>Dialogic</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>Spoken</td>
<td>Spoken</td>
<td>Spoken</td>
</tr>
<tr>
<td></td>
<td>Channel</td>
<td>Aural</td>
<td>Aural</td>
<td>Aural</td>
</tr>
<tr>
<td></td>
<td>Language</td>
<td>Constitutive</td>
<td>Constitutive</td>
<td>Constitutive</td>
</tr>
</tbody>
</table>

*Note. The bold font presented in the social activities section indicates the most dominant of the three social activities in a context.*

### 7.3 Concluding Comments

In this section, I reference the research questions presented in Chapter 1. It should be noted that the purpose of this study was to examine whether parents-children interactions were influenced by the distinct affordances of four different books. The first research question focused on any similarities and/or differences in patterns of parents’/caregivers’ and children’s
interactions during shared reading across the four different contexts with a print storybook, two
digital storybooks with different features, and a hand-held electronic storybook. The findings
showed that parent-child dyads made significantly more follow-up comments, asked more
questions and wh- questions, and talked more about metalinguistic items in the PB and LB
contexts than in the DB1 and DB2 contexts156 (see Sections 6.5 and 6.7.2).

The second question focused on the patterns of parents'/caregivers’ and children’s
verbal interactions during shared reading with these four different books. Although there were
similarities across all four contexts, there were also differences. Across contexts, the parents
commented and asked questions more often than their children did, a finding consistent with
previous studies that examined shared reading of print books (e.g., Martin 1998; McArthur,
Adamson & Deckner, 2005), and shared reading of print and digital books (e.g., Kim, 2006). In
the PB and LB, parents tended to ask different types of questions from those in the DB1 and
DB2—with more [actant] (who, what, which questions) in the PB and LB. The children’s use of
different types of questions appeared to be similar in the four contexts, tending to select more
[explain] (why and how questions).

The third question focused on potential relationships between parent-child interactions
and aspects of the four different books, including different digital features within three of the
books. The digital features appeared to influence the dyads’ talk and their turn taking. In
particular, the game questions in the LB appeared to encourage extra-textual talk, while clicking
a page-turning icon in the DB1 and the automatic video play in the DB2 appeared to hinder or

156 Some findings showed statistical significances, but some did not, although some different frequencies were
shown.
discourage discussion (see Sections 6.5.4 and 6.6.2).

Based on Vygotsky’s perspectives of young children’s development of higher mental functions through the internalization of social interactions, the different patterns in the dyads’ verbal interactions across the contexts would encourage the children’s intra-metal process in different ways. This intra-mental process is thought ultimately to develop their thinking and knowledge. One of the most interesting findings in the current study was that, in the PB and LB, there were more parent-child follow-up interactions and talk that went beyond the information presented in the books. Follow-up comments and questions appeared to encourage the children to learn and relate various kinds of information in the text, and to process information following a certain logic, which would expand their knowledge, and develop their ways of thinking. Indeed, such interactions during shared reading provided the children with opportunities to develop ways to process texts and learn from them.

According to Meek (1988), interactive shared reading supports children in grasping a way to connect texts and their world and make meanings from the texts. Moreover, Williams (1994) postulated that the socialization of specific ways of meaning construction and thinking occurred through social interactions during reading. Williams described this socialization as individuation of literacy. The individuation of the children’s literacy involving school-like early literacy practices such as those that were evident in the current study are positively related with later school literacy practices (e.g., Heath, 1983). In a school setting, certain patterns of verbal interactions such as the IRF (“Initiation, Response, and Follow-up”) pattern (Wells, 1999, p. 167) and reflective talk (Chamber, 1996) are prominent, and studies have shown that being familiar with these practices and routines at home are related to children’s later literacy learning
at school (e.g., Heath, 1983; Wells, 1985). In this study, the verbal interactions favored at school tended to occur more frequently in the PB and LB contexts than in the DB1 and DB2 contexts. Thus, with greater frequency of parents’ follow-up comments and questions, and talk that went beyond the information in the books, the PB and LB provided the children with more opportunities to engage in the type of interactions that are thought to support cognitive, language and literacy development, and the discursive practices favored in school.

It should be noted that these findings do not imply that certain book formats are better than others. Although some of the benefits of the PB and LB were shown—such as greater involvement of parent-child dyads’ talk that are thought to encourage children’s language, literacy, and cognitive development—, the potential of the four books can be different in a context in which children read the books by themselves. For instance, some studies have shown positive influences of certain types of digital books on reading comprehension when children read the texts themselves (e.g., Bus & de Jong, 2012). Moreover, varied types and foci of talk, and social activities in reading of different formats of books may encourage different areas of children’s development. For instance, action-based social activities involved in the selection of the semantic feature [demand/give;goods and services] in the shared reading of the LB and DB1 may provide the children with chances to learn about how to operate a digital device, and ways of utilizing the device as part of the reading process (e.g., Parish-Morris et al., 2013). Thus, different verbal exchanges across the contexts may have different potential benefits in children’s development and learning.

7.4 Implications

In this section I present theoretical, methodological, and practical implications of major
findings of this study.

7.4.1 Theoretical and Methodological Implications

7.4.1.1 Social interactions and thinking during shared reading

Scholars have postulated a relationship between social interactions and thinking. Some examples include Vygotsky’s notion of the relationship between thought and language, Halliday’s SFL, and Wells’ (1981, 1999) dialogic inquiry. Similarly, Whorf’s (1956) linguistic theory holds that culturally specific language use and practices influence the construction of one’s thoughts. All of these theorists emphasize the important role of adult mediation in children’s learning and development. Findings in the current study showed that parent-child verbal interactions while sharing books provided the children with opportunities to rehearse and practice their social language skills and to build their ways of thinking, although differentially across the four books. Most importantly, the chains of verbal interactions selecting the semantic feature [follow] appeared to support the parents and children in maintaining a topic and discussing various related aspects, as shown in the example of the discussion on electric blankets in Chapter 6. Moreover, parents’ mediation in those chains of verbal interactions tended to focus on certain aspects of a topic and involve meaning orientation with logical flow (e.g., from a general to a specific aspect of a topic, and problems and their solutions).

Based on Vygotsky’s notion of internalization, it was conjectured that the internalization of knowledge and the logical flow in the chains of parent-child interactions would take place through the following processes. Focusing on diverse aspects of a topic would encourage building of the children’s knowledge. Moreover, the verbal chains would encourage children to
gain the logical flow that would lead them to think about a series of pieces of information in a certain way and to develop their ways of thinking during reading. In addition, the types of the dyads’ talk in those chains, such as questions for further information and comments about their own or each other’s talk, appeared to develop children’s thinking within their ZPD, as those follow-up questions and comments often were connected logically and provided information that went beyond the information in the texts. The comparison across the contexts showed that chains of verbal interactions appeared significantly more often in the LB and PB contexts than in the DB1 and DB2 contexts (see Section 6.5.4.2). Thus, based on Vygotsky’s theory, LB and PB contexts seemed to provide the children more opportunities to develop ways of thinking and abstract thinking.

7.4.1.2 Social interactions and contexts in shared reading

Based on the notions of social interactions and construction of thinking (e.g., Bakhtin, 1986/94; Halliday & Hasan, 1985; Vygotsky, 1978), I propose that contextual variation in parent-child interactions shown in the current study would ultimately influence the children’s development of their thinking and literacy practice. As explained in Chapters 2 and 3, many scholars also have argued that contexts are closely related with social interactions (Bakhtin, 1986/94; Halliday & Hasan, 1985; Vygotsky, 1986). The findings of the current study are consistent with those scholars’ notions of the close relationship between social interactions and contexts. As discussed earlier, parent-child interactions tended to be different across the contexts157 (Section 7.2.2). Those differences in the contexts of situation appeared to be influenced by multimodal aspects in the books. For instance, game questions in the LB seemed

157 The differences included different social activities and agency, and mode of talk (details in Section 7.2.2).
to encourage a greater amount of the parent-child’s ongoing discussion and talk about metalinguistic items, while the video play in the DB2 tended to discourage parent-child talk. Thus, the multimodality aspects in the books appeared to influence the frequency and type of parent-child interactions. This is consistent with an SFL perspective that books are parts of the context of situation in parent-child discussions during shared reading. Similarly, in Vygotsky’s (1978) theory, a tool, an object involved in social interactions, is closely related to sign (language) in a mediated activity. In sum, the findings of the current study showed the different formats of the texts were different tools, as they were utilized differently. Moreover, the differences in the tools resulted in different interactions. Those variations of interactions in turn would theoretically influence children’s learning, as shown in SFL and Vygotsky’s theory.

7.4.1.3 The examination of social interactions within shared reading contexts

Given the importance of social interactions in young children’s development, scholars have examined social interactions from different perspectives. In the current study, besides Vygotsky’s theory, SFL was utilized in the analysis of parent-child social interactions during shared reading in order to provide detailed understandings of interactions that are considered important in children’s learning and development. Using SFL enabled the analysis of the available functional meanings of language under three metafunctions of language, and also to map the relationships between various functional meanings of language in parent-child interactions. First, semantic network analysis enabled the analysis of semantic features under the three metafunctions of language, namely, interpersonal meanings (including semantic features [demand;information], [give;information] and [demand/give;goods and services]), logico-semantic meanings (including semantic features [initiate], [follow], and so on), and experiential
meanings (including semantic features [doing], [being], and referential significances). The findings provided further understandings on what kinds of meanings (e.g., [demand;information] or [demand/give;goods and services]) and information (e.g., [confirm;ask;assumptive] or [apprize;specify;actant]) under [demand;information]) were exchanged in parent-child shared reading. These distinctions of functional meanings of language enabled me to show the frequency of the forms of language158 utilized and the functions of languages in parent-child interactions. Thus, utilizing semantic network analysis enhanced our understanding of the dyads’ language uses in meaning making. Previous studies that did not utilize semantic network analysis did not make such distinctions systematically. They did not make linguistic distinctions either.

Achieving a thorough understanding of the three metafunctions in parent-child interactions during shared reading through semantic network analysis enabled me to map how different semantic features were related to each other. For instance, the examination of the dyads’ co-selection of semantic features [follow;develop] (in logico-semantic meanings) and [demand;information] (in interpersonal meanings) enabled me to show their use of follow-up questions and specific types of follow-up questions with the examination of more detailed levels under [demand;information] (e.g., [actant]). Moreover, the dyads’ selections of certain semantic features among available features were different across contexts. In other words, in the same system level, one semantic feature was chosen more often in one context than in others, while other features were often chosen in other contexts. For instance, in interpersonal meaning, there are three choices, [give;information], [demand;information] and [demand/give;goods

---

158 The frequent forms of language include lexico-grammatical realizations of semantic features that were used frequently in parent-child interactions (e.g., [demand;information], [give;information] and [demand/give;goods and services]). Details of lexico-grammatical realizations were explained in Appendix F.
and services]. At this primary level, the dyads selected [demand/give;goods and services] more often than [demand;information] in the LB context. However, they selected [demand/give;goods and services] much less than [demand;information] in the PB context. Thus, semantic network analysis made it possible to map meanings in the dyad’s interactions, and to map the dyads’ selection of a certain meaning among available resources in different contexts.

The utilization of SFL seemed to have two benefits. It complemented Vygotsky’s theory by providing understandings about linguistic resources that are seen as critical in early development (e.g., internalization, ZPD, and cultural transmission). In particular, it allowed me to theoretically examine text, context, and the relationship between the two. First, as I discussed in the section on social interactions and thinking, the semantic network analysis of parent-child interactions enabled me to analyze the focus and frequencies of the dyads’ talk, different types of talk, and ways of constructing meanings in the dyads’ interactions over several turns during shared reading. These findings allowed me to generate detailed and systematic explanations about the internalization of what information dyads talked about (references of their talk), and in what ways they processed the information.

By incorporating both aspects, I was able to gain further insights on children’s learning within their ZPD (e.g., abstract talk and logic of the process, specific ways of processing information and paying attention to certain aspects during shared reading). Thus, the utilization of SFL in the present study enabled me to examine and understand the ways in which the dyads constructed meanings through their interactions, as well as the types of talk they used. Furthermore, the present study expanded our understanding on findings from previous studies, as those studies had examined only partially how different types of talk enable meaning.
construction in parent-child shared reading (e.g., the examination of initiations, but not follow-up talk in Kim and Anderson’s [2008] study).

The examination of parent-child interactions by semantic analysis and the examination of reading contexts through the context of situation in SFL also enabled me to show the close relationships between parent-child interactions and reading contexts, as well as between variations in parent-child interactions and contexts of situation (see Section 3.2.4). The theory-based (e.g., SFL and multimodality) examination of the books revealed differences among four different book formats and what aspects of the formats were related to parent-child interactions during a context of shared reading. For instance, the parents’ and the children’s agentive role in terms of initiation of turns and amount of talk appeared to depend on the different features available on the books, such as games in the LB, page-turning icons in the DB1, and auto play in the DB2 (see details in Section 7.2.2). That is, the children were less likely to initiate interactions and were less likely to talk in the DB1, as they focused more on clicking on page-turning icons. Thus, the current study advances our understanding of text (interactions), context, and the relationship between the two.

7.4.2  Practical Implications

7.4.2.1  Implications for families

The availability of digital materials such as websites, apps for iPads, iPods or iPhones, and CD-ROMs for young children at home is rapidly increasing (e.g., Halverson & Smith, 2009; Saine, 2012). Children are exposed to, and use, digital materials from a young age (e.g., Kim 2011; Rideout et al., 2003) as digital devices and tools have become a part of daily life,
particularly in western societies (e.g., McTavish, 2010; Snyder, Angus, & Sutherland-Smith, 2004). However, families may not be aware of the affordances of different formats of books, as the findings of the current study suggest. Thus, when digital books on the Internet or on a CD-ROM are provided for or suggested to families, information about the potential differences of different formats of books and practical guidance for home literacy practices with digital literacy materials should also be provided. Families should be informed about the varied types of digital books available and the different digital features they have, such as automatic play, hyper-text features, page-turning features, sound effects, narration and presentation of written texts, story building options, etc. Furthermore, families and educators need to be aware of how these different features may affect the reading experience, in a shared reading context or when children read on their own. For example, information about the influence of page-turning icons or narration of the texts as suggested by the current study should be shared.

In the current study, there were few examples of extending conversation and abstract language in DB1 and DB2 contexts. Based on these findings, it seems important to encourage families to use traditional print books and LB (in addition to digital books), as they allow for more extra-textual talk and expanded discussion. Moreover, selecting well-designed electronic books for shared reading, like the LB used in this study, may also be beneficial, because they promote the type of interactions that matches the discursive patterns children will encounter at school. Previous studies (e.g., Heath, 1983) showed that parents from low socioeconomic status (SES) groups showed less strategic guidance in shared reading with their children. Often, this type of guidance does not match school literacy practices (e.g., Heath, 1983).

Findings in this and some previous studies suggested some strategies parents could use
during shared reading with digital books. An example would be to pause the automatic play of digital books to increase opportunities for discussion. Also, parents should be informed that the children may resist pausing—as sometimes happened during families’ reading of the DB2. In those cases, parents should be informed about verbal and behavioral strategies (e.g., appropriate number of pauses) to deal with the children’s resistance. Another strategy could be to review the stories after the automatic play of the books is finished. A few families in the current study did this, as did the family in the Kim and Anderson’s (2008) study. The reviews often involved discussion about details of the stories. It was conjectured that the reviews helped children rethink the stories, and allow parents opportunities to initiate discussion and check their children’s understanding.

In short, findings in the current study suggest that although digital books might be a convenient form of reading material, they should not replace print books. Also, they should be provided together with sufficient information and guidance to promote their most effective use.

7.4.2.2 Implications for educators and curriculum planners

As in home settings, digitalized devices such as iPads, Smart Boards, and computers (e.g., Halverson & Smith, 2009; Parette, Quesenberry, & Blum, 2010; Saine, 2012) are increasingly utilized in school education. Although studies have reported some positive outcomes of the utilization of digitalized devices in early childhood education (e.g., Clements & Sarama, 2003), and although guidance on the use of digitalized devices in early childhood education is available (Clements, 1994; NAEYC, 1996, 2012; Parette & Blum, 2010; Rosen & Jaruszewicz, 2009), it is important to critically examine young children’s use of these devices. Given that the current study pointed to different formats of books influencing discussion during parent-child shared
reading, teachers and other educators should be aware of the effects. Educators need to understand the advantages and disadvantages of using different types of books in shared reading contexts in their classrooms and early childcare settings. For instance, this study showed that, in the PB and LB, parents and children tended to make more follow-up comments, ask more questions, and use more abstract talk—the types of language uses that are thought to encourage children’s learning.

Although home and classroom contexts are not the same, the various affordances of different formats of books may be reflected as well during teacher-student shared reading in class. The social interactions between the teacher and children during shared reading guide the children in their learning to read texts (e.g., Chamber, 1996; Meek, 1988). Scholars have identified how teachers’ verbal interactions can encourage students’ learning at school (Bruner, 1986; Cloran, 2000; Wells, 1981, 1999; Williams, 1999, 2009; Wood, 1998). Bruner (1986) emphasized the importance of teachers’ verbal guidance, or “scaffolding,” that encourages students’ learning within their ZPD. Furthermore, the detailed analysis of teacher’s talk examined by semantic network analysis showed that teacher’s can often talk often guide children to engage in decontextualized talk (e.g., Cloran, 2000; Williams, 1999, 2009). However, both of these studies also showed that decontextualized talk can be much less familiar to children from certain social positions and therefore much more difficult for them to learn to use in school. In this study I did not attempt to examine effects of family social positioning, but rather focused on different types of text, so it is not possible to comment on possible interactive effects. As reported earlier, follow-up comments and questions, and abstract talk were more frequent in the PB and LB contexts. Based on these findings, it can be speculated that PB and LB may have more potential for facilitating teachers’ use and promotion of abstract talk in classroom contexts.
Furthermore, the findings of the current study showed different foci in the parent-child discussion across the four shared reading contexts, such as more talk on digital features in the LB. This variation in foci may also occur in a classroom setting. Educators should be aware of possible variations and consider how they could influence children’s learning. They could use books in different formats for different purposes or parts of lessons. For instance, teachers could use a print book to facilitate more detailed discussions and a digital book for listening comprehension with follow-up discussions after reading. They could also use digital books for previewing or reviewing lessons or concepts. Although the current study showed that shared reading with digital books on computers seemed to lead to less discussion while reading, it still provided information and vocabulary to children. Previous studies (e.g., Lankshear & Knobel, 2003; Saine, 2012; Unsworth, 2006; Wood, 2004) have also shown the use of digital reading/writing materials on computers as complementary materials to print books. Examples are searching for information about an author after reading a print book (Unsworth, 2006) or using technology (iPods, iPads and the SMARTBoard) for pre- and/or post assessment (Saine, 2012). As suggested earlier, teachers could still use digital books for class discussion, using strategies such as pausing during reading and reviewing questions after reading. Last, electronic books like the LB may be used for small group reading discussion, as the books provide narration of written words and game questions that encourage verbal discussions.

In short, teachers should consider how to balance the use of different print and digital materials that may involve different ways of meaning making. Given that the availability and utilization of digital reading and writing materials at school is increasing, educators should be aware of the differing potential of books in different formats, as well as practical strategies to use them in educationally productive ways.
7.4.2.3 Implications for publishers of digital books

Only a few studies have examined the quality and the effects of digital materials. For example, in a recent study, Bus and de Jong (2012) reported the effects of different digital features on 8-year-olds’ visual attention and how different types of digital books influenced their reading comprehension and literacy skills. They found that the children paid less visual attention to the print when a human narrator was present and read the book. The current study also showed relationships between different digital features of the text and parent-child interactions. For instance, game questions in LB appeared to encourage follow-up discussions; page-turning icons in DB1 appeared to promote the dyads’ use of operational talk; and automatic play of the video in DB2 appeared to discourage follow-up discussions.

Digital book publishers should be aware of how different digital features influence children’s reading and parent-child shared reading in order to design digital books that promote learning and are high quality, engaging, and enjoyable. In particular, they should consider various variables and the potential influences of those variables based on the three theoretical principles in multimodality. For instance, they should consider placement and layout of presentation of modes (regarding the relationships among different modes), the number of modes involved in texts (regarding degree of multimodality) and the use of hypertexts (regarding interactivity). They should also consider the potential influences of variances in those aspects on parent-child shared reading. Besides considering those multimodal aspects, when designing digital books, digital book publishers should evaluate potential influences of physical

---

159 The principles include (1) relationships among different modes, (2) degree of multimodality, and (3) interactivity (details shown in Section 3.3.2).
accessibility and physical control of pages\textsuperscript{160} on parent-child shared reading. For instance, having page icons on the left side of the books would help dyads move back and forward to any part of the book, as they need to do for discussion or reviewing. Also, options to set a slower pace of narration and/or an interval time between sentences may provide more opportunities for discussion. Thus, digital book publishers should understand the different affordances of different formats of digital books. Moreover, such information would be valuable for consumers in choosing digital books.

7.5 Significance of the Study

The findings of the current study contribute to the literature on parent-child shared reading by examining new formats of books, including digital books, and utilizing linguistic theory in the examination of parent-child interactions. First, as with previous studies (Cloran, 2000; Hasan, 1989, 1990; Williams, 1994), the current study integrated Vygotsky’s socio-historical theory and semantic network analysis under SFL. Semantic network analysis was developed by Hasan, following an original suggestion by Halliday about the potential of semantic networks to give a “grounded” account of semiotic mediation. In the current study, semantic network analysis enabled fine-grained examination of parent-child interactions. In particular, it permitted the linguistic mapping that shows the linguistic processes in children's internalization of various cognitive aspects presented in parent-child interactions. Thus, by utilizing the semantic network analysis as a method to analyze the interactions, the current study contributes to Vygotsky’s socio-historical theory. In particular, the current study showed an in-

\textsuperscript{160} The notions on physical accessibility and physical control of pages have been presented in Section 5.3.2.1.
depth way to examine inter-mental activities that are emphasized in the course of children’s mental development by Vygotsky.

Second, the findings of the study added to our understandings of the relationships between differing features in different formats of books and parent-child interactions. The findings showed that types and ways of language use that are thought to be important in children’s language, literacy, and other cognitive development, occurred more frequently in the print book and the LeapFrog book contexts. Thus, given the better affordances of these two books for children’s learning through parent-child interactions during shared reading, educators and families should pause in terms of moving away from traditional print books toward those in a digital or electronic format, and choose digital or electronic books with a high-quality design (e.g., LB) for their shared reading activities. Moreover, the study provided families and educators with considerations on how to best use materials in different formats. The results of this study should also be informative for publishers in terms of how different features are related to different activities and processes within shared reading events.

7.6 Limitations

Given the lack of randomization and the small sample size, the results of this study cannot be generalized. As the current study used snowball sampling, the families involved in the study do not represent the larger population of English-speaking middle-class families in an urban area of Western Canada. However, the families were homogeneous in terms of their shared interests, demographics, and educational level. Studies have shown varied types of parent-child interactions in families from different cultural groups (e.g., Bus, Leseman, & Keultjes, 2000; van Kleeck, 2004), different SES groups (e.g., Korat & Haglili, 2007; Neuman, 1996; Pellegrini et al.,
1994), or groups where parents’ professional autonomy or socio-economic class differed (e.g., Williams, 1994, 1998). The findings in the current study may have been different with families from different cultural backgrounds, such as those speaking a language other than English and/or from other ethnic or SES groups.

Another limitation of the current study is the one-time data collection of parent-child shared reading of the books. The findings of the study do not show how the parents and the children may change their verbal interactions while reading four different books repeatedly or over an extended period. Kim and Anderson (2008) found some changes over time in parent-child talk during shared reading of a print book and two types of digital books. In the long term, parent-child’s social activities\textsuperscript{161} may change, which would alter the focus of their talk, turn taking, and types of talk, as social activities and their talk are closely related to each other.

Lastly, the materials used in this study had some limitations. Even though the books were selected to ensure their comparability across the contexts, they still had some minor differences. For instance, some concepts embedded in the stories as well as details in the storylines were different, including number of characters and the relationships among them. These text differences might have had some influence on the parent-child interactions. In addition, the familiarity with the books may have been different among the families. However, these limitations are inevitable aspects of conducting naturalistic research with minimal control over the shared reading beyond the selection of the texts. And despite these limitations, several important trends in parent-child interactions were apparent across the four contexts.

\textsuperscript{161} These activities are an aspect in the field of context of situation in their discussion during shared reading.
7.7 Further Research

The limitations of the current study and the gaps in the literature call for further studies on parent-child shared reading with different book formats. Future studies involving families from non-English speaking families, diverse ethnic groups, and/or different SES groups would provide further understandings about how families in different populations interact around different book formats. Future studies examining teacher-students interactions during shared reading with digital and print books at school are also necessary (Wells, 1981, 1999).

In terms of materials used in studies, researchers should consider various types of digital books involving different devices (e.g., iPads, computer-operated digital books, etc.) that incorporate various degrees of physical accessibility and operation and distinct digital features (e.g., page turning, game questions, narration, hyperlinks, video play), as these features and formats may have differential effects on shared reading. In addition, rather than just being described, those digital features should be examined and explained based on theories, such as multimodality theory. For instance, in the current study, multimodality theory provided some understandings about the roles specific digital features played (e.g., sound effects provided a reader with aural mode of meaning).

Previous studies on shared reading with print books have shown that genre influences parent-child interactions. Future studies about shared reading with different genres of print and digital books—other than narrative texts as the present study employed—would enhance our understandings of how parent-child interactions are influenced by the genre and formats of the books read.
As well, differences in children’s age (e.g., Goodsitt, Raitan, & Perlmutter, 1988; Martin, 1998; Martin & Reutzel, 1999; McArthur et al., 2005; Mol et al., 2008; Sheets, & Buyer, 1999; van Kleeck & Beckley-McCall, 2002; Wheeler, 1983) and gender (e.g., Anderson et al., 2004; Schwartz, 2004) have been shown to influence parent-child interactions during shared reading. These studies should be replicated using different formats of digital materials.

The findings from the current study and the ongoing research in this area are expected to lead to the development of criteria and guidance to assist educators and families in selecting texts for children. The development of such criteria is critical and timely as the number of digital reading and writing materials is increasing and young children have more access to them (e.g., Parish-Morris et al, 2013; Rideout et al., 2003; Unsworth, 2006). In conclusion, for the productive utilization of available print and digital books, researchers, educators and families should be aware of and understand the varied potential of different formats of books in parent-child shared reading and how they influence young children’s development and learning.
Bibliography


Appendix A
Letter of initial contact

A.1: Letter of initial contact for parents

My name is Ji Eun Kim. I am a PhD. student in Language and Literacy Education at UBC. I am interested in studying Parent (or caregiver)-child interactions during shared reading of print and digital books. Currently, I am looking for parents/caregivers with four to five years old children who are willing to participate in my study. Below is a description of my research. Please contact me at the following email address or telephone number if you are interested in participating. Thank you for your attention.

Sincerely,
Ji Eun Kim
(e-mail) jieun_kim2@yahoo.ca
(telephone) 604-431-5014/ (Cell) 604-345-5014

Research Description
Parent/caregiver-child interactions during shared book reading

The purpose of my study is to exam the interactions that occur when parents and children read or share different types of books. This study will involve an interview with a parent (around 30-40 minutes), as well as self-audio-recording of shared book reading sessions (around 20-60 minutes) and an optional after-session interview (around 30-40 minutes). Participating parents/caregivers will need to audio-record while sharing four storybooks in four different formats (a print book, a digital book with static illustrations, a digital book with animated illustrations, and a leapfrog book) with their child at their convenience and as they normally would at home. After recording the shared reading of the four books, each family will be provided with a $100 gift certificate as a small token of appreciation for their involvement in the study. Because digital and other forms of electronic books are relatively new but becoming increasingly...
available to families, it is very important for educators to understand how parents and children use these different formats of books. This project will contribute to a better understanding of the relationships between types of books and parent-child shared book reading that will provide invaluable insights for the development of early literacy education.

If you are willing to participate in and assist with the study, please contact me by telephone (604-431-5014/ Cell) 604-345-5014) or e-mail (jieun_kim2@yahoo.ca) to discuss further your participation in the study. If after the telephone call, you wish to participate in the study, I will provide a letter of consent for you to sign agreeing to your participation and your child’s participation in the study.
A.2: Letter of initial contact for organizations (preschools and daycares)

Letter of Initial Contact

My name is Ji Eun Kim. I am a PhD. student in Language and Literacy Education at UBC. I am interested in studying Parent (or caregiver) -child interactions during shared reading of print and digital books. Currently, I am looking for parents/caregivers with four to five years old children who are willing to participate in my study. If you are willing to distribute envelopes (that contain letters) to potential participants whose children attend your institution, please contact me at the following email address or telephone number. Thank you for your attention.

Sincerely,
Ji Eun Kim
(e-mail) jieun_kim2@yahoo.ca
(telephone) 604-431-5014

Research Description
Parent/caregiver-child interactions during shared book reading

The purpose of my study is to exam the interactions that occur when parents and children read or share different types of books. This study will involve an interview with a parent (around 30-40 minutes), as well as self-audio-recording of shared book reading sessions (around 20-60 minutes) and an optional after-session interview (around 30-40 minutes). Participating parents/caregivers will need to audio-record while sharing four storybooks in four different formats (a print book, a digital book with static illustrations, a digital book with animated illustrations, and a leapfrog book) with their child at their convenience and as they normally would at home. After recording the shared reading of the four books, each family will be provided with a $100 gift certificate as a small token of appreciation for their involvement in the study. Because digital and other forms of electronic books are relatively new but becoming increasingly available to families, it is very important for educators to understand how
parents and children use these different formats of books. This project will contribute to a better understanding of the relationships between types of books and parent-child shared book reading that will provide invaluable insights for the development of early literacy education.
Appendix B

Parent consent form

The University of British Columbia
Department of Language and Literacy Education
2125 Main Mall
Vancouver, B.C. V6T 1Z4 Canada
Phone: (604) 822-6853
http://www.lled.educ.ubc.ca

Consent Form

Parent/caregiver-child interactions during shared book reading

Principal Investigator:  Dr. Jim Anderson
Professor
Department of Language and Literacy Education
The University of British Columbia
604-822-6853

Co-Investigator:  Ji Eun Kim
Doctor of Philosophy
Language and Literacy Education
604-431-5014
(Completing current research to meet dissertation requirement for a PhD. student in Language and Literacy Education)

Purpose:
The purpose of this study is to investigate parent/caregiver-child interactions during shared reading of print and digital books at home. You and your child have been invited to participate in this study because we are interested in finding out how parents and children share or read different kinds of books or texts.

Study Procedures:

As part of her PhD. dissertation, Ji Eun Kim will interview you about your child’s home book reading and computer activities, about your children’s
experience with literacy and computer use, and about the kinds of books, computer software, and digital books you have at home. She will also ask you to audio-record while sharing four storybooks (a print book, a digital book with static illustrations, a digital book with animated illustrations, and a leapfrog book). She will provide the books for you and your child. After reading each book, you will need to complete a one page questionnaire about the shared reading sessions. After the shared book sessions, she may interview you again about the shared book reading.

The first interview will take approximately 30-40 minutes. You can choose not to answer any questions on topics that you prefer not to talk about during the interview. The interview will take place at a time and place of your convenience. It will be audio-recorded and transcribed for data analysis purposes.

Next, we will ask you to audio-record while sharing the four books with your child, as described above. For the audio-recording sessions, you will need to read the information we are providing about the audio-recording of the shared reading. We are asking you to complete the short questionnaire (5 questions) after the audio-recording. We are asking you to share the books as you normally would with your child and there is no need to worry about the amount of time you and your child spend with each book. We ask that you read the books with your child at your home as you usually do, at a time convenient to you and based on your child’s daily routine. Each shared book reading session will take around 5-15 minutes. Thus, with four books, the shared book reading sessions will take around 20-60 minutes. The audio-recorded sessions will be transcribed for data analysis purposes. Audio-recording is necessary to conduct this study as audio-recording provides a record of the detailed verbal and non-verbal interactions between you and your child, which is the focus of this study.

After the shared book reading sessions, we may ask you to participate in an after-session interview. We will ask four to eight parents/caregivers among twenty families to participate in this after-session interview in order to obtain further information about and to help us better understand the decisions you made during the shared reading sessions, such as why you explained about illustrations during shared book reading. This interview will take around 30-40 minutes. It will be audiotape recorded and transcribed for data analysis.
purposes.

The principle investigator, Dr. Jim Anderson, who is the research supervisor, and the co-investigator Ji Eun Kim, who is completing the study as part of her Ph. D. studies, will access data from audio-recording. In addition, one or two trained research assistants who will help with transcription and data analysis will have access to the data.

You and your child can withdraw participation from the study at any time. The total amount of time you will be requested to devote to this project will not exceed four hours (including the interviews and audio-recording sessions) within a one-month period.

Confidentiality:

You and your child’s identity, and the information collected through the interviews and the audio-recorded sessions, will be kept strictly confidential. All documents, cassettes and digital audio files will be identified only by code number, and will be kept in a locked filing cabinet. Only the principal investigator, the co-investigator and one or two trained research assistants will have access to the data. Files stored in the computer will be password-protected. You and your child’s names will be identified by pseudonyms in any reports of the completed study.

Contact for information about the study:

If you have any questions or require further information about this study, you may contact Dr. Jim Anderson at 604-822-6853 or Ji Eun Kim at 604-431-5014.

Contact for concerns about the rights of research subjects:

If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line at the UBC Office of Research Services at 604-822-8598.
Consent:

In no way will the information gathered in this study be used to harm or misrepresent you or your child. Should you consent to your and your children’s participation in this project, you have the right to refuse involvement or to withdraw at anytime. Such withdrawal or refusal to be involved will not jeopardize you and your children in any way. You do not waive any of your legal rights by signing this consent form.

Your signature indicates that you consent to participate in this study.


Signature: __________________________ Date: __________________________

I consent / I do not consent to my participation [adult’s name] in the study entitled “Primary caregiver – child shared reading: The affordances of print, digital, and hand-held electronic storybooks,” as described above.

Signature: __________________________ Date: __________________________

[I consent / I do not consent to my home as the setting for the study.

Signature: __________________________ Date: __________________________

[I consent / I do not consent to audio-recording during the study.

Signature: __________________________ Date: __________________________

____________________________________________________

Printed Name of the Subject, Parent, or Guardian signing above.
PLEASE KEEP THIS LETTER FOR YOUR FILES AND RETURN THE ATTACHED CONSENT FORM.

PLEASE TEAR AND RETURN THIS CONSENT FORM TO THE RESEARCHER WITH A PRE-ADDRESSED, STAMPED ENVELOPE.


Signature: ___________________________ Date: __________________________

I consent / I do not consent to my participation [adult’s name] in the study entitled: “Primary caregiver – child shared reading: The affordances of print, digital, and hand-held electronic storybooks,” as described above.

Signature: ___________________________ Date: __________________________

[I consent / I do not consent to my home as the setting for the study.]

Signature: ___________________________ Date: __________________________

[I consent / I do not consent to audio-recording during the study.]

Signature: ___________________________ Date: __________________________

I acknowledge that I received a copy of the letter and consent form for my own files.

Signature: ___________________________

____________________________________________________

Printed Name of the Subject, Parent, or Guardian signing above.
### Appendix C

**Interview with the parent/primary caregiver about children’s literacy and computer experience at home**

<table>
<thead>
<tr>
<th>-About shared book reading activities at home-</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you read books with your child?</td>
</tr>
<tr>
<td>2. What kinds of books do you usually read with your child?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>- About home computer activities-</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you do computer activities, and digital books or books on CD with your child?</td>
</tr>
<tr>
<td>2. What kinds of computer software/ programs, and digital books or books on CD do you usually use with your child?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>-Children’s experience with literacy and computers-</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Experience with literacy)</strong></td>
</tr>
<tr>
<td>1. What kinds of activities does your child usually do at home?</td>
</tr>
<tr>
<td>2. When did your child start to write, draw or read?</td>
</tr>
<tr>
<td>3. How often does your child write, draw or read?</td>
</tr>
<tr>
<td>4. What kinds of books does your child read or what kinds of books do you read to them?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>(Experience with a computer, and digital books or books on CD)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When did your child have his first experience with a computer?</td>
</tr>
<tr>
<td>Question</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2. How often does your child usually use a computer?</td>
</tr>
<tr>
<td>3. What kinds of things does your child usually do with a computer?</td>
</tr>
<tr>
<td>4. What kinds of computer software or programs, and digital books or books on CD does your child usually use?</td>
</tr>
<tr>
<td>5. How long does your child do computer activities per day or per week?</td>
</tr>
</tbody>
</table>

**Books and software at home**

(About children’s books at home)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What kinds of books do you usually buy for your child? What is the purpose of purchasing these books?</td>
<td></td>
</tr>
<tr>
<td>2. How often do you usually buy books for your child?</td>
<td></td>
</tr>
</tbody>
</table>

(About home computer software)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What kinds of computer software, and digital books or books on CD do you usually buy for your child? What is the purpose of purchasing this software?</td>
<td></td>
</tr>
<tr>
<td>2. How often do you usually buy computer software, and digital books or books on CD for your child?</td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

Book reading instructions

By Ji Eun Kim

Overall Instructions

- You will need to read 4 books (one print book, one digital book with page turning options and minimal animation of the illustrations, one animated digital book and one LeapFrog tag book).
- You will read the 4 books at times when it is convenient and as you do in your normal daily routine.
- I would like you to read the books as naturally as possible and as you do normally.
- You may read the books in any order that you and/or your child want to do so.
- You need to audio record your shared book reading sessions.
- You may read the books more than one time at one session (or in several sessions), however you and your child feel comfortable and how you prefer.
- At the end of sessions, you need to fill out the book reading questionnaire, entitled “Questionnaire for each parent-child shared book reading session”.

- You will read the following books for this study. *Bear Wants More* (the print book), *When Pigs Fly* (the digital book with page-turning options and minimal animation of the illustrations), *Bear Snores On* (the animated digital book) and *Click, Clack, Moo: Cows That Type* (the LeapFrog tag book).

Instructions for reading usage of each book

1) The print book

2) The digital book with page-turning options and minimal animation of the illustrations

   (1) Go online and visit the following webpage that I will e-mail to you.

   ➔ http://www.vpl.ca/electronic_databases/cat/C528

   (2) Scroll down and Select “TumbleBook Library”

   (3) Pop-up screen will be on.

   (4) Log on to the Vancouver Public Library with ID and password.

   (5) Click on “Continue to your selected electronic resource” message.

   (6) Select “storybooks” icon (on pink; on the left side of the screen)

   (7) Click to “T-W” on the horizontal alphabetic list

   (8) Stroll down until “When Pigs Fly” and Click on the picture or View Online button above the picture

   (9) When the book screen is on, you need to click “manual” on the right side of the screen, otherwise the story will automatically play as an animation format. (So it is important that you select “manual”.) (Please check manual button on the following picture for more information.)

   (10) The following icons that you can choose at your need before, during and/ or after the reading will be presented. (the order is from left to right; please see notes on the picture for more information)
3) **The animated book**
   
   (1) Go online and visit the following webpage that I will e-mail to you.
       ➔ [http://www.vpl.ca/electronic_databases/cat/C528](http://www.vpl.ca/electronic_databases/cat/C528)
   
   (2) Scroll down and Select “BookFlix”
   
   (3) Pop-up screen will be on.
   
   (4) Log on to the Vancouver Public Library with ID and password.
   
   (5) Click on “Continue to your selected electronic resource” message.
(6) Select “Animals and nature” (on the left side of the screen)
(7) Select “Bear Snores On” (on the right side)
(8) Select “Bear Snores On” with “Watch a story” (on the left side)
(9) “Read along” option below the book screen is for text caption feature (On for the text present/Off for the non-text viewing)
(10) The story will play and proceed automatically.
(11) On the bottom of the screen, the following icons that you can choose at your need before, during and/or after the reading will be presented. (the order is from left to right; please see notes on the picture for more information)
   “pause” icon (to pause the scene)
   “forward” icon (to move forward)
   “volume” icon (to adjust volume)
   “whole screen” icon (to enlarge the viewing)

4) LeapFrog book
   (1) Get the tag book and the tag pen
   (2) Turn on the tag pen (on switch placed on the right side of the pen.)
   (3) If needed, adjust volume (placed on the top of the pen)
   (4) Read the book with the pen, as you want to do.

*Please call me (604-345-5014; anytime before 10 pm) or e-mail me (jieunkim2@gamil.com), if you have further questions about the book reading.
*Thank you so much for your participation.
Appendix E

Questionnaire for each parent-child shared book reading session

Name:_______________________               Date:______________________________

The titles of the books that you read today (please write one or more books that you read):

___________________________________________________________________
___________________________________________________________________

1. Was this shared book session the same as that in your child’s normal daily routine?

   1-1. in terms of time of the day,   (Y/N)

       (if No, please give some details about why: ______________________________

       ___________________________________________________________________
       ___________________________________________________________________
       ___________________________________________________________________

   1-2. overall atmosphere of the session, (Y/N)

       (if No, please give some details about why: ______________________________

       ___________________________________________________________________
       ___________________________________________________________________
       ___________________________________________________________________

       When do you usually share a book with your child in you and your child’s daily routine?

       ___________________________________________________________________
       ___________________________________________________________________

   1-2. overall atmosphere of the session, (Y/N)

       (if No, please give some details about why: ______________________________

       ___________________________________________________________________
       ___________________________________________________________________
       ___________________________________________________________________

       Does your child usually like shared book reading activities at home?

       ___________________________________________________________________
2. How did the session go? (e.g., How many times did you read the book? Did you read the four books at the same time or at different times? If you did not read all four books, which book did you read? Or any other things you would like to talk about.)

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

3. Today are there any special or unexpected events before the shared book reading session? (such as visiting Zoo, bad events at daycare, or grandparents or relatives visiting your home)

_________________________________________________________________

3-1. If so, do you think they would have affected you and your child’s shared reading session? How?

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

4. How similar are the books you read today to those usually read with your child at home?

_________________________________________________________________

_________________________________________________________________

Note. These questions are modified from Mansell, Evans, and Hamilton-Hulak’s study (2005).
Appendix F
Semantic network

F.1 Textual and logical meanings

F.1.1 Semantic features [prefaced] and [nonprefaced]

A further, more delicate\textsuperscript{162} level of system for [progressive] messages is the option of the choices [prefaced] or [nonprefaced]. The feature [prefaced] is realized by projecting clauses. Projection occurs in a message that contains two clauses and one of the clauses represents “the linguistic content of another either as ideas in a mental clause of sensing or locutions in a verbal clause of saying” (Matthiessen et al., 2010, p. 165). The projecting clause is the representing clause, and the projected clause is the represented clause. Since these two clauses are closely tied logico-semantically, they are considered as one message in semantic network analysis. Semantic meanings of projecting clauses can be described by three simultaneous systems (Williams, 1994), including: “1) the projection of information as subjective or objective; 2) the form of activity through which the projecting is enacted; and 3) whether the prefacing element of the message recursively selects a further prefacing element” (p. 175). There are three simultaneous systems under [prefaced] (Figure F.1).

\textsuperscript{162} Here, delicate refers to informal meanings, such as micro or more detailed informal meanings.
In the first system, there are choices of [subjective] versus [objective]. The distinction between the two semantic features [subjective] and [objective] is the different orientation of prefacing, whether the representation of the projected clause contains a personal locution or a general fact made from a subjective or an objective perspective. In the feature [subjective], projecting clauses represent the projected clause from a person’s subjective perspective. In contrast, in the feature [objective], projecting clauses represent the projected clause from an objective perspective without involvement of a person’s perspective. Under the [subjective] there are two simultaneous systems: 1) one indicates “the point of view through which the rest of the message is prefaced,” and 2) one is “to whom the rest of the prefaced message is addressed” (Williams, 1994, p. 176; Figure F.2). Informally, the second system is only selected when the message selects a Verbal Process, such as say, tell, show, and so on. Both systems have further options of [self] versus [other] that indicate different references in the [prefaced] messages. The feature [self] indicates the speaker his/herself. It contains two options, [inclusive] or [exclusive]. The feature [other], referencing other than self, contains two sub-systems: [addressee] versus [third party]. The feature [addressee] has three options: [adult], [child], and [unknown].
[Other] has two options, [objective text figure] and [alternative entity]. The two options distinguish between “messages prefaced through a character, a digital icon and a digital device in an object text” or “some other figure materially external to the book reading contexts” (Williams, 1994, p. 176). Further details for each feature are described in the realization statements followed by Example F.1.

Figure F.2: Some choices for [subjective]

The Example F.1 shows prefaced clauses in the mother’s talk (lines 2, 5, 7, 10, 12, and 14). In those prefaced clauses, lines 2, 12, and 14 are selecting [subjective:self:exclusive] in the first system of [prefaced]. In line 5, [subjective:others:addresssee:child] was selected, and lines 7 and 10 selected [subjective:others:third party:object text figure].

---

163 The message in line 2 selected [subjective:self:exclusive]; as the message contained “I” (a personal subject) as subject, the message selected the semantic feature [subject]; and as “I” in the message was senser (a person who thought) and 1st person singular pronominal, the message further selected the semantic feature [self:exclusive].
Example F.1: Dyad 6 (mother and 5-year-old daughter), LB

1. C: What is that?
2. M: I think that’s reminding us
3. because we haven’t used it in a while.
4. So let’s turn the page. …
   A: Farmer Brown got out his own typewriter. Dear Cows and
   Hens: There will be no electric blankets. You are cows
   and hens. I demand milk and eggs. Sincerely, Farmer
   Brown.
5. M: Do you know what demand means?
6. C: Nope.
7. M: He said I demand milk and eggs.
8. That means you have to give me milk and eggs.
9. He is not giving them a choice.
10. He is saying this is what you have to do.
11. Sometimes, I do that when it’s time for bedtime, don’t I?
12. I say it’s time for bed now.
13. There is no choice.
14. I demand that you go to bed.

Realization statements (Williams, 1994, pp. 178-179\textsuperscript{164}) for the first system of the [prefaced] are:

\begin{itemize}
  \item \textbf{subjective} Either:
    \begin{enumerate}
    \item (1) clause: major
      Subject (S) in projecting clause
      preselects personal pronominal or kin
      term or term of endearment
    \item or:
      (2) clause: hypotactic: nonfinite
    \end{enumerate}
  \item \textbf{objective} S in projecting clause preselects it
\end{itemize}

\textsuperscript{164} The following citation and other citations from Williams’ (1994) paper are direct citations throughout the dissertation. If there are any additional aspects included, those are indicated in a note.
System (1)

**self: inclusive** S conflates with Sayer or Senser:
Either:
(1) S in projecting clause preselects 1st person plural pronominal
or
(2) S preselects let’s

**self: exclusive** S conflates with Sayer or Senser S in projecting clause preselects 1st person singular pronominal

**Other** S in projecting clause preselects reference to entity other than speaker

**Addressee** S in projecting clause preselects reference to an addressee

**third party** S in projecting clause preselects reference to entity other than interactants

**adult** S in projecting clause preselects reference to the participating parent

**unknown** wh/ conflates with S in projecting clause

**child** S in projecting clause preselects reference to the participating child

**third party** S in projecting clause preselects reference to an entity other than an interactant

**object text figure**
S in projecting clause preselects reference to a figure, a digital icon* and a digital device* in the object text

**alternative entity**
S in projecting clause preselects reference to some alternative entity other than those given in the preceding realization statements

System (2)

As for System (1), except that Receiver is substituted for Subject in each case;

and, additionally:

nil Projecting clause outclassifies Receiver

*Note.* * indicates references added on Williams’ (1994) realization statements.

The second system under [prefaced] has options of [experiential] versus [interpersonal]
(Figure F.3). The [experiential] option represents experiential meanings including [saying], realized by Verbal Process, and [idea], realized by Mental Process. The [interpersonal] option represents interpersonal meaning realized by interpersonal grammatical metaphor (Halliday, 1985, cited in Williams, 1994). Interpersonal grammatical metaphor is realized by Mental and Relational: attributive projecting clauses. The feature [interpersonal] has further options of [attitudinal] presenting an explicit attitudinal expression to the projected clause in the message versus [nonattitudinal]. The feature [nonattitudinal] contains [nonmodal], expressing “actual or apparent” status of the projected clause in the message, and [modal], “expressing a judgement about the probability, obligatoriness, certainty and so on, of the projected element of the message” (Williams, 1994, p. 180).

In the Example F.1, lines 5 and 14 select [experiential:idea]. A further feature [experiential:idea:knowledge] was selected in line 5, and [experiential:idea:reaction] was selected in line 14. Lines 7, 10, and 12 selected [experiential:saying:nil], as those messages do not contain recipients of the verbal process. Line 1 selected [interpersonal:nonattitudinal:modal].

Realization statements (Williams, 1994, p. 181) for the second system of [prefaced] are:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>experiential</td>
<td>Process in projecting clause preselects either Mental or Verbal in congruent form</td>
</tr>
<tr>
<td>saying</td>
<td>Process in projecting clause preselects Verbal</td>
</tr>
<tr>
<td>idea</td>
<td>Process in projecting clause preselects Mental</td>
</tr>
<tr>
<td>cognition</td>
<td>Process in projecting clause preselects Mental: cognition</td>
</tr>
<tr>
<td>perception</td>
<td>Process in projecting clause preselects Mental: perception</td>
</tr>
</tbody>
</table>
reaction  Process in projecting clause preselects
Mental: reaction

interpersonal  Process in projecting clause preselects
Mental: cognition or Relational: intensive:
attributive as grammatical metaphor

attitudinal  Attribute preselects Epithet/Head. Epithet
from class adjective: reactive, e.g. happy,
sad, puzzled, worried, etc.

nonattitudinal
nonmodal  Process preselects happen. Seem or look
modal  Either
(1) Attribute preselects grammatical
metaphor of modality
Or
(2) Process preselects Mental: cognition as
grammatical metaphor

The third system of [prefaced] comprises options of [stop] versus [go]. The selection of
[stop] is for messages with one prefacing element (Figure F.3). The selection of [go] describes
recursive occurrence of the prefacing elements in messages with more than one prefacing
element. In Example F.2, the mother’s talk in line 4 selects [go], and the full selection expression
of the message is

subjective:others:third party:object text figure:experiential:saying:nil:stop].\textsuperscript{165} Thus, in this
message, there are two projecting clauses containing one Mental Process and one Verbal Process.

\textsuperscript{165} The message in line 4 selected the following semantic features. The words in parentheses indicate which
semantic features were realized by the words: [prefaced:subjective:others:adressee:child: (you)
experiential:idea:knowledge: (think) go: (having an embedded clause, “he said …”) subjective:others:third
party:object text figure: (he) experiential:saying: (said) nil: (no identification of listener of the character’s talk)
stop (no more embedded clause; only the first embedded clause was analyzed, for efficiency reasons)]
Example F.2: Dyad 3 (mother and 4-year-old son), DB1

1. M: He said yes, but only if ... pigs do something
2. C: and pigs fly.
3. M: Why?
4. Why you think he said if pigs fly?
5. C: Um, I don’t know.

Figure F.3: Some choices for [prefaced] and [nonprefaced]¹⁶⁶

F.1.2 Semantic features [initiate] and [follow]

In addition to prefacing elements of messages, there are two further systems for textual and logical meanings. The options in these two systems are simultaneously selected with prefacing elements, semantic features [prefaced] or [nonprefaced]. The first system contains choices of [initiate] versus [follow] that provide positions of the messages in relation to other interactive text messages (Williams, 1994). The second system contains options of

¹⁶⁶ The complete systems for [prefaced:subjective] were presented in Figure F.2.
supplemented versus nonsupplemented that show logical relationships among messages.

Here are realization statements (Williams, 1994, p. 184) for these options:

- initiate: First primary clause in a stretch of interactive text
- follow: Sequent clause in a stretch of interactive text
- supplementing: Clause is expanded explicitly by a secondary clause, or implicitly by an adjacent clause
- nonsupplementing: Clause outclassifies expansion relation

In Example F.3, lines 2167 and 3 selected [initiate], as those messages are the first primary clause after the reading of texts in the print book. In terms of features with supplementing versus nonsupplementing, lines 2, 3, and 4 selected nonsupplementing, while line 1 selected supplementing, as it is the secondary clause. Thus, lines 2 and 4 selected [follow:nonsupplementing], line 1 selected [initiate:supplementing], and line 3 selected [initiate:nonsupplementing].

Example F.3: Dyad 11 (mother and 4-year-old daughter), PB

M: When springtime comes, in his warm winter den a bear wakes up very hungry and thin!
1. M: So if he’s hungry,
2. I think he wants some more food.

M: And he waddles outside and roots all around. He digs and he paws fresh shoots from the ground.
3. C: What does he like to eat?
4. M: Well, I think he likes to eat fresh fruit.

167 A message selected nonsupplementing realizes initiate (line2), as it is a primary clause. A message selected supplementing is a dependent clause, and does not realize initiate (line1).
The specification of the semantic feature [follow] developed by Hasan (1984) had to be slightly enhanced for the description of interactions in the LB and DB2 texts, which create unusual interactive conditions involving multiple modes of interactions. For the LB context, the feature [follow], originally used for verbal responses, was expanded to include the children’s non-verbal responses with the digital pen to the parents’ questions, as those non-verbal replies maintain the topic of the on-going interactions between the parents and the children. For the DB2 context, the feature [follow] was expanded to include the parent-child dyads’ interactions that were overlapped or interrupted by the narration of the video play, when the interactions were paired in the interpersonal meanings (replies and comments) and contained the same references. More details are provided after the realization statements of these two exceptional cases for the feature [follow].

The realization statements of these two exceptional cases for the semantic feature [follow] are:

Exceptional cases for the [follow]
in the LB context,

1) cohesive ties between a child’s non-verbal responses with the digital pen and the parents’ preceding utterance, and
2) maintenance of the topic of the talk (in parents’ comments and the children’s non-verbal responses to those comments)

in the DB2 context,

in the case of interruption of the parent-child talk by the narration of the video play,
1) adjacency pairing in the interpersonal meanings in talk as replies and comments, and
2) the same references in the experiential meanings of those messages.
As briefly mentioned earlier, some additional realizations for option [follow] were observed in the parent-child book reading of the LB and the DB2. In the LB context, parents often commented on the children’s non-verbal responses with the operation of the digital pen to the parents’ questions or game questions. In these interactions, the sequence of the verbal interactions is questioning-responding-feedback. These parents’ comments cohesively and interpersonally related to the child’s non-verbal responses with the digital pen, and the topics of the talk (in parents’ comments and the children’s non-verbal responses) were maintained. Thus, these parents’ comments on the children’s non-verbal responses were considered as [follow]. However, when parents gave information on the child’s operation of the pen that was not in response to the questions, but consisted of a random selection from the illustrations or texts on the page with the digital pen, parents’ giving of information was then considered as [initiate]. In Example F.4, the mother commented in response to the child’s responses to the mother’s question (line 2) and to the game question (line 5) in lines 3 and 6. These comments form part of the question, response and feedback sequence, and were considered as [follow].

Example F.4: Dyad 11 (mother and 4-year-old daughter), LB

A: Touch where do you think the farmer brown is going.
1. M: Where do you think the farmer brown is going?
2. C: (pointing)
3. M: That’s right!
   A: The barn. Right.
4. M: Awesome!
   A: Let’s play. Touch someone who can’t believe his ears.
5. C: (pointing)
6. M: That’s right!

In the DB2 context, parents and children commented or replied to each other while the
video was playing. Those replies and comments were interrupted by the narration of the video play. However, those messages were considered as [follow] to the verbal exchange, as the interpersonal meanings of those replies and comments were paired with the speakers’ own talk or the previous speakers’ talk, and the same references in the experiential meanings of those messages and the previous speakers’ messages were continued. For instance, the following conversation, (Example F.5) between a mother and her 5-year-old daughter shows that the mother’s response to her own question (line 1) was interrupted by the narration in the DB2. In terms of interpersonal meanings, the mother’s message in line 2 was paired with her message in line 1 as a demand for information (questioning) and giving information (answering) pair. Both her messages in lines 1 and 2 referenced the expression in the storybook “tunnel up through the floor.” Based on these additional realizations, the mother’s message in line 2 was realized as [follow], even though the message was interrupted by the narration.

**Example F.5: Dyad 6 (mother and 5-year-old daughter), DB2**

A: A gopher and a mole tunnel up through the floor.
1. M: They tunnel up through the floor?
   A: Then a wren and a raven flutter in through the door!
2. M: That means they’re digging holes in the ground
3. and they made a tunnel.

Under the feature [follow], there are two options: [discontinue topic] versus [maintain topic] (Figure F.4). Even though further selection of the feature [discontinue topic] was not utilized in this study, a sub-system of [maintain topic] was employed to obtain a fuller description of parent-child interaction pairs. The feature [maintain topic] has two simultaneous sub-systems: 1) [continue] versus [respond], and 2) [repetition] versus [not-repetition]. In the
first system, [continue] is realized by messages in which a speaker continues his/her talk in the same turn, while [respond] is realized by messages uttered by another speaker in the following turn (Williams, 1994). In the second system, repetition of the previous message is considered [repetition], while a message without repetition of the previous message is considered [not-repetition]. The second system applies to both [continue] and [respond] in the first system.

Figure F.4: Some choices for [follow]

The following example shows messages that selected [continue] and [respond]. This conversation was between a mother and her 4-year-old daughter during shared reading of the LB. The mother’s reply in line 3 to her child’s question in line 2 selected the feature [follow:maintain topic:respond:not-repetition]. The mother’s message followed the child’s talk, was announced in the new turn, and did not repeat the child’s talk. The mother’s talk in line 4 selected the feature [follow:maintain topic:continue:not-repetition] as she continued her talk in the same turn, and did not repeat her previous talk.
Example F.6: Dyad 11 (mother and 4-year-old daughter), LB

A: Then, he couldn’t believe his eyes. Dear Farmer Brown, The barn is very cold at night. We’d like some electric blankets. Sincerely, The Cows.

1. M: Oh my heavens!
2. C: What does sincerely cows mean?
3. M: Sincerely means that the cows are very sincere about their request.
4. They are very honest about their request.

F.2 Choices in interpersonal meanings

From the range of interpersonal meanings, “demand and give information” and “demand and give goods and services” were analyzed in depth in this study since those meaning exchanges are the key aspects in parent-child shared reading interactions, as indicated by previous research (e.g., Williams, 1994). The following section will present detailed descriptions of choices in demanding information, demanding goods and services, and giving information.

F.2.1 Some defined distinctions between [demand;information] and [demand;goods and services]

Besides those realizations derived from Hasan’s (1983) original semantic networks and William’s (1994) modified semantic networks for parent-child shared reading, further distinctions between [demand;information] and [demand;goods and services] were developed for the analysis of the parent-child interactions in this study. In contrast to shared reading of texts with written words and illustrations only, in this study there were some unusual contextual aspects displayed during shared book reading by parents and young children. Those aspects were particularly prevalent in the LB context and in the two digital book contexts, in which parent-
child dyads played games and/or operated digital devices, besides reading the text in the books (further details in Section 6.6). During those additional activities in the LB, the DB1, and the DB2 contexts, parent-child dyads appeared to use some messages selecting [demand/give;information] and [demand/give;goods and services]. The messages selecting those two semantic features appeared to be similar in terms of their orthographic/phonological\textsuperscript{168} shapes. For instance, the question “Do you want to read it?” can function as [demand;information] if the question is asked to find out a child’s preference, while it can function as [demand/give;goods and services] if it is asked to direct a child to operate digital page-turning icons or click a reading icon (an example given below). In order to distinguish between the two functions systemically, the two realization criteria were developed.

As meanings of messages are constructed and specified by subsequent discourses within activities, the decisions to select the feature [demand/give;goods and services] rather than [demand/give;information] were made with the two channels, verbal and non-verbal actions, based on the following realization aspects. First, the speaker’s talk requests a receiver’s response with verbal and non-verbal actions. Second, the request is also warranted by the receiver’s response presented either immediately or a few verbal turns after the request is uttered. The meanings in the receiver’s response represent the receiver’s understanding of the meaning in the speaker’s request. Understanding the meaning of the talk based on these sequential speech processes is consistent with Bakhtin’s notion of language as process and SFL’s perspective on language in use. The following examples show how the messages were considered as

\textsuperscript{168} The terms “orthographic/phonological shapes” refers to words (orthographic) and sounds (phonological) of messages (Williams, 1994, p. 155). The same orthographic/phonological shapes in the two messages mean that they contain the same words and sounds. Williams’ (1994) example “that’s it,” involved two messages containing the same words and sounds, but functioning differently based on their contexts.
In Example F.7, the child was exploring sounds embedded in illustrations by randomly clicking illustrations on the page. The mother stopped the child’s random clicking of illustrations (line 1). Then, the mother asked the child if she wanted to read the book (line 2). The mother’s talk in line 2 would have appeared to be asking about the child’s preference, had there not been subsequent verbal interactions. However, the function of the mother’s talk in line 2 did not appear to ask a question, but to demand the child to read the text by clicking the reading icon on the page. This aspect was supported by her utterance “read” selecting an imperative direction (line 4). Together with those contextual aspects and the cohesive relation with subsequent messages, the mother’s talk in line 2 was considered as the message selecting the feature [demand;goods and services], since her message signaled for the child to operate the pen to read the text rather than for her to click randomly, and the mother’s talk in line 4 confirmed the intention of her talk in line 2 selecting the feature [demand;goods and services].

Example F.7: Dyad 6 (mother and 5-year-old daughter), LB

A: Moo.
1. M: No.
2. Do you want to read
3. C: That’s not the one.
4. M: Read

F.2.2 Choices in demanding information

The feature [demand;information] is typically selected when the parents and the children ask questions about stories, illustrations, words, and so on. The feature [demand;information] in interpersonal meanings is co-selected with semantic features in
textual and logical meanings, either [initiate] or [follow]. Messages that co-select
[demand;information] and [follow:maintain topic] are considered to be one of the significant
aspects in parent-child interactions, as these messages contribute to the modification of “the
discourse of a previous message to which they are cohesively tied” (Williams, 1994, p. 214).
Informally, these messages are considered as follow-up questions in parent-child verbal
interactions. Given the importance of these messages, there is an extended system for these
messages that specifies the relation between the current message selected
[demand;information] and [follow:maintain topic], and the previous message. The system
contains choices of [confront], [facilitate], or [develop] (Figure F.5). The feature [confront]
contains a negative response to a previous speaker’s message “either by directly challenging the
speaker’s authority or by returning the speech role” (Williams, 1994, p. 214). Messages with the
feature [facilitate] are a positive response to clarify meaning in meaning exchanges. Lastly,
messages that select the feature [develop] demand an interlocutor to develop and expand on
information he/she previously provided by offering further information.

Figure F.5: Some choices in the feature [demand;information]
Example F.8 shows a mother and her 5-year-old daughter’s sharing of the print book.

After reading of the text, the child initiated an interaction with the semantic feature [demand;information] (line 1). The mothers’ questions in lines 3 and 9 co-selected the semantic features [demand;information] and [follow:maintain topic:develop]. These questions were provided after her reply to the child’s questions, and expanded their discussion about bears sleeping. Similar to the mother’s questions, the child asked questions that co-selected the features [demand;information] and [follow:maintain topic:develop] (lines 7 and 14) after the mother’s giving of information on the topic.

Example F.8: Dyad 6 (mother and 5-year-old daughter), PB

M: He waddles outside and roots all around. He digs and he paws fresh shoots from the ground. He nibbles on his lawn till the last blade is gone. But the bear wants more!
1. C: More what?
3. Do you know he was sleeping all winter?
4. When he woke up in the spring time,
5. he is so so hungry.
6. He wants more food.
7. C: Why does he sleep all winter?
9. It’s kind of interesting, isn’t it?
10. C: mm, hmm.
11. M: They sleep all winter long
12. when it’s cold outside,
13. they want to hide somewhere really warm.
14. C: Why?
The realization of features under [follow:maintain topic:develop] (Williams, 1994, pp. 214-216) are:

**Confront**  
Preselect clause indicative: interrogative  
Subject preselects “you” as Thing, where “you” refers to previous speaker  
Preselect Process: verbal

**Facilitate**  
Preselect indicative: interrogative: non-polar  
Wh/ item queries phoric reference or referential signification of a constituent of the clause forming the first pair part of the adjacency pair where the message under focus is the second pair part.

**Develop**  
Either: (1) Preselect indicative declarative: tagged or  
(2) Preselect indicative: interrogative  
Preselect componential cohesive relations between the two pair parts of the adjacency pair.

As the diagram shows, after the extended system for the feature [demand;information] there are detailed systems of the feature [demand;information] (Figure F.6). The first level of choices in the feature [demand;information] are the feature [confirm] and the feature [apprize]. Messages that select the feature [demand;information:confirm] are commonly recognized in structure as polar interrogatives (or yes/no interrogatives). Under the feature [confirm] there are two sub-systems: the feature [verify] with choices of [reassure] and [probe], and the feature [enquire] with choices of [ask] and [check]. Both the feature [ask] and the feature [check] have further choices of [assumptive] and [non-assumptive] (Figure F.6).
The other option under the feature \textbf{[demand;information]} paired with the feature \textbf{[confirm]} is the feature \textbf{[apprize]} (Figure F.7). Messages selecting the feature \textbf{[demand:information:apprize]} are informally identified by their structure as wh-interrogatives. From the feature \textbf{[apprize]}, there are semantic choices of either \textbf{[precise]} or \textbf{[tentative]}. Only the feature \textbf{[precise]} has further choices of \textbf{[explain]} versus \textbf{[specify]}. The feature \textbf{[specify]} has further choices of \textbf{[circumstance]}, \textbf{[event]}, or \textbf{[actant]}. The feature \textbf{[actant]} has two options: \textbf{[specific]} and \textbf{[non-specific]} (Figure F.7).
The following table shows the realizations and examples of each feature in [demand;information].

Table F.1: The realizations and examples of each feature in [demand;information]

<table>
<thead>
<tr>
<th>Feature</th>
<th>Realization</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>[confirm:verify:reassure]</td>
<td>[declarative: tagged: reversed] S(^\text{Fneg}) ... Fpos(^\text{S}) S(^\text{Fpos}) ... Fneg(^\text{S})</td>
<td>M: That’s what we will have to discover, isn’t it?</td>
</tr>
<tr>
<td>[confirm:verify:probe]</td>
<td>[declarative: tagged: constant] S(^\text{Fneg}) ... Fneg(^\text{S}) S(^\text{Fpos}) ... Fpos(^\text{S})</td>
<td>M: (laugh) Having a little dance, are you?</td>
</tr>
<tr>
<td>[confirm:enquire:ask:assumptive]</td>
<td>[polarity negative] Fneg(^\text{S})^(^\text{Pred}) ...</td>
<td>M: Isn’t that nice?</td>
</tr>
<tr>
<td>[confirm:enquire:ask:non-assumptive]</td>
<td>[polarity positive] Fpos(^\text{S})^(^\text{Pred}) ...</td>
<td>M: Have you heard of cows that type?</td>
</tr>
<tr>
<td>[confirm:enquire:check:assumptive]</td>
<td>[polarity negative] S(^\text{Fpos})^(^\text{Pred}) ... /Tone2</td>
<td>M: Cows don’t ride bikes?</td>
</tr>
<tr>
<td>[confirm:enquire:check:non-assumptive]</td>
<td>[polarity positive] S(^\text{Fpos})^(^\text{Pred}) ... /Tone2</td>
<td>C: But there’s one flying right now?</td>
</tr>
<tr>
<td>[apprize:precise:explain]</td>
<td>major.indic:interrog:nonpolar wh- S F P : wh- conflated with Adjunct and Circumstance of cause why(^\text{F})^(^\text{S})^(^\text{Pred})</td>
<td>=C: Why are they special books?</td>
</tr>
<tr>
<td>[apprize:precise:specify:circumstance]</td>
<td>wh- conflates with Adj wh-\text{Ad} F P</td>
<td>C: Where is raven?</td>
</tr>
<tr>
<td>[apprize:precise:specify:event]</td>
<td>wh- conflates with C C preselects what P preselects lex verb do or happen what (^\text{F})^(^\text{S})^(^\text{do})</td>
<td>M: What’s gonna happen next?</td>
</tr>
<tr>
<td>[apprize:precise:specify:actant:specific]</td>
<td>wh- conflates with Deictic (1) what/which.Thing^(^\text{F})^(^\text{S})^(^\text{P}) (2) what/which..Thing (^\text{F})^(^\text{P})</td>
<td>M: Which button do you press?</td>
</tr>
<tr>
<td>[apprize:precise:specify:actant:nonspecific]</td>
<td>wh- conflates as in ‘actant’ S or C preselect simple nom group Thing wh- conflates with Thing (1)what(^\text{F})^(^\text{S})^(^\text{P}); (2) who or what (^\text{F})^(^\text{P})</td>
<td>C: What does he like to eat?</td>
</tr>
</tbody>
</table>

*Note.* Modified table, based on Hasan’s (2009, pp. 715-716) table. Examples are from data in this study.
F.2.3 Demand/give goods and services

The feature [demand/give;goods and services] is another set of meanings that was typically selected in the parent-child shared reading in this study. Even though Hasan (1992/2009) distinguished between the semantic features [demand;goods and services] and [give;goods and services], those two semantic features were treated together since the separation of the features was not necessary for the purposes of the current study (to examine semantic variations in parental semiotic mediation during parent-child shared book reading of different types of text). The feature [demand/give;goods and services] has two simultaneous sub-systems: the first system with choices of either [suggestive] or [nonsuggestive], and the second system with choices of either [nonexhortative] or [exhortative]. Originally, Hasan (2009) developed more detailed systems and features under [demand/give;goods and services]. In this study only the systems and features noted above were analyzed as they match the purposes of the study and can effectively capture variations in the parent-child interactions. Realization statements and examples of each feature under [demand/give;goods and services] are presented in the following diagram and table (Figure F.8, Table F.2).

Figure F.8: Further features for [demand/give;goods and services]
Table F.2: Realizations and examples of each feature in [demand/give goods and services]

<table>
<thead>
<tr>
<th>Feature</th>
<th>Realization</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>[suggestive]</td>
<td>if nonexhortative, subject preselects feature [1st person; plural] = item (we);</td>
<td>Select [nonexhortative], M: We’ve got to keep playing.</td>
</tr>
<tr>
<td></td>
<td>if exhortative, subject preselects feature [1st person; plural] = item (let’s) and preselects clause features [major:inclusive]</td>
<td>Select [exhortative], F: Let’s keep listening.</td>
</tr>
<tr>
<td>[nonsuggestive]</td>
<td>second person singular or it as a subject and non-referential and attribute preselect time as Head</td>
<td>Select [nonexhortative] M: You wanna try?</td>
</tr>
<tr>
<td>[nonexhortative]</td>
<td>preselect clause features [major: indicative] insert Mood; expand Mood= S’F verbal group preselects features finite and indicative</td>
<td>M: We’ve got to keep playing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M: You wanna try?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M: Use this pen.</td>
</tr>
</tbody>
</table>


F.2.4 Choices in giving information

In semantic network analysis, parents’ comments as well as answering questions are recognized as the feature [give;information]. The realization statement of the [give;information] is: Declaratives, tone (except 2) with Subject^Finite^Predicator “realized by [this] in the system of MOOD,\textsuperscript{169} though not in a one-to-one relation … there is regularity of realizational relation between semantic options and lexicogrammar” (Hasan, 1996, p. 121). Some messages that select the feature [give;information] simultaneously with the feature [initiate] or

\textsuperscript{169} The definition of MOOD is provided in the endnotes in Chapter 3. Declaratives consist of Subject (noun group), Finite (tense or other auxiliaries), and Predicator (verbal group after auxiliaries), selected in that order, and are one type in the MOOD (Butt et al., 2000).
sometimes the feature [continue] just provide comments on some aspects and do not have further options (Figure F.9). However, in some cases in which a speaker provides information on the previous question or comment, there are further choices of [give;information], namely [rejoin] and [reply]. The feature [rejoin] describes acts of giving information in response to information given immediately before. The feature [reply] is a receiver’s response to the previous [demand;information]. The feature [reply] has two further simultaneous systems. The first system under the feature [reply] has two choices of [confirm] and [apprize] (further explanations about each are added in the diagram). The second system under the feature [reply] has two choices: [answer] or [disclaim]. Messages select the feature [answer] to provide responses to questions, while messages selecting the feature [disclaim] do not address the point of the question.

Under the feature [answer] there are two simultaneous systems. In the first system there are three choices: [minimal], [nonminimal], and [answer with a pen]. Messages selecting the feature [answer: minimal] contain only one word as incomplete messages, while messages selecting the feature [answer:nonminimal] contain full sentence structures including Subject and Predicator. The feature [answer:answer with a pen] was added in this study in order to more fully capture parent-child talk around activities other than reading the texts in the LB context, such as playing games and exploring the sound of pictorial objects on a page (also explained in Section 6.9.3). While reading texts or playing games, the children’s responses to the parents’ questions or game questions from the book were verbal, non-verbal (with the digital

---

170 Subject consists of a noun group, and often an actor, an object or other grammatical item, such as what and it. Predicator consists of a verb group, and presents a process done by Subject. For instance, the sentence “I jumped” has the Subject “I” and the Predicator “jumped.”
pen), or both verbal and non-verbal. As the children’s non-verbal responses maintain the topic of their talk and provide answers to questions from parents or games, they semantically function as [follow:maintain topic: … :give;information:reply:answer].

In the second system of the [answer], [answer] is described in terms of whether the messages are either [adequate] or [inadequate]. Here, the adequateness of the [answer] is not based on “either factuality or quantity of information provided” (Hasan, 1989/2009, p. 214), but on the relevance of the information between the message provided in [answer] and the query point of the question asked. Messages selecting [answer:adequate] provide responses of “yes” or “no” to yes/no questions, or specified information to each wh- question (what, why, how, where, which, when, and who).

Figure F.9: Some choices in the feature [give;information]
F.3 Choices in experiential meanings

Besides interpersonal meanings, experiential meanings were examined in this study. These experiential meanings enable us to obtain understanding about various aspects in messages, such as who is an agent, what they are talking about, what circumstances exist, and so on, following Williams’ (1994) semantic network.

The entry point of the experiential meanings is a choice between doing and being. Informally, meanings “to do with events and actions” are considered as the semantic feature doing, while meanings “to do with relations between entities” are considered as the semantic feature being (Williams, 1994, p. 201). Messages with doing are realized by preselecting a Process of either the Material, Mental, Verbal, or Behavioral type. Messages selecting the feature being are realized by preselecting a Process of either the Relational or Existential type (Williams, 1994, pp. 201-202).

F.3.1 The feature [doing]

Under the feature [doing], there is a mandatory feature [effecting]. This feature provides descriptions of the element of a message “which is centrally implicated in the bringing into effect of the activity” (Williams, 1994, p. 203). A message with simultaneous selection of the feature [effecting] and [doing] has further choices: 1) [material], and 2) a system of either [mental], [verbal], or [behavioral] with simultaneous choices of either [purview] or [no purview]. The semantic feature [doing:material] represents actions, and is realized by selecting of Material
Processes in the lexicogrammar stratum. Material Processes are realized by verbs encoding “experiences in the external, material world … to do with doing and happening” (Butt et al., 2000, p. 51). Messages selecting the feature [doing:material] have further sub-choices of [effector] versus [no effector]. The feature [effector] portrays an element of a message that has a direct effect on the referential signification of the [effecting]. Informally, as actions presented with [material] Processes, effectors are “initiators of actions” and goals are “the objects of the actions” (Williams, 1994, p. 282). For instance, a mother’s utterance “you click the button” contains an [effector] “you” that initiates action, and an [effecting] “you” that is the entity that performs the action that possibly affects someone or something, or shows its effect. In messages selecting the semantic feature [doing:effecting:material:no effector], [effecting] is “an entity through which the action is brought into effect” (Williams, 1994, p. 204), but there are no directly responsible people or things for the effect (i.e., no effector). For example, in the utterance “The card had gone,” there is no effector who initiated, but there is an entity, “the card,” through which the effect of the action, “gone,” possibly happened (Williams, 1994, p. 204).

Messages selecting the features [doing:mental], [doing:verbal] or [doing:behavioral] have simultaneous choices of either [purview] versus [no purview]. The semantic feature [doing:mental] is realized by Mental Processes in lexicogrammar, and verbs “encoding

---

171 Messages containing material processes represent actions, as “material clauses construe doings (actions-doing to/with a participant or creating one)” (Matthiessen et al., 2010, p. 135). Some examples of material process are “hit,” “make” and “give”.

172 Mental clauses that contain mental processes “construe processes of consciousness – sensings of various kinds, involving a conscious Senser and usually a Phenomenon that enters into the senser’s consciousness” (Matthiessen et al., 2010, p.137). Mental processes represent one’s thoughts, senses, knowledge, etc. Some examples of mental process are “know,” “remember,” and “think.”
experiences in the inner world of consciousness … to do with thinking, wanting, perceiving and emoting” (Butt et al., 2000, p. 51). Moreover, the semantic feature [doing:verbal] contains verbs realizing Verbal Processes in lexicogrammar that are “encoding the experiences of bringing the inner world outside by speaking … to do with saying and asking” (Butt et al., 2000, p. 51). Lastly, the semantic feature [doing:behavioral] is realized by Behavioral Processes in lexicogrammar with verbs “encoding physiological or psychological behaviour” (Butt et al, 2000, p. 51). Choices of [purview] versus [no purview] enable us to distinguish between messages containing “a metasymbolic entity which is the domain of the event described through the simultaneously selected option” and messages containing no such reference (Williams, 1994, p. 204). Realization statements and examples of each feature under [doing] are presented in the following diagram and table (Figure F.10, Table F.3).

173 “Behavioral clauses cover (1) behavior that is biological in nature .... (2) behavior that is social in nature ...., and (3) behavior that is semiotic in nature … ” (Matthiessen et al., 2010, p. 65). Some examples are “sleep” (biological), “hug” (social), and “chat” (semiotic).
Table F.3: The realizations and examples of each feature in [doing]

<table>
<thead>
<tr>
<th>Feature</th>
<th>Realization statement</th>
<th>Example</th>
</tr>
</thead>
</table>
| [effecting]   | Preselect either (1) Goal, or (2) Actor in middle clauses, or (3) Behaver, or (4) Sayer or (5) Senser | (1) M: Can you read those too?  
(2) M: What’s coming?  
(3) He is snoring, isn’t he?  
(4) Who is saying that?  
(5) You hear him. |
| [material]    | Preselect Material Process                                                            | M: Can you read those too?                                               |
| [verbal]      | Preselect Verbal Process                                                              | C: Who’s saying that?                                                    |
| [behavioral]  | Preselect Behavioral Process                                                          | M: We can look it up.                                                    |
| [effector]    | Preselect clause effective Preselect Actor                                            | M: Can you read those too?                                               |
| [no effector] | Preselect clause middle                                                               | M: What’s coming?                                                        |
| [purview]     | Preselect either (1) Phenomenon, or (2) Verbiage, or (3) Range, or (4) Circumstance of matter | (1) M: You hear him.  
(2) C: Who’s saying that?  
(3) M: We can look it up.  
(4) M: bears sleep through the whole winter |
| [no purview]  | Clause outclassifies (1) Phenomenon, and (2) Verbiage, and (3) Range, and (4) Circumstance of matter | M: He is snoring, isn’t he?                                               |

Note. Features and realization statements are originally from Williams’ study (1994, p. 206). Examples are from parent-child interactions during shared reading in this study.

In addition to lexicogrammatical realizations of each feature under the feature [doing], there are working categories of referential signification of the features [effecting] and [effector] (Williams, 1994). Referential signification of the features [effecting] and [effector] enables us to show which referential elements are included in parent-child talk (e.g., characters, illustrations, metalinguistic items), who operates digital devices, who is asked, what is asked, and so on. Table F.4 presents categories of the referential significations of the features [effecting] and [effector].
Table F.4: Categories of referential significations of the options [effecting], [effector] or [purview]

<table>
<thead>
<tr>
<th>Referential significations</th>
<th>Definitions of the referential significations</th>
</tr>
</thead>
<tbody>
<tr>
<td>child</td>
<td>the participating child</td>
</tr>
<tr>
<td>parent</td>
<td>the participating parent</td>
</tr>
<tr>
<td>we</td>
<td>the participating parent-child dyad</td>
</tr>
<tr>
<td>character</td>
<td>a character in an object-text, including personified characters</td>
</tr>
<tr>
<td>non-character</td>
<td>an element which forms some aspect of the content of an object-text other than a character element</td>
</tr>
<tr>
<td>object-text title *</td>
<td>the title of a text which is the object of discussion, whether being read during the session or not</td>
</tr>
<tr>
<td>object-text itself *</td>
<td>a text which is the object of discussion, whether being read during the session or not; the text can be “written presented text” or “orally presented text” (e.g., game question)</td>
</tr>
<tr>
<td>extended text reference *</td>
<td>either anaphoric or cataphoric text reference as defined by Halliday and Hasan (1976, pp. 66-70; as cited in Williams [1994, p. 207])</td>
</tr>
<tr>
<td>metalinguistic items *</td>
<td>an element referring to language itself at any stratum</td>
</tr>
<tr>
<td>exophoric reference to a feature * / illustration</td>
<td>reference to a feature of the visual semiotic of an object-text</td>
</tr>
<tr>
<td>digital icon</td>
<td>digital icons (icons on the LB, the DB1 and the DB2)</td>
</tr>
<tr>
<td>physical object</td>
<td>physical objects that are needed for the book reading process (e.g., page, pen, mouse to click, and screen)</td>
</tr>
<tr>
<td>sound</td>
<td>sound provided by the digital pen (LB) or the other digital books; except reading of text</td>
</tr>
<tr>
<td>game</td>
<td>games in the LB</td>
</tr>
<tr>
<td>reader</td>
<td>a narration reading of the written texts in the LB DB1 and DB2 (no sounds); parents read the written texts in the PB</td>
</tr>
<tr>
<td>video play</td>
<td>automatic video play of the story in the DB2</td>
</tr>
<tr>
<td>story</td>
<td>story includes story content as a whole (e.g., I do not like this story)</td>
</tr>
<tr>
<td>book, page, and story</td>
<td>reading of book, page, and story; here, reading is a bigger concept (including whole interactions in shared reading activities) than reading actual texts in the books</td>
</tr>
<tr>
<td>authors and producers</td>
<td>parent-child talk about authors and producers of print and digital books</td>
</tr>
<tr>
<td>references external to the story (external references)</td>
<td>references from outside the story but related to aspects of the content of the story or graphically related to a character on the object-text</td>
</tr>
<tr>
<td>other</td>
<td>the residual category for any reference item not included above</td>
</tr>
<tr>
<td>unknown *</td>
<td>“Wh” item functioning either as Head or Deictic in a nominal group</td>
</tr>
</tbody>
</table>

*Note.* Categories marked with * are originally from Williams’ study (1994, p. 207).
The categories in Table F.4 were also used for the referential signification of the feature \textit{purview}, as similar categories of referential significations exist in the features \textit{effecting}, \textit{effector}, and \textit{purview}. The Figure F.10 presents semantic systems and choices in experiential meaning.

\textbf{Figure F.10: Semantic systems and choices in experiential meaning}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{semantic_systems.png}
\end{figure}

\textbf{F.3.2 The feature \textit{being}}

As stated earlier, the realization statement for the feature \textit{being} is preselecting of the process as either a Relational or Existential Process at the lexicogrammatical stratum (Williams,
The feature \textbf{[being]} consists of the mandatory feature \textbf{[entity]} and a simultaneous choice of three sub-systems, either \textbf{[existing]}, \textbf{[classifying]} or \textbf{[describing]}. Williams (1994) stated that “The feature \textbf{[entity]} is the element of the message whose existence is asserted, or which is classified or described by other aspects of the message” (p. 208). Obtaining information about referential significations of the feature \textbf{[entity]} is essential for deeper understandings of configurations of meanings in the messages selecting the feature \textbf{[being]}. The same categories of referential significations of the feature \textbf{[effecting]} in Table F.5 are used for the referential significations of the feature \textbf{[entity]}.

In terms of the three simultaneous sub-systems of the feature \textbf{[being]}, firstly, under the feature \textbf{[being:existing]}, there are two different types of entities whose existence is asserted in the messages selected \textbf{[existing]}, a \textbf{[thing]} or a \textbf{[circumstance]} (Figure F.10). The semantic feature \textbf{[being:existing:thing]} asserts the existence of the thing as entity, and the semantic feature \textbf{[being:existing:circumstance]} asserts the existence of the circumstances as entity. Secondly, the feature \textbf{[classifying]} enables the distinction of an entity by its class membership, with further descriptive systems of \textbf{[equating]} versus \textbf{[grouping]}. Messages selecting the feature \textbf{[equating]} identify an element \textbf{[entity]} with another element of the messages, while messages selecting the feature \textbf{[grouping]} represent a general category or class of an element \textbf{[entity]} (Williams, 1994). Lastly, messages selecting the feature \textbf{[describing]} assert general descriptive aspects of an entity that distinguish the entity with further choices of \textbf{[relation]} or \textbf{[state]}. The feature \textbf{[relation]} has two options of \textbf{[pertinence]} or \textbf{[location]}. According to Williams (1994):

For \textbf{[pertinence]} the description involves an indication of what an entity is ‘about’, or its status as a possession. The selection of \textbf{[location]} indicates the spatial or temporal
Position of an entity, including position in a graphic image in an object-text. (p. 211)

Messages selecting the feature [state] provide descriptions about a quality of an entity, such as good or bad, and hungry or full.

Table F.5: The realizations and examples of each feature in [being]

<table>
<thead>
<tr>
<th>Feature</th>
<th>Realization statement</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>[entity]</td>
<td>Either: 1) Preselect Carrier, or (2) Preselect Token, or (3) Preselect Existent.</td>
<td></td>
</tr>
<tr>
<td>[existing:thing]</td>
<td>Preselect Process: existential</td>
<td>M: There is a bit more.</td>
</tr>
<tr>
<td>[classifying:grouping]</td>
<td>Process: relational: attributive Preselect Attribute Either: (1) nominal group, Thing = Head, nominal group outclassifies Epithet or (2) Attribute = Circumstance of Cause: purpose</td>
<td>M: He is a heavy sleeper, isn’t he?</td>
</tr>
</tbody>
</table>

Note. Features and realization statements are originally from Williams’ study (1994, pp. 211-212). Examples are from parent-child interactions during shared reading in this study.
F.4  Punctuative messages

As described earlier, the feature [punctuative] is a counter choice to [progressive]. These two options form a system at the entry point of the whole semantic network of the messages (explained in Section 5.6.5). In messages that select the feature [punctuative], only meanings of a ritualized or highly routinized type are introduced. Messages that are [punctuative] are typically minor clauses without a Predicator. Some examples of [punctuative] messages are “oh,” “yeah,” “hum,” and so on (more examples in Table F.6). It is important to distinguish between [punctuative] messages and ellipsed [progressive] messages, as these two types of messages appear to be similar or the same in terms of orthographic/phonological shapes. The distinction is made based on “co-textual and contextual information” (Williams, 1994, p. 155). For example, “that’s it” in a parents’ comment can be considered as either [punctuative] or [progressive] depending on what that signals in different contexts, even though the message “that’s it” is in a full sentence structure containing the Predicator “is.” The following example shows how “that’s it” in a parent’s comment signaled the concluding of their reading of the book (line 1; Example F.9.). Thus, the message in line 1 presents the meaning of ritualized type, concluding.

Example F.9: Dyad 13 (mother and 5-year-old son), LB

A: The next morning he got a note: Dear Farmer Brown, The pond is quite boring. We’d like a diving board. Sincerely, The Ducks Click, clack, quack Click, clack, quack. Clickety, clack, quack.
1. M: That's it.
2. Did you like reading like that?

174 Explanations were presented in the footnote of Appendix F.2.1.
In another example in Williams’ (1994, p. 156) study, a message included a “that’s it” that was uttered to give information on one’s comment: “That’s it, that’s the one I meant.” In that case, “that’s it” is a [progressive] message. Table F.6 and Figure F.11 present all types of features in [punctuative] messages with descriptions and examples of the features.

**Table F.6: Sub-choices, descriptions and examples of each feature in [punctuative]**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Descriptions of a feature shown inside parentheses and sub-choices without parentheses</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>maintaining</td>
<td>(a set of elements whose function is to maintain the on-goingness of discourse)</td>
<td></td>
</tr>
<tr>
<td>- nonreactive</td>
<td>well, yeah, right</td>
<td></td>
</tr>
<tr>
<td>- reactive</td>
<td>gosh, ugh, really</td>
<td></td>
</tr>
<tr>
<td>- paralinguistic</td>
<td>mm, uh huh.</td>
<td></td>
</tr>
<tr>
<td>channel repair</td>
<td>(messages which attempt to overcome difficulties with the audibility or comprehensibility of preceding messages)</td>
<td></td>
</tr>
<tr>
<td>- ritualistic</td>
<td>sorry?, pardon?</td>
<td></td>
</tr>
<tr>
<td>- repeat</td>
<td>M: Gosh he's hungry.</td>
<td>C: <strong>Gosh he's hungry.</strong></td>
</tr>
<tr>
<td>civility</td>
<td>(expressions of politeness)</td>
<td></td>
</tr>
<tr>
<td>- receiving</td>
<td>Thanks</td>
<td></td>
</tr>
<tr>
<td>- apologizing</td>
<td>Sorry</td>
<td></td>
</tr>
<tr>
<td>- requiring</td>
<td>Please</td>
<td></td>
</tr>
<tr>
<td>address</td>
<td>- name</td>
<td>Susan.</td>
</tr>
<tr>
<td>- endearment</td>
<td>My dear little one</td>
<td></td>
</tr>
<tr>
<td>- castigation</td>
<td>Dirty little brat</td>
<td></td>
</tr>
<tr>
<td>- praise</td>
<td>Good work. Well done.</td>
<td></td>
</tr>
<tr>
<td>framing</td>
<td>- initiating</td>
<td>look, see, I know, you know that</td>
</tr>
<tr>
<td>- continuing</td>
<td>hang on, just a minute, never mind</td>
<td></td>
</tr>
<tr>
<td>- concluding</td>
<td>that’s all, there you are, that’s enough now</td>
<td></td>
</tr>
<tr>
<td>Feature</td>
<td>Descriptions of a feature shown inside parentheses and sub-choices without parentheses</td>
<td>Examples</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>object-text-message-collaboration (The message is related to reading texts in the books.)</td>
<td>- requirement &lt;br&gt;(An adult/child requires a listener to provide the final part of the message by pausing before it is completed or by articulating it in Tone 2.)&lt;br&gt;- completion &lt;br&gt;(An adult/child provides the part of the message omitted through the selection in a preceding message of requirement.)&lt;br&gt;- accompaniment &lt;br&gt;(An adult/child may accompany an adult’s or digital book’s reading of an object-text.)&lt;br&gt;- accompaniment-requirement &lt;br&gt;(While digital books are reading an object-text, an adult/child requires a listener to provide the final part of the message by pausing before it is completed or by articulating it in Tone 2.)&lt;br&gt;- accompaniment-completion &lt;br&gt;(While digital books are reading an object-text, an adult/child provides the part of the message omitted through the selection in a preceding message of requirement.)</td>
<td></td>
</tr>
<tr>
<td>message-collaboration-general* (The message is related to aspects other than reading texts in the books.)</td>
<td>- requirement &lt;br&gt;(An adult/child requires a listener to provide the final part of the message by pausing before it is completed or by articulating it in Tone 2.)&lt;br&gt;- completion &lt;br&gt;(An adult/child provides the part of the message omitted through the selection in a preceding message of requirement.)&lt;br&gt;- accompaniment &lt;br&gt;(An adult/child may accompany an adult’s reading of an object-text.)</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Features and realization statements are originally from Williams’ study (1994, pp. 217-221), except those marked *. Examples are from parent-child interactions during shared reading in this study.
The following figure presents semantic systems and choices in [punctuative] messages:

**Figure F.11: Semantic systems and choices in [punctuative] messages**

F.5 **Ellipsed messages**

Different from [punctuative] messages, ellipsed messages are considered as [progressive] messages. In ellipsed messages, parts of messages are ellipsed due to the principle of economy in verbal language. Major types of ellipsed messages are questions and responses to
questions that are ellipsed. Example F.10 presents ellipsis of a whole clause. In this example, the child’s response, the ellipsed message in line 2, contains the meaning “Yeah, I remember how we made daisy chains” that provides a positive confirmation to the mother’s question in line 1.

Example F.10: Dyad 20 (mother and 4-year-old son), PB

1. M: Remember how we made daisy chains?  
2. C: Oh, Yeah.

Example F.11 presents ellipsis of wh- questions. In this example, the mother explained about different digital icons on the page (lines 1-5). Then, she expressed her preference about clicking on the repeat icon (line 6). The child’s question about the mother’s preference involved a wh-question ellipse omitting the whole clause, which means “Why don’t you wanna really repeat it?” (line 8). Next, the mother’s reply to the child’s question in line 9 was ellipsed with the deletion of the last part of the message “repeat it” that was recovered in the analysis.

Example F.11: Dyad 6 (mother and 5-year-old daughter), LB

1. M: That’s a repeat.  
2. We just don’t need it  
3. because you got it right.  
4. If you want to play again,  
5. click the star, or turn the page.  
6. I don’t wanna really repeat it,  
7. sweetie.  
8. C: Why?  
9. M: Because we don’t need to.

Example F.12 presents substitution of a whole clause with “so.” In this example, the mother’s agreement in line 2 to the child’s question in line 1 was ellipsed, substituting a whole clause.
Thus, the mother’s message contains the meaning “Yes, I think that is Ralph.”

**Example F.12: Dyad 12 (mother and 5-year-old daughter), DB1**

1. =C: Is that Ralph?

The recovery of these ellipsed messages is crucial for the data analysis in order to capture meaning exchanges between parents and children. Halliday and Matthiessen (2004) specified three types of ellipses. According to them, two types of ellipses at the clause level relate to questions, including yes/no ellipsis and wh- ellipsis. In both types, either the whole clause or part of a clause is omitted. Moreover, in some instances, substitution of the clause or part of the message occurs. Based on Halliday and Matthiessen’s (2004) principles, I recovered those ellipsed and substituted parts in the ellipsed messages. Then, I analyzed the messages based on the recovered clause structure. Examples of recoveries done are presented next (Examples 6.11-13).

In Example F.10, the recovered message by the recovery of the whole clause omitted, “yeah, I remember how we made daisy chains” (line 2), was analyzed as [progressive:prefaced: … :response: …]. In Example F.11, the recovered message by the recovery of the wh- question, “Why don’t you wanna repeat it?”(line 8), was analyzed as [progressive:prefaced: … :demand:information: …]. In Example F.12, the recovered message by the recovery of the substitution of a clause, “Yes, I think that is Ralph” (line 2), was analyzed as [progressive:prefaced: … :response: …].
Appendix G

Statistical results

G.1

Table G.1.1: Paired t-tests of the means of the total number of the dyads’ interactive messages

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = -3.030, p = .008^{**})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = 1.705, p = .106)</td>
<td>(t(17) = 2.982, p = .008^{**})</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = .815, p = .427)</td>
<td>(t(17) = 2.516, p = .022^{*})</td>
<td>(t(17) = -.774, p = .450)</td>
</tr>
</tbody>
</table>

* \(p < .05\).

** \(p < .01\).

Table G.1.2: Paired t-tests of the means of the total number of the dyads’ [punctuative] messages

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = -2.260, p = .037^{*})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = 1.908, p = .073)</td>
<td>(t(17) = 2.517, p = .022^{*})</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = 1.533, p = .144)</td>
<td>(t(17) = 2.422, p = .027^{*})</td>
<td>(t(17) = .188, p = .853)</td>
</tr>
</tbody>
</table>

Table G.1.3: Paired t-tests of the means of the total number of the dyads’ [progressive] messages

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = -3.221, p = .005)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = 1.598, p = .128)</td>
<td>(t(17) = 3.064, p = .007)</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = .609, p = .550)</td>
<td>(t(17) = 2.480, p = .024)</td>
<td>(t(17) = -1.030, p = .317)</td>
</tr>
</tbody>
</table>
G.2

Table G.2: Paired t-tests of the means of the dyads’ [demand;information] messages

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>t(17) = -2.536, p=.021*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>t(17) = 1.635, p=.121</td>
<td>t(17) = 2.744, p=.014*</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>t(17) = .567, p=.578</td>
<td>t(17) = 1.825, p=.086</td>
<td>t(17) = -1.025, p=.320</td>
</tr>
</tbody>
</table>

G.3

Table G.3: Paired t-tests of the means of the parents’ [demand;information] messages

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>t(17) = -2.118, p=.049*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>t(17) = .605, p=.553</td>
<td>t(17) = 2.047, p=.056</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>t(17) = .610, p=.550</td>
<td>t(17) = 1.878, p=.078</td>
<td>t(17) = .391, p=.701</td>
</tr>
</tbody>
</table>

G.4

Table G.4: Paired t-tests of the means of the parents’ [demand;information] messages without pause families

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>t(17) = -1.940, p=.071</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>t(17) = 1.602, p=.130</td>
<td>t(17) = 2.409, p=.029*</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>t(17) = 1.570, p=.137</td>
<td>t(17) = 2.419, p=.029*</td>
<td>t(17) = .806, p=.433</td>
</tr>
</tbody>
</table>
G.5

Table G.5: Paired t-tests of the means of the children’s [demand;information] messages

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -1.699, p = .108$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 2.625, p = .018^*$</td>
<td>$t(17) = 2.796, p = .012^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = .358, p = .725$</td>
<td>$t(17) = 1.286, p = .216$</td>
<td>$t(17) = -2.474, p = .024^*$</td>
</tr>
</tbody>
</table>

G.6

The dyads’ selection of [demand;information:confirm] and [demand;information:apprize] examined with 2 by 4 mixed ANOVA showed that within-subject factor (types of books) was significant, $F(1.504, 51.139) = 6.346$, $MSe = 87.621$, $p = .007$, partial $\eta^2 = .157$. (Huynh-Feldt) with Mauchly’s Test of Sphericity ($\chi^2$) = .105, $p = .000$. This means there were significant differences in the dyads’ use of wh- and y/n questions across the contexts.

G.7

Table G.7: Paired t-tests of the means of the dyads’ selection of [demand;information:confirm]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -2.778, p = .013^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = .182, p = .858$</td>
<td>$t(17) = 2.020, p = .059$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = -.256, p = .801$</td>
<td>$t(17) = 1.267, p = .222$</td>
<td>$t(17) = -.740, p = .470$</td>
</tr>
</tbody>
</table>
G.8

Table G.8: Paired t-tests of the means of the dyads’ selection of [demand;information:apprize]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = -1.994, p = .062)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = 2.532, p = .021^*)</td>
<td>(t(17) = 2.824, p = .012^*)</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = 1.147, p = .267)</td>
<td>(t(17) = 1.923, p = .071)</td>
<td>(t(17) = -1.016, p = .324)</td>
</tr>
</tbody>
</table>

Thus, the dyads’ selection of [demand;information:apprize] is greater in the PB and LB contexts than in the DB context.

G.9

Table G.9.1: Paired t-tests of the means of the parents’ selection of [demand;information:confirm]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = -2.245, p = .038^*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = -2.07, p = .839)</td>
<td>(t(17) = 1.643, p = .119)</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = -2.60, p = .798)</td>
<td>(t(17) = 1.140, p = .270)</td>
<td>(t(17) = -2.40, p = .813)</td>
</tr>
</tbody>
</table>

Table G.9.2: Paired t-tests of the means of the parents’ selection of [demand;information:apprize]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = -1.604, p = .127)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = 1.302, p = .210)</td>
<td>(t(17) = 2.099, p = .051)</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = 1.668, p = .114)</td>
<td>(t(17) = 2.331, p = .032^*)</td>
<td>(t(17) = 1.022, p = .321)</td>
</tr>
</tbody>
</table>
G.10

Table G.10.1: Paired t-tests of the means of the parents’ selection of [ask] under [demand; information:confirm]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -2.465, p = .025^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = -3.038, p = .007^{**}$</td>
<td>$t(17) = 1.142, p = .269$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = -1.166, p = .260$</td>
<td>$t(17) = 1.047, p = .310$</td>
<td>$t(17) = .230, p = .821$</td>
</tr>
</tbody>
</table>

Table G.10.2: Paired t-tests of the means of the parents’ selection of [check] under [demand;information:confirm]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -1.610, p = .126$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = .591, p = .562$</td>
<td>$t(17) = 2.230, p = .040^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = .323, p = .751$</td>
<td>$t(17) = 1.641, p = .119$</td>
<td>$t(17) = -.615, p = .547$</td>
</tr>
</tbody>
</table>

Table G.10.3: Paired t-tests of the means of the parents’ selection of [explain] under [demand;information:apprize]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = .000, p = 1.000$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = -1.944, p = .069$</td>
<td>$t(17) = -2.129, p = .048^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = .236, p = .816$</td>
<td>$t(17) = .212, p = .834$</td>
<td>$t(17) = 2.496, p = .023^*$</td>
</tr>
</tbody>
</table>
Table G.10.4: Paired t-tests of the means of the parents’ selection of [actant] under [demand;information:apprize]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -1.706, p = .106$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 2.182, p = .043^{**}$</td>
<td>$t(17) = 2.547, p = .021^{*}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = 1.952, p = .068$</td>
<td>$t(17) = 2.378, p = .029^{*}$</td>
<td>$t(17) = .333, p = .743$</td>
</tr>
</tbody>
</table>

G.11

Table G.11.1: Paired t-tests of the means of the children’s selection of [demand;information:apprize]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -1.740, p = .100$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 2.888, p = .010^{*}$</td>
<td>$t(17) = 3.000, p = .008^{**}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = .475, p = .641$</td>
<td>$t(17) = 1.290, p = .214$</td>
<td>$t(17) = -2.176, p = .044^{*}$</td>
</tr>
</tbody>
</table>

Table G.11.2: Paired t-tests of the means of the children’s selection of [demand;information:confirm]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -1.216, p = .240$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 1.017, p = .323$</td>
<td>$t(17) = 1.853, p = .081$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = -.108, p = .915$</td>
<td>$t(17) = .959, p = .351$</td>
<td>$t(17) = -2.153, p = .046^{*}$</td>
</tr>
</tbody>
</table>
Table G.12.1: Paired t-tests of the means of the children’s selection of [demand; information:apprize:actant]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = -2.617, p = .018^*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = 2.644, p = .017^*)</td>
<td>(t(17) = 3.000, p = .008^{**})</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = 1.448, p = .166)</td>
<td>(t(17) = 2.196, p = .042^*)</td>
<td>(t(17) = -1.534, p = .143)</td>
</tr>
</tbody>
</table>

Table G.12.2: Paired t-tests of the means of the children’s selection of [demand; information:apprize:explain]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17) = .091, p = .929)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17) = 1.761, p = .096)</td>
<td>(t(17) = 2.365, p = .030^*)</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17) = -.205, p = .840)</td>
<td>(t(17) = -.331, p = .745)</td>
<td>(t(17) = -2.015, p = .060)</td>
</tr>
</tbody>
</table>

G.13
Contrast comparisons between the parents’ and the children’s use of [confirm] showed that there were significant differences in the PB context, \(t(1)= 2.676, p = .015\), the LB context, \(t(1) = 2.776, p = .011\), the DB1 context, \(t(1) = 4.143, p = .001\), and the DB2 context, \(t(1) = 3.152, p = .005\).

Contrast comparisons between the parents’ and the children’s use of [apprize] showed that there are significant differences in the DB1 context, \(t(1) = 2.468, p = .019\). Contrast comparisons between the parents’ and the children’s use of [explain] showed that there are significant differences in the DB1 context, \(t(1) = 2.224, p = .036\).
G.14

Table G.14.1: Paired t-tests of the means of the dyads’ selection of [demand;information: develop]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)=-2.817, p=.012^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)=.957, p=.352$</td>
<td>$t(17)=2.545, p=.021^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)=.181, p=.859$</td>
<td>$t(17)=1.298, p=.212$</td>
<td>$t(17)=-.634, p=.534$</td>
</tr>
</tbody>
</table>

Table G.14.2: Paired t-tests of the means of the dyads’ selection of [demand;information: develop:apprize]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)=-2.628, p=.018^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)=1.230, p=.235$</td>
<td>$t(17)=2.803, p=.012^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)=.452, p=.657$</td>
<td>$t(17)=1.669, p=.113$</td>
<td>$t(17)=-.901, p=.380$</td>
</tr>
</tbody>
</table>

Table G.14.3: Paired t-tests of the means of the dyads’ selection of [demand;information: develop:confirm]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)=-2.338, p=.032^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)=.223, p=.826$</td>
<td>$t(17)=1.621, p=.123$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)=-.112, p=.913$</td>
<td>$t(17)=.776, p=.449$</td>
<td>$t(17)=-.353, p=.728$</td>
</tr>
</tbody>
</table>
G.15

Table G.15: Paired t-tests of the means of the dyads’ selection of [maintain:continue:give;information] and [maintain:reply:give;information] (comments about further information)

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -2.238, p = .039^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 2.790, p = .013^*$</td>
<td>$t(17) = 2.999, p = .008^{**}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = 1.232, p = .236$</td>
<td>$t(17) = 2.120, p = .049^*$</td>
<td>$t(17) = -2.435, p = .026^*$</td>
</tr>
</tbody>
</table>

G.16

Table G.16: Paired t-tests of the means of the parents’ comments for further information

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -2.498, p = .023^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 2.492, p = .023^*$</td>
<td>$t(17) = 3.056, p = .007^{**}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = 1.290, p = .214$</td>
<td>$t(17) = 2.198, p = .042^*$</td>
<td>$t(17) = -2.256, p = .038^*$</td>
</tr>
</tbody>
</table>

G.17

Table H17: Paired t-tests of the means of the children’s comments for further information

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = - .937, p = .362$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 2.013, p = .060^{**}$</td>
<td>$t(17) = 2.481, p = .024^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = .610, p = .550$</td>
<td>$t(17) = 1.455, p = .164$</td>
<td>$t(17) = -2.641, p = .017^*$</td>
</tr>
</tbody>
</table>
### G.18

Table G.18: Paired t-tests of the means of the dyads’ selection of [maintain:continue:give; information]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LB</strong></td>
<td>(t(17) = -2.993, p = .008**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB1</strong></td>
<td>(t(17) = 2.826, p = .012*</td>
<td>(t(17) = 3.197, p = .005**</td>
<td></td>
</tr>
<tr>
<td><strong>DB2</strong></td>
<td>(t(17) = 1.169, p = .259</td>
<td>(t(17) = 2.299, p = .034*</td>
<td>(t(17) = -1.941, p = .069</td>
</tr>
</tbody>
</table>

### G.19

Table G.19: Paired t-tests of the means of the dyads’ selection of [maintain:response:give; information]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LB</strong></td>
<td>(t(17) = -0.604, p = .554</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB1</strong></td>
<td>(t(17) = 2.628, p = .018*</td>
<td>(t(17) = 2.631, p = .018*</td>
<td></td>
</tr>
<tr>
<td><strong>DB2</strong></td>
<td>(t(17) = 1.265, p = .223</td>
<td>(t(17) = 1.584, p = .132</td>
<td>(t(17) = -2.385, p = .029*</td>
</tr>
</tbody>
</table>

### G.20

Table G.20: Paired t-tests of the means of the dyads’ selection of [give:information:rejoin]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LB</strong></td>
<td>(t(17) = -0.212, p = .834</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB1</strong></td>
<td>(t(17) = 2.564, p = .020*</td>
<td>(t(17) = 2.448, p = .026*</td>
<td></td>
</tr>
<tr>
<td><strong>DB2</strong></td>
<td>(t(17) = 1.425, p = .172</td>
<td>(t(17) = 1.343, p = .197</td>
<td>(t(17) = -1.306, p = .209</td>
</tr>
</tbody>
</table>
G.21

Table G.21.1: Paired t-tests of the means of the parents’ selection of [give;information: rejoin]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LB</strong></td>
<td>$t(17) = -.534, p = .600$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB1</strong></td>
<td>$t(17) = 2.519, p = .022^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB2</strong></td>
<td>$t(17) = 1.458, p = .163$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table G.21.2: Paired t-tests of the means of the children’s selection of [give;information: rejoin]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LB</strong></td>
<td>$t(17) = .566, p = .579$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB1</strong></td>
<td>$t(17) = 1.558, p = .138$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB2</strong></td>
<td>$t(17) = .595, p = .560$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

G.22

Table G.22.1: Paired t-tests of the means of the dyads’ selection of [prefaced:self:exclusive] or [prefaced:subjective:other:child]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LB</strong></td>
<td>$t(17) = -2.597, p = .019^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB1</strong></td>
<td>$t(17) = -.203, p = .842$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB2</strong></td>
<td>$t(17) = .334, p = .742$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LB</strong></td>
<td>$t(17) = 2.744, p = .014^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB1</strong></td>
<td>$t(17) = 2.460, p = .025^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DB2</strong></td>
<td>$t(17) = .698, p = .494$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table G.22.2: Paired t-tests of the means of the parents’ selection of [prefaced:subjective: other:child]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -2.268, p=.037^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= -0.075, p=.941$</td>
<td>$t(17)= 2.471, p=.024^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= 0.590, p=.563$</td>
<td>$t(17)= 2.429, p=.027^*$</td>
<td>$t(17)= 1.023, p=.321$</td>
</tr>
</tbody>
</table>

Table G.22.3: Paired t-tests of the means of the children’s selection of [prefaced:self: exclusive]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -3.168, p=.006^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= -0.489, p=.631$</td>
<td>$t(17)= 2.989, p=.008^{**}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= -0.496, p=.626$</td>
<td>$t(17)= 2.319, p=.033^*$</td>
<td>$t(17)= -.156, p=.878$</td>
</tr>
</tbody>
</table>

G.23

Table G.23: Paired t-tests of the means of the parents’ selection of [prefaced:interpersonal: modal]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -1.653, p=.117$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 1.758, p=.097$</td>
<td>$t(17)= 2.485, p=.024^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= 1.027, p=.319$</td>
<td>$t(17)= 2.138, p=.047^*$</td>
<td>$t(17)= -.644, p=.524$</td>
</tr>
</tbody>
</table>
G.24

Table G.24.1: Paired t-tests of the means of the dyads’ selection of [prefaced: experiential: knowledge]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = - .790, p = .440$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 0.108, p = .915$</td>
<td>$t(17) = 1.093, p = .290$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = 1.100, p = .287$</td>
<td>$t(17) = 1.762, p = .096$</td>
<td>$t(17) = 1.248, p = .229$</td>
</tr>
</tbody>
</table>

Table G.24.2: Paired t-tests of the means of the parents’ selection of [prefaced: experiential: knowledge]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = - .833, p = .416$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 0.000, p = 1.000$</td>
<td>$t(17) = 1.007, p = .328$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = 1.151, p = .266$</td>
<td>$t(17) = 1.911, p = .073$</td>
<td>$t(17) = 1.339, p = .198$</td>
</tr>
</tbody>
</table>

Table G.24.3: Paired t-tests of the means of the children’s selection of [prefaced: experiential: knowledge]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = 0.000, p = 1.000$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = .566, p = .579$</td>
<td>$t(17) = .437, p = .668$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = .437, p = .668$</td>
<td>$t(17) = .325, p = .749$</td>
<td>$t(17) = .000, p = 1.000$</td>
</tr>
</tbody>
</table>
G.25

Table G.25.1: Paired t-tests of the means of the dyads’ selection of [initiate]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -3.421, p=.003^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = .000, p=1.000$</td>
<td>$t(17) = 3.128, p=.006^{**}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = -.523, p=.608$</td>
<td>$t(17) = 3.171, p=.006^{**}$</td>
<td>$t(17) = -.886, p=.388$</td>
</tr>
</tbody>
</table>

Table G.25.2: Paired t-tests of the means of the parents’ selection of [initiate]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -3.419, p=.003^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = -1.256, p=.226$</td>
<td>$t(17) = 2.639, p=.017^{*}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = -.198, p=.845$</td>
<td>$t(17) = 3.186, p=.005^{**}$</td>
<td>$t(17) = 1.418, p=.174$</td>
</tr>
</tbody>
</table>

Table G.25.3: Paired t-tests of the means of the children’s selection of [initiate]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -2.252, p=.038^{*}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 2.550, p=.021^{*}$</td>
<td>$t(17) = 2.988, p=.008^{**}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = -.514, p=.614$</td>
<td>$t(17) = 2.129, p=.048^{*}$</td>
<td>$t(17) = -2.602, p=.019^{*}$</td>
</tr>
</tbody>
</table>

G.26

Contrast comparisons showed that there are significant differences in parents’ and children’s use of [initiate] in the PB context, $t(1)= -2.265, p=.031$; in the LB context, $t(1)= -2.140, p=.042$; in the DB1 context, $t(17)= -6.333, p=.000$. 

326
G.27

Table G.27: Paired t-tests of the means of the dyads’ selection of [follow]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>( t(17) = -2.977, p = .008^{**} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>( t(17) = 1.865, p = .080 )</td>
<td>( t(17) = 2.984, p = .008^{**} )</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>( t(17) = .742, p = .469 )</td>
<td>( t(17) = 2.222, p = .040^{*} )</td>
<td>( t(17) = -.956, p = .352 )</td>
</tr>
</tbody>
</table>

G.28

Table G.28: Paired t-tests of the means of the parents’ selection of [follow]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>( t(17) = -3.339, p = .004^{**} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>( t(17) = 1.936, p = .070 )</td>
<td>( t(17) = 3.187, p = .005^{**} )</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>( t(17) = .784, p = .444 )</td>
<td>( t(17) = 2.434, p = .026^{*} )</td>
<td>( t(17) = -1.081, p = .295 )</td>
</tr>
</tbody>
</table>

G.29

Table G.29: Paired t-tests of the means of the children’s selection of [follow]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>( t(17) = -1.987, p = .063 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>( t(17) = 1.542, p = .141 )</td>
<td>( t(17) = 2.326, p = .033^{*} )</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>( t(17) = .625, p = .540 )</td>
<td>( t(17) = 1.634, p = .121 )</td>
<td>( t(17) = -.705, p = .490 )</td>
</tr>
</tbody>
</table>

G.30

Contrast comparisons showed that there were significant differences in parents’ and children’s use of [follow] in the LB context, \( t(1) = 2.082, p = .049 \).
G.31

Table G.31: Paired t-tests of the means of the dyads’ co-selection of [follow] and [give; information]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -2.579, p=.019^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 2.427, p=.038^*$</td>
<td>$t(17)=2.979, p=.008^{**}$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)=.907, p=.377$</td>
<td>$t(17)=1.950, p=.068$</td>
<td>$t(17)= -1.880, p=.077$</td>
</tr>
</tbody>
</table>

G.32

Table G.32: Paired t-tests of the means of the dyads’ co-selection of [follow] and [demand; information]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -2.016, p=.060$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 1.506, p=.150$</td>
<td>$t(17)=2.291, p=.035^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)=.708, p=.489$</td>
<td>$t(17)=1.489, p=.155$</td>
<td>$t(17)= -.428, p=.674$</td>
</tr>
</tbody>
</table>

G.33

The dyads’ selection of the semantic feature [demand/give;goods and services] was examined with 2 by 4 Mixed ANOVA with two factors, books and agent (parents or children). The analysis of 2 by 4 mixed ANOVA showed statistical significance in within-subject factor $F(1.208, 41.074)= 15.084, \text{MSe}= 238.439, p=.000, \text{partial Eta}^2 = .307$ (Huynh-Feldt) with Mauchly’s Test of Sphericity (5) = .032, $p=.000$. This shows that the dyads’ selection of [demand/give;goods and services] was statistically different across the contexts. Moreover, there was a significance in interactions between the two factors, types of books and agent, $F(1.208, 41.074) = 4.852, \text{MSe} = 238.439, p = .027, \text{partial Eta}^2 = .125$. This means that the parents’ and the children’s selection of [demand/give;goods and services] were significantly different depending on the reading contexts. Further examination of parents’ and children’s selection of [demand/give;goods and services] examined by contrast comparisons showed significant differences between the two
agents in the PB context, \( t(1)= 2.856, p=.011 \), in the LB context, \( t(1)= 2.572, p=.017 \), and in the DB1 context, \( t(1)= 3.612, p=.002 \).

Table G.33.1: Paired t-tests of the means of the dyads’ selection of [demand/give;goods and services]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>( t(17)= -3.589, p=.002^{**} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>( t(17)= -2.357, p=.031^{*} )</td>
<td>( t(17)= 3.132, p=.006^{**} )</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>( t(17)= -.060, p=.953 )</td>
<td>( t(17)= 3.323, p=.004^{**} )</td>
<td>( t(17)= 1.852, p=.081 )</td>
</tr>
</tbody>
</table>

Table G.33.2: Paired t-tests of the means of the parents’ selection of [demand/give;goods and services]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>( t(17)= -3.564, p=.002^{**} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>( t(17)= -2.168, p=.045^{*} )</td>
<td>( t(17)= 3.165, p=.006^{**} )</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>( t(17)= .172, p=.866 )</td>
<td>( t(17)= 3.281, p=.004^{**} )</td>
<td>( t(17)= 1.935, p=.070 )</td>
</tr>
</tbody>
</table>

Table G.33.3: Paired t-tests of the means of the children's selection of [demand/give;goods and services]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>( t(17)= -2.563, p=.020^{*} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>( t(17)= -1.571, p=.135 )</td>
<td>( t(17)= 2.239, p=.039^{*} )</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>( t(17)= -1.236, p=.233 )</td>
<td>( t(17)= 2.376, p=.030^{*} )</td>
<td>( t(17)= .555, p=.586 )</td>
</tr>
</tbody>
</table>
### Table G.34: Paired t-tests of the means of the dyads’ references to external references

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= 2.103, p=.051$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 2.283, p=.036^*$</td>
<td>$t(17)= 1.377, p=.186$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= 2.005, p=.061$</td>
<td>$t(17)= 1.216, p=.241$</td>
<td>$t(17)= -.259, p=.799$</td>
</tr>
</tbody>
</table>

### Table G.35: Paired t-tests of the means of the dyads’ references to metalinguistic items

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -2.953, p=.009^{**}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 1.788, p=.093$</td>
<td>$t(17)= 2.660, p=.017^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= .857, p=.404$</td>
<td>$t(17)= 2.592, p=.020^*$</td>
<td>$t(17)= -1.761, p=.097$</td>
</tr>
</tbody>
</table>

### Table G.36.1: Paired t-tests of the means of the parents’ references to metalinguistic items

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -2.786, p=.013^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 2.021, p=.059$</td>
<td>$t(17)= 2.745, p=.014^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= 1.381, p=.185$</td>
<td>$t(17)= 3.093, p=.007^{**}$</td>
<td>$t(17)= -1.450, p=.165$</td>
</tr>
</tbody>
</table>

### Table G.36.2: Paired t-tests of the means of the children’s references to metalinguistic items

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= -2.217, p=.041^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 1.584, p=.132$</td>
<td>$t(17)= 2.263, p=.037^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= .492, p=.629$</td>
<td>$t(17)= 1.863, p=.080$</td>
<td>$t(17)= -1.458, p=.163$</td>
</tr>
</tbody>
</table>
In terms of semantic choices under \textit{[being]}, 5 by 4 ANOVA was conducted with the two factors, types of books, and the dyad’s selection of features under \textit{[being]} in their talk referencing \textit{[metalinguistic items]}. The test showed a significance in the interaction between two factors, $F(5.397,114.690) = 4.261$, MSe = 8.088, $p = .001$, partial $\eta^2 = .167$ (Huynh-Feldt) with violation of additive mode and circularity assumptions, Mauchly’s Test of Sphericity (5) = .053, $p = .000$.

\textbf{Table G.37.1: Paired t-tests of the means of the dyads’ selection of [being:equeating] with references to [metalinguistic items]}

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -2.307, p = .034^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 1.870, p = .079$</td>
<td>$t(17) = 2.408, p = .028^*$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = 1.694, p = .108$</td>
<td>$t(17) = 2.374, p = .030^*$</td>
<td>$t(17) = -1.650, p = .117$</td>
</tr>
</tbody>
</table>

The contrast comparison in dyads’ selection between \textit{[doing]} and \textit{[being]} in their talk about characters did not show any statistical significance in any of the four contexts.

\textbf{Table G.38.1: Paired t-tests of the means of the dyads’ selection of [doing] with referencing to [character]}

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17) = -.448, p = .660$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17) = 1.565, p = .136$</td>
<td>$t(17) = 1.092, p = .290$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17) = 1.010, p = .327$</td>
<td>$t(17) = 1.054, p = .307$</td>
<td>$t(17) = - .236, p = .817$</td>
</tr>
</tbody>
</table>
Table G.38.2: Paired t-tests of the means of the dyads’ selection of [being] with referencing to [character]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17)=-1.377, \ p=.186)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17)=.864, \ p=.399)</td>
<td>(t(17)=1.751, \ p=.098)</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17)=-1.254, \ p=.227)</td>
<td>(t(17)=.474, \ p=.641)</td>
<td>(t(17)=-2.269, \ p=.037)</td>
</tr>
</tbody>
</table>

G.39

The examination of the dyads’ selection of [doing] in their talk about characters conducted by 4 by 4 ANOVA with the two factor: types of books and dyad’s selection of features under [doing] in their talk referencing [characters]. The test showed a significance in the interaction between two factors, \(F(5.185,117.557) = 4.442, \ MSe = 17.557, \ p = .001\), partial \(\eta^2 = .164\) (Huynh-Feldt) with violation of additive mode and circularity assumptions, Mauchly’s Test of Sphericity \((5) = .256, \ p = .000\).

G.40

Table G.40.1: Paired t-tests of the means of the dyads’ selection of [doing:material] with referencing to [character]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>(t(17)=-1.141, \ p=.270)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>(t(17)=1.944, \ p=.069)</td>
<td>(t(17)=1.490, \ p=.155)</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>(t(17)=2.768, \ p=.013^*)</td>
<td>(t(17)=1.971, \ p=.065)</td>
<td>(t(17)=2.116, \ p=.049^*)</td>
</tr>
</tbody>
</table>
Table G.40.2: Paired t-tests of the means of the dyads’ selection of [doing: mental] with referencing to [character]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>t(17)= 1.891, p=.076</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>t(17)= 2.573, p=.020*</td>
<td>t(17)= .531, p=.602</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>t(17)= 2.743, p=.014*</td>
<td>t(17)= .941, p=.360</td>
<td>t(17)= .369, p=.717</td>
</tr>
</tbody>
</table>

Table G.40.3: Paired t-tests of the means of the dyads’ selection of [doing: verbal] with referencing to [character]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>t(17)= -1.112, p=.282</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>t(17)= -1.534, p=.144</td>
<td>t(17)= -.682, p=.504</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>t(17)= 1.325, p=.203</td>
<td>t(17)= 2.258, p=.037*</td>
<td>t(17)= 2.410, p=.028*</td>
</tr>
</tbody>
</table>

Table G.40.4: Paired t-tests of the means of the dyads’ selection of [doing: behavioral] with referencing to [character]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>t(17)= 2.026, p=.059</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>t(17)= 1.906, p=.074</td>
<td>t(17)= 1.000, p=.331</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>t(17)= -2.769, p=.013*</td>
<td>t(17)= -3.936, p=.001**</td>
<td>t(17)= -3.979, p=.001*</td>
</tr>
</tbody>
</table>

G.41

Table G.41: Paired t-tests of the means of the dyads’ selection referencing to [illustrations]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>t(17)= 1.508, p=.150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>t(17)= 2.565, p=.020*</td>
<td>t(17)= 2.031, p=.058</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>t(17)= 2.046, p=.057</td>
<td>t(17)= .842, p=.411</td>
<td>t(17)= -.801, p=.434</td>
</tr>
</tbody>
</table>
G.42

Table G.42.1: Paired t-tests of the means of the dyads’ selection of [being] with referencing to [illustrations]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= 1.631, p=.121$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 2.742, p=.014^*$</td>
<td>$t(17)= 2.038, p=.057$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= 2.624, p=.018^*$</td>
<td>$t(17)= 1.494, p=.153$</td>
<td>$t(17)= .000, p=1.000$</td>
</tr>
</tbody>
</table>

Table G.42.2: Paired t-tests of the means of the dyads’ selection of [doing] with referencing to [illustrations]

<table>
<thead>
<tr>
<th></th>
<th>PB</th>
<th>LB</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>$t(17)= .478, p=.639$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB1</td>
<td>$t(17)= 2.848, p=.011^*$</td>
<td>$t(17)= 1.230, p=.235$</td>
<td></td>
</tr>
<tr>
<td>DB2</td>
<td>$t(17)= -.154, p=.879$</td>
<td>$t(17)= -.491, p=.630$</td>
<td>$t(17)= -1.429, p=.171$</td>
</tr>
</tbody>
</table>

G.43

Contrast comparisons between [doing] and [being] showed some significant differences in PB $t(1)= 17.697, p=.008$, in LB $t(1)= 19.800, p=.032$, and in DB1 $t(1)= 19.226, p=.027$. 