

*Empirical Article*

# Reading Books With Young Deaf Children: Strategies for Mediating Between American Sign Language and English

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Received September 30, 2012; revisions received January 4, 2013; accepted January 7, 2013

Research on shared reading has shown positive results on children's literacy development in general and for deaf children specifically; however, reading techniques might differ between these two populations. Families with deaf children, especially those with deaf parents, often capitalize on their children's visual attributes rather than primarily auditory cues. These techniques are believed to provide a foundation for their deaf children's literacy skills. This study examined 10 deaf mother/deaf child dyads with children between 3 and 5 years of age. Dyads were videotaped in their homes on at least two occasions reading books that were provided by the researcher. Descriptive analysis showed specifically how deaf mothers mediate between the two languages, American Sign Language (ASL) and English, while reading. These techniques can be replicated and taught to all parents of deaf children so that they can engage in more effective shared reading activities. Research has shown that shared reading, or the interaction of a parent and child with a book, is an effective way to promote language and literacy, vocabulary, grammatical knowledge, and metalinguistic awareness (Snow, 1983), making it critical for educators to promote shared reading activities at home between parent and child. Not all parents read to their children in the same way. For example, parents of deaf children may present the information in the book differently due to the fact that signed languages are visual rather than spoken. In this vein, we can learn more about what specific connections deaf parents make to the English print. Exploring strategies deaf mothers may use to link the English print through the use of ASL will provide educators with additional tools when working with all parents of deaf children. This article will include a review of the literature on the benefits of shared reading activities for all children, the relationship between ASL and English skill development, and the techniques deaf parents use when reading with their

deaf children. Following this is the presentation of a study that was conducted on specific techniques deaf parents use in bridging ASL to English as they read with their deaf children.

## Benefits of Shared Reading

Shared 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). This interaction 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 children new skills such as how to read a book, become more culturally aware, and gain world knowledge. In addition, a child can learn new vocabulary and grammar, develop early literacy skills, and be exposed to their parents' worldviews and values (Heath, 1982). Because the parent and child are both attending to specific text and pictures (DeTemple, 2001), it not only allows for reading and understanding what is happening but also gives 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; identification of words, letters, and quotes;

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and clarification of story meaning (Snow, 1983). Deaf children also have the potential of benefitting from shared reading activities and hence the importance of identifying strategies that are unique to and effective for this population.

### Reading Skills of Deaf Children From Deaf Families

For school-aged deaf and hard-of-hearing children, knowledge and use of American Sign Language (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), writing skills (Strong & Prinz, 1997; see Wilbur, 2000 for review) and Math skills as measured by standardized tests in English and Math (Boudreault, 2011). 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 visual language and the written system (Padden & Ramsey, 1998). In other words, although 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 signed language that they use (Andrews & Mason, 1986).

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. Deaf parents are able to set up visual literacy environments (Akamatsu & Andrews, 1993; Bailes, Erting, Erting, & Thumann-Prezioso, 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).

### Deaf Parents Reading With Their Deaf Children

There has been evidence to support that deaf children can develop language and preliteracy skills similar to their hearing peers (Akamatsu & Andrews, 1993; Andrews & Taylor, 1987; Newport & Meier, 1985; Maxwell, 1984). Various studies have found that 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, 1997; Lartz & Lestina, 1995) just like hearing mothers do with their hearing children (Beals, DeTemple, & Dickinson, 1994; Neuman, 1996;). Deaf mothers who frequently read to their children have been found to use certain reading techniques that make the book visually accessible (see Swanwick & Watson, 2005 for a review). For example, mothers will 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; Swanwick & Watson, 2005); and use nonmanual behaviors such as facial expressions or shifts in eye gaze to demonstrate character changes (Lartz & Lestina, 1995). Deaf mothers will position themselves in a way that they can have eye contact and sufficient signing space while reading the book (Swanwick & Watson, 2005) and will 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, deaf parents build on their child’s literacy knowledge by using the book as a foundation and following their children’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, deaf mothers will “intuitively adjust their linguistic and cultural practices to the needs of their young children” (Singleton & Morgan, 2006, p. 349). One may presume that the strategies they use are natural and based on their own experiences as a deaf person.

## 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 (2011), the vast majority of the 37,828 deaf and hard-of-hearing children in the United States are born to hearing parents. Therefore, the majority of parents do not know ASL when their child is born and may not have access to the Deaf community and the reading strategies that are used by deaf parents. These strategies may not be intuitive for hearing parents of deaf children (Swanwick & Watson, 2005).

To make these strategies available for parents, Schleper (1997) initiated the Shared Reading Project (SRP) and developed 15 principles based on small case studies and his own observations of how deaf adults read to their deaf children. The principles of the SRP are as follows:

1. Parents translate stories using ASL.
2. Parents keep both languages (ASL and English) visible.
3. Parents are not constrained by the text.
4. Parents reread stories on a storytelling to story reading continuum.
5. Parents follow their child's lead.
6. Parents make what is implied explicitly.
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.
15. Parents expect the child to become literate.

An evaluation of the 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). Although this project illuminated some of the strategies deaf parents use when reading with their deaf children, we still do not know enough. For example, several of the SRP principles state that parents are using ASL to tell the story, yet they keep both languages visible (Principles 1, 2, and 13). What these principles do not tell us is how parents specifically do this. Further examination to better understand how deaf parents share books with their deaf children is needed in order to provide support to all parents of deaf children.

In the following section, a part of a study that was conducted with deaf mothers examining the reading techniques they used when reading books with their deaf children will be discussed. This paper describes specific techniques deaf mothers use to mediate between their primary language, ASL, and the written text. It also identifies strategies that mothers used to make English explicit for their children. The research design and findings are presented here.

## Method

### Participants

The study group comprised 10 deaf mothers with their deaf children. 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 had some college experience with eight of the deaf mothers completing graduate school. Five were trained as school teachers. All of the children were between the ages of 3–5 years, identified as deaf before 6 months of age, and not having any known cognitive or developmental disabilities. Two language instruments, the Peabody Picture Vocabulary Test, Fourth Edition and the Expressive One Word Picture Vocabulary Test, were used to screen out individuals who may have had a standard score below 80, indicating a possible delay in language abilities. Although these tests are normed on hearing children, they were administered to the deaf children in ASL. Because the procedures dictate the number of items that a subject must get wrong before determining a level, there was not a concern about items that did not have a 1:1 match between ASL and English. Eleven children were initially screened, and one dyad was not selected to participate in the study

because of potential language concerns. The deaf children were from homes where ASL was described as the primary mode of communication with the deaf child. All of the families identified their ethnicity as white and described themselves as middle class. See [Table 1](#) in the appendix for the descriptive information and language measures of the participants.

### Procedure

The researcher, who is a fluent and native user of both ASL and spoken English, went to each family's home at least twice to videotape the reading sessions. Each session typically lasted approximately 45–60 min. Mothers were told that they should read with their child as they normally would. Families were provided with books that were new or unfamiliar to them to read. The books provided were of the narrative genre. This genre was selected because these books are more likely to “expose children to particular key features of the written language register such as plot, dialogue, and direct quotations” ([Kadaravek & Sulzby, 1998](#), p. 37). They also seem to provide an avenue for dyads to engage in more cognitively challenging talk ([Neuman, 1996](#)). The books were selected based on the criteria set by [Justice, Meier, and Walpole \(2005\)](#). The criteria include the following:

1. Colorful illustrations that help to narrate the story.
2. Neither excessively long or heavily reliant on text for telling the story.
3. Narrative genre.
4. Developmentally appropriate

### Coding

All of the reading sessions were transcribed and analyzed. Because there is no written form of ASL, the sessions in ASL were transcribed using a gloss system, which identifies a sign (in capital letters), finger-spelled word, or classifiers. All reading techniques used by mothers were identified, coded, and counted through the Nvivo software program. For this particular analysis, the researcher reviewed all of the tapes and manuscripts in order to identify specific techniques that were used by deaf mothers to make English explicit. From this analysis, codes were established based on what was

observed, similar to the work of [Swanwick and Watson \(2005\)](#).

### Interrater Reliability

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 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 interrater reliability, the researcher provided a 7-min clip from each of the coded reading sessions along with the corresponding transcript. The 7-min time frame 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-min 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 all of the families.

### Analysis and Discussion

All of the deaf mothers in this study found ways to make connections among their visual language, ASL, and the printed text. 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, using ASL to explain the difference between the two languages and following the English text through ASL. [Table 2](#) in the appendix provides several examples of how deaf mothers make English explicit.

In addition to these strategies deaf mothers used to make English explicit, the mothers in this study used other strategies to engage their child and maintain their attention to the book. Nine of the mothers asked their child to help identify a name sign for the most important characters in the book. For example (English translations are 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 to maintain their child's attention is shifting their bodies or hands for repetitive English words or phrases or demonstrating a change in character as seen in the examples in [Table 3](#) (see appendix).

Although we know from previous studies ([Bailes et al., 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 the specific techniques they are actually using to make English explicit. 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

Just like deaf teachers in various studies ([Bailes, 2001](#); [Humphries & MacDougall, 1999–2000](#); [Padden, 2006](#); [Padden & Ramsey, 1998](#)), four of the deaf mothers in this research used the chaining technique frequently with their deaf children to bridge ASL with the English text. In the reading sessions that were observed, four mothers were seen to use this technique. It is noteworthy that two of the mothers were trained as classroom teachers, whereas the other two were not. The fact that some of the deaf mothers in this study used this technique appears to indicate one of several things. They might have been exposed to it through their participation in an early intervention program that was available in their state, or it may simply be a practice that deaf mothers intuitively know is effective because they have benefitted from this strategy themselves. For those mothers who were classroom teachers by profession, they may have received this training as part of their professional development and carried it over to their personal, home environment.

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). The teachers in Bailes' study and possibly the mothers in this study know that chaining is an effective way to help a deaf child understand the English print.

### Providing English Definitions

Providing a definition for a word encountered in a book is another common feature used among the deaf mothers in this study. 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, whether or not they were trained as classroom teachers, 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. 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 2](#)). 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

Deaf mothers, regardless of their professional training, also took extra steps to distinguish similar-looking English words. As an example, one 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 2). The mother took the time to explain that adding an “I” to the word chef makes it “chief” and its definition is boss. Although 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), finger spelling 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. Three of the 10 dyads selected this particular book to read. However, as one deaf mother, who was not trained as a teacher, 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 showed that she knew what her child might be missing and provided information that will help with developing an understanding of English and

literacy conventions. This practice was not unique to this mother as this technique was noted in other homes as well.

### Explaining Font Sizes

Authors may use different font sizes to indicate the volume or force with which something is being said. Mothers used various techniques to reinforce this unique feature of the English print. As an example, one deaf mother, in addition to reading the text and indicating through her signs and facial expressions that the 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. Whether or not they had training in deaf education, mothers provided an explanation of how one English word could have different ASL meanings. 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, whereas another first used the sign LISTEN at the ear. Another mother explained that if “LISTEN” is signed, it would be “LOOK-AT-ME.” In these two cases, neither of these mothers were trained as classroom teachers. This suggests that the deaf mothers intuitively knew to differentiate between the two types of listening. It is likely that they felt it was important to explicitly explain to 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

Although 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” and finger spelled the word “Z-I-N-G!”, the mother provided the ASL translation “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 provided 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 used ASL to convey the stories in order to make them come alive, all of them also made a conscious decision to incorporate English grammatical features in their signing in order to clearly illuminate English in the text. For example, English grammatical function words such as “a” and “is” were often signed/finger spelled and pointed out in the book. Likewise, at times, mothers would intentionally sign in English word order to explicitly represent grammatical features of English, such as subject-verb-object word order. This is a good example of how mothers meditate between English and ASL, making on-going decisions on utilizing the best of ASL and English as they make their reading sessions entertaining, enriching, and educational for their deaf child. Gioia (2001) noted a similar strategy in her observation of a preschool teacher after receiving feedback that this was a way to expose

children to rich language. As mentioned earlier, the deaf mothers in this study were well educated. It is presumed that they were comfortable with both their ASL and English skills. For hearing parents who may not be as adept at mediating between the two languages and feel intimidated by translating from one language to the other, they may find comfort to know that deaf parents do sometimes sign in English word order. By showing them how deaf parents do this, hearing parents can become more comfortable about learning ways of making English explicit through ASL.

### Conclusion

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. Mothers in this study used a variety of techniques that may expand a child’s knowledge of and exposure to written English. For example, techniques observed such as providing definitions for English vocabulary or discussing how to figure out a rhyme scheme are important teaching strategies (Desjardin & Ambrose, 2010). By explicitly teaching their children the nuances of English, it will help the children when they encounter new words or rhymes in other contexts. Discussing literary conventions such as what enlarged font size exposes the child to different features of a book and how authors use different strategies to convey an emotion. These observations are significant because they demonstrate how deaf mothers intuitively know, even if they do not have professional training in Deaf Education, that their children may need extra support as they encounter English print and its conventions. 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. Deaf parents are not only making concrete connections between ASL and English but also providing deaf children with the idea that books are something from which they learn and apply to their

understanding of the world. 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.

### Funding

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.

### Acknowledgments

The author would like to thank Dr. Brenda Schick for her guidance while conducting the research and Dr. Thomas K. Holcomb for his thoughtful feedback, insight, and support.

### 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 & S. Templeton (Eds.), *Metalinguistic awareness and beginning literacy* (pp. 277–290). Portsmouth, NH: Heinemann.
- 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.
- Andrews, J. F., & Zmijewski, G. (1997). How parents support home literacy with deaf children. *Early Child Development and Care, 127*, 131–139. doi:10.1080/0300443971270111
- Bailes, C. (2001). Integrative ASL-English language arts: Bridging paths to literacy. *Sign Language Studies, 1*, 147–174. doi:10.1353/sls.2001.0002
- 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. doi:10.1353/sls.0.0022
- 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.
- 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, QC, 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.
- Day, L., & Sutton-Spence, R. (2010). British sign name customs. *Sign Language Studies, 11*, 22–54. doi:10.1353/sls.2010.0005
- Delk, L., & Weidekamp, L. (2001). *Shared reading project: Evaluating implementation processes and family outcomes*. Washington, DC: Gallaudet University.
- DesJardin, J. L., & Ambrose, S. (2010). The importance of the home literacy environment for developing literacy skills in young children who are deaf or hard of hearing. *Young Exceptional Children, 13*, 28–44. doi:10.1177/1096250610387270
- 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, MD: Paul H. Brookes Publishing Co.
- 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. (2011). *Regional and national Summary Report of Data from the 2009–10 Annual Survey of Deaf and Hard of Hearing Children and Youth*. Washington, DC: GRI, Gallaudet University.
- Gioia, B. (2001). The emergent language and literacy experiences of three deaf preschoolers. *Journal of Disability, Development and Education, 48*, 411–428. doi:10.1080/10349120120094293
- Goldin-Meadow, S., & Mayberry, R. (2001). How do profoundly deaf children learn to read? *Learning Disabilities Research & Practice, 16*, 222–229. doi:10.1111/0938-8982.00022
- Guilfoile, E. (1957) *Nobody listens to Andrew*. Chicago: Follett Publishing.
- Heath, S. (1982). What no bedtime story means: Narrative skills at home and school. *Language in Society, 11*, 49–76. doi:10.1017/S0047404500009039
- 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*, 84–94. doi:10.1525/var.2000.15.2.84
- 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. doi:10.1044/0161-1461(2005/003)
- 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.
- 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.
- 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. doi:10.1353/aad.2012.0358
- 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. doi:10.1093/oxfordjournals.deafed.a014290
- 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.
- Newport, E. L., & Meier, R. P. (1985). The acquisition of American Sign Language. In D. I. Slobin (Ed.), *The crosslinguistic study of language acquisition: The data* (Vol. 1, pp. 881–938). Hillsdale, NJ: Lawrence Erlbaum Associates.
- 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). New York: Oxford University Press.
- Padden, C., & Ramsey, C. (1998). Reading ability in signing deaf children. *Topics in Language Disorders, 18*, 30–46. doi:10.1097/00011363-199818040-00005
- Padden, C. & Ramsey, C. (2000). American Sign Language and reading ability in deaf children. In C. Chamberlain, J.P. Morford, & R.I. Mayberry (Eds.), *Language acquisition by eye* (pp. 165–189). Mahwah, NJ: Lawrence Erlbaum Associates.
- Rathmann, P. (2003). *The day the babies crawled away*. New York: Putnam Juvenile.
- Schleper, D. R. (1997). *Reading to deaf children: Learning from deaf adults*. Washington, DC: Laurent Clerc National Deaf Education Center.
- Schleper, D. R. (1995). Reading to deaf children: Learning from deaf adults. *Perspectives in Education and Deafness, 13*, 4–8.
- 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. doi:10.1093/deafed/enh011
- Snow, C. E. (1983). Literacy and Language: Relationships during the preschool years. *Harvard Educational Review, 53*, 165–189.
- 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. doi:10.1093/oxfordjournals.deafed.a014308
- Supalla, S. (1992). *The book of sign names*. Berkeley, CA: DawnSignPress.
- Swanwick, 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. doi:10.1177/1468798405050594
- 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. doi:10.1093/deafed/5.4.337
- 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. doi:10.1093/deafed/5.1.81

## Appendix

**Table 1** Descriptive information for Deaf dyads

Deaf subject ID	Gender	Age (in months)	Expressive one word picture vocabulary test standard score/peabody picture vocabulary test standard score	Deaf mothers' education	Deaf mothers' occupation
D1	M	56	105/102	Graduate school	Professor
D2	F	67	89/126	College graduate	Office technician
D3	M	71	100/103	AA	Stay at home
D4	M	49	114/100	Graduate school	Classroom teacher
D5	F	43	102/95	Graduate school	Classroom teacher
D6	M	60	103/88	Graduate school	Stay at home
D7	F	64	111/144	Graduate school	School administrator
D8	F	57	100/101	Graduate school	PE teacher
D9	M	62	89/100	Graduate school	Stay at home
D10	M	51	91/96	Graduate school	Classroom teacher

Table 2 Deaf mothers making English explicit

Strategy	Example	English translation	Use of strategy
Chaining (sign, finger spell, 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. M: 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>	<p>Mothers use chaining (sign, finger spelling and pointing) to emphasize the word in both American Sign Language (ASL) and English.</p>
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>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. C: BABY.</p> <p>M: MANY BABY.</p> <p>7. M: YOU YELL WILL B-E-THERE IN J-I-F, FAST.</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. Andrew says, listen, Mr. Neighbor. What does that mean? I don't know. Neighbor. Neighbor. The person in the house next door is called neighbor.</p> <p>5. Tuck means to put to sleep.</p> <p>6. Baby, babies. Baby. Many babies.</p> <p>7. You yelled, I will be there in a jiff, which means fast.</p>	<p>Mothers provide definitions for English words such as bog, she, neighbor, tuck, and jiff.</p>

Table 2 Continued

Strategy	Example	English translation	Use of strategy
Interpreting English word sounds	<p>1. M: Z-O-O-M. Z-O-O-M MEANS WHAT? C: THAT Z-O-O. M: HAVE Z-O-O HAVE BUT Z-O-O-M MEAN FAST. POLICE ARRIVE IN-A-MINUTE! SIREN ARRIVE. (point) M: (turns page) OTHER FIRE (point) Z-I-N-G SOUND-LIKE BELL. Z-I-N-G FAST. M: (turns page, points to word) W-H-O-O-S-H. FAST. WIND-WAVE-HAIR. ARRIVE DOG CATCH. POINT Z-O-O. 2. W-H-O-O-S-H, S-W-I-S-H. MAKE NOISE.</p>	<p>1. Zoom, What does zoom mean? That's the zoo. There is the zoo but zoom means fast. The police arrived quickly; the car with sirens arrived. Another firetruck. Zing sounds like a bell. Zing went fast. Whoosh is fast. The hair is blowing in the wind. The dog catcher arrived. He is from the zoo. 2. Whoosh and Swish are words to describe noise. That's the cook. What? 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. 1. They crawled in the cave. You called, babies, behave, behave. But the babies loved bats so the babies just waved. The words look the same. Behave and wave. All of them do: Cave, behave. The words look alike and have a similar spelling: They sound almost the same. 2. It's a poem, a poem. This is a rhyme. When the baby crawled (taps child) look, it's the same spelling; almost the same: Ledge and edge.</p>	<p>Mothers explain that these particular words (zoom, whoosh, and swish) are English words that represent sounds.</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. M: WHAT? C: (points to picture). M: CHIEF. O-HI! 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. 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. 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. 2. M: POEM P-O-E-M POEM. 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>Mother clarifies for the child that while chef and chief look very similar, they are two different words with two different meanings.</p>	
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. 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. 2. M: POEM P-O-E-M POEM. 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>1. They crawled in the cave. You called, babies, behave, behave. But the babies loved bats so the babies just waved. The words look the same. Behave and wave. All of them do: Cave, behave. The words look alike and have a similar spelling: They sound almost the same. 2. It's a poem, a poem. This is a rhyme. When the baby crawled (taps child) look, it's the same spelling; almost the same: Ledge and edge.</p>	<p>Mother points out how in English, words that are spelled similarly may also sound the same.</p>

Table 2 Continued

Strategy	Example	English translation	Use of strategy
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>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)</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>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 think it means?</p> <p>C: Bear, bear, bear. These are big words.</p> <p>Yes, Andrew is screaming.</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>	<p>Mother explains that large font sizes represents the characters raising their voices. English.</p>
Use of ASL to help child understand differences between the 2 languages	<p>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—</p>	<p>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)</p>	<p>Mother shows how the English word "listen" can be interpreted or signed two different ways in ASL.</p>
Following the English text through ASL	<p>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—</p>	<p>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)</p>	<p>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.</p>

Table 3 Deaf mothers' use of American Sign Language features to demonstrate character changes

English text	American sign language	English translation	American sign language 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-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.