

Deaf parents with deaf children and hearing parents with hearing
children: A comparison of shared reading experiences

by

Michele G. Berke

B.A., University of Maryland Baltimore County, 1985

M.A., University of San Francisco, 1997

A thesis submitted to the
Faculty of the Graduate School of the
University of Colorado in partial fulfillment
of the requirement for the degree of
Doctor of Philosophy
Speech, Language, and Hearing Sciences

2012

UMI Number: 3507966

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent on the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI 3507966

Copyright 2012 by ProQuest LLC.

All rights reserved. This edition of the work is protected against unauthorized copying under Title 17, United States Code.



ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

This thesis entitled:
***Deaf Parents With Deaf Children And Hearing Parents With Hearing Children:
A Comparison Of Shared Reading Experiences***
has been approved for the Department of Speech, Language and Hearing Sciences

Dr. Brenda Schick, Advisor

Dr. Sandy Bowen

Dr. Margaret LeCompte

Dr. Allison Sedey

Dr. Christine Yoshinaga-Itano

*Date*_____

*The final copy of this thesis has been examined by the signatories, and we
Find that both the content and the form meet acceptable presentation standards
Of scholarly work in the above mentioned discipline.*

IRB protocol # 1009.22

Berke, Michele G. (Ph.D., Speech, Language and Hearing Sciences)

Deaf parents with deaf children and hearing parents with hearing children: A comparison of shared reading experiences

Thesis directed by Professor Brenda Schick

Abstract

Teaching parents about the value of shared book reading has become a component of intervention for many programs that want to promote early literacy with diverse populations, including families with deaf and hard-of-hearing children. There is evidence that supports the effectiveness of family literacy programs in that participation in shared reading activities is related to growth in areas such as language and early literacy skills. For all children, deaf and hearing alike, there are techniques that are effective when reading books with children. It has been proposed that there are specific techniques that deaf parents with deaf children use to capitalize on their child's reliance on visual rather than primarily auditory cues. These techniques, or indigenous practices, used by deaf parents are believed to provide a foundation for their deaf children that support them as they encounter print in books and as they enter into an academic environment.

The purpose of this study was to specifically examine the indigenous family practice of shared reading between deaf mothers and their deaf children. Using a matched pair design, the study compared these practices to how hearing mothers read with their hearing children. These two groups were selected because there is no language barrier between a deaf mother and her deaf child and a hearing mother and her hearing child. However, one major difference is that the deaf dyads communicated in a language, American Sign Language (ASL), which is different from the written English text. In contrast, the hearing dyads communicated in spoken English,

which is structurally identical to the text. A comparison of these two groupings provided insight into what techniques may be similar or different in the shared reading process, and specifically, what techniques deaf parents use to make connections to the English text.

This study examined 20 families in two groups using a matched pair design. There were ten deaf mother/deaf child dyads and ten hearing mother/hearing child dyads. The children were between 3 and 5 years of age and the deaf and hearing children were matched for age. Each dyad was videotaped in their home on at least two occasions. During the first session, they read two unfamiliar books that were provided by the researcher. During the second session, the families read one familiar book (that was introduced as an unfamiliar book in the first session), and one additional unfamiliar book. A coding system that was devised for a pilot study was revised and used to describe the parent reading techniques of the unfamiliar books. An inter-rater reliability check was conducted on 7 minutes of each of the video/transcripts. Analyses included paired-samples t-tests and one-way multivariate analysis of variance (MANOVA) to determine if there were group differences in reading techniques used by the two groups of parents and if there was a difference between the first and second reading of the unfamiliar book. Results showed that deaf and hearing mothers do use different reading techniques when reading with their children and that there is minimal effect of book familiarity. Descriptive analysis showed specifically how deaf mothers make English explicit for their deaf child compared to hearing mothers with hearing children.

There have not been any controlled studies that have examined how deaf mothers read books with their deaf children compared to hearing mothers reading with their hearing children. It is important to learn what, if any, techniques they may use that may be replicated and taught to all parents of deaf children so that they can engage in more effective shared reading activities.

Dedication

Without question, this document is dedicated to Sunny, my constant, loyal and faithful companion throughout the writing process. Whether I was sitting at the computer, reading with Troy or needing to take a walk, she was always by my side. Thank you, dear Sunny.

Acknowledgements

Many years ago, I was asked to think about my long-term goals in various aspects of my life. In the physical arena, I stated that I wanted to train and run a marathon. In the education arena, I wanted to continue my education and obtain a doctorate. What I didn't realize then is that running a marathon and getting a PhD are similar in many ways.

Both are filled with high and low points. Both have obstacles. Both bring out the support of numerous family members and friends. Both are self-centered activities in a way that requires intense time away from those to whom one is close. Both provide huge rewards including the self-satisfaction of having achieved something that one set out to do.

I am enormously indebted to my husband, Thomas K. Holcomb, who helped put this dream into a reality. His encouragement during the low points, his seizing the opportunity to celebrate the high points and his ability to let me be self-centered when necessary (usually at his expense), are actions that go beyond words.

Our son, Troy D. Holcomb, also deserves my thanks. He was born to a forever student mom but provided the inspiration for the shared reading because it is one of his most favorite activities.

I was born into a family of readers. It is through books that I learned about and yearned for the world. Thank you to my mother, Lilly R. Shirey, my sisters, June McMahon and Janet Weinstock, my brother Andrew Berke and their spouses and children for all your encouragement.

My mother-in-law, Mabs Holcomb also receives my gratitude. With every "Is it done yet?" I received the push to keep moving. The Holcomb children: Tara, Leala, Cary and the

youngest, Tristan Pax have provided insight and inspiration as young deaf up and coming leaders.

Classmates and colleagues are essential to anyone's success. I am particularly thankful to Beth Caldwell Langer, Amy Hile, Elaine Gale, and Debbie Golos for their words of wisdom and support. Lisa McNeill, Anne Tenney, Kathryn Dyjak, Deb Guthmann, Shelley Lawrence, and Greg Tillman deserve a lot of kudos for being those sideline cheerleaders and who provided sustenance along the way.

No research project can be conducted without numerous people's involvement. I appreciate Patty Lessard for ensuring the accuracy of the coding and Chandra Brodje for making sure it read well. Ron Bye and Jack Lamberton provided emergency assistance for which I am grateful!

Of course, this could not have been accomplished without the families who participated in this study. As a mother and researcher, I am indebted to them all because I know what it means to give up family time to have a stranger intrude in your home and observe you in a very intimate family activity.

And finally, to my committee, who provided guidance and ideas and stuck with me throughout the years. I appreciate your support.

Funding support for this research came from the U.S. Department of Education, Office of Special Education Programs, through a Leadership Training grant (CDFA 84.325D), Dr. Brenda Schick, Project Director.

And so, this particular marathon has reached a finish line. Run, anyone??

Table of Contents

Chapter 1: Introduction	1
Chapter 2: Review of the Literature.....	5
Benefits of shared reading	5
Effects of shared reading on language, literacy skills, and vocabulary development	6
Effect of book familiarity.....	8
Specific techniques that parents use during shared reading.....	9
Technique #1: Connecting concepts.....	10
Technique #2: Questioning	11
Technique #3: Interactions between language, print, and illustrations	13
Technique #4: Attention getting strategies.....	15
Technique #5: Encouraging child/Inviting participation.....	17
Technique #6: Corrections	17
Deaf and hard-of-hearing children.....	18
Reading achievement of deaf and hard-of-hearing students.....	18
Reading skills of deaf children from deaf families	21
Deaf parents reading with their deaf children.....	24
Shared reading with hearing parents and their deaf and hard-of-hearing children	27
Applying deaf parents reading techniques to hearing parents of deaf children.....	31
The current study	35
Pilot study and coding system.....	35

Chapter 3: Method	38
Participants.....	38
Age of children	40
Familiar vs. unfamiliar book.....	41
Materials	41
Procedure	43
Coding.....	44
Inter-rater reliability of coding data.....	59
Chapter 4: Results.....	61
Research Question#1: Summary of Results.....	68
Research Question #2: Summary of Results.....	77
Research Question #3: Summary of Results.....	85
Chapter 5: Discussion	86
Research Question #1: Summary of Findings	94
Research Question #2: Summary of Findings	100
Research Question #3: Summary of Findings	110
Conclusion/Application of findings.....	110
Limitations and Areas for future research	114
References.....	117
Appendix A: List of unfamiliar books.....	127
Appendix B: Parent questionnaires.....	128
Appendix C: Summary of global coding categories.....	132

List of Tables

Table 1: <i>Descriptive Information for Deaf Participants and their Hearing Matched Participants</i>	39
Table 2: <i>Shared Reading Technique of Connecting Concepts</i>	47
Table 3: <i>Shared Reading Technique of Questioning</i>	49
Table 4: <i>Shared Reading Technique of Interactions between Language and Print</i>	52
Table 5: <i>Shared Reading Technique of Attention Getting Strategies</i>	55
Table 6: <i>Shared Reading Technique of Encouraging Child/Inviting Participation</i>	57
Table 7: <i>Shared Reading Technique of Corrections</i>	58
Table 8: <i>Summary of Reading Time Means, Rate per Minute Means and Standard Deviations and Significance for Reading Techniques used by the Two Groups for all Books During all Sessions</i>	62
Table 9: <i>Results of One Way Multivariate Analysis of Variance for Reading Techniques by Deaf and Hearing Mothers</i>	63
Table 10: <i>Correlation Matrix for Deaf Mothers' use of reading techniques used during all sessions</i>	65
Table 11: <i>Correlation Matrix for Deaf Mothers' Use of Reading Techniques Used During All Sessions</i>	66
Table 12: <i>Deaf Mothers Making English Explicit</i>	70
Table 13: <i>Deaf Mothers Use of ASL Features to Demonstrate Character Changes</i>	76
Table 14: <i>Summary of Means and Standard Deviations for Language Measures of the Two Groups Reading the Same Book</i>	80
Table 15: <i>Results of One Way Multivariate Analysis of Variance for Language Measures for Deaf and Hearing Mothers and Children for the First and Second Reading of the Same Book</i>	82
Table 16: <i>Paired Samples Correlations for Deaf Mothers Language Measures during the First and Second Reading</i>	84

Table 17: <i>Paired Samples Correlations for Hearing Mothers Language Measures during the First and Second Reading</i>	85
Table 18: <i>Comparison of D4 and H10 Reading One Section of Familiar Book</i>	103
Table 19: <i>Comparison of Reading Techniques Used by D5 and H6 in One Section of Familiar Book</i>	107

Introduction

Often, the introduction a child receives to book reading is through a parent reading a book to him or her. Books are ideal avenues for learning about life, for exploring lands and cultures different from one's own, or for becoming immersed in different worlds altogether. Books can also be used to connect the child to the real world, to help the child prepare for new experiences such as a new baby or a doctor's visit, or to learn about his place in the world (Cullinan, 1992). Storybook reading is conceptualized as a jointly constructed event between parent and child with the focus of the interaction being the text (Neuman, 1996). Research has shown that shared reading, or the interaction of a parent and child with a book, is a way of promoting language and literacy, development of vocabulary, grammatical knowledge, and metalinguistic awareness (Snow, 1983), making it critical for educators to promote shared reading activities at home between parent and child.

Although educators promote shared reading activities at home, not all parents read to their children in the same way. For example, deaf parents may present the information in the book differently due to the fact that American Sign Language (ASL) is a visual rather than a spoken language. In contrast, hearing mothers do not need to make the same accommodations when reading with their hearing children. Hearing mothers use spoken English to read the written English text and the mother can talk while both she and the child are looking at the book. Schleper (1995) has described some techniques that Deaf adults use when reading books with their deaf children but little is known about what specific connections Deaf parents make to the English print. Exploring what strategies deaf mothers may use to link the English print through the use of ASL will help us to apply these strategies when working with all parents of deaf children.

Just like their hearing counterparts, deaf mothers have been observed interacting with their deaf child(ren). Deaf mothers will “intuitively adjust their linguistic and cultural practices to the needs of their young children” (Singleton & Morgan, 2006, p. 349). When using ASL, deaf mothers have a natural way of engaging with their deaf children. For example, using ASL, deaf mothers use child-directed signing that is reflected in changes of how and where they sign (Bailes, Erting, Erting, & Thumann-Prezioso, 2009). They also utilize visually-oriented attention-getting strategies (see Spencer & Harris, 2006, for a review). They change how they provide linguistic input due to the sequential rather than simultaneous nature of communication (Jamieson, 1994) in that deaf mothers must ensure that they have their child’s visual attention before the child can then attend to whatever the mother intended. Hearing mothers, by contrast can talk to their hearing child while attending to whatever the focus is. In addition, deaf mothers use physical contact such as tapping or touching (Waxman & Spencer, 1997) or wave to gain their child’s attention (Harris & Mohay, 1997; Waxman & Spencer, 1997). They also sign in their child’s field of vision (Harris & Mohay, 1997; Waxman & Spencer, 1997) to get their attention. These techniques help provide a picture of how deaf parents might participate in shared reading activities with their deaf children.

Researchers have been interested in observing deaf mothers’ literacy practices because this information might be valuable in helping parents become more effective in their effort to promote reading with their deaf children. Deaf mothers who frequently read to their children have been found to use certain reading techniques that make the book visually accessible (see Swanick & Watson, 2005, for a review) that a hearing mother with a hearing child does not necessarily have to do. For example, mothers sign on the book to be within the child’s visual field, maintain attention by physically touching, tapping or moving the book (Lartz & Lestina,

1995; Swanick & Watson, 2005), and use non-manual behaviors such as facial expressions or shifts in eye gaze to demonstrate character changes (Lartz & Lestina, 1995). Deaf mothers position themselves in a way that they can have eye contact and sufficient signing space while reading the book (Swanick & Watson, 2005) and translate the book into ASL (Akamatsu & Andrews, 1993; Lartz & Lestina, 1995). These techniques are used in an environment conducive to reading in conjunction with the expectation that their deaf child will become literate (Ewoldt, 1994; Schleper, 1995).

In addition to the obvious physical difference of how the book is shared (through a visual vs. spoken/visual approach), there may be other ways in which deaf and hearing parents differ when they read stories with their children. For example, there is a need to better understand the indigenous practices of how deaf parents read with their deaf child and to contrast this with the shared reading practices of hearing mothers with typically-developing hearing children. A direct comparison of the reading techniques of these two groups has not been previously reported. In addition, there may be variation in the way in which stories are conveyed among the deaf parents, the ways in which the deaf parent engages the child, and the ways in which deaf parents read a book for the first time or during a subsequent reading. We can benefit by expanding on the existing information that we have about deaf parents shared reading techniques because this can help all parents with deaf children.

Although research has looked to deaf adults as they engage with a deaf child over a book (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Lartz, 1999; Lartz & Lestina, 1995; Mohay, 2000; Schleper, 1995), the research typically has been observational case studies or conducted with very small sample sizes. Nor have there been direct comparisons made with hearing mothers with hearing children. Because there is a relationship between shared reading

and future language and early literacy skills, this information can become part of parent education programs that provide support to parents by providing them with specific techniques that they can use to engage their deaf children with books.

Review of the Literature

It has been well documented that parents' literacy efforts contribute to the development of language and literacy skills in their children (Deckner, Adamson & Bakeman, 2006; DeTemple, 2001; Kerr & Mason, 1993; Lazzari, Bender, & Kello, 1987, Ninio & Bruner, 1978; Snow, 1983). This review of the literature will synthesize information on the impact of shared reading on a child's language development and/or early literacy skills, reading techniques that have been shown to be effective with children in general, and conclude with what we know about parents who read with their deaf and hard-of-hearing children.

Benefits of Shared Reading

Shared reading has been studied in a variety of settings and has shown numerous important effects on children's literacy development. Reading with a child is a particularly good way of teaching them new skills such as how to read a book, become more culturally aware, and gain world knowledge. Interactive story reading is the "joint use of picture books to talk about the pictures, read the text, and discuss the story ideas" (Kerr & Mason, 1993, p. 133). Through this interaction, a child can learn new vocabulary and grammar, develop early literacy skills, and learn about their parents' worldviews and values (Heath, 1982). Because the parent and child are both attending to a "self-contained illustration and text" (DeTemple, 2001, p. 35), it allows for not just reading and understanding what is happening, but also the "opportunity for complex, explicit language such as explanations, definitions, and descriptions" (DeTemple, 2001, p. 35). Shared reading can also provide a means to talk about things other than what is not immediately visible in the book such as something the child may have experienced previously. In addition, shared reading helps children with making predictions about what could happen, or trying to understand what a character might be thinking or feeling. Shared reading also allows the parent

to introduce reading concepts such as the direction one reads, identifying words, letters, quotes, as well as clarifying story meaning (Snow, 1983). The following sections will provide information on what research has been conducted regarding the benefits of shared reading in general and with deaf children specifically.

Effects of Shared Reading on Language, Literacy Skills, and Vocabulary Development

Over the years, research conducted around parental shared reading practices has included many different variables. The research on shared reading and its effects on language development and literacy skills has evolved from looking at single variables to composite variables. This evolution provides a sense that the process of shared reading is complicated and that looking at variables in isolation does not allow us to see how they may combine and interact. There is also value in conducting an examination of the stability of maternal and home literacy practices. In addition, there is value in examining the development of the children's language and literacy skills over a period of time rather than a snapshot of how the mother and child perform during one reading episode.

It is not only the act of reading that can have an impact on a child's language development, but the frequency and type of interaction around that book. Home literacy practices such as the number of times per day the parent reads with a child, the average amount of time that is spent reading, and the number of children's books in the home have been found to be powerful predictors of children's receptive and language development (Deckner et al., 2006) especially in the area of vocabulary development (Ninio, 1983; Tabors, Beals, & Weizman, 2001; Williams, 1994).

The Home-School Study (Tabors et al., 2001) examined the type of vocabulary that mothers used and found mothers used more rare words during the discussion of the book than

was actually available in the text. While reading most definitely has an impact on vocabulary, DeTemple and Snow (2003) point out that the relationship is “bidirectional” (p. 17). Books can be used to introduce children to new vocabulary but it is also possible that children with greater vocabularies tend to enjoy reading more and engage more with their parents over a book, thus leading them to increasingly expand on their vocabulary.

There is a need to explore what variables may impact the reading strategies that mothers use. For example, mothers’ book reading strategies (simple descriptions, elaborate descriptions, links to the world, prediction/inferences, book concepts, letter/word related references, letter-sound relationships, and recall/reciting of the text) were related to their childrens’ vocabulary scores (Justice, Meier, & Walpole, 2005; Ninio, 1983; Roberts, Jurgens, & Burchinal, 2005). In one study (Roberts et al., 2005), an overall measure of the home environment (frequency and maternal bookreading strategies, child’s enjoyment of reading, and maternal sensitivity) had a positive association with vocabulary, receptive and expressive language and early literacy skills. The research conducted by Roberts et al. over a five-year period provided a correlational analysis of the variables studied, and explored whether home literacy practices could predict children’s language and literacy skills using a repeated measures analysis. The overall measure of home environment at 18 and 24 months also was a significant predictor of receptive vocabulary at 3 years of age, and a predictor of receptive and expressive language and early literacy skills at 4 years of age.

To provide further evidence of the value of home literacy practices on language and literacy skills, Storch and Whitehurst (2001) studied 367 four-year-olds and their primary caregivers over a four year period. Through Structural Equation Modeling, they identified three global measures of the parent and home environment (literacy environment, parental

expectations, and parental characteristics) that account for 40% of the variance in children's understanding of the meaning of print such as vocabulary and conceptual knowledge. These skills, in turn, have a positive correlation ($r = .64$) with the children's phonological awareness and letter knowledge. This confirms the belief that there are connections between the home literacy environment and later language ability. However, there is a need for a clearer understanding of specific techniques that have been successfully employed by parents.

Effect of Book Familiarity

Many parents and their children read books over and over again. However, the type of interactions that occur over the course of reading changes over time as books become more familiar. One study reported that mothers of 24-month-old toddlers talked more with unfamiliar books, whereas the toddlers themselves talked more with familiar books (Senechal, Cornell, & Broda, 1995). There may be more parental input with an unfamiliar book than with a familiar book because when a new book is being read, parents tend to ask more questions or provide more information to the child by labeling and describing actions taking place in the book (van Kleeck, Gillam, Hamilton, & McGrath, 1997). As they become more familiar with the book and its vocabulary, there is less labeling behavior (Goodsitt, Raitan, & Perlmutter, 1988), the questions change, and parents may use fewer descriptions, predictions or inferences (Haden, Reese, & Fivush, 1996). Instead, parents may require the children to make inferences, predict or interpret (van Kleeck et al., 1997). In addition, the parents may change their level of involvement. In an unfamiliar book, the parent may control more of the reading but as it is read over and over, the parent may give children more control (Goodsitt et al., 1988). Book familiarity has an impact on what the parent chooses to do during a shared reading session.

Because of this, studies should either control for this or provide opportunities to make meaningful comparisons of parent behavior with both a familiar and unfamiliar book.

Specific Techniques that Parents Use During Shared Reading

Parent reading techniques have been described in observational, intervention and experimental studies (Akamatsu & Andrews, 1993; Anderson-Yockel & Haynes, 1994; Andrews & Taylor, 1987; Beals, DeTemple, & Dickinson, 1994; Deckner et al., 2006; DeLoache, 1984; DeTemple, 2001; Kadaverek & Sulzby, 1998; Lartz, 1993; Lartz & McCollum, 1990; Martin, 1998; Mogford, Gregory, & Keay, 1979; Neuman, 1996; Ninio, 1983; Senechal et al., 1995; Snow, 1983; Wheeler, 1983; Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchaca, & Caulfield, 1988). There does not appear to be one correct method of sharing books with children; rather, it is a combination of techniques that seem to foster a child's language and early literacy skills development (Roberts et al., 2005; Storch & Whitehurst, 2001). These techniques include the ways in which parents:

- make connections from the book to the child's experiences or world (Beals et al., 1994),
- question their child (Beals et al., 1994; Kadaravek & Sulzby, 1998; Lartz, 1993; Lartz & McCollum, 1990; Martin, 1998; Mogford et al., 1979; Ninio, 1983; Senechal et al., 1995; Snow, 1983; Wheeler, 1983),
- make connections between the text or illustrations and language (Neuman, 1996), including ways that parents may deviate from the text (Martin, 1998; Martin & Reutzel, 1999),
- get and maintain their child's attention (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Lartz & Lestina, 1995; Schleper, 1997; Senechal et al., 1995),

- encourage or invite their child to participate in the shared interaction (Deckner et al., 2006; DeTemple, 2001), and
- may correct their child (Snow, 1983).

Each of these will be discussed in the following sections. Studies of deaf mothers and/or children that are relevant to the discussion also will be included in order to compare similar and different techniques used by deaf parents with deaf children and hearing parents with hearing children. These studies show that there are differences in the ways deaf parents get and maintain attention, and how they interact with the text as compared to hearing parents with hearing children.

Technique #1 Connecting concepts: One typical strategy that both deaf and hearing adults employ when reading books with children is using the text as a springboard for talking about information external to the story (Scarborough & Dobrich, 1994). It has been labeled in different ways: 1) relating to the child's background (Andrews & Taylor, 1987; Lartz & Lestina, 1995; Lartz, 1999; Schleper, 1995); 2) non-immediate talk (Beals et al., 1994); 3) bridging (Neuman, 1996); 4) making an association to something outside of the picture (Wheeler, 1983); or 5) extending the narration by adding new narrative elements or by expanding to related general topics (de Jong & Leseman, 2001). However, the underlying idea is that parents make connections between the story and the child's world, they explain meanings, and they make predictions or inferences (Beals et al., 1994). Parents may connect concepts because they "anticipate the skills that children will require later for successful literacy and school achievement" (Beals et al., p. 24).

Parents may alter how they use the connecting concepts strategy based on the age of their child or on other factors such as perceived language skills. Mothers of younger children or

children with language delays tend to use more immediate talk which was described as comments or questions that were closely related to the words or pictures of the books that they were reading, rather than non-immediate talk which is how mothers made comments or asked questions about general knowledge, personal experiences, drawing inferences or making predictions (Crowe, 2000; DeTemple, 2001; see van Kleeck & Vander Woude, 2003, for review). A longitudinal study, the Home-School Study of Language and Literacy Development (Snow, Tabors, & Dickinson, 2001), also found that mothers of preschoolers used immediate talk more frequently than non-immediate talk as compared to when their children were older. However, the mothers' use of immediate talk was found to be negatively associated with measures of early literacy. Those mothers who used a higher percentage of immediate talk with their preschoolers during shared bookreading had children who had lower scores on kindergarten measures of early literacy. In contrast, those mothers with a lower percentage of immediate talk tended to have children who had higher scores on the same measures. One possible reason is that non-immediate talk tends to be longer in utterance length, and requires more complex language than simply labeling pictures (DeTemple, 2001). These studies demonstrate that although mothers may adjust how they read the book depending on their child's age, they may promote early literacy skills development by using the text as a springboard for connecting concepts and engaging in more complex discussions.

Technique #2 Questioning: Parents' use of questions during shared bookreading has been shown to be a valuable tool in promoting literacy skills and resulted in higher language scores (Lazzari et al., 1987). There have been numerous observational studies that examine the types of questions asked during shared bookreading (Beals et al., 1994; Kadaravek & Sulzby, 1998; Lartz, 1993; Lartz & McCollum, 1990; Martin, 1998; Mogford et al., 1979; Ninio, 1983;

Senechal et al., 1995; Snow, 1983; Wheeler, 1983). In general, mothers have been observed to adjust the types of questions they ask of their children (DeLoache, 1984; Martin & Reutzel, 1999). For example mothers of older children use questioning to draw their children into the reading activity (DeLoache, 1984; Martin & Reutzel, 1999). DeLoache (1984) stated that mothers “adapt their questions to their perception of their child’s knowledge and...aim their questions to the child’s zone of proximal development” (p. 93). With that in mind, intervention studies have been designed to encourage specific types of questions that parents should ask during a shared bookreading event (Crain-Thoreson, & Dale, 1999; Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996; Lim & Cole, 2002; Whitehurst et al., 1988; Whitehurst, Epstein, Angell, Payne, Crone, & Fischel, 1994). For example, in the Dialogic Reading Program (Whitehurst et al.), parents are encouraged to ask more open-ended, wh-type questions and discouraged from using yes/no questions. The yes/no questions do not facilitate discussion with a child while the open-ended or wh- type questions can be considered more engaging because they encourage the child to provide more than a one-word answer. The Dialogic Reading Program studies have consistently shown that children score significantly higher on standardized post-test language measures when their parents or teachers have been trained in the use of this program compared to control groups. For example, in the original study, Whitehurst et al. reported on 30 typically developing children between 21 and 35 months of age. After the experimental group parents changed their reading strategies, including the shift in open-ended questions from yes/no questions, the children’s vocabulary, as measured by the Peabody Picture Vocabulary Test (PPVT) ($M = 11.14$; $SD = 6.54$) and Expressive One Word Picture Vocabulary Test (EOWPVT) ($M = 14.50$, $SD = 7.36$) were significantly different than the control group on both of these

measures (PPVT: $M = 7.87$, $SD = 4.72$; EOWPVT: $M = 8.47$; $M = 5.50$). These studies demonstrate the importance of questioning in the shared reading experience.

Similar to the breakdown in the connecting concepts strategy, there are questions that focus mainly on the book or questions that might challenge the child to think beyond what is immediately visible in the book. The more immediate questions may be perceived as lower level questions and include yes/no, pointing, or requests for a label or questions that the child may not even have to answer (Lartz, 1993). These are typically used with younger children (DeLoache, 1984) or when a parent may perceive that their child has language delays as in the case of hearing mothers with their deaf children (Lartz, 1993; Lartz & McCollum, 1990). Higher level questions that may engage the child to think beyond what is in the book include inferential type questions where the child is asked to explain a behavior of a character, or asking the child to make predictions or draw an inference from the story (DeLoache, 1984). In addition, parents often alter their questioning techniques based on the age of the child or the familiarity with the book.

Technique #3 Interactions between language, print, and illustrations: Another strategy parents use when sharing books with their children is the way in which they use the text or pictures. Print referencing behaviors such as pointing to the print and tracking the print can result in significant gains in children's early literacy skills such as print concepts, word concepts and word segmentation abilities (Justice & Ezell, 2000). Just as connecting concepts and questions, parents may alter how they interact with the print based on the age of their child. For example, mothers of younger children (6, 12, and 18 months) simplified text concepts while mothers of older children (24 months and 4 years) spent more time explaining text concepts (Martin, 1998). Similarly, mothers of younger children (one and one-half years of age) tend to use illustrations to

tell stories and mothers of older children (three and one half and five and one half years of age) are more likely to read the print (Sulzby, 1985). Parents of younger children also label the pictures rather than read the text. In other words, it appears that as children become more sophisticated, the discussion changes from being centered on the pictures to specifically about the text (Akamatsu & Andrews, 1993).

A related strategy that parents use when reading books with their children is how they may deviate from the text and this is where we may expect to see a difference between hearing dyads and deaf dyads. Martin (1998) and Martin and Reutzel (1999) analyzed a group of 25 mothers' text deviation strategies. These strategies were labeled: 1) Simplification, where mothers replace the text with simpler or more concrete terms; 2) cognitive elaboration (Martin, 1998) or elaborative (Martin & Reutzel, 1999), where mothers give additional information that clarifies or extends the child's knowledge; and 3) engagement strategies that serve to focus and maintain the child's attention. Mothers' deviations were categorized at the word level, phrase level or sentence level (Martin & Reutzel, 1999). In each level, the mother's strategy was described as an omission (the mother omits words from print in text), a substitution (the mother replaces more complex words in the text with language that is simpler) or repetition (the mother repeats a word, phrase or sentence to make sure the child understands; Martin 1998). Mothers of younger children (6-, 12-, 18-, and 24-month olds) tended to simplify text or use more word substitutions and mothers of 12- and 18-month old children omitted sentences more frequently (Martin, 1998; Martin & Reutzel, 1999). They concluded that mothers' use of text deviation strategies depended on their child's cognitive and language development. In other words, mothers of older children (in this case, 4-year-olds) were more likely to read the text verbatim and use less substitutions or simplification strategies.

In contrast, Kadaravek and Pakulski (2007) found that in their study of 12 deaf children between 2 and 4 years of age with their hearing parents, the older deaf children were less likely to see the text read verbatim than younger children. They created a 3-2-1 rating scale based on how mothers modified the book's text and who controlled the interaction. The authors emphasized that they did not mean to imply that verbatim reading is better than modifying the text to meet the child's language level or interest; rather the study was designed to identify any qualitative differences occurring during shared book reading. What might be of concern in replicating this type of scale is the combination of text deviation with whether or not the mother was leading the interaction. Although a mother might be reading the text verbatim, it does not mean that they are not following the child's lead in other extra-textual conversations. For example, a mother might read the text verbatim and then might respond to the child's questions that show she is following her child's interest. Additionally, the sample size was small and quite varied in how the parents communicated with their children and in the range of the children's hearing levels. Both the communication method and level of hearing could impact the tendency of the parent to read a text verbatim versus modifying or simplifying text. However, because the result of this study (with hearing mothers of deaf children) contrasts with the studies conducted by Martin (1998) and Martin and Reutzel (1999) in text deviation strategies with older children, further examination is needed to see if this difference occurs when deaf mothers read with their deaf children.

Technique #4 Attention getting strategies: Although all parents find ways to get and maintain attention, one way that deaf and hearing parents may differ is in the techniques that they use. Hearing parents tend to use vocalization attention-getting strategies with young children (Senechal et al., 1995). The attentional vocatives appear to be at the beginning of each

cycle initiated by the mother (Ninio & Bruner, 1978). For example, mothers of younger children used more sounds (e.g. Gasp!) or words (e.g. “Look!”) to direct the child’s attention and become a part of the reading routine (Martin, 1998; Martin & Reutzel, 1999). Parents who are not as comfortable reading with their child will use these attentional vocatives more often than parents who are more comfortable reading with their child (Neuman, 1996).

Parents with deaf or hard-of-hearing children may need to utilize different, more physical and visual techniques to get their child’s attention. Deaf parents with deaf or hard-of-hearing children will use techniques such as tapping, eye gaze, physically moving their body or the book to get and maintain attention (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Lartz & Lestina, 1995; Schleper, 1997). This is where we may expect to see a difference between parents with hearing children and parents with deaf and hard-of-hearing children because hearing parents and hearing children can simultaneously attend to the book without making eye contact. A deaf or hearing parent with a deaf or hard-of-hearing child must either focus on the book or communication, making the interaction sequential. As part of a longitudinal study comparing deaf mothers/deaf children, hearing mothers/deaf children, deaf mothers/hearing children and hearing mothers/hearing children, Spencer, Swisher, and Waxman (2004) examined maternal attention or redirecting strategies. They found that the dyads with a deaf parent were more likely to use visual and tactile methods than hearing mothers. They also found a significant positive relationship ($r = .54$; $p < .01$) between the parents’ use of these attention getting strategies and their child’s visual attention behaviors. In other words, all parents utilize attention getting and maintenance strategies but when a child is deaf, the strategies the parent uses are different due to the sequential rather than simultaneous nature of communication while reading a book. Further

examination of deaf parents will provide us with effective ways to get and maintain a deaf child's attention.

Technique #5 Encouraging child/Inviting participation: Besides the actual reference to the book, there are other important strategies that parents use to engage their child as active participants. Prompting (Deckner et al., 2006) and fill-in-the-blank utterances (DeTemple, 2001) are strategies that parents use to bring their child into the storytelling. Parents also use repetition, recalling, prediction, and positive reinforcement strategies (Martin, 1998) such as feedback (Neuman, 1996; Ninio & Bruner, 1978; Senechal, et al., 1995). The Dialogic Reading Program (Whitehurst et al., 1988; Crain-Thoreson & Dale, 1999), an intervention program with parents, encourages parents to follow the child's lead, help the child, provide praise and encourage the child. The parents in the original (Whitehurst et al.,) experimental group (n=14) were trained to increase their use of open-ended questions, how to expand, how to respond appropriately to their children and to decrease their frequency of straight reading. Use of these strategies resulted in a positive change in children's expressive language as measured by the Illinois Test of Psycholinguistic Abilities, the Peabody Picture Vocabulary Test-Revised, and the Expressive One Word Picture Vocabulary Test compared to the control group (n=15), whose parents were told to read as they normally would. This shows us that it is not just a book but also the interaction around the book that engages a child and fosters his language development and his understanding of the world around him. Further study is needed to better understand how deaf parents provide this support with their deaf children during shared reading.

Technique #6 Corrections: While most parent reading techniques are considered favorable, there are certain parent behaviors that may have a negative impact on storytelling (Snow, 1983). For example, when a parent takes on the role of teacher (Snow, 1983), s/he may

become critical or too quick to correct the child. The Dialogic Reading Program (Whitehurst et al., 1988) discourages the use of direct corrections and/or criticisms of a child because it may make the child reluctant to participate in reading activities at all.

Summary of parent reading techniques. In summary, there are many reading techniques utilized by parents when sharing books with their children. The techniques or combination of techniques that a parent uses may be influenced by the child's age, perceived language ability and whether their child is deaf or hearing.

Deaf and Hard-of-Hearing Children

Deaf and hard-of-hearing children are at risk for delays in language and literacy skills development (Andrews & Mason, 1991; King & Quigley, 1985; see McAnally, Rose, & Quigley, 2007, for review; Snow, Burns & Griffin, 1998; Williams, 1994). The following sections will discuss academic achievement in reading of school-age deaf and hard-of-hearing students. In order to understand why, as a group, they may not be comparable to their hearing peers, the relevance of access to language and the implications of the lack of access will be discussed. Finally, shared reading techniques of deaf parents with deaf and hard-of-hearing children will be explored in order to show that the literature to date has been a good foundation.

Reading Achievement of Deaf and Hard-of-Hearing Students

Generally, reading and language academic achievements of deaf and hard-of-hearing students have been lower than their typically developing hearing peers (Mitchell, 2008; see Paul, 2003, for review). Traxler (2000) reported the results of the Stanford Achievement Test, 9th Edition (Harcourt Educational Measurement, 1996) that was given to 4808 deaf and hard-of-hearing students around the country. The study was divided into two parts: a norming study and a performance standards study. The results of each of these will be discussed below.

The results of the norming study showed that the median Reading Comprehension, Reading Vocabulary and Language subtest scores for 80% of the students fell largely in the “Below Basic” (less than partial mastery) Performance Standard. Even those deaf and hard-of-hearing students who were in the top one-fifth range were performing no higher than the Basic Level on these same subtests.

A smaller sub-sample consisting of 971 deaf and hard-of-hearing students (ages 7-15) whose teachers judged they were performing on or near grade level were studied along with their hearing peers for the purpose of establishing Performance Standards. These standards were identified as Below Basic, Basic, Proficient, and Advanced. Both the deaf and hearing students’ scores had “fairly similar proportions” (Traxler, 2000, p. 345) in each of the performance standards. Traxler (2000) also found that the “Performance of the deaf and hard-of-hearing students relative to their same-age hearing peers is noticeably favorable in Spelling and unfavorable in Reading Vocabulary...and Language” (p. 347). Although these same deaf students performed similarly to their hearing peers for Reading Comprehension and Reading Vocabulary, 60% of both the deaf and hearing groups achieved no higher than the basic level, which is defined as “partial mastery of the knowledge and skills that are fundamental for satisfactory work” (as cited in Traxler, 2000). One might not be alarmed because some deaf students performed similarly to their hearing peers, however, it can also be argued that this was a sub-sample of 20% of a larger deaf population and included those who had been judged to be performing at grade level without any other statistical test to verify this. The majority of the 4808 deaf students, however, were performing well below grade level, which demonstrates that there is cause for concern.

There has been much discussion as to the reason for the delayed reading abilities of deaf and hard-of-hearing students. General consensus is that it is not due to any one specific reason but due to the many components involved in the reading process (Andrews & Mason, 1991; King & Quigley, 1985). For example, a typically developing hearing child usually has the pre-literacy skills such as “a well-developed vocabulary, experiential knowledge, a wide variety of developing schemata...linguistic competence in the English language, inference skills, and skills in figurative language,” (McAnally et al., 2007, p. 24). One part of what a hearing child must do when learning to read is learn how to decode the text. They must also be able to acquire, store and retrieve the meaning of words and sentences, understand when something is not explicit and use all of this information to organize, store and recall information (Wilbur, 2000). A deaf child also needs all of this in order to read however, the deaf or hard-of-hearing child who has limited access to spoken language may have reduced or delayed skills in the domains necessary for reading. The printed word will not necessarily reinforce the relationship between the language and the text (McNally et al.) because the deaf child does not have access to the printed word in its spoken form and may have inadequate language skills (Wilbur). That child will need other strategies such as phonological, orthographical or sign codes (Goldin-Meadow & Mayberry, 2001; see Musselman, 2000, for review) to make the connection. In addition, King and Quigley (1985) compare the "knowledge base" (p.70) that a deaf child from a hearing family, as compared to a hearing child, brings to the reading process. The knowledge base is a result of various experiences that a child has internalized through interaction with parents and other people. The deaf child may not lack exposure to early experiences but they "may lack a fluent language and communication system with which to signify and internalize those experiences in some manipulable code" (King & Quigley, 1985, p. 70).

In summary, deaf and hard-of-hearing children, unlike their typically developing hearing peers, may not have the inferential, figurative language and other linguistic skills that hearing children seem to acquire automatically through exposure to the environment (e.g., overhearing conversations). They may “lack early intensive experiences with print that are personal, authentic, and meaningful” (Williams, 1994, p. 150). All readers need to infer the meaning from written words, but deaf and hard-of-hearing children are less likely to make the leap from concrete straightforward reading (Stewart & Clarke, 2003). It could be for this reason that deaf and hard-of-hearing students often hit a ceiling at approximately the 4th grade reading level (Stewart & Clarke, 2003). In other words, hearing children usually come to the task of reading with the necessary pre-literacy skills while the same cannot be assumed for deaf and hard-of-hearing children.

Reading Skills of Deaf Children from Deaf Families

When examining the early literacy development of deaf children from deaf families as compared to deaf children from hearing families, deaf children’s pre-literacy development appears similar to that of hearing children (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Maxwell, 1984). It is of great interest how deaf parents read to their deaf children because they provide us with a model of typical development using a visual language. Presumably, deaf parents are able to set up visual literacy environments (Akamatsu & Andrews, 1993; Bailes et al., 2009) and have a fluent communication system (Andrews & Zmijewski, 1997). Studying these indigenous practices is valuable because the “examination of language teaching and learning in natural environments of home, community, and culture has much to teach us about promoting language acquisition and literacy in school...and we might discover strategies we can teach

hearing parents as they attempt to interact with their child in the visual modality” (Erting, 1992, p. 107).

For school-aged deaf and hard-of-hearing children, knowledge and use of ASL has a positive correlation with English literacy skills such as reading comprehension (see Chamberlain & Mayberry, 2000, for review; see Goldin-Meadow & Mayberry, 2001, for review; Hoffmeister, 2000; Strong & Prinz, 1997) and writing skills (Strong & Prinz, 1997; see Wilbur, 2000, for review) and Math skills as measured by standardized tests in English and Math (Boudreault, 2011). Chamberlain and Mayberry (2000) summarized three studies (also reported by Strong & Prinz, 1997, 2000; and Hoffmeister, 2000; Padden & Ramsey, 2000) of the relationship between ASL and reading skill and found what they consider to be robust positive correlations. For example, Strong and Prinz (2000) report a statistically significant, albeit moderate, correlation between ASL skills and English literacy ($r(145) = .580, p < .01$) for students aged 8-15. They also state that there was a significant difference in English literacy skill depending on ASL ability but did not report any statistics. Hoffmeister (2000) also reports moderate correlations between various ASL skills (ranging from .51 to .54) and reading comprehension for 50 students aged 8-16. Padden and Ramsey (2000) reported that various ASL skills (sentence order, verb agreement, sentence imitation, fingerspelling in sentences, and initialized signs in sentences) of students aged 9-15 had correlations ranging from .43 to .80 with reading comprehension ($n=31$). Further confirming the relationship between ASL and English skills, Boudreault (2011) reported on the correlation of English skills as measured by the California Standards Test (CST), Measures of Academic Progress (NWEA, 2011), the California High School Exit Exam (CAHSEE) and Rigby’s (2003) Independent Reading Level (IRL), with three tests of ASL. The study took place at the elementary, middle school and high school levels in a California K-12 school for the Deaf.

For students in the elementary school, the in-house ASL assessment showed a positive moderate correlation with the spring IRL scores ($r(55) = .623, p < .01$). Similarly for Middle and High School students, significant correlations were found for 3 different ASL measures, the Test of Grammatical Judgment in ASL-Revised (Boudreault, 2006), Noun-Verb Comprehension Test, and Subject-Object Comprehension (Supalla, Newport, Coulter, & Metlay, 1995) and MAP Reading and the ELA portion of the California Standards Test. In addition, students with higher ASL skills had significantly higher scores on MAP Reading than their peers who had lower ASL skills ($F(1, 43) = 11.778; p < .01$). Another finding was that ASL skills predicted High School student performance in English and Math on the CAHSEE.

The positive relationship between ASL and English skills has been shown for deaf and hard-of-hearing children with hearing parents who communicate with ASL, as well. In a total sample of 45 hearing mothers with deaf children, Andrews and Mason (1986) report that hearing mothers who were more fluent in ASL had children who were considered to be high print achievers. Similarly, hearing mothers with intermediate or advanced levels of sign language skills were able to provide higher levels of mental state input to their children (Moeller & Schick, 2006).

However, simply knowing and using ASL does not mean that a child will automatically acquire literacy skills because mapping ASL to English is not a direct process (Mayer & Wells, 1996; Singleton, Morgan, DiGello, Wiles & Rivers, 2004). The challenge for deaf students is the ability to make meaningful associations between a child's natural, visual language and the written system (Padden & Ramsey, 1998) when there is a mismatch between their language, ASL, and the printed word, English. In other words, while hearing children can map their spoken language onto the English text, ASL does not have that same direct relationship with the English

text. The deaf reader needs to be able to recode the print into the language that they use (Andrews & Mason, 1991).

Deaf Parents Reading with their Deaf Children

The shared reading techniques used by deaf parents that are similar to what hearing parents with hearing children have been shown to use will be explored. Following that, reading techniques that are used by both deaf mothers with their deaf children and hearing mothers with hearing children will be examined to look at the differences. Given these differences, it may be critical to explore why these differences exist.

There has been evidence to support that deaf children can develop language and pre-literacy skills similar to their hearing peers. One of the earliest reports of how a deaf child with deaf parents develops literacy was a longitudinal case study conducted by Maxwell (1984) as part of a larger study on language acquisition. Alice, a third generation deaf child, was observed from the time she was 21 months old until she was just over six years. The analysis was from developmental data of 22 videotaped sessions from the ages of 2 years, 3 months to 6 years, 3 months. Alice's interaction with books allowed her to incorporate six levels of story knowledge including:

1. Labeling, or naming pictures and signs;
2. Stating propositions and expressing continuity in terms of story information;
3. Reading pictures;
4. Going beyond the pictures;
5. Projecting into the stories; and
6. Reading independently for meaning (Maxwell, 1984, p. 196).

These levels, Maxwell (1984) reports, are a natural result of the interaction between Alice and her parents and are similar to what a typically developing hearing child with hearing parents would experience. In addition, Maxwell reports that Alice's reading achievement scores in Grades 1-3 showed her to be performing at grade level. This descriptive study provides information about typical development of a deaf child who uses her native language with her parents.

Maxwell (1984) observed that deaf parents make their stories visually accessible through the use of ASL. For example, the father is described as transferring "the spatial relations of ASL manual signs to the objects in the pictures so that a picture substitutes for a usual sign location" (Maxwell, 1984, p. 199). Another observation made by Maxwell (1984) is that Alice learned, albeit implicitly, that books have other purposes. These include:

1. Stories are for enjoyment;
2. Stories are for repetition;
3. Stories can be a social activity;
4. Characters have different styles of speaking;
5. Stories contain two kinds of language;
6. Language can be translated into action;
7. Books are authorities;
8. Stories have an order that is important; and that
9. Voices (signing) can change to express mood (Maxwell, 1984, p. 213).

Generally speaking, deaf mothers use the shared reading time as an opportunity to confirm their child's knowledge and understanding, expand on various concepts, make connections between the content of the book and the child's experiences, and provide specific

language input (Andrews & Taylor, 1987; Andrews & Zmijewski, 1996; Lartz & Lestina, 1995). For example, Andrews and Taylor observed a deaf mother with her 3½-year-old deaf child and noted that during their shared reading, a large proportion of the mother's comments were focused on expanding and confirming the child's understanding through explanations such as discussing why a character was behaving in a certain way.

Deaf mothers also use the book to make connections to their child's own experiences or the real world, similar to a technique that Wheeler (1983) described hearing mothers doing with their hearing children. The mother in Andrews and Taylor's (1987) study used the book to remind her son of an experience they had that was similar to one in the book (blowing bubbles). Five of six deaf mothers (Lartz & Lestina, 1995) and the two deaf mothers described by Andrews and Zmijewski (1996) also used this strategy when reading with their 3-to-5 year-old deaf children.

And finally, deaf mothers will provide language input by labeling, reading the text and prompting their child to read with them (Andrews & Taylor, 1987). Parents build on their child's literacy knowledge by using the book as a foundation. They also follow their child's lead. These are the types of techniques that Akamatsu and Andrews (1993) suggest that all parents should use with their children. Because there is no language barrier between deaf mothers and their deaf children, one may presume that the strategies they use are natural and based on their own experiences as a deaf person.

Hearing mothers may not have a similar comfort level when reading with their deaf children because they may not be as familiar with the language or may not be aware of what is needed to make the book visually accessible. The following section will cover information on

what is known about hearing parents when they share books with their deaf and hard-of-hearing children.

Shared Reading with Hearing Parents and their Deaf and Hard-of-Hearing Children

We know relatively little about the shared reading practices of hearing parents with their deaf children. Few studies have been conducted that examined hearing parents reading techniques with their children and what the effect is on language development and early literacy skills of deaf and hard-of-hearing children. Specifically, four studies will be discussed showing the strategies that hearing mothers with deaf or hard-of-hearing children use during shared bookreading as compared to hearing mothers with hearing children. Although these studies all show that they may use similar strategies, they also alter these strategies based on the perceived language level of their children.

The language learning experience for deaf children with a hearing mother is different than for hearing children with a hearing mother. An early study concluded the experience was different because of the mother's need to initiate joint attention, control and channel the child's attention in a visual rather than auditory manner (Mogford et al., 1979). The researchers focused on hearing mothers and the differences in their shared reading behavior with either hearing or deaf children by comparing how six hearing mothers of deaf or hard-of-hearing children and six hearing mothers of hearing children read to their child at 18 and 24 months. Mogford et al. (1979) found that the amount of time spent reading and the number of turns used by mothers of both deaf and hearing children were the same. However, the amount of time the hearing children participated was greater than the deaf children. In addition to analyzing for frequency and number of turns, they also coded the following types of utterances: attentional vocatives, queries (questions), feedback, labels, qualifiers (describing something), invitations to vocalize,

encouragement for child to relate concepts to his/her own environment, and expansions. Mogford et al. (1979) found that the mothers of deaf children were more likely to have a highly structured reading session and less likely to deviate from the book such as making connections from the book to the child's experience. They suggested that this behavior did not change with the child's age and contrasted with the "smooth-flowing" (Mogford et al., p. 45) interaction of hearing mothers with hearing children who followed their child's lead or expanded on their interests.

Even the same mother might read differently when she has deaf and hearing children. Lartz and McCollum (1990) developed a study where one hearing mother was her own control with her deaf and hearing 3-year-old twins. Lartz and McCollum (1990) examined the frequency and types of questions (conventional test questions, gestural test questions, requests for information and verification of communication) used when reading the same book to each twin alone. The mother, who was learning sign language, was videotaped three times. Results indicated that the mother asked significantly more questions of the hearing twin than the deaf twin. The mother primarily asked test questions that allowed the girls to show their knowledge but the manner in which she did this varied with each child. It appears that she accommodated her deaf child's need to maintain visual attention to the book by using more gestural test questions, such as pointing to an object in the book and waiting for the child to respond rather than getting her child's visual attention, asking the question, and then waiting for a response. Lartz and McCollum speculated that the difference in the number and type of questions was due to the deaf child's lower language level and that the mother adjusted her questions based on what she knew that each child knew. However, there was no formal language assessment conducted to determine the child's language. The researchers believed the deaf twin had delayed language based on her limited participation in the reading sessions.

Hearing mothers of deaf children may also ask different types of questions or may not ask as many as hearing mothers with hearing children. As Lartz and McCollum (1990) suggested, it is possible that mothers adjust their reading style to accommodate the perceived language levels of their child. Lartz (1993) found that four hearing mothers with their deaf children did not ask as many questions and asked different types of questions compared with hearing mothers with hearing children. She did not use a hearing mother-child control group but relied on what had been reported in the general literature. She believed that the difference in maternal questions was attributed to the low language levels (as determined by the Mean Length of Utterance-MLU) of the children. However, the MLU was calculated based on the reading sessions and not an independent language sample which would be a better indicator of the child's actual MLU. This, in turn, would allow for a correlational analysis of the child's language during the reading session and a spontaneous sample. This type of analysis would provide a better picture of the child's language and if, in fact, mothers are altering their questions based on their child's language levels.

These three small studies (Mogford et al., 1979; Lartz, 1993; Lartz & McCollum, 1990) provide a glimpse into how shared reading with a hearing parent can be different for deaf children compared to their hearing peers but there is no conclusive evidence as to the reason for these differences. To better explore the differences, Plessow-Wolfson and Epstein (2005) conducted a study of 7 deaf children between the ages of 4 and 9 years and their hearing mothers during story reading episodes. All of the dyads used either American Sign Language or some type of sign system such as Signing Exact English. Mothers whose children were functioning at age level, as determined by the Preschool Language Assessment Instrument, asked twice as many questions and used five times as many elicitation strategies as those mothers whose

children who were not functioning at age level. Strategies that mothers used included elaboration to ensure that their child understood the text, maximizing their child's comprehension by questioning, and presenting in an affective manner. However, there is another factor, which influenced the amount of questions and concept elicitation strategies. The mothers who reported that they read more than 60 minutes each week with their child asked many more questions and discussed more concepts and inferences than those who read less than 60 minutes. This study seems to confirm previous reports that mothers' reading strategies are related to the language levels of their children.

Although the Plessow-Wolfson and Epstein (2005) study is important for showing that mothers adjust their reading strategies depending on the child's language and that one of the mothers' home literacy practices (how often they read) is a factor in the types of strategies mothers used, there are several things to consider in the reporting of their work. While the numbers show a difference between those mothers who read more than 60 minutes and those who read less than 60 minutes, no statistical analysis was provided that showed whether it was a significant difference. Also, it is difficult to determine, from the report, how the groups were determined. For example, in another analysis, the group breakdown consisted of whether the children's language was at age level or below age level. A group number was not reported for either of these group comparisons. It was also not clear how age level was determined when separating the groups by younger children versus older children. Although the data are inconclusive, it does provide us with some insight about the amount of time that mothers might spend reading with their children and how this influences their reading interaction in a controlled situation. It also provides some confirmation of Lartz and McCollum's (1990) and Lartz's (1993) speculation that mothers read differently depending on the language abilities of their child.

While the sample sizes of the Mogford et al., (1979), Lartz (1993), Lartz and McCollum (1990), and Plessow-Wolfson and Epstein (2005) studies are small, they provide evidence that hearing parents use shared reading techniques such as questioning to elicit responses from their deaf and hard-of-hearing children albeit in a different way than hearing mothers with their hearing children. Hearing mothers of deaf children may feel limited by their child's language capabilities or possibly their own sign language abilities (Andrews & Zmijewski, 1997). This may explain why mothers who have children with lower language levels did not ask more questions that might elicit more language (Lartz, 1993; Lartz & McCollum, 1990; Plessow-Wolfson & Epstein, 2003). However, one must remember that that perhaps the "problem is not in the child but rather is due to an obstacle in the environment," (Kuntze, 1998, p. 2) namely, the limited sign skills of the parents. It is important to investigate the strategies that deaf parents use when reading to their deaf or hard-of-hearing child (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Lartz, 1999; Lartz, & Lestina, 1995; Maxwell, 1984; Mohay, 2000; Schleper, 1999) because one assumes that communication is facilitated by the language they have in common with their child.

Applying Deaf Parents Reading Techniques to Hearing Parents with Deaf Children

According to the recent Annual Survey of Deaf and Hard-of-Hearing Children and Youth (2008), the vast majority of the 36,710 deaf and hard-of-hearing children in the United States are born to hearing parents. Of these, 71% report that family members do not regularly sign. Therefore, it is likely that the majority of parents do not know American Sign Language when their child is born and cannot offer a visual language to their child from birth. This fact makes the deaf child from a hearing family more at-risk than deaf children from deaf families and hearing children from hearing families in acquiring language and early literacy skills because the

deaf children may be delayed in acquiring a language in their home, due to restricted language input.

The indigenous practices that deaf parents use with their deaf children can be taught to other deaf parents and/or hearing parents to assist them in effectively reading with their deaf or hard-of-hearing child (Lartz, 1999; Schleper, 1995). By compiling the results of the many small case studies and adding his own observations, Schleper and colleagues (1997) then developed the Shared Reading Project (SRP) that was based on 15 principles of how deaf adults read to their deaf children. The long-term goal was designed to help deaf and hard-of-hearing children become better readers by helping hearing parents learn how to share books with their young deaf and hard-of-hearing children. Tutors work with the parents and their children on a weekly basis for a set amount of time. The tutors provide a book bag with a book, a sign language demonstration of the story and activity guides. The tutors coach the parents on how to sign books with their children. The principles of the SRP are as follows:

1. Parents translate stories using American Sign Language (ASL),
2. Parents keep both languages (ASL and English) visible,
3. Parents are not constrained by the text,
4. Parents re-read stories on a storytelling to story reading continuum,
5. Parent's follow their child's lead,
6. Parents make what is implied explicit,
7. Parents adjust sign placement to fit the story,
8. Parents adjust signing style to fit the story,
9. Parents connect concepts in the story to the real world,
10. Parents use attention maintenance strategies,

11. Parents use eye gaze to elicit participation,
12. Parents engage in role play to extend concepts,
13. Parents use ASL variations to sign repetitive English phrases,
14. Parents provide a positive and reinforcing environment, and
15. Parents expect the child to become literate.

An evaluation of SRP provided preliminary evidence that the program can help hearing parents learn to effectively share books with their deaf and hard-of-hearing children (Delk & Weidekamp, 2001). The data, based on tutor and parent reports, showed increases in the time that children were read to and “positive qualitative changes in how they shared books and how they communicated” (Delk & Weidekamp, 2001, p. 97). While this information is promising, the long-term effects of the SRP have yet to be determined. More data should be collected through the SRP to quantify differences that show whether the increases are short-term or long-term. In addition, data are needed to determine whether or not the programs’ ultimate goal is accomplished in that the reading levels of those who participated in SRP differ from those who have not participated in such a program.

While we know some of the strategies deaf parents use when reading with their deaf children, we do not know enough. Goldin-Meadow and Mayberry (2001) suggest that the teaching process may not be the same for deaf and hearing children, thus warranting further examination to better understand what qualitative and quantitative differences exist between deaf-deaf dyads and hearing-hearing dyads when language is not an obstacle. More specifically, the techniques that hearing parents with hearing children and deaf parents with deaf children utilize to make connections from their native language to the English print should be explored.

For example, there are things that we still don't know about what the deaf parent does when reading and using ASL to connect to the text that is in a different language, English.

The Current Study

The current study is designed to investigate reading techniques that deaf mothers use with their deaf children and compare them with hearing mothers with their hearing children. This will help us better understand what reading strategies are unique to the deaf parents and help us provide suggestions for all parents with deaf children. Specifically, we will better understand what deaf parents do when the language of the text, English, is different from the primary language of the home, ASL. The study utilizes a matched-pair design that matched the dyads on children's age and mothers' educational level.

Pilot study and coding system. This study will utilize a coding scheme that was developed for a pilot study conducted by Berke (2007). In that study, conducted with six families, Berke (2007) analyzed each maternal utterance and developed global coding categories that were motivated by the literature on shared reading. These categories consist of techniques that both deaf and hearing mothers used when reading with their deaf or hearing children. These categories were then expanded to include what she observed and are consistent with what has been described in studies with both hearing and deaf populations (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Beals et al., 1994; Deckner et al., 2006; DeTemple, 2001; Kadaravek & Sulzby, 1998; Lartz, 1993; Lartz & McCollum, 1990; Martin, 1998; Mogford et al., 1979; Neuman, 1996; Ninio, 1983; Senechal et al., 1995; Snow, 1983). These six categories will provide the foundation for the coding system to be used in this study and will be described in detail in the methods section. They are as follows:

1. Connecting Concepts
2. Question Types

3. Interaction between Language, Print, and Illustrations/Deviations from Text
4. Attention Getting Strategies
5. Encouraging Child/Inviting Participation
6. Corrections

The pilot study conducted by Berke (2007) examined reading techniques of three groups of parents (deaf parents with deaf children, hearing parents with deaf children, and hearing parents with hearing children). Results showed that the deaf/deaf dyads and the hearing/hearing dyads shared books with their 3- to 5-year-old children in very different ways (Berke, 2007). Deaf parents were found to be more descriptive, utilized more attention-getting strategies, and had more turn-taking while their hearing counterparts were found to read the text more, not use as many attention getting strategies, and had less turn-taking opportunities. While the differences in attention-getting strategies and turn-taking seemed to be attributed to the need for the deaf parents to make sure that their children were visually attending to the book (a sequential rather than simultaneous process), the reason for the differences in how the story was read was not as clear. It was notable that deaf parents seemed to describe the book more than read and translate the text. It is not clear if this is attributed to familiarity with the book or some other factor that was not analyzed. For example, there may be something about a deaf parent's use of ASL that encourages them to focus more on describing the pictures rather than translating the story from one language to another or even just reading (signing) the text verbatim. It is hoped that this project will provide insight into these differences and specifically examine how parents make the connections between the printed text and ASL. The research questions that this study will address are as follows:

1. Are there quantitative or qualitative differences in how deaf parents with deaf children read to their children compared to hearing parents with hearing children? For example, will there be differences in the ways deaf or hearing parents use the 6 categories of reading techniques?
2. What specific techniques do deaf parents use in ASL to make connections to the written text and how is this different than the techniques that hearing parents use with the spoken language and the written text? For example, will we see a difference in the ways in which deaf and hearing parents provide definitions for English words?
3. Do parents (either deaf or hearing) differ in how they read the same book over time (at first unfamiliar and then familiar)?

Method

Participants

Twenty mother-child dyads participated in this study, consisting of 2 groups of ten. The first group was comprised of deaf mothers with their deaf child (D). The second group consisted of hearing mothers with their hearing child (H). To ensure consistency and avoid differences in reading techniques that could be attributed to gender, only mothers participated in the study. All of the mothers attended at least some college and 8 of the deaf mothers completed graduate school while 4 of the hearing mothers completed graduate school. Of the deaf mothers, 5 were trained as school teachers. Only 1 hearing mother worked as a music teacher. All of the children were between the ages of three to five years and did not have any known cognitive or developmental disabilities. The deaf children were from homes where American Sign Language was described as the primary mode of communication with the deaf child. All of the deaf children were identified as deaf before 6 months of age. Hearing children were from homes where there were no deaf or hard-of-hearing adults or children and the mother had not received specialized training related to deafness or sign language. All of the families identified their ethnicity as white and described themselves as middle class. The study used a matched-pair design. Participants in the deaf (D) and hearing (H) groups were matched on: the mother's education level (within 2 years) and the child's age (within 4 months). See Table 1 for the descriptive information of the participants.

Table 1

Descriptive Information for Deaf Participants and their Hearing Matched Participants

Deaf Subject ID	Gender	Age (in months)	EOWPVT Standard Score/PPVT Standard Score	Deaf Mothers' Education	Deaf Mothers' Occupation	Hearing Subject Match (Gender/Age)	EOWPVT Standard Score/PPVT Standard Score	Hearing Mothers' Education	Hearing Mothers' Occupation
D1	M	56	105/102	Graduate school	Professor	H3 (F/54)	110/90	College graduate	Writer/Editor
D2	F	67	89/126	College Graduate	Office Technician	H8 (M/63)	118/113	Some graduate school	Photographer
D3	M	71	100/103	AA	Stay at Home	H7 (M/69)	117/130	College graduate	Stay at Home
D4	M	49	114/100	Graduate school	Classroom Teacher	H10 (M/49)	100/99	Graduate school	School Psychologist
D5	F	43	102/95	Graduate school	Classroom Teacher	H6 (F/40)	102/112	College graduate	Stay at Home
D6	M	60	103/88	Graduate school	Stay at Home	H1 (F/56)	105/104	College graduate	Stay at Home
D7	F	64	111/144	Graduate school	Outreach Supervisor	H4 (F/60)	107/87	College graduate	Stay at Home
D8	F	57	100/101	Graduate school	PE Teacher	H2 (F/55)	108/101	College graduate	Writer/Editor
D9	M	62	89/100	Graduate school	Stay at Home	H5 (M/58)	97/111	Graduate school	Music Teacher
D10	M	51	91/96	Graduate school	Classroom Teacher	H9 (F/52)	104/95	Graduate school	Veterinarian

The deaf mothers and their children were recruited by contacting the two state schools for the deaf in California and asking that envelopes with a description of the study be given to deaf parents whose children fell within the age criteria. Subsequently five families were recruited from Northern California and five families from Southern California. To recruit the hearing dyads, the researcher contacted individuals who had networks of mothers with children in this particular age group in Northern California and Boulder, Colorado. A description of the study was posted on websites and listservs designed specifically for mothers with young children. Subsequently, six families were recruited from Northern California and four from Colorado.

For both the deaf and hearing families, the parent/potential participant was asked to contact the researcher if they were interested in participating in the study. Upon contact, either by phone or email, the researcher asked background questions (including age of child, parent education, and whether the child had any cognitive disabilities of which they are aware). Following this, she explained the procedures involved in the study. If they agreed to participate, they were asked if any of the books on the list were familiar to them. Once an agreement was reached, the researcher set up a time to conduct the study. Prior to the first visit, mothers were sent questionnaires and consent forms and asked to return them in a pre-paid envelope. A copy of the signed consent was then given to the mother during the first visit.

Age of Children

The children in this study were between 3 and 5 years of age. The target age of 3- to 5-year-olds was selected because presumably, children under 3 may not be as engaged in story reading sessions or may engage in a different way. In addition, parent techniques may be different in that they are focused on labeling and vocabulary development rather than storytelling or using the text as a springboard for other discussions (Martin, 1998; Ninio & Bruner, 1978). In

addition, it is also assumed that by this age, the children have become familiar with technology such as a camcorder and would not find the device unusual or intrusive.

Familiar vs. Unfamiliar Book

Because book familiarity can have an impact on the language and/or techniques that parents may use during book reading sessions (Goodsitt et al., 1988; Haden et al., 1996; Senechal et al., 1995; van Kleeck et al., 1997), the parents in this study were asked to read two different unfamiliar books in the first session. One of these books, *Nobody Listens to Andrew*, (Guilfoile, 1957) became a familiar book in a subsequent session and was read along with a new unfamiliar book. It was expected that with repeated exposure to the book, the interaction over the book would change.

Materials

Books: In each session, mothers were asked to read a minimum of two books that the researcher provided. Prior to the visit, the mother was given the list of books and asked if any of the books were familiar to her and her child. If so, they were removed from the selection. The books were of the narrative genre and were the same for each family (see Appendix A for the complete list of books). During each visit, the books were given to the mother and child. They were told that they would read one book that was the same during each session, *Nobody Listens to Andrew* (Guilfoile, 1957). This story was about a boy who saw something upstairs in his bedroom and tried to get the attention of his family to tell them what it was. This book was chosen because it contained sound words such as whoosh, swish, zing, and zoom, and provided an opportunity to predict what it might be upstairs, to discuss how Andrew might be feeling when he was being ignored.

Other than the Andrew book, the dyads were not directed to read any particular book. It was up to each dyad to select and read whichever book that was appealing to them. The remaining narrative books were selected because as Kadaravek and Sulzby (1998) describe, they are more likely to “expose children to particular key features of the written language register such as plot, dialogue, and direct quotations” (p. 37). They also seem to provide an avenue for dyads to engage in more cognitively challenging talk (Neuman, 1996). Based on Justice et al., (2005), the unfamiliar narrative books were selected on the following criteria:

- Colorful illustrations that help to narrate the story
- Neither excessively long or heavily reliant on text for telling the story
- Narrative genre
- Developmentally appropriate

Demographic Questionnaire: Parents were given a questionnaire prior to their participation in the study and asked to complete the form and return it to the researcher in a pre-addressed stamped envelope. They were asked demographic information about their families (see Appendix B for complete list of questions) that was used for identifying the matches in the matched-pair design.

Language Assessment: The researcher tested the child’s language using two different methods. The first was the Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4). The PPVT-4 is a standardized, norm-referenced instrument that provides an assessment of an individual’s receptive vocabulary from ages 2 years, 6 months through 90 years. Children are asked to select a picture that best matches the word that is spoken (or signed) by the tester. The PPVT-4 takes approximately 10-15 minutes to administer. The PPVT-4 has been commonly used with deaf and hard-of-hearing children using ASL or other sign systems such as Signed

English. It also has been used with deaf and hard-of-hearing children who use spoken English. The second way of measuring the child's language was through the Expressive One Word Picture Vocabulary Test (EOWPVT). The EOWPVT is a standardized, norm-referenced instrument that assesses an individual's expressive vocabulary from 2 years through 18 years, 11 months. The children in this study were asked to name objects, actions, and concepts that were pictured in the illustrations shown to them. Similar to the PPVT-4, it takes approximately 10-15 minutes to administer. Although the EOWPVT is designed to measure a student's spoken English vocabulary, it has been used with English Learners to evaluate their vocabulary. For the purpose of this study, both the PPVT-4 and the EOWPVT were not used to measure the child's English language abilities. Instead, these instruments were used as a criterion to screen out individuals who may have had a standard score below 80, which may indicate a delay in language abilities. All of the children who participated in this study had standard scores above 80 on both of the language measurements. See Table 1 for the standard scores on both assessments.

Procedure

The researcher, who is fluent, and a native user of both ASL and spoken English, went to each family's home for each of the sessions. The first session typically lasted approximately 45-60 minutes. The researcher arrived at the home and allowed time for the child to become comfortable with the new person in their home. The researcher first conducted the two language assessments and then explained that she would be videotaping while the child and mother read books together. Mothers were told that they should read with their child as they normally would. For example, they were told to read in a room where they typically read and use a position in which they normally sit. The second session, was also no longer than 45-60 minutes. If, at any time, the mother or child wanted to stop, the session ended. The researcher then set up a time for

a third session. During the first session, each family was provided with a selection of unfamiliar narrative books to read together. The family was asked to read one book, *Nobody Listens to Andrew*, and then any other book(s) of their choosing. At the second session, the book, *Nobody Listens to Andrew*, was reintroduced and then they could select any other unfamiliar narrative book. If a third session was needed because the dyad did not read either the *Andrew* book or an unfamiliar book, the researcher returned to the home. The family was asked to either read an unfamiliar book or do the repeated reading of the *Andrew* book. Upon completion of all of the sessions and testing, the child was given a \$10 gift certificate to a local bookstore to thank them for their participation.

Coding

All of the reading sessions were transcribed and analyzed. Because there is no written form of American Sign Language, the sessions in ASL were transcribed using a gloss system, which identifies a sign (in capital letters), fingerspelled word, or classifiers. Both mother and child utterances were transcribed. Transcriptions were entered into the Nvivo 9 software program (QSR International, 2010) for the coding of the reading techniques.

To analyze the language measures, the Systematic Analysis of Language Transcripts, SALT, (Miller & Iglesias, 2006) format was used. SALT analyzes language in terms of descriptive measures for both parent and child. These measures included mother and child utterances, mother and child mean length of utterance in words, mother and child number of different words, and mother and child total number of words. Rules for separating an utterance are described by Blamey, Savant, and Paatch (2005) and were used for the spoken language transcripts. These rules are a change in speaker, rising and falling intonation, a pause of more than 2 seconds, and/or a single thought (p. 95). For the deaf mothers, an adaptation to this was

made. An ASL utterance was defined a sequence of signs preceded and followed by a pause, silence, or a change in signer. The end of utterance markers included relaxation of one or both hands and/or drop below chest level; change in facial expression or eyegaze direction; extension of the duration of the last sign (Baker, van den Bogaerde & Woll, 2009, p. 24). The mean length of utterance in words (MLW) is the average number of words or signs per utterance for each individual analyzed. The number of different words is a count of the number of each distinct word used for each individual and the total number of words is a count of all the words used in a given transcript.

The shared reading techniques have been explored in the literature review and include the following coding categories:

1. Connecting Concepts,
2. Question Types,
3. Interactions between Language, Print, and Illustrations/Deviations from Text,
4. Attention Getting Strategies,
5. Encouraging child/Inviting Participation, and
6. Corrections.

Each of these categories is further defined here.

1. *Connecting concepts*. In this study, the individual codes under this global coding category include connecting concepts to the real world, general comments, connecting concepts to the child's experience, expansions, inferences, and integration of perception. The code definitions, and examples are included in Table 2. While different researchers (Andrews & Taylor, 1987; Beals et al., 1994; deJong & Leseman, 2001; Lartz, 1999; Lartz & Lestina, 1995; Neuman, 1996; Scarborough & Dobrich, 1994; Schleper, 1995; Wheeler, 1996) have called it

different things, the underlying construct of the connecting concepts category is that the parents utilize the book to discuss things that are not immediately present in the book. Both hearing and deaf parents have been shown to use this technique with their hearing and deaf children (Andrews & Taylor, 1987; Beals et al., 1994; deJong & Leseman, 2001; Lartz, 1999; Lartz & Lestina, 1995; Neuman, 1996, Scarborough & Dobrich, 1994; Schleper, 1995; Wheeler, 1996).

Table 2
Shared Reading Technique of Connecting Concepts

Technique	Definition	Examples
Connecting concepts to the real world	Mother relates something from book to something in child's immediate physical environment.	<p>"They might be poison to other animals but I don't think they do to (point) porcupines."</p> <p>"FROG LIVE. FROG LIKE M-U-D WITH WATER. BAT LIKE KISS-FIST LIVE IN C-A-V-E."</p> <p>"Frogs live there. Frogs like (fingerspelled) mud with water. Bats love living in (fingerspelled) caves."*</p>
Expansion	Mother expands upon an abstract concept or reference from book to something in child's world.	<p>"Froggy found the food in his bed! We don't put food in our bed!"</p> <p>"POINT INSULT-INSULT-ME. MAYBE POINT NEGATIVE PERSON. MAYBE NOT WORTH MARRY. GO-SEPARATE-WAY."</p> <p>"He insults her. Maybe he's a negative person. Maybe he's not worth marrying. They went their separate ways."</p>
General comments	Mother makes a general comment or observation about the book or about herself/child.	<p>"I like massage."</p> <p>"It's not for fishing. It's for butterfly catching."</p> <p>"MY FAVORITE. KISS-FIST THIS BOOK."</p> <p>"It's my favorite. I love this book."</p>
Connecting concepts to child's experience	Mother makes a connection from the book to something that the child has already experienced or to compare something in the book to the child.	<p>"We saw a giraffe like this at the zoo yesterday."</p> <p>"S-ON-HEAD WOKE-UP EARLY. HIS SCHOOL NAME, WHAT? B-A-L-D EAGLE, SWELL. BALD EAGLE, SAME C-S-D MASCOT WHAT, EAGLE. SAME (points to book)."</p> <p>"Stanley woke up early. The name of his school is</p>

		(fingerspelled) Bald Eagles. Cool. Bald Eagles is the same as the CSD mascot, the eagle “The mouse likes to eat the cookie with milk, same as you do.”
Inferences	Mother provides a point of view, speculates on the perception of a character or makes a judgment about information presented in book.	“That’s silly!” “I think Froggy is embarrassed.” “POOR-THING. CAN YOU IMAGINE HOW FEEL? LOW SELF-ESTEEM, EMBARRASSED.” “Poor thing. Can you imagine how he feels. Has low self-esteem and is embarrassed.”
Integration of perception	Mother recalls information presented earlier.	“That’s like what happened in Froggy’s dream.” “CLEAN HIS JOB REMEMBER, CLEAN. “His job is to clean, remember?”

*English translation is provided under the ASL gloss.

2. *Question types*. This coding focuses on the type of questions asked. In this study, questions were categorized by the level (higher vs. lower level) of the question. Lower level questions are those that focus on the book and include immediate questions, directive questions, lower level prediction, test questions or questions the child may not have to answer. Higher level questions are more open-ended and allow an opportunity for the parent and child to discuss something that may not be obvious from the book’s text. These include inferential, comprehension, and higher level prediction questions. Table 3 describes the seven codes and definitions within the question types category.

Table 3
Shared Reading Technique of Question Types

Technique	Definition	Examples
Lower level immediate questions	<p>What can be seen in the immediate context of the book?</p> <p>Asking a yes/no question (that is typically answered with a yes/no or head nod/shake) but is not a prediction-type question.</p> <p>Request for a label in the book.</p> <p>Relates directly to the book</p>	<p>“Where is the pig?”</p> <p>“Does the dinosaur want to go to bed?”</p> <p>“What is that?” or “What is he holding?”</p> <p>“POINT SWELL POINT CAN FIT?”</p> <p>“That’s cool. Can it fit?”</p> <p>“WHAT THAT POINT?”</p> <p>“What is that?”</p>
Lower level directive questions	A request for an action.	<p>“Can you wiggle your toes like he is doing?”</p> <p>“LET-ME-SEE PRACTICE GRR. LET-SEE, CAN YOU?”</p> <p>“Let me see you practice a growl. Let me see, can you do it?”</p>
Lower level prediction question	A question that asks the child to predict what might happen but can be answered with a yes or no.	<p>“Will the boy give the mouse a cookie?”</p> <p>“FEEL BEAR IN BED QUESTION-MARK-WIGGLE?”</p> <p>“Do you think the bear is in his bed?”</p>
Lower level test question	<p>A question that is used to ‘test’ the child’s knowledge.</p> <p>A parent deliberately mislabels something to see if child corrects.</p>	<p>“Do we put cookies in our bed?”</p> <p>“PERMIT QUESTION-MARK-WIGGLE” (in reference to a behavior that a character did in the book) “Is that allowed?”</p>
Higher level Inferential questions	Asking the child to explain the behavior or emotions of characters and/or draw inferences from the text	<p>“What is he feeling?”</p> <p>“Why don’t you want to eat dirty food?”</p> <p>“WHY A-N-D-R-E-W</p>

		FRUSTRATED? WHY? “Why is Andrew frustrated?”
Higher level comprehension questions	Asking the child to explain the meaning of words	“What does pout mean?” “WHAT MEAN TWIN DAY?” “What does Twin Day mean?”
Higher level prediction questions	Asking the child to make predictions	“What do you think the fox will do next?” “WHAT THINK E-L-I-Z-A-B-E-T-H WILL D-O?” “What do you think (fingerspelled) Elizabeth will do?”

3. *Interactions between language, print and illustrations/deviations from text.* A typical strategy that adults employ when reading books with children is using the text as a way to teach the child about (spoken) language and print (Scarborough & Dobrich, 1994). For the deaf/deaf dyads, the language of the text is different than their home language. The hearing/hearing dyads use the spoken English, which serves as a basis for written English, the language of the text. This set of coding categories will provide us with information on what parents do to make the connection between the language of the home and the language of the text.

For the purposes of this study, this category was differentiated by lower level interactions/text deviations and higher level interactions/text deviations. The lower level interactions/deviations were coded as selective analysis/describing or labeling (van Kleeck et al., 1997), text deviations, and text simplification. The higher level interactions/deviations were coded as reading words in the text (Schleper, 1995), making English explicit, translating English to ASL, literacy conventions, pointing/following the text while reading (Justice & Ezell, 2000), adding words, phrases or sentences, and provides additional information about the text. They were only coded in this category if

they did not fall into another category such as expansions or connecting concepts to the child's experience. The codes and definitions are described in Table 4.

Table 4

Shared Reading Technique of Interactions between Language, Print, and Illustrations/Deviations from Text

Technique	Definition	Examples
Lower level selective analysis/labeling interaction	Describes the picture or what is happening in the book (as opposed to reading the text). Provides a label or description for a picture.	“And here, Froggy is looking under the bed for his helmet.” “That’s a barn. That’s where the animals sleep at night.” “NOW READ NEWSPAPER POINT (father). SEW, KNIT POINT (mother). (signs in child’s vision on book) POINT (brother) DRAW.” “Now father is reading the newspaper. Mother is sewing or knitting. Brother is drawing.”
Lower level text deviation	Omits a major content word, phrase, or sentence from the text.	“and playing my favorite xxx game,” (xxx=video) “DAD COME-ON. HELP ME CLEAN MESS. C-U-S-H-I-O-N PUT-AWAY. HELP PUT-PUT-PUT. POINT CRY STOP. FEEL BETTER.” (father didn’t say this. Father sat down to comfort the child) “Dad said come on. Help me clean this mess. (fingerspelled) Cushions, put away. Help put them away. Stop crying and you’ll feel better.”
Lower level text simplification	Substitutes/replaces a word, phrase or sentence with simpler or more concrete terms	And he was “terrified” replaced with “scared.” “(points to book) PICK-UP, LEFT” (instead of “the dragon carried off Prince Ronald.”) “Picked him up and left.” “PULL W-A-L-L PAPER PULL” (instead of tore strips of paper off the wall) “Pulled the (fingerspelled) wallpaper off.”
Higher level interaction reading words in text	Reads words in text or follows along text with fingers	“Oh my goodness, we’ve never had a monster in the house before.”

		<p>“O-H MY G-O-O-D-N-E-S-S WE NEVER BEFORE HAVE MONSTER IN HOUSE BEFORE NEVER.”</p> <p>“(fingerspelled) Oh my (fingerspelled) goodness. We’ve never had a monster in the house before. Never”</p>
Makes English Explicit	Expands on the English text by providing definition and/or sandwiching the word in ASL.	<p>“B-uh. At. Just bat. There’s no “l” in that one.”</p> <p>M: NEIGHBOR. HOUSE NEXT POINT CALLED NEIGHBOR. “Neighbor. The house next door is called a neighbor.”</p> <p>C: NEIGHBOR (looks back at book)</p> <p>M: (taps child)</p> <p>C: (looks at mother)</p> <p>M: OUR NEIGHBOR. N-E-I-G-H-B-O-R. “Our neighbor. (fingerspelled) Neighbor.</p>
English to ASL	Uses ASL to show different meanings of English print.	<p>“NO ONE LISTEN (AT EAR) OR NO ONE LISTEN (AT EYE) WHICH PREFER?”</p> <p>“No one listens (by ear) or no one listens (by eye). Which sign do you prefer?”</p>
Literacy conventions	Identifies the title, or author, illustrator, or dedication.	<p>Written by Elizabeth Guilfoile. And, illustrated by Mary Stevens. That’s the one who xx the pictures.”</p> <p>“WHO WRITE, WHO? (finger points to name) WOMAN NAME WEDNESDAY K-I-R-W-A-N.”</p> <p>“Who wrote the book? A woman named Wednesday (fingerspelled) Kirwan.”</p>
Higher level text addition and elaboration	<p>Follows the text and adds words, phrases, or sentences.</p> <p>Expands on text to other known words.</p> <p>Provides additional information to clarify or extend child’s</p>	<p>“Now all he had to do was get back to his spaceship without getting caught.” ADDED: “because he wanted to get home.”</p> <p>“A-ON-CHIN BECOME FRUSTRATED BUILD-UP INSIDE, BLOW-TOP” (not in the text) “Andrew became frustrated. It was building up inside until he blew his</p>

	knowledge	<p>top.”</p> <p>“Look at Zoo. If we put a B instead of Z, it will become Boo!”</p> <p>“But he was not like an ordinary peddler carrying his wares on his back.” ADDED: “A peddler is someone who sells things; wares are the things he sells.”</p> <p>“MOTHER PASS-OUT AGAIN. Added: REAL-BUSINESS WILL LAST WITH 2-HAND-CL: OPEN-5-ANTLER. ME WANT I-M-O-G-E-N-E B-A-C-K TO MY DAUGHTER. 2-HAND-CL: OPEN-5-ANTLER DON’T-WANT.” (text says, Imogene’s mother fainted again.) “Mother passed out again. The antlers will last. I want (fingerspelled) Imogene (fingerspelled) back. I don’t want my daughter with antlers.”</p>
--	-----------	--

4. *Attention getting strategies.* This category describes the ways that parents get and maintain their child’s attention during a shared bookreading session. The codes include attention vocative or non-verbal eye gaze or point, commands, tapping, physical movement of the body, physical movement of the book, or a physical demonstration of character changes, role shifts and redirecting the child from a distraction to the book. These codes are listed and defined in Table 5.

Table 5

Shared Reading Technique of Attention Getting Strategies

Technique	Definition	Examples
Attention vocative or non-verbal eye gaze or point*	Says something to draw child's attention. Points to something** Looks at book or looks at child	"Uh, oh!" Points to book. Looks at child.
Tap	Taps child to get attention	Taps child.
Physical movement of body	Physically moves own or child's body to see better. Moves signing space into child's visual field.	Moves body into child's view.
Physical movement of book	Physically moves book into the child's visual field.	Moves the book into the child's view.
Physical demonstration of character change/role shift or acts out what is happening in the book	Vocal shift (intonation). Parent assumes characteristic(s) of character in book.	Voice changes pitch. Physical change of facial expression or body movement.
Redirecting child from distraction to book	An attempt to redirect the child's attention; not directly related to what is happening in the book.	"Let's look at this first, then, you can play with your dolls."
Command	Tells child to copy or do something.	"Look!" "LOOK!"

*This is specifically an attention-getting strategy. This code is not to be used if it is part of a question, prompt, or reading of the text.

**Points in an ASL conversation need to be analyzed closely to ensure that it is not being used as a pronoun. For example, in ASL "POINT FINISH" means "He is finished." While a point used in the following context, "BOY POINT (to book) PLAY OUTSIDE" is a referential point and considered an attention getting strategy to reinforce that she is talking about the boy.

5. *Encouraging child/inviting participation.* This global category was created to identify the techniques that parents use to engage their children as active participants in the shared reading experience. The codes in this category include, confirmation of child's understanding (Haden, Reese, & Fivush; 1996), providing praise, prompting the child for an answer, requesting the child to provide a sign or say a word, recalling something from earlier in the book (van Kleeck et al., 1997), commanding, prompting the child to read or finish a sentence, following child's lead, offering assistance, and predicting (van Kleeck et al.). The codes are listed and described in Table 6.

Table 6

Shared Reading Technique of Encouraging Child/Inviting Participation

Technique	Definition	Examples
Confirmation of child's understanding	Affirms child has understood a concept.	"You're right. The monkeys are copying him." "YOU RIGHT." "You're right."
Provides praise	Gives positive feedback for something child did.	"You did a great job reading that word!" "YOU GOOD MEMORY, GOOD MEMORY." "You have a good memory."
Prompting for an answer	After initial question, prompts child to respond, even if the question is repeated verbatim.	"Can you guess where the hats are?" (after having asked, "Where do you think the hats are?" "WHAT THAT?" (then) "QUESTION-MARK-WIGGLE" "What is that? What?"
Requests child provide a sign, word or letter for a picture or a word	Asks child to identify something in book.	"Hey, I bet you know that word." "SHOW ME."
Recalling	When mother asks the child to recall information presented earlier	"Where did Froggy look for the helmet?" "REMEMBER, BEFORE PLAN MARRY. DROP." "Remember, before they planned to get married. Now it's over."
Prompts child to read or finish a sentence	Pauses at the end of the sentence to allow the child to complete it	"First his own checked cap, then the..." (wants child to insert gray caps). "WRITE-PERSON (points) SPELL YOU?" "Can you spell the author's name?"
Follow child's lead	Let's child lead interaction.	"Oh, ok, so we can skip that page!" "YOU PREFER THAT, O-K." "You prefer that? Ok."
Offering assistance	Sensing child's	"Do you need a hint?"

	uncertainty and providing help	“WANT ME TELL-YOU, WANT?” “Do you want me to tell you?”
Predicting	Making a guess about what might happen Saying or suggesting that there’s something we might learn ahead but not in question format	”Let’s see what happens next” “THINK MAYBE. SEE-SEE.” “ I think so, maybe. Let’s see.”
Tracking print while child reads	Tracks finger along words for child	Mother points to words as child reads.

6. *Corrections*. The codes are correction or criticism of a child’s pronunciation, sign, answer or behavior or when the parent self-corrects. The codes are listed in Table 7.

Table 7
Shared Reading Technique of Corrections

Technique	Definition	Examples
Corrects pronunciation/sign structure or answer	Provides the correct word/sign	”No, it doesn’t say bear.” “P-L-A-Y NO. P-A-Y.” “(fingerspelled) Play, no. It’s (fingerspelled) pay.”
Criticism of pronunciation, sign, behavior	Criticizes child’s word/sign/behavior.	”G, don’t do that. Xx don’t be silly.” “THAT REALLY LOUD. MY EAR HURT.” “That was really loud. My ear hurts.”
Self-correction	Parent corrects self (pronunciation/sign, word choice)	“Ah, I did miss a page!” ME THOUGHT BOY REALLY POINT GIRL. “I thought it was a boy but really, it’s a girl.”

Due to the variability in the amount of time that each session occurs, and presumably that the longer a session, the more opportunity for various codes to occur, the researcher converted the raw frequency scores (a count of each storytelling code per

session) into rates by dividing frequency by the length of each book reading session (see Justice & Ezzell, 2000).

In summary, these global coding categories have been created to capture what parents do when sharing books with their children. Based on previous studies and the pilot study, with the goal of capturing data on language and early literacy skills development, these categories have been identified as ones that can assist with language and early literacy skills development. This underlying scheme is what provides the framework for studying the unique population of deaf parents reading with their deaf children and is the first method of coding that will occur with the data. A summary of the codes is provided in Appendix C.

Inter-rater Reliability of Coding Data

The researcher asked a second person, (a former educator of the deaf, linguistics instructor and ASL interpreter with top-level certification from the Registry of Interpreters for the Deaf), who was trained for the pilot study, to provide a reliability check on the storytelling codes. She performed the reliability on each of the video/transcripts. Because the length of the reading sessions varied, and in order to remain consistent for the inter-rater reliability, the researcher provided a 7-minute clip from each of the coded reading sessions along with the corresponding transcript. This was determined by figuring out the average amount of time that the deaf families were engaged in the reading sessions and multiplying it by 15%. The 7 minute clips were then randomly selected from the first, middle or last part of the reading session. The coding was compared for point-by-point agreement. Overall, the researcher and the second coder achieved a satisfactory level of interrater agreement ($K = 84.2\%$; range 57.8% - 96.9%)

for each family. The area of weak agreement was between deviation from the text and general comments. What one rater perceived as a deviation, the other perceived as a general comment. However, the remaining areas of agreement were consistent.

Data Analysis. In order to answer the stated research questions, the data were input into SALT to compile the language measures. It was also entered into SPSS to calculate the inter-rater reliability, correlational analyses, paired-sample t-tests and a one-way multivariate analysis of variance (MANOVA).

Results

The results from the various statistical analyses will be discussed as they relate to each of the stated research questions.

Research Question #1: Are there quantitative or qualitative differences in how deaf parents with deaf children read to their children compared to hearing parents with hearing children? For example, will there be differences in the ways deaf or hearing parents use the 6 categories of reading techniques?

In order to analyze differences in how deaf and hearing mothers may read with their children, all of the techniques used during reading of all the books during each of the reading sessions were compiled. Table 8 shows a summary of the mean reading time for both unfamiliar books as well as the rate per minute of each reading technique that the deaf and hearing mothers used during all of their reading sessions.

A visual inspection of the means shows that there were differences between the two groups in some of the reading techniques. A one-way multivariate analysis of variance (MANOVA) was run to explore group differences on each of the variables. Significant differences were found between the groups ($F(8, 10) = 6.208, p < .01$) indicating that the mean reading time as well as the means for certain reading techniques (attention getting strategies, higher level interactions between language and print, higher level questions, encouraging child/inviting participation, and corrections) are different. A summary of the MANOVA results can be found in Table 9. Each variable is then described in turn.

Table 8

Summary of Reading Time Means, Rate per Minute Means and Standard Deviations and Significance for Reading Techniques used by the Two Groups for all Books During all Sessions (n=10 per group)

Variable	Deaf	SD	Hearing	SD	Sig.
Read time	24.30	5.27	12.26	5.08	.000*
Attention Getting Strategies	4.63	2.33	2.16	1.57	.013*
Connecting Concepts	.69	.26	.80	.56	.568
Lower level Interactions	3.68	5.79	.62	.72	.114
Higher level interactions	3.28	1.27	5.84	1.4	.001*
Lower level Questions	.60	.27	.51	.45	.605
Higher level Questions	.49	.23	.26	.20	.028*
Encouraging Child/ Inviting Participation	1.25	.56	.53	.49	.015*
Corrections	.16	.10	.04	.04	.004*

*indicates significance

Table 9

Results of One Way Multivariate Analysis of Variance for Reading Techniques used by Deaf and Hearing Mothers

Technique	F	Df1	Df2	p	η
Attention getting strategies	7.67	1	18	.013	.299
Connecting concepts	.339	1	18	.568	.018
Lower level interactions between language and print	2.760	1	18	.114	.133
Higher level interactions between language and print	18.33	1	18	.000*	.505
Lower level questions	.278	1	18	.605	.015
Higher level questions	5.743	1	18	.028	.242
Encouraging child/inviting participation	9.175	1	18	.007	.338
Corrections	10.682	1	18	.004	.372

*Significance is greater than .0001

Reading time: The length of time that deaf mothers and hearing mothers spent reading unfamiliar books was significantly different. The deaf mothers spent more time ($F(1, 18) = 16.99, p = .00$) reading than the hearing mothers.

Attention getting strategies: There were significant group differences between the deaf and hearing mothers in the use of attention getting strategies. The deaf mothers had a higher rate of using this technique while reading books with their deaf children than hearing mothers with their hearing children.

Higher level interactions between language and print: There were also significant group differences between the deaf and hearing mothers' use of this technique. Hearing mothers used this technique more than deaf mothers.

Higher level questions: Deaf mothers used more higher level questions than hearing mothers during their reading sessions.

Encouraging child/inviting participation: Deaf mothers were also found to have a higher rate of encouraging their child or inviting their participation in the reading session.

Corrections: Similarly, the deaf mothers in this study corrected their children more during their reading sessions than did the hearing mothers.

There were no significant differences between deaf and hearing mothers use of connecting concepts, lower level interactions between language and print, and lower level questions.

To examine the relationship between the two descriptive variables (the child's age and mother's education) and mothers' use of storytelling techniques, Pearson Product-Moment correlations were computed for each of the groups. First, the significant correlations for the 10 deaf dyads will be discussed (see Table 10) followed by the significant correlations for hearing dyads (see Table 11).

Table 10

Correlation Matrix for Deaf Mothers' Use of Reading Techniques Used During All Sessions (n=10)

Variable	1	2	3	4	5	6	7	8	9	10
1. Age of child		-.459	-.134	-.392	.088	-.044	-.593	.660*	.209	.084
2. Mother's education			.450	.534	.249	.276	.394	-.587	-.638*	-.074
3. Attention Getting Strategies				.308	-.081	.419	.022	-.517	-.403	-.065
4. Connecting Concepts					.157	.369	.791**	-.088	-.118	-.293
5. Lower level interactions between language and print						-.207	-.032	-.001	-.362	-.085
6. Higher level interactions between language and print							.363	-.081	.350	.169
7. Lower level questions								-.033	.178	.063
8. Higher level questions									.448	-.126
9. Encouraging child/inviting participation										.488
10. Corrections										

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

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

For the deaf mothers, the significant correlations were the age of child and higher level questions ($r = .660$, $p < .05$), mother's education and encouraging child's participation ($r = -.638$, $p < .05$) and connecting concepts with lower level questions ($r = .791$, $p < .01$). In other words, the older the child, the deaf mothers used more higher level questions, the higher the level of education, the less likely the deaf mothers used encouraging strategies and those who used connecting concepts were more likely to use lower level questions.

Table 11

Correlation Matrix for Hearing Mothers' use of Reading Techniques used during all Sessions (n=10)

Variable	1	2	3	4	5	6	7	8	9	10
1. Age of child		.052	-.432	-.347	-.229	-.523	-.054	.230	.091	.266
2. Mother's education			.221	.515	.327	-.327	.071	.531	.410	.198
3. Attention Getting Strategies				.149	.809**	-.262	.447	-.088	.069	.071
4. Connecting Concepts					.428	-.122	-.097	.131	.018	-.212
5. Lower level interactions between language and print						-.470	.342	-.035	.100	-.275
6. Higher level interactions between language and print							.106	-.266	.263	-.028
7. Lower level questions								.262	.537	.073
8. Higher level questions									.563	-.141
9. Encouraging child/inviting participation										-.293
10. Corrections										

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

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

The only significant correlation for the hearing mothers was between attention getting strategies and lower interactions between language and print ($r = .809, p < .01$) indicating that the more attention getting strategies that hearing mothers used, the more lower level interactions between language and print were used.

Research Question #1: Summary of Results

In this study, deaf mothers reading with their deaf children differed from hearing mothers reading with their hearing children in the amount of time they spent reading books and their quantity of use of specific reading techniques such as attention getting strategies, higher level interactions between language and print, higher level questions, encouraging their child and correcting their child. Correlational analyses for the deaf dyads showed a relationship between the age of child and higher level questions, the mother's education and encouraging child's participation and connecting concepts with lower level questions whereas the hearing dyads had one significant correlation between attention getting strategies and lower level interactions between language and print.

Research Question #2: What specific techniques do deaf parents use in ASL to make connections to the written text and how is this different than the techniques that hearing parents use with the spoken language and the written text? For example, will we see a difference in the ways in which deaf and hearing parents provide definitions for English words?

In all of the reading sessions combined, eight of the ten deaf mothers used the reading technique of making English explicit while only 2 of the hearing mothers used this same technique. The ways that the deaf mothers made English explicit varied. Examples include the use of chaining, providing an English definition, interpreting English word sounds, explaining

the difference in spelling of two similar-looking words, explaining rhyming, and explaining font sizes. Table 12 provides several examples of how deaf mothers make English explicit.

Table 12
Deaf Mothers Making English Explicit

Strategy	Example	English Translation	Use of Strategy
Chaining (sign, fingerspell, point to the English word)	<p>1. M: THERE I-S A BEAR, B-E-A-R (points to word) UP ON MY BED!</p> <p>2. L-O-V-E-L-Y MEAN LOVELY (points to word on page)</p>	<p>1. There is a bear, bear, up on my bed.</p> <p>2. Lovely means lovely.</p>	Mothers use chaining (sign, fingerspelling and a point) to emphasize the word in both ASL and English.
Providing English definition	<p>1. M: A-L-L BABY CRAWL-UP-TREE CHASE B-E-E. FINISH. CRAWL-DOWN TREE. SEE HAVE B-O-G. SAME WATER M-U-D MIX</p> <p>2. M: (turns page) POINT CL:BENT-V-CRAWL B-O-G, SAME M-U-D, FILL-UP SAME B-O-G DIRTY, CAREFUL, CHASE CHASE FROG.</p> <p>3. M: (points to word) S-H-E MEAN GIRL. GIRL, H-E-R.</p> <p>4. C: A-ON-CHIN SAY LISTEN M-R N-E-I-G-H-B-O-R.</p> <p>M: (nods head and points to book) WHAT MEAN?</p> <p>C: (looks at mother) DON'T-KNOW</p> <p>M: NEIGHBOR.</p> <p>C: (looks at book)</p> <p>M: (taps child)</p>	<p>1. All the babies crawled up the tree chasing the bees. They crawled down the tree. See, there's a bog. It's the same as water and mud mixed together.</p> <p>2. They crawled through the bog, it's the same as mud. It's the same as being full of water but dirty. They have to be careful chasing the frogs.</p> <p>3. She means girl. Girl is the same as her.</p> <p>4. C: Andrew says, listen, Mr. Neighbor.</p> <p>M: What does that</p>	Mothers provide definitions for English words such as bog, she, neighbor, tuck, and jiff.

	<p>C: (looks at mother)</p> <p>M: NEIGHBOR. HOUSE NEXT POINT CALLED NEIGHBOR</p> <p>5. M: T-U-C-K MEAN PUT-IN SLEEP</p> <p>6. M: BABY, B-A-B-I-E-S.</p> <p>C: BABY M: MANY BABY.</p> <p>7. M: YOU YELL WILL B-E THERE IN J-I-F, FAST.</p>	<p>mean?</p> <p>C: I don't know.</p> <p>M: Neighbor.</p> <p>C: I don't know. M: Neighbor</p> <p>M: Neighbor. The house next door is called neighbor.</p> <p>5. Tuck means to put to sleep.</p> <p>6. M: Baby, babies.</p> <p>C: Baby.</p> <p>M: Many babies.</p> <p>7. You yelled, will be there in a jiff, fast.</p>	
Interpreting English word sounds	<p>1. M: Z-O-O-M. Z-O-O-M MEANS WHAT?</p> <p>C: THAT Z-O-O.</p> <p>M: HAVE Z-O-O HAVE BUT Z-O-O-M MEAN FAST. POLICE ARRIVE IN-A-MINUTE! SIREN ARRIVE. (point)</p> <p>M: (turns page) OTHER FIRE (point) Z-I-N-G SOUND-LIKE BELL Z-I-N-G FAST.</p>	<p>1. M: Zoom, What does zoom mean? C: that's the zoo. M: There is the zoo but Zoom means fast. The police arrived quickly; the car with sirens arrived. M: Another firetruck.</p>	Mothers explain that these particular words (zoom, whoosh, swish) are English words that represent sounds.

	<p>M: (turns page points to word) W-H-O-O-S-H. FAST. WIND-WAVE-HAIR. ARRIVE DOG CATCH. POINT Z-O-O.</p> <p>2. W-H-O-O-S-H, S-W-I-S-H. MAKE NOISE.</p>	<p>Zing sounds like a bell. Zing went fast. M: Whoosh is fast. The hair is blowing in the wind. The dog catcher arrived. He is from the zoo.</p> <p>2. Whoosh and Swish are words to describe noise.</p>	
Explaining the difference in spelling of two words that look similar in English (also provides English definition)	<p>C: (leans over and points) COOK.</p> <p>M: WHAT?</p> <p>C: (points to picture)</p> <p>M: CHIEF. O-H! C-H-E-F—COOK. C-H-I-E-F. ADD “I” MEANS CHIEF, BOSS FIRE D-E-P-T. C-H-I-E-F (leans left). C-H-E-F MEAN COOK. RIGHT. GOOD NOTICE.</p>	<p>C: That’s the cook.</p> <p>M: What?</p> <p>C: (pointing)</p> <p>M: Chief. Oh! Chef is a cook. If you add an “I”, it means chief, who is the boss of the fire department. Chef means cook, you’re right. It’s good that you noticed that.</p>	Mother clarifies for the child that while chef and chief look very similar, they are two different words with two different meanings.
Explaining rhyming in English	<p>1. M: (turns page) CRAWL POINT CRAWL IN C-A-V-E. YOU CALL BABY BEHAVE, B-E-H-A-V-E. BUT BABY LOVE BAT S-O BABY J-U-S-T WAVE.</p> <p>M: (waves to child) LOOK SAME (points to word) B-E-H-A-V-E. (points to other word) W-A-V-E-D. A-L-L C-A-V-E, B-E-H-A-V-E. WORD LOOK-LIKE ALMOST SAME SPELL, WILL SOUND ALMOST SAME.</p> <p>2. M: POEM P-O-E-M POEM.</p>	<p>1. M: They crawled in the cave. You called, babies, behave, behave. But the babies loved bats so the babies just waved.</p> <p>M: The words look the same. Behave and</p>	Mother points out how in English, words that are spelled similarly may also sound the same.

	<p>M: (turns page waves) RHYME. POINT WHEN BABY CL:BENT-V-CRAWL (taps child) LOOK (towards book and tracks finger along words) SAME SPELL SAME. ALMOST SAME. (point) L-E-D-G-E. (point) E-D-G-E. (covers the l on ledge)</p>	<p>wave. All of them do: Cave, behave. The words look alike and have a similar spelling. They sound almost the same.</p> <p>2. It's a poem, a poem.</p> <p>This is a rhyme. When the baby crawled (taps child) look, it's the same spelling; almost the same: Ledge and edge.</p>	
Explaining the purpose of different font sizes	<p>M: BEAR UP-UP IN MY BED! WORDS BIG: T-H-E-R-E- I-S A B-E-A-R U-P-S-T-A-I-R-S IN MY B-E-D. SMALL, SMALL, BIG! WHAT YOU THINK MEAN? SMALL, SMALL, SMALL BIG! (referring to the font size) WHAT YOU THINK MEAN?</p> <p>C: BEAR, BEAR, BEAR!</p> <p>M: (shows child picture and points to font/words)</p> <p>C: MORE MORE BIG.</p> <p>M: (head nod) ANDREW SCREAM.</p>	<p>M: There is a bear upstairs in my bed. See the big words, "there is a bear upstairs in my bed." See these are small and these are big. What do you think that means? Small words then Big words. What do you thin it means?</p> <p>C: Bear, bear, bear.</p> <p>M: (pointing)</p> <p>C: These are big words</p>	<p>Mother explains that large font sizes represents the characters raising their voices. English</p>

		M: Yes, Andrew is screaming.	
Use of ASL to help child understand differences between the 2 languages	<p>1. M: NO ONE LISTEN (AT EAR) OR NO ONE LISTEN (AT EYE) (points to words on cover). NO ONE LISTEN (EYE) O-R LISTEN (EAR); and</p> <p>2. M: (turns page) A-W SAY LOUD, LISTEN MOTHER, LISTEN DAD, LISTEN R-U-T-H-Y, LISTEN. WAVE LISTEN OR LOOK-AT, IF SIGN, LOOK-AT-ME B-O-B-B-Y. LOOK-AT-ME NEIGHBOR, LISTEN M-R-S. C-L-E-A-N CLEAN-PERSON. POINT I-S A BEAR UP IN MY B-E-D!</p>	<p>1. No one listens (with their ears), or no one listens (with their eyes). No one listens (with their ears) or no one listens (with their eyes).</p> <p>2. Andrew said loudly, listen mother, listen dad, listen Ruthy, listen. (waves hand) Listen or look at. If you sign, it's look at me Bobby, look at me, Neighbor, listen Mrs. Cleaner. There is a bear up in my bed.</p>	Mother shows how the English word "listen" can be interpreted or signed two different ways in ASL.
Following the English text through ASL	M: A-ON-TEMPLE SAID LOUD, PATIENCE RUN-OUT, POINT FRUSTRATED. LISTEN, DADDY. LISTEN, MOMMY. LISTEN R-U-T-H-Y. LISTEN B-O-B-B-Y. LISTEN M-R. NEIGHBOR. LISTEN M-R-S. CLEAN-PERSON (with each "listen", alternates sign side) POINT LOOK-AT-ME. POINT I-S A—A--	1. Andrew said loudly. He was running out of patience and becoming frustrated. Listen, Daddy (left). Listen Mommy (right). Listen Ruth (left). Listen Bobby (right). Listen Mr. Neighbor (left). Listen Mr. Cleaner (right). Look at me. There is a-a (prompts child to finish sentence)	Signs the text in English word order. Also expands on the text by adding that Andrew was becoming frustrated and encourages child to participate by asking to finish the sentence.

By contrast only 2 hearing mothers made the English explicit for their child. Examples of definitions that these two hearing mothers provided are given below:

1. M: Gran is, I think, short for Grandmother or Granny.
2. M: Bloomernut! Look, the nuts look like bloomers. Bloomers are like outerwear that are pants.
3. M. I think that means he's somebody who makes a hat (in reference to the word milliner).

In addition, nine of the deaf mothers asked their child to help identify a name sign for the most important characters in the book. For example (English translations provided below the signed utterance):

M: S-T-A-N-L-E-Y, CREATE NAME SIGN WHAT? LOOK-AT—

M: Stanley, what name sign shall we give him? Look at--

C: S-ON-CHEST.

C: S-handshape on the chest.

M: S-ON-CHEST, FINE. S-ON-CHEST, MORNING, GET-UP EARLY MORNING.

M: S-handshape on the chest, Fine. Stanley got up early in the morning.

Another strategy used by deaf mothers is shifting their bodies or hands for repetitive English words or phrases or to demonstrate a change in character as seen in the following examples in Table 13.

Table 13

Deaf Mothers Use of ASL Features to Demonstrate Character Changes

English text	ASL	English translation	ASL feature
Andrew said very loud, “Listen, Mother, Listen, Daddy, Listen, Ruthy, Listen, Bobby, Listen Mr. Neighbor, Listen, Mrs. Cleaner, THERE IS A BEAR UPSTAIRS IN MY BED.”	M: A-ON-CHIN BECOME FRUSTRATED BUILD-UP- INSIDE BLOW-TOP SCREAM, LISTEN MOM. LISTEN DADDY. LISTEN B- O-B-B-Y. LISTEN R-U-T-H- Y. LISTEN NEIGHBOR. LISTEN M-R-S. CLEAN- PERSON (alternates hands with each Listen).	Andrew became frustrated. It was building up inside until he screamed, listen mom, listen daddy, listen Bobby, listen Ruthy, listen Neighbor, listen Mrs. Cleaner.	The English word “listen” is repeated throughout this selection. The mother alternates the use of her hands (left and right), which provides a rhythm to the signing.
Mother said, “Wait, Andrew. I must pay Mrs. Cleaner. She must catch the bus before dark.”	M: (TURNS PAGE). WAVE. MOM ME SAW SOMETHING. POINT TO BOOK. CLOSED 5-HAND (WAIT). (SHIFT SHOULDER) (body is facing different direction) HAVE TO PAY PERSON WHO CLEAN. WAIT. WOMAN HURRY CATCH B-U-S (POINT TO BOOK)	Waves (as if trying to get someone’s attention). Mom, I saw something. Wait. (turns body so facing the opposite way, as if it’s the mother facing Andrew) I have to pay the cleaning person. Wait. The woman has to hurry and catch the bus.	The mother uses her body to show character changes as a hearing mother might change her tone of voice to demonstrate different characters.

Similarly, hearing mothers used nonverbal methods for repetitive English words or for emphasis as in the following example:

M: (turns page) Andrew said very loud, “Listen, Mother, Listen, Daddy, Listen, Ruthy, Listen, Bobby, Listen, Mr. Neighbor, Listen, Mrs. Cleaner, there is a bear upstairs in my bed.” (with each “listen”, mother nods head emphatically)

Research Question #2: Summary of Results

All of the deaf mothers in this study found ways to make a connection between the English text and their primary language, ASL. They did this either by providing definitions, pointing out rhyming schemes, providing explanation for sound words, assigning name signs for main characters, and shifting their bodies for repetitive words or phrases. By contrast, only 2 hearing mothers used the technique of making English explicit for their hearing children.

Research Question #3: Do parents (either deaf or hearing) differ in how they read the same book over time (at first unfamiliar and then familiar)?

In order to investigate this question, different statistical analyses were conducted. The following sections will share the results of the following analyses between the first and second reading and between groups: time spent reading, language measures, reading techniques, and correlational analyses.

Repeated reading of the same book: Analysis of time spent reading. Each family was asked to read the book, *Nobody Listens to Andrew* (Guilfoile, 1957) two times; once per reading session. Broken down by group, there was no significant difference in the mean reading times for the first and second reading. A paired-samples t-test for the deaf mothers showed that there was not a significant difference between the first reading ($M = 7.77$, $SD = 1.35$) and second reading ($M = 6.96$, $SD = 1.59$), $t(9) = 1.943$, $p = .084$. Similarly, a paired-sample t-test was conducted for

the hearing mothers and showed that there was not a significant difference between the first reading ($M = 3.49$, $SD = .91$) and the second reading ($M = 3.58$, $SD = .75$) of the same book, $t(9) = -.466$, $p = .652$.

However, there was a significant difference for the mean reading duration between the deaf and hearing groups. For the first reading, as an unfamiliar book, the mean reading duration for the deaf mothers was 7.77 minutes ($SD=1.35$) as compared to 3.49 minutes ($SD=.91$) for the hearing mothers. For the second reading, the deaf mothers' read time decreased to a mean reading time of 6.96 ($SD=1.59$) and the hearing mothers remained the same ($M=3.5$; $SD .75$). A one-way multivariate analysis of variance (MANOVA) was conducted and showed that the deaf mothers spent significantly more time reading the same book than the hearing mothers (First reading: $F(1, 18) = 68.51$, $p = .000$; Second reading: $F(1, 18) = 36.75$, $p = .000$).

Repeated reading of the same book: Analysis of language measures. Using the SALT program (Miller & Iglesias, 2006), the transcripts from the first and second reading of Nobody Listens to Andrew were analyzed for the following language measures during both reading sessions: mother and child utterances, mother and child mean length of utterance in words, mother and child number of different words, and mother and child total number of words. Table 14 describes the means and standard deviations for all of the language measures. The following sections will show the results for these language measures each group.

A visual inspection of the means shows that there were differences between the two groups in some of the language measures for both mother and child. In order to explore these differences, a one-way multivariate analysis of variance (MANOVA) was run to explore group differences on each of the language measures. Significant differences were found between the

groups in both reading sessions for both mother and child's total utterances, and mothers' MLW.

Table 15 shows a summary of the MANOVA results. Each one is then described in turn.

Table 14

Summary of Means and Standard Deviations for Language Measures of the Two Groups Reading the Same Book (n=10 per group)

Variable	Deaf	SD	Hearing	SD	Sig.
Total Utterances (mother)					
Unfamiliar Book	136.00	25.72	84.20	15.024	.000*
Familiar Book	113.90	36.01	84.30	13.58	.026*
Total Utterances (child)					
Unfamiliar Book	50.70	28.65	8.90	7.17	.000*
Familiar Book	47.10	23.11	10.50	8.23	.000*
ML Words (mother)					
Unfamiliar Book					
Familiar Book	3.75	.81	5.29	.26	.000*
ML Words (child)					
Unfamiliar Book	1.85	.89	1.74	1.13	.817
Familiar Book	1.86	1.04	1.98	1.41	.838
Number of Different Words (mother)					
Unfamiliar Book	153.70	38.37	136.00	26.73	.247
Familiar Book	145.50	60.46	134.00	23.38	.247
Number of Different Words (child)					
Unfamiliar Book	24.90	29.11	8.30	7.11	.097
Familiar Book	27.10	31.33	11.30	11.54	.152
Total Number of Words (mother)					
Unfamiliar Book	407.30	129.30	438.70	70.45	.509
Familiar Book	376.00	163.55	430.70	72.57	.347

Total Number of Words (child)					
Unfamiliar Book	48.20	75.48	9.60	9.32	.097
Familiar Book	55.50	101.23	16.00	17.96	.240

*Significant

Table 15

Results of One Way Multivariate Analysis of Variance for Language Measures for Deaf and Hearing Mothers and Children for the First and Second Reading of the Same Book

Language Measure	F	Df1	Df2	p	η
Total utterances for mother-1	30.241	1	18	.000*	.627
Total utterances for child-1	20.019	1	18	.000*	.527
MLW for mother-1	87.044	1	18	.000*	.829
MLW for child-1	.055	1	18	.817	.003
Number of different words for mother-1	1.432	1	18	.247	.074
Number of different words for child-1	3.067	1	18	.097	.146
Total number of words for mother-1	.455	1	18	.509	.025
Total number of words for child-1	2.576	1	18	.126	.125
Total utterances for mother-2	5.915	1	18	.026	.247
Total utterances for child-2	22.246	1	18	.000*	.553
MLW for mother-2	32.124	1	18	.000*	.641
MLW for child-2	.043	1	18	.838	.002
Number of different words for mother-2	1.432	1	18	.247	.074
Number of different words for child-2	2.239	1	18	.152	.111
Total number of words for mother-2	.935	1	18	.347	.049
Total number of words for child-2	1.476	1	18	.240	.076

*Significance is greater than .0001

Mothers' total utterances: For both the first and second reading of the same book, there were significant group differences between the deaf and hearing mothers in the total number of utterances that were used. In both cases, the deaf mothers had a higher number of total utterances than the hearing mothers.

Child's total utterances: There were also group differences for the child's total utterances for both the first and second reading of the same book. In both situations, the deaf children had a higher number of total utterances than the hearing children.

Mothers' MLW: For each of the reading sessions, there was a significant difference between the mothers' MLW. The hearing mothers had a higher MLW than the deaf mothers.

There were no group differences for the following language measures: Child's MLW, number of different words for the mother, number of different words for the child, total number of words for the mother, and total number of words for the child.

Broken down by group, the deaf dyads showed significant correlations in all language measures except for the mothers' MLW. Table 16 shows the paired samples correlations between the first and second reading of the same book.

Table 16: *Paired Samples Correlations for Deaf Mothers Language Measures during the First and Second Reading (n=10)*

Language Measure	Correlation	Significance
Total Utterances (mother)	.653	.041
Total utterances (child)	.678	.031
MLW (mother)	.482	.158
MLW (child)	.963	.000
Different words (mother)	1.00	.
Different words (child)	.928	.000
Total number of words (mother)	.795	.006
Total number of words (child)	.967	.000

A paired-samples t-test was conducted to see if there were any differences in the language measures between readings for the deaf dyads. Only the mothers' total number of utterances showed significance ($t(9) = 2.554$, $p < .05$) with the mean being higher for the first reading ($M = 136$; $SD = 25.721$) than the second reading ($M = 113.90$; $SD = 36.011$). Other language measures such as child's total number of utterances ($t(9) = .533$, $p = .607$), MLW for mothers ($t(9) = -.700$, $p = .502$), MLW for children ($t(9) = -.157$, $p = .879$), number of different words for children ($t(9) = -.596$, $p = .566$), mothers' total number of words ($t(9) = .998$, $p = .344$), and child's total number of words ($t(9) = -.675$, $p = .516$) did not have any differences between the first and second reading for the deaf dyads.

The hearing dyads showed significant correlations in three language measures (total utterances, total number of words for the mother and total number of words for the child). Table 17 shows the paired samples correlations.

Table 17

Paired Samples Correlations for Hearing Mothers Language Measures during the First and Second Reading (n=10)

Language Measure	Correlation	Significance
Total Utterances (mother)	.790	.007
Total utterances (child)	.240	.505
MLW (mother)	-.002	.996
MLW (child)	.167	.647
Different words (mother)	1.00	.
Different words (child)	.591	.072
Total number of words (mother)	.772	.009
Total number of words (child)	.706	.022

A paired-samples t-test was conducted to see if there were any differences in the language measures between readings for the hearing dyads. No differences were found for mothers' total utterances ($t(9) = -.034$, $p = .974$), child's total utterances ($t(9) = -.531$, $p = .609$), mothers' MLW ($t(9) = .948$, $p = .368$), child's MLW ($t(9) = -.452$, $p = .662$), child's number of different words ($t(9) = -1.01$, $p = .335$), mothers' total number of words ($t(9) = .523$, $p = .613$), and child's total number of words ($t(9) = -1.53$, $p = .158$).

Research Question #3: Summary of Results

In this study of deaf and hearing mothers reading the same book at two different times, there were differences between the groups for mother's total utterances, child's total utterances and the mean length of utterance in words. For example, in each reading of the book, the deaf mothers and deaf children had a higher number of total utterances than the hearing mothers and hearing children. The hearing mothers had higher mean length utterances in words for both the first and second reading of the same book.

Discussion

This study examined twenty mother/child dyads as they interacted while reading books together. The dyads were broken into two groups: deaf mother/deaf child (D), and hearing mother/hearing child (H). The purpose of the study was to explore what differences or similarities there may be between the two groups in the shared reading techniques, to explore what specific techniques deaf mothers use to make connections to the English print while using American Sign Language and to explore what effect book familiarity may have on language measures and the use of reading techniques.

Each research question will be discussed in turn followed by a discussion on how these results may provide insight for working with parents who have deaf children.

Research Question #1: Are there quantitative or qualitative differences in how deaf parents with deaf children read to their children compared to hearing parents with hearing children? For example, will there be differences in the ways deaf or hearing parents use the 6 categories of reading techniques?

In this study comparing two groups of deaf and hearing dyads reading books together, there were five significant differences in the amount of parent reading techniques that were used. These differences were in the categories of attention getting strategies, higher level interactions between language and print, encouraging strategies, higher level questions, and corrections. The following will address each reading technique and discuss the findings.

Deaf Mothers: Higher Rate of Attention Getting Strategies

As in the pilot study conducted by Berke (2007), deaf mothers in this research had a higher rate of attention getting strategies than the hearing mothers. This can be attributed to the

fact that when deaf mothers are engaging with their deaf children, it is a sequential rather than simultaneous process of reading. For example, if the mother and child are both looking at the book but the mother then wants to communicate or read the story, she must tap or wave to her child in order for the child to see what she is signing (Meadow-Orlans, 2003). Other techniques that the mothers in this study used include eye gaze, physically moving their own body or the book. These are similar to what has been reported in other studies with deaf mothers (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Lartz & Lestina, 1995; Schleper, 1997). By contrast, hearing mothers and hearing children can both look at the book and talk at the same time because the mother does not need to have the child's visual attention.

Whereas some may consider that the deaf child's need to divide his attention is a difficulty (Spencer & Marschark, 2010), deaf mothers are likely to be more aware of their child's need to attend sequentially and employ these attention getting or visually sensitive strategies intuitively (Spencer & Marschark, 2010). Deaf mothers are also able to reconfigure how they sit or control the book in a way that may reduce their need to employ attention getting strategies. For example, two deaf mothers had relatively low rates of taps or waves in at least one of their reading sessions. This was because the mothers sat across from their child, held the book while they signed, and then showed the picture to the child. This specific strategy was not used by any of the hearing mothers rather, they used attention vocatives (a gasp) or commands ("look!") to get and maintain their child's attention. It is not surprising that deaf mothers, compared to hearing mothers, used more attention getting strategies due to the nature of visual communication and needing to divide attention between the book and the mother.

Hearing Mothers: Higher Rate of Higher Level Interactions Between Language and Print

The hearing mothers in this study used significantly more higher level interactions between language and print, which included reading the text, than the deaf mothers. In all reading sessions, the hearing mothers were more likely to read the text exclusively. For this age group, this is consistent with other studies of hearing dyads that showed that mothers of 3- to 5-year-old children are more likely to read the print (Martin, 1998; Martin & Reutzel, 1999; Sulzby, 1985) without extratextual conversation (DeTemple & Snow, 2003). This result might suggest that deaf mothers do not read the text as much hearing mothers however, when breaking down this global category, all the deaf mothers did read the text, just not at the same rate nor as exclusively as the hearing mothers.

There were other techniques in the higher level category that deaf mothers engaged in at a different rate than that of hearing mothers. For example, all of the deaf mothers utilized print referencing techniques such as tracking the print, compared to 6 hearing mothers. Seven of the deaf mothers added or elaborated on the text as opposed to only 2 of the hearing mothers. And finally, 8 of the deaf mothers used the technique of making English explicit while two hearing mothers did this (see research question #2 for further explanation of deaf parents' use of this technique). In summary, more deaf mothers engaged in more of the specific higher level interactions compared to the hearing mothers. Because the hearing mothers had a higher rate of reading the text, this may have skewed the results in their favor. However, when looking at the distribution, deaf mothers used more of a variety of methods of interacting with the print than their hearing counterparts. Hearing mothers almost exclusively read the text while deaf mothers utilized various higher level interactions between language and print.

Deaf Mothers: Higher Rate of Higher Level Questions

The reading technique of asking higher level questions was used at a higher rate by deaf mothers than hearing mothers. In other words deaf mothers used more comprehension, inferential and prediction types of questions, all of which are used to engage and challenge a child to think beyond what is visible in the book and encourages more than a one-word answer. In fact, teaching parents to use these higher level questions is one of the important components of the Dialogic Reading Program (Whitehurst et al., 1988), an intervention program initially designed for children who are at-risk for reading difficulties.

One might speculate why it is that deaf mothers used more of these types of questions than hearing mothers. One possible reason is that it is very likely that the deaf mothers, having been associated with the two schools for the deaf in California, were involved in early start programming provided through the school. Through this intervention program, parents were provided opportunities to attend workshops and have home visits from a deaf education teacher where specific reading techniques may have been shared and encouraging literacy is emphasized. The hearing mothers, whose children did not have any reason to be involved in an early intervention program, would be unlikely to have had specific instruction in reading strategies. In addition, 5 of the deaf mothers were trained as classroom teachers, where they were likely to have been taught this technique to use in the classroom. Although two of the hearing mothers worked with children, neither had been trained as a classroom teacher. By asking more higher level questions, the deaf mothers in this study were able to engage and attempt to bring their child into the reading process more than their hearing counterparts.

Deaf Mothers: Higher Rate of Encouraging Child and/or Inviting Participation

Similar to higher level questions, strategies that encourage children or invite them to participate in the interaction over the book are taught to parents involved in reading intervention programs. The Dialogic Reading Program (Whitehurst, et al., 1988; Crain-Thoreson & Dale, 1999) teaches parents to follow their child's lead, provide praise, encourage and help the child. The deaf mothers in this study used these strategies at a higher rate than the hearing mothers. All of the deaf mothers confirmed their child's understanding, and 8 of the hearing mothers did so albeit at a much lower rate ($M = .53/\text{minute}$, $SD = .49$) than the deaf mothers ($M = 1.25/\text{minute}$, $SD = .56$). All of the deaf mothers followed their child's lead whereas eight hearing mothers did so. This is similar to what Andrews and Taylor (1987) reported in their study, i.e., that a large part of the mother's comments were focused on confirming the deaf child's understanding. In addition, and perhaps an interesting observation, is that the two deaf mothers of the oldest deaf children (D2, 67 months and D3, 71 months) prompted their child to read the books in their entirety and supported them through higher rates of tracking the print, asking comprehension questions, and higher level interactions between language and print than their hearing matched pairs. While it is not a surprise that mothers of older deaf children followed their child's lead by allowing them to read when they wanted, it is surprising that none of the hearing children were interested in doing this and they were not encouraged to do so by their mothers in these observations. Similar to the higher level questions, it appears that the deaf mothers in this study encouraged and attempted to engage their children more than the hearing mothers.

Deaf Mothers: Higher Rate of Corrections

While deaf mothers had a higher rate of encouraging and/or inviting their child's participation, they also had a higher rate of corrections. Broken down, the sub-category of

criticisms were rarely used by any of the families. However, all deaf mothers used the technique of correcting their child's sign whereas only one hearing mother corrected her child's pronunciation. Of note is that one of the deaf mothers whose child did the majority of the reading herself had the highest correction rate of all the families combined. She was constantly working with her child to ensure that her child understood specific vocabulary as well as the story as in the following example (English translation provided below the signed utterance):

C: SURPRISE SURPRISE! BABY CALL AWAY!

C: Surprise surprise, the baby calls away.

M: (taps child and points to word)

C: CALL, CALL.

C: Call, call.

M: (taps child)

C: (looks at mom)

M: WHAT SAY?

M: What does it say?

C: CALL, CALL.

C: Call, call.

M: CALL? REALLY, C-R-A-W-L, CRAWL.

M: Call? Really, it's (fingerspells) crawl, crawl.

C: (starts to turn page)

M: (returns to front of book and points to picture of babies crawling)

C: CRAWL.

C: Crawl.

M: (nods head yes)

M: (opens book back to page)

C: (points to picture of babies crawling)

M: (nods head yes) YES CRAWL.

M: (nods head yes) Yes, crawl.

Although direct corrections (Whitehurst, et al., 1988) and criticizing (Snow, 1983) are discouraged during the shared reading process, the previous example shows that mothers can do this in a constructive and positive way. In fact, this mother used a number of positive strategies to engage her child such as following her child's lead (when she allows her child to read), checks for comprehension (WHAT SAY?), fingerspells and signs the target vocabulary (C-R-A-W-L, CRAWL) and confirms her child's understanding (nods head yes, YES CRAWL). While it was beyond the scope of this study to measure the enjoyment that both the mother and child experienced, their body language and facial expressions indicated that they were enjoying their reading time together. Thus, it is possible to provide positive corrections that further the child's understanding of the book.

Correlational Analysis of Descriptive Variables and Reading Techniques Used by Mothers

The previous section covered the differences between the deaf and hearing mothers while reading unfamiliar books during all the reading sessions. What was learned from the correlational analyses further supports the findings that there are some differences between deaf mothers and hearing mothers in the techniques they use when they read books to their children. The significant correlations are discussed below.

For the deaf dyads, the children's age was positively correlated with the asking of higher level questions ($r = .660, p < .01$; see Table 10). The positive correlation of the child's age with higher level questions is consistent with what has been shown in the literature (DeLoache, 1984; Martin & Reutzel, 1999). Whitehurst et al. (1988) suggests that all mothers can use more open-ended questions that encourage the child to think beyond the book regardless of the child's age.

This finding may seem unusual because although the deaf and hearing children were matched for age, the deaf mothers in this study were shown to use higher level questions at a significantly higher rate than the hearing mothers. In a closer look at the rates, it does appear that the mothers of the older deaf children (4.5 – 5 years) had higher rates of this technique than the mothers of the younger children. This confirms that parents with older children tend to ask more higher level questions when reading a book.

The mother's education level was only significant with the deaf group in that the deaf mothers education level was negatively correlated with encouraging the child ($r = -.638, p < .05$; see Table 10). What this appears to demonstrate is that the more educated the mother, the less likely she is going to encourage her child or invite her child to interact when reading the book. This result seems somewhat unusual given the fact that deaf mothers were found to be more encouraging and inviting than hearing mothers. One possible reason for this was that deaf mothers were more likely to have participated in early intervention programs regardless of their education level. One might consider that those with higher education could be more controlling of the interaction however, this perspective does not match the other findings in this study that deaf mothers appear to be more engaging of their child. Perhaps it is the way that they engaged their child (through higher level questions and interactions) that made them less likely to encourage their child. This is inconclusive and might warrant further study.

An interesting comparison is that deaf and hearing mothers who used more lower level interactions had correlations with two different variables. For the deaf mothers, they tended to connect concepts ($r = .791, p < .05$; see Table 10) while the hearing mothers tended to use more attention getting strategies ($r = .809, p < .05$; see Table 11). What this might suggest is that deaf mothers use different strategies for maintaining attention than hearing mothers when they both

use lower level interactions such as describing, labeling or simplifying the text. Again, it is possible that the deaf mothers' participation in early intervention is the reason. Another possibility is that since deaf mothers are using attention getting strategies such as tapping or waving more than hearing mothers, they find different ways to maintain their child's attention through connecting concepts.

Summary of Correlation Analyses

This study showed group differences on some of the variables and the correlations for each group provide a perspective on what techniques might be used or not used with other techniques. This study was consistent with findings in previous studies with hearing children that showed older children tend to have more higher level questions asked of them (DeLoache, 1984; Martin & Reutzel, 1999) although this only played out with the deaf dyads. In addition, deaf mothers who had a higher education level used less encouraging strategies, which seemed inconsistent with other findings. Deaf mothers who connected concepts for their child were also found to engage in lower level interactions while hearing mothers who used more attention getting strategies used lower level interactions. This finding suggests that deaf and hearing mothers are also using lower level interactions to find different ways to get or maintain their child's attention during the reading.

Research Question #1: Summary of Findings

The statistical analyses in this study showed that there were group differences between deaf and hearing mothers in how they read books with their children. Although hearing mothers in this sample tend to do more straight reading of the text, they are less likely to engage in other types of interactions that have been described as being important during shared reading. The Deaf mothers in this study read the text but also used a variety of techniques to engage their

children in the reading process. In addition to the higher rate of attention getting strategies that is attributed to the visual and sequential nature of reading with deaf children, the deaf mothers in this study asked more higher level questions, encouraged their children more and had a higher rate of corrections. The latter, while not always a good thing, was actually used positively and constructively with their children in helping them understand what they were reading. It cannot be assumed that all deaf mothers will use the techniques that were described here but what was learned can be shared with all parents of deaf children.

Research Question 2: What specific techniques do deaf parents use in ASL to make connections to the written text and how is this different than the techniques that hearing parents use with the spoken language and the written text? For example, will we see a difference in the ways in which deaf and hearing parents provide definitions for English words?

While we know from previous studies (Bailes, Erting, Erting & Thumann-Prezioso, 2009; Lartz, 1999; Maxwell, 1984; Schleper, 1995) that deaf parents are using ASL to read books, this study expands upon and provides a more in-depth perspective on what techniques they are actually using. For example, the Shared Reading Project (1995) encourages parents to translate stories using ASL and to keep ASL and English visible (principles 1 and 2) however it does not explain how to do that. The variety of ways in which the deaf mothers in this study made connections between the written text and ASL will be summarized and discussed below.

Chaining: Deaf teachers in deaf classrooms have been observed to use this technique (Bailes, 2001; Humphries & MacDougall, 1999; Padden, 2006; Padden & Ramsey, 1998) effectively, and it is actually one of the techniques taught through the Language Planning Institute instructional modules (Gallaudet University, 2010). The fact that the deaf mothers in

this study used this technique appears to indicate one of several things. Mothers may have received this training in their professional environment and carried it over to their personal, home environment. They may have been exposed to it through their early intervention program or, it may simply be a practice that deaf mothers intuitively know is effective because they have benefited from this strategy themselves. While a spoken English equivalent might be that a hearing parent points to a word, spells it and says it, none of the hearing mothers in this study used that type of technique with their hearing child. This could be because they have not been exposed to that type of technique or simply because there is no need to translate English text.

Whether it was professional training, early intervention or intuitive practice, the use of this technique is important because it shows that the mothers are aware of their role in bridging the two distinct languages. This is similar to what Bailes (2001) describes in her study of teachers in a charter school for the deaf. Teachers' use of chaining and bridging two languages is a way of taking "metalinguistic awareness and knowledge a step further" (p. 160). One teacher noted that since she "started fingerspelling the words, the kids have improved (their English skills)" (Bailes, p. 160). The teachers in Bailes' study and possibly the mothers in this study know that chaining is an effective way in which to help a deaf child understand the English print.

Providing English definitions: While providing a definition for a word encountered in a book might not seem unique, 7 of the deaf mothers compared to 2 hearing mothers actually did this. Table 12 provides several examples. It's unlikely that it's because the hearing children knew all of the vocabulary, instead, it might be because hearing parents assume the child will pick it up from the context and/or the pictures in the story. The importance of providing definitions is not trivial. In Traxler's (2000) norming study, she noted that deaf students' performance in reading vocabulary is significantly below their same-age hearing peers. Given that the majority of the

deaf mothers provided definitions, it appears that they intuitively know that their child needs additional support and are conscientious about making English words explicit for their children.

Interpreting English word sounds: Related to providing definitions for English words, deaf mothers also provided interpretations of English sounds while none of the hearing mothers did this. The words in one particular book, *Nobody Listens to Andrew* (Guilfoile, 1957) had words such as “zoom” “zing” “whoosh” and “swish.” Hearing mothers may not think of expanding on these onomatopoeic words. Deaf mothers, because of their own experiences, know that their deaf child will not know that the words sound like the sounds they are meant to represent and need explicit definitions (see examples in Table 12). Although the deaf children might not have auditory access to the sounds, knowing that the written word represents sounds will be helpful as they continue to learn to read and try to make meaning from their books. Using the example of the mother defining that zoom means fast, one can expect that the next time that child encounters the word “zoom”, the child may remember that represents a sound and hopefully, will have greater understanding of what is being conveyed.

Explaining the difference of similar-looking English words: One deaf mother capitalized on the opportunity to help her child when she mistakenly saw the word “chief” and thought it was chef (see example in Table 12). The mother took the time to explain that adding an “I” to the word chef makes it “chief” and its definition is boss. While one might assume that any parent would make this correction, this deaf mother demonstrated her support for her child by following the child’s lead (to see what the child was pointing to), defining the words (chief and chef), fingerspelling and signing the words (C-H-E-F, COOK; C-H-I-E-F, BOSS) and providing praise for her child (RIGHT, GOOD NOTICE). Similar to the mothers who provided definitions of sound words, providing the correct spelling and meaning of similar-looking words

is helpful in providing a foundation as the child continues to develop reading skills. It also helps the child understand some of the details of spelling and how incorrectly spelling a word might make a different word entirely, much like using a similar sign handshape in a different location means something different.

Explaining rhyming in English: One book in particular, *The Day the Babies Crawled Away* (Rathmann, 2003), was a story told in rhymes. As one deaf mother read the book to her child, she used this feature to teach her child about English rhyming. For example, she pointed to the words that rhymed (CAVE and BEHAVE) and explained that they look similar, have almost the same spelling, and therefore will sound almost the same. She also exposed the child to the word, RHYME, and told her child that this was a poem. This particular mother, who also had hearing children, probably realized that her hearing children had exposure to rhyming in a way that her deaf children did not. Her decision to explicitly explain this feature of spoken English shows that she knows what her child might be missing and provides information that will help with developing an understanding of English and literacy conventions.

Explaining font sizes: Authors may use different font sizes to indicate the volume or force with which something is being said. One deaf mother, in addition to reading the text and indicating through her signs and facial expressions that boy was screaming, related the screaming to the change in font size. This is yet another indication of how deaf mothers may intuitively know what a child needs as they continue to encounter English print. She provided a type of contextual clue for her child that the child can then apply to other stories.

Explaining different ASL meanings for one English word: Deaf mothers intuitively know that words in English may not have the same connotation in ASL. For example, the word “listen” typically means to pay attention through sound. However, for a deaf child, the meaning

is to pay attention with vision. One mother made this explicit by signing, “LISTEN” at both the ear and the eye while another first used the sign LISTEN (at the ear) and then explained that if it’s signed, it would be “LOOK-AT-ME”. By differentiating between the types of listening that can occur, these mothers taught their children that English words might have different meanings in ASL. For deaf children, this can be helpful to know as they navigate the two worlds in which they live; the hearing and deaf world.

Translating into ASL: While some may argue that simply the act of reading English text in ASL is translating, this study looked at how mothers made explicit translations from English words to ASL. As an example, when a child signed the sentence “Zing! came the fire department”, the mother provided the sign “L-TO-BABY-O” to ensure that the child understood the meaning of the English words. Once again, this shows how deaf mothers might intuitively know that the English word might not be familiar to the child and provides a translation. This will be helpful as the child encounters this word in the future.

Providing name signs: Having a name sign is one of the most common features of one’s involvement with Deaf culture (Day & Sutton-Spence, 2010; Supalla, 1992). Almost all of the mothers involved their child in creating a name sign for the main characters in the book. It usually happened at the beginning of the story and the mothers would follow the child’s lead in selecting a name sign, even if it wasn’t a typical name sign. For example, one child wanted to use her own brother’s name sign instead of something more closely related to the character’s name in the book. The mother followed along until the child decided she wanted a different name sign. Regardless of the appropriateness of the name sign, the fact that the majority of the deaf mothers used this technique showed how they incorporate aspects of their own culture in the shared reading process.

Signing in English word order: Although all the deaf mothers were using ASL to convey the stories, many of the mothers mediated between ASL and the English text by representing English grammatical function words such as “a” and “is” as well as signing in English word order. This allowed them to represent grammatical features of English, such as subject-verb-object word order, through the use of ASL. These elements of English are not typically represented in ASL. As mentioned earlier, the deaf mothers in this study were well educated and presumably, comfortable with both their ASL and English skills. These deaf mothers were purposeful in the way they represented English because they signed in English word order. Hearing parents who are learning ASL may find comfort to know that Deaf parents do sometimes sign in English word order. Hearing parents may not be as adept at mediating between the two languages and may feel intimidated by translating from one language to the other. By showing them how Deaf parents do this, hearing parents learn ways of making English explicit through ASL.

Research Question #2: Summary of Findings

Previous research has shown that deaf mothers make connections to the English print but did not go into detail as to how this is done. This study expands on the research by detailing how deaf mothers make English explicit with their deaf children when engaging over a book. Techniques such as providing definitions for English vocabulary, discussing literary conventions such as what enlarged font size is or rhyming schemes not only serve to expand a child’s knowledge but also foster positive interactions over a book. These observations are significant because they demonstrate how deaf mothers intuitively know that their children may need extra support as they encounter English print and its conventions as they show how English is different than their primary language, ASL. The use of these techniques may be one reason why positive

correlations have been found between ASL skills and English literacy skills (Boudreault, 2011; Chamberlain & Mayberry, 2000; Goldin-Meadow & Mayberry, 2001; Hoffmeister, 2000, Strong & Prinz, 1997; Padden & Ramsey, 2000; Wilbur, 2000). These observations should not be taken lightly. Not only are deaf parents making concrete connections between ASL and English, they are also providing deaf children with the idea that books are something from which we can learn and apply to their understanding of the world.

Research Question #3: Do parents (either deaf or hearing) differ in how they read the same book over time (at first unfamiliar and then familiar)?

The effect of book familiarity on parents' use of reading techniques is not a novel concept. Previous research with hearing families has shown that there are differences in parental input through the use of questioning, labeling or predictions (Goodsitt et al., 1988; Haden et al., 1996; Senechal et al., 1995, van Kleeck et al., 1997). This study explored this further by comparing deaf and hearing mothers when reading the same book, *Nobody Listens to Andrew* (Guilfoile, 1957) on two different occasions. In other words, this study controlled for and examined the effect of book familiarity by introducing an unfamiliar book during the first reading session and having parents read it again in a subsequent reading session. Significant analyses will be discussed in turn.

Reading time: For all of the families, there was a significant positive correlation between the first and second read times of the same book. In other words, deaf mothers spent more time reading the book on both occasions than hearing mothers but neither deaf nor hearing mothers differed in the time they spent reading the book between sessions. The difference between deaf and hearing mothers' time reading the book can be attributed to two factors: deaf mothers take longer to read than hearing mothers because of the sequential nature of book reading. Ensuring

that each family read the same book further affirms the findings that the deaf and hearing mothers in this study differ in how they engage in shared reading practices. Each finding will be discussed in turn.

Language measures: Related to the difference in the length of time that deaf mothers and their children spent reading the book, there was also a significant difference in mother and child utterances. For both mothers and children, the deaf dyads had a greater number of utterances than the hearing dyads. As mentioned earlier, deaf mothers appeared to engage and encourage their child's participation in the reading session while the hearing mothers were often reading the text but not inviting participation. This finding shows that when this group of deaf mothers read with their deaf children, the reading sessions were more interactive than those of the group of hearing mothers. This may be because deaf parents see the shared reading as an opportunity to expose their children to English and teach their children about the concepts that may be introduced in the book. This may be attributed to their intuition of what their deaf child needs to know to navigate the world or their involvement in early intervention programs or both. It may also be because the deaf mothers had received training in interactive storybook reading. Regardless of the reason, this practice is reported as favorable and should be taught to other parents.

Hearing mothers, however, had a higher MLW than deaf mothers in both readings of the same book which was similar to Berke's (2007) study that showed that the hearing dyads had higher MLU in words than either deaf dyads or hearing-deaf dyads. On the other hand, there were no differences between groups in the number of different words that mothers used. Although hearing mothers were using more straight reading of the text, possibly influencing the higher MLU in words, the deaf and hearing mothers were using the same variety of words that

were taken from the text itself. For example, the D4 and H10 children were exactly the same age and their mothers had comparable education levels. H10's mother was observed to be atypical of the hearing mothers because she provided more extratextual comments in addition to reading the book. In Table 18, we see a comparison of one section from the familiar book.

Table 18
Comparison of D4 and H10 Reading One Section of Familiar Book

Original text	D4	English translation	H10
(1)Mother said, "Wait Andrew. I must pay Mrs. Cleaner. She must catch the bus before dark."	M: (turns page) TAP TAP TAP MOM POINT-UP. MOM WHAT-DO? (role shift) WAIT. ME NEED-TO PAY WOMAN NOW WAIT PATIENCE TAP-ME TAP-ME STOP. NO.	M: (turns page taps in air "up" as if towards tall person) What does the mother do? (changes her position to become the mother). Wait, I have to pay the woman now. Wait, have patience and stop tapping me.	M: (turns page) Mother said, "Wait, Andrew. I must pay Mrs. Cleaner. She must catch the bus before dark."
(2)Andrew said, "Listen, Daddy. I saw something upstairs. Daddy said, "Wait, Andrew. I must cut the grass before dark."	M: (reads next page; makes frustrated face/gesture like Andrew) CL:ONE-PERSON WALK. TAP DAD. (leans closer to child) DAD, WHAT DO? C: BUSY. M: BUSY (nods head) WHAT DO (points to picture)? C: MOW GRASS. M: THAT. TAP FATHER. SAW SOMETHING POINT-UPSTAIR. DAD (rs. Eye gaze down) WAIT NEED-TO HURRY-UP CUT MOW	M: (imitates Andrew's facial expression) Walks and taps Dad. (leans closer to child) What is dad doing? C: He's busy. M: Yes, busy. What is he doing? C: He is mowing the grass. M: Yes, that's right. Taps his father. I saw something upstairs. (shifts eye gaze	M: Andrew said, "Listen, Daddy. I saw something upstairs." Daddy said, "Wait, Andrew. I must cut the grass before dark." He's trying to get him (points), huh; running after him.

	GRASS BEFORE SUNSET. TIME NONE. WAIT.	down to become father and responds) Wait. I need to hurry and mow the grass before it gets dark. I don't have any time now. Wait.	
(3)Andrew said, “Listen, Ruthy. I saw something upstairs. It was in my bed.” Ruthy said, “Wait, Andrew. I must put on my roller skates. I want to skate before dark.”	M: (makes frustrated face, turns page) NEXT GO-TO WHO? C: (looks at book) M: (points to picture) C: GIRL. M: SISTER. (nods head) HIS SISTER. TAP-TAP R-U-T-H- Y. SAW SOMETHING POINT-UPSTAIR. UNDERSTAND IN MY BED. R-U-T-H-Y WHAT-DO? LOOK O-R IGNORE, WHICH? C: IGNORE. M: (looks at book) SAYS WAIT ANDREW, NEED-TO HURRY-UP PUT-ON- ROLLERSKATES. WHY? WANT SKATE-SKATE BEFORE SUNSET. (points to picture) THAT SKATE.	M: (imitates Andrew's frustration). Who does he go to next? C: (looks at book) M: (points to picture) C: A girl. M: Yes, his sister. Taps (fingerspells) Ruthy. I saw something upstairs, you know, in my bed. What does Ruthy do? Does she look or ignore him? C: Ignores him. M: (looks at book) She says, wait, Andrew. I have to hurry and put on my rollerskates. I want to skate before dark. (points to picture). That's a rollerskate.	M: (turns page) Now he's gonna look for someone else. Andrew said, “Listen, Ruthy. I saw something upstairs. It was in my bed.” Ruthy said, “Wait, Andrew. I must put on my roller skates. I want to skate before dark.” Everybody needs to do something before dark. Isn't that interesting.

From (18-3), we see that the deaf mother uses the words in the text (R-U-T-H-Y. SAW SOMETHING POINT-UPSTAIRS. UNDERSTAND IN MY BED. R-U-T-H-Y WHAT-DO? LOOK O-R IGNORE, WHICH? (Ruthy. I saw something upstairs, you know, in my bed. What does Ruthy do? Does she look or ignore him?) and “SAYS WAIT ANDREW, NEED-TO HURRY-UP PUT-ON-ROLLERSKATES. WHY? WANT SKATE-SKATE BEFORE SUNSET (She says, wait, Andrew. I have to hurry and put on my rollerskates. I want to skate before dark.) similar to the hearing mother reading the text. Thus, they are both reading the text but the deaf mother has a lower MLW because her utterances are shorter. However, they are both adding different words, which may explain why there was no difference in the number of different words for the deaf and hearing mothers. This finding confirms that deaf mothers are reading the text but may shorten the MLW while hearing parents who rely on the text will likely have longer utterances in words.

Reading techniques between first and second reading of the same book: When broken down by group, the hearing mothers used higher level questions at a higher rate during the first reading than the second reading. Van Kleeck et al. (1997) suggest that parents may take on a larger role during the unfamiliar book. It appears that the hearing mothers in this study did take on a larger role by asking more higher level questions during the first reading but did not during the second reading.

While both groups of mothers were consistent in their use of reading techniques when reading the unfamiliar and familiar book with the exception of higher level questions for hearing mothers, there were consistent group differences in the use of some reading techniques. Deaf mothers used more attention getting strategies and lower level interactions in both readings while hearing mothers had more high-level interactions in both readings. The latter is attributed to the

fact that hearing mothers did more straight reading of the text while deaf mothers used more describing, text simplification or labeling strategies as shown in Table 19, a comparison of the matched pairs D5 and H6 reading the book for the second time.

Table 19

Comparison of Reading Techniques used by D5 and H6 in One Section of Familiar Book

Original text	D5	English translation	H6
(1) Andrew said, “Listen, Bobby. I saw something upstairs. It was in my bed on the sun porch.”	M: A-ON-SHOULDER RUN BROTHER B-O-B-B-Y. TAP, TAP. ME SAW SOMETHING. ME SAW CL: BENT-V-ON-BED, MY BED, COME COME. B-O-B-B-Y SAY WAIT. UNDER BED (shrugs shoulder)	M: Andrew ran to his brother, Bobby, and tapped him. I saw something. I saw something laying on my bed. Come, come. Bobby said wait. He is under the bed.	M: Andrew said, “Listen, Bobby (points to picture). I saw something upstairs. It was in my bed on the sun porch.” Did I say? It was in my bed on the sun porch.
	C: (turns page)	C: (turns page)	
	M: (checks to make sure on right page)	M: (checks to make sure on right page)	
	C: (looking at book)	C: (looking at book)	
	M: (tracks finger along words then taps child)	M: (tracks finger along words then taps child)	
	C: (looks at mom)	C: (looks at mom)	
(2) Bobby said, “Don’t bother me, Andrew. I must find my bat and ball. I want to play ball before dark.”	M: (role shifts) A-ON-SHOULDER NOT BOTHER ME. LEAVE-ME. WORK-WORK. THROW-THINGS CLOSET LEAVE. WAIT. HAVE-TO PLAY BALL BEFORE DARK. (role shifts) A-ON-SHOULDER LOOK-AT (shrugs shoulders)	M: (becomes Bobby and looks in a different direction) Andrew, don’t bother me. Leave me alone. I’m working. I’m throwing things in my closet. Leave or wait. I have to play ball before dark. (becomes Andrew). Andrew looks at Bobby and shrugs his shoulders.	M: (turns page) Bobby said, “Don’t bother me, Andrew. I must find my bat and ball. I want to play ball before dark.”
	M: TURN-NEXT (signs	M: Who is next?	

<p>(3) Andrew said, "Listen, Mr. Neighbor. I saw something upstairs. It was in my bed on the sun porch. It was black." Mr. Neighbor said, "Never mind, Andrew. I must take my dog for a walk before dark."</p>	<p>on book from one page to next).</p> <p>C: (points to book)</p> <p>M: (nods head) A-ON-SHOULDER SAW RUN WAVE M.R. N-E-I-G-H-B-O-R NEIGHBOR TAP, TAP. (role shift) MAN 2-HAND-CL: HANDLE-LEASH WAIT ME HAVE-TO GO D-O-G OUTSIDE DARK MAKE-MOST-OF BATHROOM WAIT. (role shift) WAVE ME SAW SOMETHING UPSTAIRS. (role shift) WAIT. 2-HAND-CL: HANDLE-LEASH. TAKE-OFF.</p> <p>C: POINT MAD.</p> <p>M: NOT MAD. TAKE-OFF GO, HURRY D-O-G BATHROOM.</p> <p>C: (turns page and looks at book)</p> <p>M: (points and taps child)</p> <p>C: (looks at mom)</p>	<p>C: (points to book)</p> <p>M: Yes, Andrew saw and ran and waved to (fingerspells) Mr. Neighbor. (becomes Andrew) Taps. (becomes Mr. Neighbor) The man is holding a leash with both hands. Wait I have to take (fingerspells) dog outside. It's dark so I have to take him to the bathroom. Wait. (becomes Andrew) But I saw something upstairs. (becomes Mr. Neighbor) Wait. Walks off with the dog.</p> <p>C: He's mad.</p> <p>M: He's not mad. He took off because he's in a hurry to take his (fingerspells) dog to the bathroom)</p> <p>C: (turns page and looks at book)</p> <p>M: (points and taps child)</p> <p>C: (looks at mom)</p>	<p>M: Andrew said, (point to picture) "listen, Mr. Neighbor. I saw something upstairs. It was in my bed on the sun porch. It was black."</p> <p>M: Mr. Neighbor said,</p> <p>C: What is it?</p> <p>M: "Never mind, Andrew. I must take my dog for a walk before dark." I don't know. I don't remember.</p>
--	---	---	--

(4) Andrew said very loud, “Listen, Mother, Listen Daddy, Listen Ruthy, Listen Bobby, Listen Mr. Neighbor, Listen Mrs. Cleaner, there is a bear upstairs in my bed.”	M: A-ON-SHOULDER ANGRY! 2-HAND-CL: BENT-ONE-STOMP- FEET MOM NONE LISTEN, DAD LISTEN, SISTER R- ON-SHOULDER LISTEN, B-O-B-B-Y BROTHER LISTEN, M-R. NEIGHBOR LISTEN, WOMAN CLEAN LISTEN (with each person, shifts back and forth and shakes head) THERE SOMETHING UPSTAIRS WHAT BEAR UPSTAIRS SCREAM!	M: Andrew is angry! He jumps up and down. Mom! (leans to left) No one has listened. (leans to right) Dad, listen. (leans to left) Ruthy, listen. (leans to right) Bobby, listen. (leans to left) Mr. Neighbor, listen. (leans to right) Cleaning woman, listen. (straight) There is something upstairs. There’s a bear upstairs, he yells.	M: (turns page) Mr. Andrew, Andrew said very loud, “Listen, Mother, Listen, Daddy, Listen, Ruthy, Listen, Bobby, Listen, Mr. Neighbor, Listen, Mrs. Cleaner, there is a bear upstairs in my bed.” (there is a bear upstairs mom slaps hand on child’s own leg for emphasis)
--	---	--	---

In Table 19, we see that H6 did more straight reading of the text while in the same selection, D5 had more attention getting strategies (taps, points, role shifts), more labeling and describing, UNDER BED, WORK-WORK. THROW-THINGS CLOSET LEAVE (He’s under the bed. I’m working. I’m throwing things in my closet. Leave).

What we see in the examples presented in Tables 18 and 19, is how the deaf mothers may follow the text but present additional information, question their children and expect responses, describe what is happening, and encourage or follow the child’s lead while the hearing mothers primarily read the text, may provide additional information but do not expect responses and do not encourage or invite their child’s participation. For example, the deaf mother in Table 18 adds questions, NEXT GO TO WHO? (who does he go to next) while the matched hearing mother makes a statement, Now he’s gonna look for someone else. Both mothers are reading the text but the deaf mother is engaging her child more because she is expecting a response to the question

rather than making a statement that doesn't expect a response. The questioning and expectations of a response is similar to what Bailes et al. (2009) reports in observations of a deaf mother reading with her deaf child. In this longitudinal study, the mother established and maintained book sharing routines and asked questions to keep the child involved. Bailes et al. believe that this practice "modeled a turn-taking routine that Ann (the child) eventually joined" (p. 18). Although the children in the current study were older than the one described by Bailes et al., the behaviors of the deaf mothers are similar: They engage their children by asking questions and expect responses in return.

Research Question #3: Summary of Findings

To explore the effect of book familiarity, each family was asked to read the same book at two different times. For all of the dyads and specifically the deaf dyads, the mothers had more utterances in the first reading of the book than the second indicating that they may talk more with an unfamiliar book. There were also group differences that were consistent with the findings in Research question #1 in that deaf mothers spend more time reading with their children and engage them in more varied ways while hearing mothers do more straight reading of the text. However, two readings of the same book might be insufficient for a dyad to be truly familiar with a book. It is possible that with more readings of the book, there would be more evidence of differences between an unfamiliar and familiar book.

Conclusion of Findings and Application when Working with Parents of Deaf Children

This study analyzed deaf and hearing mothers reading with their children who are between the ages of 3 and 5 years. The findings to the 3 research questions have shown that although book familiarity does not necessarily change the nature of how mothers read with their children, deaf mothers do read differently than hearing mothers. The results also provide us with

insight as to what specific techniques the deaf mothers use when using ASL to read a text in English.

For example, this study has shown that this sample of deaf mothers tend to engage with their deaf children over a book in many different ways while the hearing mothers tend to read, follow the text closely and are less likely to engage in extratextual conversations. One possible reason for this is that, due to early intervention programs that are provided for families with deaf children, these deaf mothers may have had the advantage of learning about shared reading and techniques that engage children in books from early intervention specialists who emphasize literacy. Hearing parents do not necessarily have access to this type of intervention or instruction. Reading the text should not be construed as a negative interaction however, it does not always encourage a child to think beyond the book. Reading techniques such as higher level questioning and encouraging the child and/or inviting participation have been taught to parents whose children may be at-risk for literacy achievement (Whitehurst et al., 1988; Crain-Thoreson & Dale, 1999). Certainly these techniques could and should be taught to all parents to encourage engagement with their child during shared reading. Other differences are discussed below.

Use of attention getting strategies and time spent engaging in books: Hearing parents whose deaf children rely on American Sign Language or other visual learning strategies may not be accustomed to the sequential nature of reading with deaf children. Due to the divided nature of attending to the book and attending to the reader, hearing parents can benefit from understanding that it is acceptable to use physical techniques such as tapping, waving, moving the body or book to gain their child's attention. The sequential process typically means that parents will spend more time reading the book than they might if they were reading with a hearing child. To alleviate any frustration that parents might have because of time constraints, it

might be helpful for them to understand this process and to set the expectation that reading books may take longer than anticipated. This can deter the frustration and hopefully, create a positive interaction while sharing books together.

Use of higher level questions: The use of questions that encourage a child to answer with more than just one word is a technique that is encouraged in intervention programs and was used more frequently by deaf mothers than hearing mothers in this study. Because these questions can engage and challenge a child to think beyond what is immediately present in the book, it is a technique that other parents should be encouraged to replicate with their deaf children.

Use of corrections: The idea of correcting a child can be perceived as a negative technique that should not be encouraged when reading with one's child. However, parents of deaf children can be taught that when corrections are provided in a positive way (as in the example provided on page 92), it can further the child's understanding of the vocabulary and the book.

Use of chaining: Because both deaf parents and teachers use chaining at home and in the classroom, it is one that should be taught to other parents with deaf children. This can be particularly beneficial for hearing parents who typically are also learning to sign along with their young child. Chaining provides them with the opportunity to practice fingerspelling and signing while reading with their child.

Specific techniques mothers use to make English explicit: Often hearing parents who have deaf children are at a loss of how to share stories with their children because they are trying to navigate between two languages. Deaf mothers in this study showed that there are many different ways to introduce English vocabulary and concepts when bookreading. For example,

using ASL to describe how the word “listen” can mean something different for deaf and hearing people is not a concept that hearing parents may think about however, it is very much a part of deaf peoples’ way of being. However, this strategy can be taught to parents with deaf children as they foster their child’s involvement in and understanding of both the deaf and hearing worlds.

Another technique that deaf mothers used was to explain how words that look the same may sound the same in English. The concept of rhyming exists in ASL but does not follow the English sounds therefore parents may find it challenging to introduce this concept with their child. However, visually showing children the rhythm or beat as well as how the words may look and sound the same provide children with strategies that help them better understand English. They can apply this knowledge when reading any type of book.

While providing definitions for English words should not be specific to deaf mothers, it was surprising that only two of the hearing parents used this technique. Perhaps this is a strategy that all parents should learn so that they expand upon their child’s vocabulary. Instead of assuming that a child will learn the word from context, it may be more valuable to spend the time to engage the child by asking for meaning and explaining it when the child doesn’t know. In addition, because hearing mothers primarily read the text with their children, they could possibly benefit from learning some of the engagement strategies that deaf mothers use.

In summary, the deaf mothers in this study spent more time with books and engaged their children in significantly different and possibly beneficial ways than the hearing mothers. While it was not surprising that deaf mothers use more attention getting strategies and spent more time reading than their hearing counterparts, the other findings confirm the Shared Reading Principles (Schleper, 1997) and contribute to our knowledge of what deaf mothers bring to the shared reading process. The fact that the deaf mothers use a variety of strategies including higher level

questions, encouraging their child more inviting their participation along with the expectation that their child will be engaged in the reading process, confirms that deaf mothers expect that that their children will become literate (Schleper, 1997). In addition and perhaps more importantly, this study has expanded on exactly what techniques mothers may use to make English explicit when reading the story in ASL. What we have learned from this group of deaf mothers can and should be shared with all parents of deaf children to encourage their interest in books that could potentially lead to an increase in their reading skills.

Limitations and Areas for Future Research

While this study provided insight and expanded upon what we know about deaf mothers reading with their deaf children, there are still limitations to the study. First, the exploration of group differences and relationships was important but neither can address the issue of causality. In other words, how does the shared reading experience benefit children? This can only be addressed with a longitudinal study that follows children for several years and explores their language, literacy and academic outcomes at several time points beyond the initial data collection time frame.

Secondly, this study almost exclusively examined the parent reading practices and only minimally looked at the children's contributions to the reading interaction. Although it was beyond the scope of this study to do so, one must be cautious about looking at the utterances in isolation (Berke, 2007). While it was shown that deaf children had more participation in the reading process as shown by the difference in their total number of utterances, individual utterances are embedded in other utterances so it might be helpful to look at the sequences of mother/child utterances and the interaction per se (Pellegrini et al., 1990). In addition, van Kleeck (2003) proposes that future studies should look at the child's level of participation (not

just the parent's style and how it relates to future child language measures) and how this might be related to their language development. Future research should consider including the child utterances to evaluate their contribution to the shared reading process.

Thirdly, this study tried to explore differences that may occur when a book becomes familiar. However, only reading a book two times does not necessarily make a book familiar which is why there may not have been many differences in how mothers read the same book for the first and second time. In future studies, it would be important to ensure that families have the opportunity to read a book repeatedly to truly understand the effect of book familiarity.

Another variable that affected the outcome of this study is the fact that this was a well-educated group of women. In addition to having college and even graduate school experience, several of the deaf mothers were trained as teachers of the deaf. This may have been one reason why they used many of the reading techniques that have been reported in the literature as favorable while the hearing mothers were well-educated but not necessarily trained as teachers. Future studies may want to study mothers who have varying degrees of education to understand whether their practices were truly intuitive or a result of their educational background and training.

Finally, although this study controlled for the child's age, parent education level, and book genre, there are still other variables that impact the shared reading process and can be explored. For example, it was assumed that most, if not all, of the deaf parents participated in some type of early intervention program because of the difference in how they read their book with their children compared to hearing parents in this study. This is not to be interpreted negatively, rather, it is an advantage that the deaf parents in this study may have over hearing parents but it is still an important and influential variable that should be examined more in-depth.

In conclusion, this study explored the reading techniques that deaf mothers use when reading with their deaf children compared to hearing mothers reading with their hearing children. The deaf mothers in this study, some of whom were trained as teachers, utilized more attention getting strategies and higher level questions, encouraged their child to engage in the reading and corrected their child more while the hearing mothers in this study followed and read the text more closely. The deaf mothers may have been relying on their own training or using strategies that they may have been exposed to through early intervention programs designed for families who have deaf children. Although the results of the study provide valuable information about what deaf mothers do when reading with their deaf children, the results of this study should be interpreted considering the background and training of these deaf mothers.

This study also provided insight into the ways in which deaf mothers use their native visual language, ASL, to make the language of the text, English, more explicit for their children. Whether the deaf mothers relied on their own experience with learning English, or intuitively knew what is needed to become a good reader, the strategies that were observed can be taught to all parents with deaf children.

References

- Akamatsu, C. T. & Andrews, J.F. (1993). It takes two to be literate: Literacy interactions between parent and child. *Sign Language Studies*, 81, 333-360.
- Andrews, J. & Mason, J., (1986). Childhood deafness and the acquisition of print concepts. In D.B. Yaden and S. Templeton (Eds.), *Metalinguistic awareness and beginning literacy* (pp. 277-290). Portsmouth, NH: Heinemann.
- Andrews, J. & Mason, J. (1991). Strategy usage among deaf and hearing readers. *Exceptional Children*, 57, 536-545.
- Andrews, J.F. & Taylor, N. E. (1987). From sign to print: A case study of picture book "reading" between mother and child. *Sign Language Studies*, 56, 261-274.
- Anderson-Yockel, J., & Haynes, W.O. (1994). Joint book-reading strategies in working-class African American and White mother-toddler dyads. *Journal of Speech and Hearing Research*, 37, 583-593.
- Andrews, J.F., & Zmijewski, G. (1997). How parents support home literacy with deaf children. *Early Child Development and Care*, 127, 131-139.
- Bailes, C. (2001). Integrative ASL-English language arts: Bridging paths to literacy. *Sign Language Studies*, 1, 147-174.
- Bailes, C., Erting, C., Erting L., & Thumann-Prezioso, C., (2009). Language and literacy acquisition through parental mediation in American Sign Language. *Sign Language Studies*, 9, 417-456.
- Baker, A., van den Bogaerde, B., & Woll, B., (2009). Methods and procedures in sign language acquisition studies. In A. Baker and B. Woll (Eds.), *Sign language acquisition* (pp. 1-49). Amsterdam: John Benjamins Publishing.
- Beals, D. E., DeTemple, J. M., & Dickinson, D. K. (1994). Talking and listening that support early literacy development of children from low-income families. In D. K. Dickinson (Ed.), *Bridges to literacy: Children, families and schools* (pp. 19-40). Cambridge, MA: Blackwell Publishers.
- Berke, M. (2007). *Shared reading: Implications for deaf children*. Unpublished manuscript, University of Colorado, Boulder.
- Blamey, P., Savant, J., & Paatch, L. (2005). Relationships among speech perception and language measures in hard-of-hearing children. In P. Spencer and M. Marschark

- (Eds.), *Advances in the spoken-language development of deaf and hard-of-hearing children*, (pp. 85-102). New York: Oxford University Press.
- Boudreault, P. (2009). *Language and identity: A quantitative study of American Sign Language grammatical competency and deaf identity through on-line technology*. Unpublished doctoral dissertation, University of Manitoba, Winnipeg, Canada.
- Boudreault, P. (2011). Comparing American Sign Language and academic assessment. Symposium: American Sign Language competence and English reading abilities: What is the underlying relationship? Paper presented at the Society for Research in Child Development Preconference: Development of Deaf and Hard-of-Hearing Children, March 30, 2011, Montreal, Canada
- Chamberlain, C. & Mayberry, R. (2000). Theorizing about the relation between American Sign Language and reading. In C. Chamberlain, J. Morford, R. Mayberry (Eds.), *Language acquisition by eye* (pp. 221-259). Mahwah, NJ: Lawrence Erlbaum Associates.
- Crain-Thoreson, C. & Dale, P. (1999). Enhancing linguistic performance: Parents and teachers as book reading partners for children with language delays. *Topics in Early Childhood Special Education*, 19, 28-39.
- Crowe, L.K. (2000). Reading behaviors of mothers and their children with language impairment during repeated storybook reading. *Journal of Communication Disorders*, 33, 503-524.
- Cullinan, B. (1992). Read to me: Raising kids who love to read. New York: Scholastic, Inc.
- Dale, P. S., Crain-Thoreson, C., Notari-Syverson, A., & Cole, K. (1996). Parent-child book reading as an intervention technique for young children with language delays. *Topics in Early Childhood Special Education*, 16, 213-235.
- Day, L., & Sutton-Spence, R. (2010). British sign name customs. *Sign Language Studies*, 11, 22-54.
- Deckner, D., Adamson, L., & Bakeman, R. (2006). Child and maternal contributions to shared reading: Effects on language and literacy development. *Applied Developmental Psychology*, 27, 31-41.
- de Jong, P.F., & Leseman, P.P.M. (2001). Lasting effects of home literacy on reading achievement in school. *Journal of School Psychology*, 39, 389-414.

- Delk, L. & Weidekamp, L. (2001). Shared reading project: Evaluating implementation processes and family outcomes. Washington, DC: Gallaudet University.
- DeLoache, J. (1984). What's this? Maternal questions in joint picture book reading with toddlers. *The Quarterly Newsletter of the Laboratory of Comparative Human Cognition*, 6, 87-95.
- DeTemple, J.M. (2001). Parents and children reading books together. In D.K. Dickinson, & P.O. Tabors (Eds.), *Beginning literacy with language*. (pp. 31-51). Baltimore: Paul H. Brookes Publishing Company.
- DeTemple, J.M. & Snow, C.E. (2003). Learning words from books. In A. van Kleeck, S. Stahl, E. Bauer (Eds.), *On reading books to children* (pp. 16-36). Mahwah, NJ: Lawrence Erlbaum Associates.
- Erting, C. (1992). Deafness & literacy: Why can't Sam read? *Sign Language Studies*, 75, 98-112.
- Ewoldt, C. (1994). Booksharing: Teachers and parents reading to deaf children. In A. Flurkey & R. Meier, (Eds.), *Under the whole language umbrella: Many cultures, many voices* (pp. 331-342). Urbana, IL: National Council of Teachers of English.
- Gallaudet Research Institute. (November 2008). *Regional and national Summary Report of Data from the 2007-08 Annual Survey of Deaf and Hard of Hearing Children and Youth*. Washington, DC: GRI, Gallaudet University.
- Goldin-Meadow, S. & Mayberry, R. (2001). How do profoundly deaf children learn to read? *Learning Disabilities Research & Practice*, 16, 222-229.
- Goodsitt, J., Raitan, J.G., & Perlmutter, M. (1988). Interaction between mothers and preschool children when reading a novel and familiar book. *International Journal of Behavioral Development*, 11, 489-505.
- Haden, C., Reese, E., & Fivush, R. (1996). Mothers' extratextual comments during storybook reading: Stylistic differences over time and across texts. *Discourse Processes*, 21, 135-169.
- Harris, M. & Mohay, H. (1997). Learning to look in the right place: A comparison of attentional behavior in deaf children with deaf and hearing mothers. *Journal of Deaf Studies and Deaf Education*, 2, 95-103.
- Heath, S. (1982). What no bedtime story means: Narrative skills at home and school. *Language in Society*, 11, 49-76.

- Hoffmeister, R. (2000). A piece of the puzzle: ASL and reading comprehension in deaf children. In C. Chamberlain, J. Morford, & R. Mayberry, (Eds.), *Language acquisition by eye* (pp. 143-163). Mahwah, NJ: Lawrence Erlbaum Associates.
- Humphries, T., & MacDougall, F. (1999-2000). "Chaining" and other links: Making connections between American Sign Language and English in two types of school settings. *Visual Anthropology Review*, 15 (2), 84-94.
- Jamieson, J. (1994). Instructional discourse strategies: Differences between hearing and deaf mothers of deaf children. *First Language*, 14, 153-171.
- Justice, L.M., & Ezell, H.K. (2000). Enhancing children's print and word awareness through home-based parent intervention. *American Journal of Speech-Language Pathology*, 9, 257-269.
- Justice, L.M, Meier, J., & Walpole, S. (2005). Learning new words from storybooks: An efficacy study with at-risk kindergartners. *Language, Speech, and Hearing Services in Schools*, 36, 17-32.
- Kadaravek, J.N. & Sulzby, E. (1998). Parent-child joint book reading: An observational protocol for young children. *American Journal of Speech-Language Pathology*, 7, 33-47.
- Kadaravek, J.N. & Pakulski, L. A. (2007). Mother-child story book interactions: Literacy orientation of pre-schoolers with hearing impairment. *Journal of Early Childhood Literacy*, 7, 49-72.
- Kerr, B.M. & Mason, J.M. (1993). Awakening literacy through interactive story reading. In F. Lehr & L. Osborn (Eds.), *Reading, language and literacy* (pp. 133-148). Mahwah, NJ: Lawrence Erlbaum Associates.
- King, C.M., & Quigley, S.P. (1985). *Reading and deafness*. San Diego: College-Hill Press, Inc.
- Kuntze, L. (1998). Literacy and deaf children: The language question. *Topics in Language Disorders*, 18, 1-15.
- Lartz, M.N. (1993). A description of mothers' questions to their young deaf children during storybook reading. *American Annals of the Deaf*, 138, 322-330.
- Lartz, M.N. (1999). Teaching hearing parents to read effectively to their children who are deaf. *Teaching Exceptional Children*, 31, 43-46.

- Lartz, M.N. & Lestina, L. J. (1995). Strategies deaf mothers use when reading to their young deaf or hard of hearing children. *American Annals of the Deaf*, 140, 358-362.
- Lartz, M.N. & McCollum, J. (1990). Maternal questions while reading to deaf and hearing twins: A case study. *American Annals of the Deaf*, 135, 235-240.
- Lazzari, A.M., Bender, W.N., & Kello, M.N. (1987). Parents' and children's behavior during preschool reading sessions as predictors of language and reading skills. *Reading Improvement*, 24, 89-95.
- Lim, Y.S. & Cole, K. N. (2002). Facilitating first language development in young Korean children through parent training in picture book interactions. *Bilingual Research Journal*, 26, 367-381.
- Martin, L. E. (1998). Early book reading: How mothers deviate from printed text for young children. *Reading Research and Instruction*, 37, 137-160.
- Martin, L.E., & Reutzel, D. R. (1999). Sharing books: Examining how and why mothers deviate from the print. *Reading Research and Instruction*, 39, 39-69.
- Maxwell, M. (1984). A deaf child's natural development of literacy. *Sign Language Studies*, 44, 191-224.
- Mayer, C., & Wells, G., (1996). Can the linguistic interdependence theory support a bilingual-bicultural model of literacy education for deaf students? *Journal of Deaf Studies and Deaf Education*, 1, 93-107.
- McAnally, P., Rose, S., & Quigley, P. (2007). *Reading practices with deaf learners* (2nd ed.). Austin, TX: PRO-ED.
- Miller, J. & Iglesias, A. (2006). Systematic Analysis of Language Transcripts (SALT), English & Spanish (Version 9). [Computer Software], Language Analysis Lab, University of Wisconsin-Madison.
- Mitchell, R. (2008). Academic achievement of deaf students. In R. Johnson & R. Mitchell (Eds.), *Testing students in an age of accountability* (pp. 38-50). Washington, DC: Gallaudet University Press.
- Mogford, K., Gregory, S., & Keay, S. (1979). Picture book reading with mother: A comparison between hearing-impaired and hearing children at 18 and 20 months. *Journal of the British Association of Teachers of the Deaf*, 3, 43-45.

- Moeller, M. P., Hoover, B., Putman, C., Arbataitis, K., Bohnenkamp, G., Peterson, B., Wood, S., Lewis, D., Pittman, A., & Stelmachowicz, P. (2007). Vocalizations of infants with hearing loss compared with infants with normal hearing: Part I-Phonetic Development. *Ear & Hearing, 28* 605-627.
- Moeller, M. P. & Schick, B. (2006). Relations between maternal input and theory of mind understanding in deaf children. *Child Development, 77*, 751-766.
- Mohay, H. (2000). Language in sight: Mothers' strategies for making language visually accessible to deaf children. In P.E. Spencer, C.J. Erting & M. Marschark (Eds.), *The Deaf Child in the Family and at School* (pp.151-166). New Jersey: Lawrence Erlbaum Associates, Inc.
- Musselman, C. (2000). How do children who can't hear learn to read an alphabetic script? A review of the literature on reading and deafness. *Journal of Deaf Studies and Deaf Education, 5*, 9 – 31.
- Neuman, S. (1996). Children engaging in storybook reading: The influence of access to print resources, opportunity and parental interaction. *Early Childhood Research Quarterly, 11*, 495-513.
- Ninio, A. (1983). Joint book reading as a multiple vocabulary acquisition device. *Developmental Psychology, 19*, 445-451.
- Ninio, A. & Bruner, J. (1978). The achievement and antecedents of labelling. *Journal of Child Language, 5*, 1-15.
- Nittrouer, S. & Burton, L. (2005). The role of early language experience in the development of speech perception and phonological processing abilities: Evidence 15-year-olds with histories of otitis media with effusion and low socioeconomic status. *Journal of Communication Disorders, 38*, 29-63.
- Northwest Evaluation Association. (2011). Technical manual: For Measures of Academic Progress (MAP) and Measures of Academic Progress for Primary Grades (MPG). Portland, OR: Author.
- Nvivo qualitative analysis software. QSR International Pty Ltd. Version 9, 2010.

- Padden, C. (2006). Learning to fingerspell twice. Young signing children's acquisition of fingerspelling. In B. Schick, M. Marschark, & P. Spencer (Eds.), *Advances in the sign language development of deaf children* (pp. 189-201).
- Padden, C., & Ramsey, C. (1998). Reading ability in signing deaf children. *Topics in Language Disorders, 18*, 30-46.
- Paul, P. (2003). Processes and components of reading. In M. Marschark & P.E. Spencer (Eds.), *Deaf Studies, Language and Education* (pp. 97-109). New York: Oxford University Press.
- Plessow-Wolfson, S., & Epstein, F. (2005). The experience of story reading: Deaf children and hearing mothers' interactions at story time. *American Annals of the Deaf, 150*, 369-378.
- Rigby PM Resources (2003). Harcourt Supplemental Publishers. Orlando.
- Roberts, J., Jurgens, J., & Burchinal, M. (2005). The role of home literacy practices in preschool children's language and emergent literacy skills. *Journal of Speech, Language, and Hearing Research, 48*, 345-359.
- Scarborough, H. S. & Dobrich, W. (1994). On the efficacy of reading to preschoolers. *Developmental Review, 14*, 245-302.
- Schleper, D. R. (1995). Reading to deaf children: Learning from deaf adults. *Perspectives in Education and Deafness, 13*, 4-8.
- Schleper, D. R. (1997). Reading to deaf children: Learning from deaf adults. Washington, DC: Laurent Clerc National Deaf Education Center.
- Senechal, M., Cornell, E. H., & Broda, L. S. (1995). Age-related differences in the organization of parent-infant interactions during picture-book reading. *Early Childhood Research Quarterly, 10*, 317-337.
- Singleton, J. & Morgan, D. (2006). Natural signed language acquisition within the social context of the classroom. In B. Schick, M. Marschark, & P. Spencer (Eds.), *Advances in the sign language development of deaf children* (pp. 344 – 375). New York: Oxford University Press.
- Singleton, J., Morgan, D., DiGello, E., Wiles, J. & Rivers, R. (2004). Vocabulary use by low, moderate, and high ASL-proficient writers compared to hearing ESL and monolingual speakers. *Journal of Deaf Studies and Deaf Education, 9*, 86-103.

- Snow, C.E. (1983). Literacy and Language: Relationships during the preschool years. *Harvard Educational Review*, 53, 165-189.
- Snow, C. E., Burns, M.S., & Griffin, P. (1998) *Preventing reading difficulties in young children*. (National Research Council, No. 98-9031). Washington, DC: National Academies Press.
- Snow, C. E., Tabors, P. O., & Dickinson, D. K. (2001). Language development in the preschool years. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning Literacy with Language* (pp. 1-25). Baltimore: Paul H. Brookes Publishing Company.
- Stewart, D.A. & Clarke, B. R. (2003). Literacy and your deaf child: What every parent should know. Washington, DC: Gallaudet University Press.
- Storch, S. A., & Whitehurst, G. J. (2001). The role of family and home in the literacy development of children from low-income backgrounds. *New Directions for Child and Adolescent Development*, 92, 53-71.
- Strong, M., & Prinz, P. (1997). A study of the relationship between American Sign Language and English literacy. *Journal of Deaf Studies and Deaf Education*, 2, 37-46.
- Supalla, S. (1992). *The Book of Sign Names*. Berkeley: DawnSignPress.
- Supalla, T., Newport, E., Singleton, J., Supalla, S., Coulter, G. & Metlay, D. (1995) *An overview of the test battery for American Sign Language morphology and syntax*. Paper presented at the Annual meeting of the American Educational Research Association (AERA), San Francisco, CA.
- Spencer, P., & Harris, M. (2006). Patterns and effects of language input to deaf infants and toddlers from deaf and hearing mothers. In B. Schick, M. Marschark & P. E. Spencer (Eds.), *Advances in the sign language development of deaf children* (pp. 71-101). New York: Oxford University Press.
- Spencer, P. & Marschark, M. (2010). Evidence-based practice in educating deaf and hard-of-hearing students. New York: Oxford University Press.
- Spencer, P., Swisher, M.V., & Waxman, R.P. (2004). Visual attention: Maturation and specialization. In K.P. Meadow-Orlans, P.E. Spencer, & L.S. Koester (Eds.), *The world of deaf infants: A longitudinal study* (pp. 168 – 188) New York: Oxford University Press.

- Sulzby, E. (1985). Children's emergent reading of favorite storybooks: A developmental study. *Reading Research Quarterly, XX*, 458-479.
- Swanick, R. & Watson, L. (2005). Literacy in the homes of young deaf children: Common and distinct features of spoken language and sign bilingual environments. *Journal of Early Childhood Literacy, 5*, 53-78.
- Tabors, P., Beals, D., & Weizman, Z. (2001). "You know what oxygen is?": Learning new words at home. In D.K. Dickinson & P.O. Tabors (Eds.), *Beginning literacy with language*. (pp. 93-110). Baltimore: Paul H. Brookes Publishing Company.
- Traxler, C. B. (2000). The Stanford Achievement Test, 9th Edition: National norming and performance standards for deaf and hard-of-hearing students. *Journal of Deaf Studies and Deaf Education, 5*, 337-348.
- van Kleeck, A., Gillam, R., Hamilton, L., McGrath, C., (1997). The relationship between middle-class parents' book-sharing discussion and their preschoolers' abstract language development. *Journal of Speech, Language, and Hearing Research, 40*, 1261-1271.
- van Kleeck, A. & Vander Woude, J., (2003). Book sharing with preschoolers with language delays. In A. van Kleeck, S. Stahl, & E. Bauer (Eds.), *On reading books to children* (pp. 58-92). Mahwah, NJ: Lawrence Erlbaum Associates.
- Waxman, R., & Spencer, P. (1997). What mothers do to support infant visual attention: Sensitivities to age and hearing status. *Journal of Deaf Studies and Deaf Education, 2*, 104-114.
- Wheeler, M.P. (1983). Context-related age changes in mother's speech: Joint book reading. *Journal of Child Language, 10*, 259-263.
- Whitehurst, G. J., Epstein, J. N., Angell, A. L., Payne, A. C., Crone, D. A., & Fischel, J. E. (1994). Outcomes of emergent literacy intervention in head start. *Journal of Educational Psychology, 84*, 542-555.
- Whitehurst, G. J., Falco, F. L., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M.C., & Caulfield, M. (1988). Accelerating language development through picture book reading. *Developmental Psychology, 24*, 552-559.
- Wilbur, R. (2000). The use of ASL to support the development of English and literacy. *Journal of Deaf Studies and Deaf Education, 5*, 81-104.

Williams, C. (1994). The language and literacy worlds of three profoundly deaf preschool children. *Reading Research Quarterly*, 29, 124-155.

Appendix A

List of Unfamiliar Books

Title*	Author	Year	Publisher	Age Range
Hedgie Blasts Off	Brett, Jan	2006	Putnam Juvenile	4-8 years
The Trouble with Gran	Cole, Babette	1987	Sandcastle Books	4-8 years
Nobody Listens to Andrew	Guilfoile, Elizabeth	1957	Follett Publishing	
How to Get a Gorilla Out of Your Bathtub	Hall, John	2006	Harrison House	4-8 years
Two Mrs. Gibsons	Igus, Toyomi	2001	Children's Book Press	4-8 years
The Rubbish Monster	Jordaan, Braam	2009	Cambridge University Press	
The Tooth Witch	Karlin, Nurit	1999	Somerville	4-8 years
Nobody Notices Minerva	Kirwan, Wednesday	2007	Sterling	4-8 years
Minerva the Monster	Kirwan, Wednesday	2008	Sterling	4-8 years
Coyote: A trickster from the American Southwest	McDermott, Gerald	2009	Sandpiper	4-8 years
The Paper Bag Princess	Munsch, Robert	1992	Annick Press	4-8 years
The Birthday Cake	Nordquist, Sven	1985	Opal Press	
The Day the Babies Crawled Away	Rathmann, Peggy	2003	Putnam Juvenile	Pre-school-1 st grade
Crazy Hair Day	Saltzberg, Barney	2008	Candlewick	4-8 years
Imogene's Antlers	Small, David	1985	Crown Publishers	4-8 years

***None of these books are in the Amazon top 100.**

Appendix B

Parent Questionnaire (Deaf families) (all answers are confidential and for research purposes only)

1. What is your child's name: _____
2. What is your child's birthdate? _____
3. Please describe the education level of you and the father of your child (please circle one):

Yourself:

Completed high school

Some College

College graduate

Some graduate school

Completed graduate school

Father:

Completed high school

Some college

College graduate

Some graduate school

Completed graduate school

4. Please describe the occupation of both you and the father of your child:

Yourself: _____

Father: _____

5. Please identify your family's income range:

_____ Below \$25,000 per year	_____ Between \$101,000 - \$125,000
_____ Between \$25,01 - \$50,000	_____ Between \$125,001 - \$150,000
_____ Between \$50,001 - \$75,000	_____ Between \$150,001 - \$175,000
_____ Between \$75,001 - \$100,000	_____ Above \$175,000

6. Please describe your ethnic or racial identity:

_____ African American or Black	_____ Native American
_____ Asian	_____ Pacific Islander
_____ Latino or Hispanic	_____ White _____

7. Does your child have any disabilities of which you are aware? If so, please describe:

8. At what age did you learn that your child is deaf or hard of hearing? _____

9. Please circle the type of hearing level your child has?

Mild

Moderate

Moderate-severe

Profound

10. Does your child have any siblings who live in the same home? _____

If yes, how many and what are their ages? _____

11. Any other comments you would like to share?

Appendix B

Parent Questionnaire (all answers are confidential and for research purposes only)

1. What is your child's name: _____
2. What is your child's birthdate? _____

3. Please describe the education level of you and the father of your child (please circle one):

Yourself:

Completed high school

Some College

College graduate

Some graduate school

Completed graduate school

Father:

Completed high school

Some college

College graduate

Some graduate school

Completed graduate school

4. Please describe the occupation of both you and the father of your child:

Yourself: _____

Father: _____

5. Please identify your family's income range:

_____ Below \$25,000 per year	_____	Between \$101,000 - \$125,000
_____ Between \$25,01 - \$50,000	_____	Between \$125,001 - \$150,000
_____ Between \$50,001 - \$75,000	_____	Between \$150,001 - \$175,000
_____ Between \$75,001 - \$100,000	_____	Above \$175,000

6. Please describe your ethnic or racial identity:

_____ African American or Black	_____	Native American
_____ Asian	_____	Pacific Islander
_____ Latino or Hispanic	_____	White

7. Does your child have any disabilities of _____ which you are aware? If so, please describe: _____

8. Does your child have any siblings who live in the same home? _____

If yes, how many and what are their ages? _____

9. Any other comments you would like to share?

Appendix C

Summary of Global Coding Categories

Global Coding Category	Included Codes
Connecting Concepts	Connecting concepts to the real world Expansions General comments Connecting concepts to the child's experience Inferences Integration of perception
Question Types (lower level)	Immediate Directive (request for nonverbal action) Predictions Test
Question Types (higher level)	Inferential Comprehension Prediction
Interaction between Language, Print and Illustrations/Deviations from Text (lower level)	Selective analysis/labeling interaction Text deviation Text simplification
Interaction between Language, Print and Illustrations /Deviations from Text (higher level)/	Reads words in text Text addition and elaboration Making English explicit ASL to English Literary Conventions

Global Coding Category	Included codes
Attention Getting Strategies	<p>Attention vocative or non-verbal eye gaze or point</p> <p>Tap</p> <p>Physical movement of body</p> <p>Physical movement of book</p> <p>Physical demonstration of character change/role shift or acts out what is happening in the book</p> <p>Redirecting child from distraction to book</p> <p>Command</p>
Encouraging child/Inviting participation	<p>Confirmation of child's understanding</p> <p>Provides praise</p> <p>Prompting for answer</p> <p>Requests child provide a sign, word, or letter for a picture or a word</p> <p>Recalling</p> <p>Prompts child to read or finish a sentence</p> <p>Follow child's lead</p> <p>Offering assistance</p> <p>Predicting</p>
Corrections	<p>Corrects pronunciation/sign structure or answer</p> <p>Criticizes of sign/pronunciation or behavior</p> <p>Self-corrects</p>