# A SURVEY COMPARING DEAF CHILDREN'S HOME LITERACY INTERACTIONS WITH DEAF AND HEARING PARENTS

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BY

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DEDICATION

For God:

My utmost for HIS highest.

To Dale and Denyse Wright

(My Papa and Grandma):

My first teachers, my best mentors, my biggest cheerleaders,

my *best* friends, and my loves.

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ABSTRACT

LISALEE DENYSE EGBERT

A SURVEY COMPARING DEAF CHILDREN'S HOME LITERACY INTERACTIONS WITH DEAF AND HEARING PARENTS

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Parents play a role in the facilitation of language and learning with their children in terms of literacy (Morrow, 2001; Snow, 1999; Vygotsky, 1978; Chomsky, 1965; Heath, 1980). While no one aspect can be identified as the root, source, or cause of literacy, one important component of academic literacy is the language aspect promoting a baseline for reading and writing. The purpose of the present study was to compare the ways in which Deaf and hearing parents engage in literacy events with their Deaf children.

Hearing Parents with Deaf children reported significantly greater use of non-print symbolic development and use of electronic text than Deaf parents with hearing children, however Deaf parents with Deaf children fell in the middle of the two. Hearing Parents with Deaf children also reported significantly greater use of informational print and use of entertainment print specifically for the Deaf than Deaf parents with hearing children and Deaf parents with Deaf children. Hearing Parents with Deaf children and Deaf parents with Deaf children reported significantly greater use of book knowledge development than Deaf parents with hearing children. Hearing Parents with Deaf children

reported significantly less use of print communication specifically for the Deaf than Deaf parents with Deaf children, however Deaf parents with hearing children fell in the middle of the two. Hearing Parents with Deaf children and Deaf parents with Deaf children reported significantly greater average use of all the literacy items than Deaf parents with hearing children.

From the current data a repeated theme emerged - Deaf Culture. Not a general culture, but a Culture of uniqueness and beauty materialized in light of literacy development: a Culture full of value. The values, characteristics, heritage and history of the Deaf appear to be a key proponent of the academic literacy learning process that cannot be ignored. As there is a call for more research in the field of Bilingual Education (Gonzalez, 1994) and a call for deeper understandings of Bilingual Education in conjunction with Deaf Education (Evan, 2004; Prinz, 1998; Swanwick, 2002, 2005), the present research concurs and further reports a need for more research directly related to Deaf Education as a Bilingual model focusing on Culture.

TABLE OF CONTENTS

LIST OF TABLES

# CHAPTER I

## INTRODUCTION

"Read write me none for for how know not me. Happen school do do English me? learn me none." Unless the reader is trained in American Sign Language (ASL), including the syntax, semantics, and history of the language for the Deaf, one might not be able to translate the above sentences. The sentences read, "I do not read or write anything because I do not know how. When I was in school, what did I do in English class? I learned nothing." The sentences are correct as stated above if they are *signed*, but many aspects of the sentences are incorrect when translated directly to written English.

In the United States, the average Deaf high school graduate reads at a fourth grade level (Gannon, 1998; Kampfe et al., 1987; Marschark, 2003; Ridgeway, 1993; Sacks, 1989; Sullivan & Schulte, 1992). However, Deaf children of Deaf parents have higher levels of reading achievement than Deaf children with hearing parents (Kanpfe et al., 1987; Kusche et al., 1983; Lane, 1988, 1993; Livingston, 1997; Lieberman et al., 2004; Maxwell, 1985; Moores & Sweet, 1990; Ritter-Brinton & Stewart, 1992; Sacks, 1989; Schilling, 1993; Sullivan & Schulte, 1992). As a result, a closer look at what happens during the early literacy development of Deaf children is necessary. The purpose of the present study, therefore, is to compare Deaf parents' interactions with their Deaf children

to those of hearing parents with Deaf children in relation to language and literacy through the use of a survey. The goal is to ascertain what factors, other than language, are enabling Deaf children of Deaf parents ($D^1$) to achieve higher literacy levels than Deaf children of hearing parents ($D^2$).

Deaf children of hearing parents are usually identified as Deaf around the age of two (Lane, 1988, 1993; Sacks, 1989). Identification of children at this age has consequences in terms of language development. In general, these children have missed early language acquisition that naturally occurs with hearing children or Deaf children with Deaf parents ($D^1$). The effective, whole accessible first language provides a foundation that supports learning new languages, in this case printed English (Collier, 1987a; Cummins, 1996; Krashen, 1992, 1998; Thomas, 1998, 1999). Deaf children of Deaf parents ($D^1$) have a greater knowledge of American Sign Language than do Deaf children of hearing parents ($D^2$) (Coutin, 2000; Harris, 2001; Vaccari & Marschark, 1997). Many Deaf children with hearing parents ($D^2$) usually do not even start learning language, spoken or signed, until after the age of two. Therefore, the basic reception and expression of language through American Sign Language is far more advanced with Deaf children of Deaf parents ($D^1$).

Deafness is diagnosed by a doctor, who may view Deafness as a pathological or medical disability. As a result, speech therapy is prescribed, which focuses primarily on hearing aids and spoken English. Learning American Sign Language is deemphasized

until later in life. The young language learner, then, loses the opportunity to build a language foundation during this critical development period (Chomsky, 1965; Morrow, 2001; Snow, 1999; Sacks, 1989). Consequently, many Deaf children with hearing parents ($D^2$) enter school without a strong first language (Lane, 1988, 1993).

The Deaf Education system provides parents with Deaf children several options for educating their children in communication styles (i.e., signing, oral), educational settings, and academic approaches. Some Deaf children do excel in speech (i.e., producing vocal articulation) and do acquire language aurally and orally (Ling, 1989). The philosophy of educating a Deaf child using lip-reading, aural amplification, and oral influx is coined oral (also referred to as oral or orally).

The conflicting research and theoretical stances related to oralism vs. signing is beyond the scope of this study. Rather this study will emphasize the research that supports the theoretical assumptions that American Sign Language is an optimal first language for Deaf children. Those findings support the need for further study of early literacy learning for Deaf children.

Oral language acquisition is the cornerstone of literacy learning (Morrow, 2001). Spoken or vocal portions of speech in English are analogous to the visual and manual production of American Sign Language (Lane, 1988, 1993; Sacks, 1989). American Sign Language, a visual language, can also serve as a cornerstone to literacy as its grammar and syntax are comparable to any language. For example, knowing that objects have signs

can help facilitate the notion that objects also have a written name. Going from the known sign to the unknown of a written word/name can provide a stepping- stone in the literacy of the Deaf child.

Historically, Deaf children of Deaf parents ($D^1$) have a linguistic (Coutin, 2000; Harris, 2001; Vaccari & Marschark, 1997) and literacy (Kanpfe et al., 1987; Kusche et al., 1983; Lane, 1988, 1993; Livingston, 1997; Lieberman et al., 2004; Maxwell, 1985; Moores & Sweet, 1990; Ritter-Brinton & Stewart, 1992; Sacks, 1989; Schilling, 1993; Sullivan & Schulte, 1992) advantage over Deaf children with hearing parents ($D^2$). If one compares the language development of Deaf children with hearing parents ($D^2$) to that of Deaf children of Deaf parents ($D^1$) or even to wholly hearing families, one can see the dichotomy among the language foundations (Lane, 1988, 1993; Sacks 1989). The language differences for Deaf children of hearing parents ($D^2$) may be one of the main causes of a lifelong struggle with literacy. One purpose of the present research is to explore why Deaf children of Deaf parents ($D^1$) might have higher literacy levels than Deaf children of hearing parents ($D^2$).

Language differences may not totally explain the difference in literacy achievement of ($D^1$) and ($D^2$) children. Within the hearing literature, research (Halliday, 1975; Morrow 2001) points to the importance of specific parent/caretaker interactions that support subsequent literacy achievement. The way a parent interacts linguistically with a child influences language development, which in turn supports literacy (Halliday,

1975; Morrow 2001). Therefore, this study will explore if parents of ($D^1$) and ($D^2$) engage their children in similar linguistic interactions. Presently, there seems to be no research on this area of literacy acquisition of Deaf children.

In the early years of American education, most Deaf students who were given an educational opportunity were cultured and skilled in their native language (ASL), which provided the student with an opportunity to acquire a language accessible to their needs. On April 15, 1817, the first permanent school for the Deaf was opened and later would be named Gallaudet University, the only Liberal Arts College for the Deaf in the world. The school employed both Deaf and hearing teachers; Deaf teachers made up 40.8% of the teaching staff at the school (Gannon, 1981). In fact, "Deaf teachers were in demand" in the classroom until 1927 when the reign of oralism, the idea of educating Deaf students through lip-reading and speech only, became the main means of educating the Deaf (Gannon, 1981, p. 3). The school achieved a high level of success in terms of school literacy and later offered courses for the "academically inclined" student (Gannon, 1981, p. 16).

One of the main reasons for the success of the students at Gallaudet was that the Deaf teachers, as well as the hearing teachers, used American Sign Language as a means to teach written English (Gannon, 1981; Lane, 1988, 1993; Livingston, 1997; Sacks, 1989). While the term Bilingual Education was not a theoretical framework which the

teachers and administrators utilized as a pedagogy of instruction, the basic idea of using a first language to teach a second language was, in fact, the foundation of the school.

Beginning in the 1850s, the move towards teaching Deaf students both linguistically and academically using lip-reading and vocal speech, known as oralism, began to grow in strength. Schools began hiring only hearing teachers, and, in time, signs were dropped from the classroom completely. During the growth of oralism, Deaf students' literacy began to decline, along with the ability of Deaf students to be able to master either ASL or English (Sacks, 1989). Because American Sign Language was prohibited, language acquisition, brain development in terms of language, cognition, and other vital skills related to literacy learning, was slowed or underdeveloped completely (Bellugi, 1985; Sacks, 1989).

If Deaf Education professionals were to compare literacy learning of Deaf speakers to bilingual speakers (i.e., Chinese, French, and Russian children), they might begin to see patterns of similarities in terms of language and literacy acquisition. American Sign Language is a language in its own right, with its own grammar, syntax, and semantics, as is Spanish, Japanese, or any other language (Stokoe, 1960). If researchers approach Deaf children's literacy learning with the idea that Deaf children are only linguistically different from hearing children and not cognitively impaired, more ideas can begin to develop. Theories and ideology from a multitude of disciplines can then be more readily applied to the learning of literacy in the area of Deaf Education.

Some Bilingual educators view non-English speakers with having less of an ability to learn than English-speaking learners have. Others, however, seem to believe that non-English speaking learners have at least an equal footing in learning when compared to their English speaking peers.

If research weds the concept of Deaf Education and Bilingual Education from a perspective of a nondeficit model, evolution in terms of Deaf Education might occur. Theorists and researchers, along with educators and parents, might apply theories, philosophies, and pedagogies of academic achievement from language and cultural arenas to the research of Deaf Education. While the marriage of the two disciplines is beginning to grow, there is still a call for a deeper understanding, use of, and solidification of Deaf Education in a bilingual focus (Evan, 2004; Prinz, 1998; Swanwick, 2002, 2005).

The pendulum of educating Deaf children with American Sign Language instead of oralism is beginning to swing back. Researchers have begun to connect the concepts and theories of Deaf Education with that of Bilingual Education, yet the research still needs to grow (Evan, 2004; Prinz, 1998; Swanwick 2002, 2005). Relatively few parts of the country recognize American Sign Language as a first language that facilitates second language learning. The move back to a Bilingual-Bicultural platform for teaching Deaf students' literacy through ASL is slow (Schwartz, 1996). More research that not only *links* the two fields of Deaf Education and Bilingual Education, but also, in fact, attempts to blend the two fields into one should be explored.

Blending Deaf Education and Bilingual Education provides a theoretical framework for studying the development of language and literacy in ($D^1$). The framework goes beyond the field of Deaf Education in order to gain insight into the complexities of the early literacy development of ($D^1$) and ($D^2$). Furthermore, blending the two theoretical frameworks may inform not only the Deaf Education Community, but also Bilingual Education and the field of literacy development.

There is a gap in the research between Deaf Education and Bilingual Reading Education. Interfacing and/or combining the theories, philosophies, and ideologies of bilingual research might help to enhance and facilitate literacy for Deaf, hearing, and bilingual children. By analyzing literature and conducting research, researchers may reach new understandings that may lead to a change in policy at all levels for Deaf and Hard-of-Hearing students and ultimately Deaf and Hard-of-Hearing adults.

In the literature review, philosophies of educating Deaf children in their language development and literacy will be reviewed from a Bilingual-Bicultural (Bi-Bi) perspective. In addition, research on Bilingual-Bicultural children who are literate in reading and writing in their native tongue and in English will be explored. In conjunction with a literature review, the survey in this study explored some interactions between Deaf parents with Deaf children ($D^1$) in order to better understand the relation and unique facilitation of literacy learning among Deaf families. Therefore, the main question addressed is how do Deaf families facilitate literacy within their homes?

## Purpose Statement

The purpose of the present study was to compare Deaf parents' interactions with their Deaf children ($D^1$) to those of hearing parents with Deaf children ($D^2$) in relation to language and literacy using a survey format. The results of the survey were analyzed from a Bilingual-Bicultural theoretical lens comparing ($D^1$) and ($D^2$).

## Research Questions

The following research questions were advanced in this study.

1. Is there a difference in the amount of discourse related to literacy used between Deaf parents and hearing parents when interacting with their Deaf child?
2. How do Deaf parents of Deaf children ($D^1$) support written English literacy learning in the home?
3. How do hearing parents of Deaf children ($D^2$) support written English learning in the home?
4. What are the differences and similarities between Deaf and hearing parents' support of written English literacy learning in the home?

## Definitions

*American Sign Language (ASL)* - is the language used by the Deaf and hard-of-hearing. ASL has its own syntax, semantics, and history separate from English (Stokoe, 1960). For example, adjectives tend to follow nouns and adverbs trail verbs. Tense in ASL tends to be determined at the beginning of a conversation and is not

reiterated in the verbs in an ongoing manner. ASL tends to be spiral in nature as opposed to English, which is linear. In English, one might write, "I am going to the store early tomorrow." In ASL, one might sign, "Tomorrow store go early me." The American Sign Language does not have a paper written form. However, it may be thought of as written in the sense that the language is "written" in the air.

*Artifacts* - A list of materials that are not limited to books. Additional materials or artifacts are not limited to wordless picture books (Jalongo & Dragich 2002) and include a print rich environment (Neuman, 2004) and drawings at home (Genishi & Dyson, 1984), recipes, grocery lists, address books, white and yellow pages (Watson & Layton, 1994), and symbolic print (such as maps) (Whitehurst & Lonigan, 2001).

*Code Switching* - refers to the process of signing in one language or system and then changing into another sign language or sign system.

*"c"ommunity* – with a lower case "c" refers to a group of persons who are part of a culture.

*"c"ulture* – with a lower case "c" refers to a group of people who share the same language, religion, origin, ethnicity, customs, and/or ideas and identify themselves as a subset of a greater whole (i.e., meaning not just Americans but Africa-Americans or Native Americans).

$D^1$ - Deaf children with Deaf parents.

$D^2$- Deaf children with hearing parents.

$D^3$ - Hearing children with Deaf parents.

*"d"eaf* – referring to a hearing loss of any degree. The person who is "d"eaf has no affiliation to the Deaf Community or the language employed by that . It is considered a pathological rather than a cultural loss because the loss is thought of as medical and "fixable." Note the term Deaf is not capitalized.

*"D"eaf (Deaf and Hard-of-Hearing, DHH)* - refers to a person who has any degree of hearing loss, and aligns themselves with the Deaf and the language of the Deaf (Sacks, 1989). Note the use of the capital "D" to distinguish the culturally Deaf from the pathologically Deaf persons.

*Deaf Bilingual-Bicultural Education* – In terms of Deaf Education, Bilingual-Bicultural Education supports the ideology or belief of facilitating reading and writing of written English through the use of American Sign Language, along with emphasizing and capitalizing on the uniqueness of the Deaf Community and its Culture (Schwartz, 1996). A Bilingual-Bicultural approach in Deaf education is different from English as a Second Language (ESL) in that the goal is not to transition the students from their first language wholly to English, but rather to facilitate a mastery of English in the written form only, not in the spoken, vocal manner (Livingston, 1999).

*Deaf Community* – Deaf persons who embrace the concept of Deaf Culture and use American Sign Language. Deaf Community is always capitalized to help distinguish the Deaf Community from other communities.

*Deaf Culture*– is a subset of Deaf or Hard-of-Hearing Americans who use American Sign Language as their main means of communication (Rutherford, 1988; Gannon, 1998; Ridgeway, 1993). Deaf Culture is always capitalized in the context of Deafness and its Community (Ladd, 2003) as opposed to a general culture. This subculture embraces its own quirks and idiosyncrasies. An example of the some of the different cultural values is that Deaf parents want to have Deaf children. The thought process is that the parents and the children will have not only the same language but also the same shared experiences and lifestyle (Ladd, 2003). Another example is DST or Deaf Standard Time, which for the Deaf is a time period that is not exact and is unlike the hearing culture's concept of time. If a party is to start on Friday night, the host might announce the party will start at 7 p.m. DST, which means any time after 7 o'clock and most likely later.

*Differently Abled* – refers to a person or persons who are able to maintain, succeed, and/or exceed in education and life but who are labeled with a medical condition (i.e., a person with Down syndrome, Deafness, or cerebral palsy).

*First Order Symbol System*- a systems of signs, or sometimes gestures, used to identify signed or spoken language (Vygotsky, 1978).

*Literacy Event* – is an interaction between a child and a parent or extended family member in direct or indirect relationship with an artifact, which is purposeful, interactive, playful, accidental, and/or intentional. The event may or may not be culturally and ethnically connected, academic or nonacademically based, and done in or out of the home (Morrow, 2001).

*Literacy* – the construction of meaning in culturally appropriate ways with first and/or second order symbol systems (Morrow, 2001).

*Mainstream (or hearing) Bilingual-Bicultural Education* – in the mainstream Bilingual-Bicultural ideology, supporters demonstrate a strong link with the child's first language and competency of that language with the child learning a second language with proficiency (Cummins, 1996; Krashen 1992, 1998). By using a child's first language as a cornerstone in language understanding, the child can go on to learn a second language (Rossell, 2003).

*Print Rich Environment* – surroundings that are plentiful in written text and/or artifacts. This environment's function is to relay meaning to the reader/onlooker.

*Proficiency* – is a level of comprehension for reading and writing by a person. To be proficient, a person must demonstrate an understanding at or above grade level at a specific age. Proficiencies are measured by formal and informal assessment by a teacher or educator.

*Second Order Symbol System* – a written or printed symbol system utilized to represent first order symbol systems (Vygotsky,1978).

*Text* – written English, print material, or pictures/symbols used to communicate and/or facilitate a message.

## Significance of the Study

The significance of this study is multifold. Primarily, the researcher offers further information, insights, and/or knowledge to the body of research in terms of literacy for Deaf persons. Secondly, the current research adds to the overall mainstream knowledge of literacy learning of all persons regardless of auditory status. Furthermore, the present research adds to the body of knowledge for both mono-or-multilingual hearing persons in regards to literacy achievement by offering insights into the literacy learning process for ($D^1$) and ($D^2$). In addition, this study discusses findings comparing ($D^1$), ($D^2$), and ($D^3$) that might serve to enlighten Deaf Education, Bilingual-Bicultural Education and indeed all literacy education. The impact on the three disciplines listed might serve to triangulate meaningful interactions, discussion, and further research between and among future investigators.

# CHAPTER II

## LITERATURE REVIEW

The majority of Deaf and Hard-of-Hearing (DHH) students leave high school with an average reading level of a fourth grader (Moores, 1987). If DHH students differ only in language and not mental capacity or cognitive ability, then there should not be a discrepancy between hearing high school students and Deaf and Hard-of-Hearing high school students in terms of literacy. If Deaf children's first language is American Sign Language, then (1) Deaf and Hard-of-Hearing children have the ability to learn to read and write as do hearing children, and (2) the manner in which we approach teaching these students must be unique because English is not their first language. Consequently, because English is not the first language of Deaf and Hard-of-Hearing children, these children are at greater risk for difficulties in early literacy learning.

American Sign Language is a language with its own syntax, structure, and grammatical aspect that parallels other languages (Stokoe, 1960). If Deaf or Hard-of-Hearing children have a primary language base of one language (ASL), then transferring their knowledge from one language to the secondary language (written English) can enhance learning and development in a second language (Cummins, 1996; Krashen, 1992, 1998). Thus, the marriage of Deaf Education and Bilingual Education theories and

philosophies could be viewed as beneficial for educating Deaf and Hard-of-Hearing children.

For the clarity of the present research, when speaking of a Deaf or Hard-of-Hearing child's primary or first language, it will be assumed (unless otherwise stated) that the first language of Deaf or Hard-of-Hearing children is American Sign Language. Again, for the purposes of the present study, when speaking of the second language of Deaf or Hard-of-Hearing children, it will be assumed that the second language will be written English. The justifications of the above statements are as follows: Due to the uniqueness of Deafness (i.e., Deaf persons might never master spoken English due to the nature of their hearing loss), reading and writing in English must stay within the guidelines of written English only. This means that the goal is not to transfer the Deaf persons "spoken," primary language of American Sign Language to written English, but to keep ASL as the principal communication language and allow English to be the core written language for that person (Livingston, 1997). Therefore, the ideas that support that literacy will lead or can lead Bilingual children to abandoning or incorporating English into their primary language must be modified for Deaf and Hard-of-Hearing children (Evans, 2004; Hanson & Padden, 1989; Paul, 1988; Prinz & Strong, 1995, 1998; Swanwick, 2002, 2005). The goal is to use American Sign Language to support and teach Deaf and Hard-of-Hearing children to read and write fluently in English.

This chapter examines eight categories that relate to Deaf and Hard-of-Hearing children. The categories are (1) Deaf Culture, (2) Deaf Values, Understandings and Experiences (3) Language of the Deaf (ASL), (4) Home environments of the Deaf, (5), Facilitating School Literacy: Reading for the Deaf (6) Writing for the Deaf, (7) Early Literacy, and (8) Bilingual-Bicultural (Bi-Bi) research.

## *Deaf Culture*

Deaf Culture for the Deaf and Hard-of-Hearing is at the very heart of the Deaf Community. The Deaf Community allows this minority group to interact with each other using their own language (ASL), to be at peace with the unique idiosyncrasy of their language, to celebrate the quirks of the language, and to grow as a vital group in America. Deaf Culture allows young members of the Deaf to see that Deafness is not a handicap; Deaf Culture salutes a group of persons that have continued to thrive in a hearing world, growing in their own identity and conquering the challenges of everyday life (Gannon, 1981; Lane, 1988, 1993; Ladd, 2003; Sack, 1989).

As in other societies, C/culture plays a role in the education of its children. Understanding Deaf Culture outside of school aids in the understanding and influences of literacy learning in the classroom. The Deaf and their Culture, like other societies or subcultures, can be acknowledged by their cultural differences. By evaluating the literature of the Deaf Culture, one can understand the need for Culture in a Deaf classroom.

Deafness and language are closely related: Deaf Culture can influence all aspects of a Deaf person's life, including language, cultural characteristics, literature, and education. Culture influences a Deaf individual and their development by validating Deafness and Deaf Culture (Kaplan, 1996; Rutherford, 1988; Stebnicki, 1999). As a minority Culture, Deaf persons share a language that affords them a unique status. As a cultural minority, Deaf students should be insured of their right to an education, as it relates to their cultural needs (i.e., language and cultural awareness). In short, Deaf students need to be educated in a multicultural setting in order to be provided an adequate education (Reagan, 1988, 2002). Deaf Culture and its members seem to have been systematically suppressed by a hearing society, which refuses to acknowledge or accept the uniqueness of Deaf Culture and language. If Deaf people stand up for their Culture and assert their right to proclaim their Culture as distinct and unique, they will enjoy enhanced status in the larger society (Wilber, 1998).

Not only does the recognition of Deaf Culture support education, but also, by not acknowledging Deaf Culture, the education of the Deaf is "disabling" to the Deaf student (Ladd, 2003; Lane, 1988, 1993). Deaf children and their families, who embrace American Sign Language, utilize the language, and educate Deaf children in a Bilingual-Bicultural setting, which is an optimal situation (Schwartz, 1996).

Deaf Culture and American Sign Language should play a major role in educating Deaf children; however,until now, Deaf Culture and American Sign Language have not

yet been fully explored in the terms that they should be, such as teaching reading and writing of English using American Sign Language (Andrews, 1997; Christensen, 2000; Conant, 1986; Lane, 1988, 1993). By not meeting the needs of the cultural minority of Deaf children, the education system is dooming these students, both socially and economically, to a lifetime of below average literacy (Lane, 1988, 1993). In the past, Deaf children utilized American Sign Language as a means to learn English, bridging the literacy gap more than other theoretical approaches to educating the Deaf. Many environmental factors, such as family and interventions, influence a Deaf child's ability to learn (Moores, 1987, 1990). Deaf Culture affects the Deaf individual and, ultimately, that person's education.

### *Deaf Values, Understandings and Experiences*

While language is the key identifying factor in unifying the Deaf Community, values and shared understandings are also vital to the cohesion of the group. Culture is passed down from generation to generation, not from hearing parents to Deaf children, but by Deaf adults to Deaf children (Ladd, 2003; Lane, 1988, 1993; Reagon, 1988, 2002) Because this group of people have a shared and understandable language in common, values are communicated more fluently and easily than might be possible with hearing persons to Deaf people. As such, it is not uncommon to see a Deaf person introduce another person as their "Deaf mom," meaning that the women is not their birth parent but

acts in the capacity of a mother in terms of language, history, Culture, and value (Ladd, 2003; Reagon, 2002).

The pride, values, and support of the group can be cultivated by this "Deaf family." A "Deaf family" is not only having a Cultural mother or father, as mentioned above, but also means having a group of very close friends who support and encourage each other. The families are usually created from common Deaf institutional schools or Deaf Clubs. Key identifiers are taught and reinforced in this family. The social interaction that grows from this "family" helps facilitate Cultural and communicable pride in the group. The group is able to help facilitate the thought that "being Deaf" is not a handicap but a lifestyle, as well as teaching individuals to overcome adversity and hardship faced by the Community (Ladd, 2003; Lane, 1988, 1993; Reagon, 1988, 2002).

As a protective factor of the Deaf Community, hearing persons as a group are not trusted (Ladd, 2003; Lane, 1998, 1993; Reagon, 1988, 2002, Stebnicki, 1999) . It is a common philosophy that the hearing community is a source of oppression for the Deaf Community. The feeling is that the hearing forced the reign of oralism on the Deaf and therefore systematically opposed the Deaf. Even if a Deaf person can hear some and/or has good to fair speech, it is not valued or encouraged in the Deaf Community (Porter, 1999; Stebnicki, 1999). However, it is valued to think like a Deaf person (one example of "thinking hearing" is that a Deaf person *must* speak). The Deaf person who thinks like a hearing person may be subjected to becoming an outcast.

Because the Deaf have been oppressed by hearing people who have attempted to force oralism on the Deaf Community, the value of being blunt and straightforward to the Deaf person has grown. Because communicating orally may be difficult and time consuming for a Deaf person, "getting to the point" became an important issue for the Deaf. Now, such bluntness has grown to be a value and stereotype for the Community (Ladd, 2003; Lane, 1988, 1993; Stebnicki, 1999; Reagon, 1988, 2002).

Storytelling is significant in the Deaf Community. The layers in storytelling are multifaceted. Storytelling is a way of passing down the history of the Culture and its people. It also serves to pass down and reinforce values and ideas in the community, as well as facilitate a form of visual literacy (Ladd, 2002; Lane, 1988, 1993).

As with other cultures, not all things translate *from* the Deaf Culture *to* the hearing culture. As such, there is an intense understanding that the Deaf Community is a closed Culture: only Deaf persons who utilize ASL can be allowed in the circle. The only hearing persons that *might possibly* be allowed "in" are hearing children from Deaf parents -- if they "think Deaf" and embrace the Culture and communicate in ASL (Lane, 1988, 1993; Sacks, 1989).

As stated above, not all aspects of the Deaf Community can be translated into something understandable for the hearing. For the purpose of this paper, a reverse example will be given for the clarity and understanding of C/cultural differences. During a conversation with a hearing relative, the Deaf person was told that during an intimate

moment between that hearing person and his spouse, the spouse called out another person's name. When the Deaf person took this comment back to the Deaf Community, the Deaf people could not understand the meaning, complexity, or underlying implications of the situation. Simply put, this situation would never occur in a Deaf relationship and therefore had no meaning to the Deaf people.

For many reasons, it is valued and encouraged that Deaf people marry each other. They will share a language for ease of communication. They will have similar values, understandings and experiences. In addition, a common support group is in place for the couple to rely on in times of need.

Wanting and having Deaf children is also a value to a large number of Deaf couples. A couple having a Deaf child would share a language. When some hearing children grow up, they tend not to use and might forget their first language of ASL; Deaf children will always use ASL. Not only is language an issue, but also Culture and Community. A parent, regardless of auditory abilities, wants to share their love and commitment with his/her own child, and that is true for the Deaf Community as well (Sacks, 1989).

The values, experiences, and understandings of the Deaf, as seen above, are part of the uniqueness of Deaf Culture. The quirks and idiosyncrasies of the Deaf Community, along with its own language, lend itself to a different and unique perspective on life. This exclusive awareness of values, understandings, and experiences may provide a different

lens for researchers to use in looking at literacy learning in the home of Deaf parents with Deaf children.

### *American Sign Language and Role of Language for the Deaf*

Language also proves to be at the center of any C/culture (Sacks, 1989). This is true of American Sign Language (ASL) and the Deaf. The very definition of the Deaf and Deaf Culture is contained in the exclusive use of American Sign Language (Lane 1988, 1992). Until recently, however, American Sign Language has not been valued or identified as a language by the hearing community (Stokoe, 1960). Now with the acceptance of American Sign Language as a language, ASL can be employed to teach, educate, and empower people in using the language.

American Sign Language (ASL) is a key to educating the Deaf (Lane, 1988, 1993). By examining the literature on American Sign Language and its role in and out of the classroom, similarities can be seen with other languages and their effects on children, students, and adults.

A landmark piece demonstrates that ASL has all the features and parameters of a language distinct from English (Stokoe, 1960). The brain seems to recognize American Sign Language in the same manner that it recognizes spoken English. Hearing and Deaf stroke victims tended to demonstrate the same patterns of errors regardless of the language when given tasks to complete after experiencing strokes, which means that both

hearing and Deaf persons who have had a stroke performed the same on a language test and proved that the same location in the brain was affected by the stroke (Bellugi, 1985). This indicates that the brain processes American Sign Language as any other language, in this case English (Bellugi, 1985).

Acknowledging American Sign Language as a language in its own right would provide children who use ASL with a deeper understanding of American Sign Language itself, and the Culture in which it is used. Educators' acceptance of the Deaf's language would empower all students, both Deaf and Hearing, and would result in a deeper understanding and respect for cultures unlike their own (Wilcox, 1988).

The existence of a written form of a language is not the only criterion for classifying a language as legitimate. American Sign Language does not have a written form, yet it has its own linguistic structure, distinct from English, and its own grammatical rules, also distinct from English. American Sign Language, additionally, provides insight into the Culture of its users. Deaf people need to be asked their opinion in regards to the widespread use of American Sign Language in mainstream society, and how the use of ASL would affect the education of the Deaf and Hard-of-Hearing children in America (Armstrong, 1988).

There is an abundance of material that explores different disorders that cause language delays, impairments, and/or handicaps of differently-abled children. Education provides a variety of solutions and guides to identify and develop language in children

with a language disorder (Bandurski, 2004; Bornstein, 1990; Paterson, 1995; Reed, 1994). If Deaf and Hard-of-Hearing children do not have access to their native language, they miss the critical period of language development, which may stunt brain development in terms of language. Once the damage has affected the language development, learning a first or second language becomes nearly, or in some cases completely, impossible (Sacks, 1989).

ASL allows a Deaf or Hard-of-Hearing child to communicate in a fully developed language, and it also allows the child to develop mentally in a normal manner in which language delays or impairments do not occur (Lane, 1988, 1993; Sacks, 1989). American Sign Language, therefore, does not seem to hinder the development of Deaf and Hard-of-Hearing children in terms of language acquisition and literacy learning, but it does seem to facilitate brain function development as compared to hearing students. American Sign Language allows children to develop language naturally in the brain, which may then lead to literacy because the brain processes American Sign Language as it would other spoken languages. In order for the brain to utilize language, Deaf persons must be able to employ their language. If American Sign Language is not used, or an ASL user's brain is damaged in some manner, the brain processes the lack of information or damage in the same manner in which a person without a hearing loss would.

### *Home Environment for the Deaf*

"The process of language acquisition is affected greatly by the interaction between age and intake," (Strong, 1990, p. 36) thus suggesting that the earlier a Deaf child learns to sign, the better the child's grasp of language will be (Chomsky, 1965; Strong, 1990). There is a need for families and schools to work together to provide a cohesive education for Deaf children by indicating a need for home and school to work as a team in education and not as separate institutions.

Young Deaf and Hard-of-Hearing children need to be exposed to and develop a love for books prior to the children's entrance into school. Adults reading in front of children offer a strong support for children to develop their own love for literacy (Finnegan, 1987). Language needs to be used to meet the needs and educational expectations for the child (Hafer & Richmond-Hearty, 1991; Limbrick, et al., 1992). The literacy process involves not only the child's interaction with the text(s), but also includes the significant involvement of the parent(s) (Akamatsu & Andrews, 1993). Deaf readers miss an extraordinary number of opportunities due to limited literacy. Narrative genre can benefit the Deaf child when parents or caretakers encourage reactions to bedtime reading (Roger, 1989). Researchers who focus on introducing reading in a home environment seem to be in agreement: parents must be actively involved with their Deaf child's reading (Andrews et al., 1994; Limbrick et al., 1992; Miller, 1992) in order for the child to develop a love for reading.

Deaf Parents of Deaf children also tend to use print in a unique manner. Maxwell's (1985) findings suggest that ($D^1$) tend to incorporate literacy experiences found exclusively in the Deaf Community. Maxwell's report states that ($D^1$) tended to exchange writing daily in the home, public, and on the job with communications devices found only in the Deaf Community (i.e., telephones for the Deaf that use a key board in order to communicate). Written communication was found in all forms from personal notes to professional letters. It was also noted that closed caption was utilized while watching the television. Deaf children were then socialized into these written behaviors. Maxwell noted that while the written communication was prevalent with ($D^1$), these same written literacy experiences were not seen in ($D^2$).

The home environment of Deaf families may also play a role in the literacy acquisition of Deaf children. The above research suggests that Deaf parents of Deaf children, like hearing parents with hearing children, play a role in modeling literacy to their children in the form of language and other social behaviors.

*Facilitating School Literacy: Reading for the Deaf*

Because most Deaf or Hard-of-Hearing children are not formally or informally exposed to English before they enter school (Schimmel, 1999), teaching reading and writing to the Deaf becomes an enormous task. The goal of literacy education for Deaf or Hard-of-Hearing children is not to replace ASL. Unlike other Bilingual-Bicultural children who are hearing, Deaf or Hard-of-Hearing children will never hear, and,

therefore, might never employ spoken English, as do other hearing Bilingual-Bicultural children (Livingston, 1997). Consequently, educators and teachers for the Deaf and Hard-of-Hearing must (due to the nature of Deafness, i.e., little to no hearing) build on existing strategies and develop new approaches to teaching and thus facilitate reading and writing of English to American Sign Language speakers.

If students have the language on which to build reading skills, reading can be approached, as it would be with any student who is ready to learn. The complexity with Deaf children (as opposed to hearing children) is that most Deaf children either do not have a language or are delayed in a language, and the language deficit affects reading to some degree (Livingston, 1997).

There are things that parents of Deaf and Hard-of-Hearing children should know about their child's language acquisition. Parents should be aware of the fact that standardized testing is not based on Deaf and Hard-of-Hearing children's first language, and as such, the test cannot be relied on wholly. This means the tests, that are not normed on Deaf and Hard-of-Hearing children, should not solely be used to determine the child's placement. Therefore, parents need to know what assessments are being used on their child. In addition, parents should know that each child is an individual and needs to be evaluated as such (LaSasso, 1987). Readability formulas, which are often used to lead or guide the choices for reading materials, are frequently limited. Due to the limitation of the readability formulas, teachers for the Deaf and Hard-of-Hearing ought to rely on multiple

or alternative methods in selecting reading materials for their children (Israelites, 1988). Reading and writing develop simultaneously, and both reading and writing offer the reader a purpose for developing these skills. The reader must be in an environment that is risk-free for the learner (Ewoldt, 1988). Deepening a Deaf child's appreciation for reading requires early development of the motivation to read (Gilzer, 1988).

In a home literacy study, Andrews and Zmijewski (1997) recommended that parents work with schools to facilitate literacy. The study examined homes with Deaf children with parents that were both Deaf and hearing. Homes that linked environmental print, valued daily storybook readings, labeling, and writing seemed to help Deaf children in their literacy growth. The study recommended that parents sign and read whole storybooks to their Deaf child.

The research shows that parents must be proactive in terms of knowing that tests in isolation do not tell about the individual uniqueness. Therefore, the Deaf or Hard-of-Hearing child should be tested in reading based on their individuality, and caretakers need to instill a love of reading by presenting reading in a positive light. Linking home and school activities was also seen as a valuable tool.

### *Writing for the Deaf*

As stated earlier, the language of the Deaf is American Sign Language (ASL), which does not have a written form. Far too often, Deaf and Hard-of-Hearing children are not taught to distinguish between the written form of English and the sign form of

American Sign Language (Akamatsu, 1988). Children need to understand that the order in which American Sign Language is signed is not appropriate for writing in English. If it is understood by the children that there *is* a difference between the languages of American Sign Language and written English, the task of teaching and educating the Deaf to write fluently in English can begin.

Literacy, however, starts at home, and that learning originates with the parent and the child. Reading and writing must be taught and evaluated in tandem. Written language must be used and relied on more than conversational interaction (i.e., utilizing printed materials and not depending on signed/ASL interactions) in order to evaluate the child's literacy achievements (Akamatsu & Andrews, 1993; Andrews & Gonzales, 1992). Albertini (1996) in a study comparing ($D^1$) and ($D^2$) reported that ($D^1$) appeared to engage in social writing such as using a TDD (telephone for the Deaf), and personal writing more then ($D^2$). Young Deaf and Hard-of-Hearing readers do, in fact, attend to and recognize print, especially in their immediate environment (Ewoldt & Saulnier, 1994) such as knowing the use of a TDD.

One study (Kluwin & Kelly, 1991) analyzed dialogue journals of Deaf and Hard-of-Hearing children who corresponded with hearing peers. The findings indicated that Deaf and Hard-of-Hearing children's writing showed enhancement and improvement with written English skills; it also showed that both sets of students developed a relationship and rapport with each other. Encouraging a relationship between Deaf and

hearing children not only provides an opportunity for writing and improving writing, it also encourages understanding and growth between the two C/cultures. There are several advantages to such peer journaling. Students are given the opportunity to choose their own topic. In choosing their own topic, the students have a purpose for writing, creating a risk-free environment. Writing is liberating due to the risk-free situation. Students have a chance to write in an unlimited platform instead of being confined to fill-in-the-blank worksheets (Mettler & Conway, 1988).

Another study (Reynolds, 1994) examined the effectiveness of dialogue journal writing between the teacher and a DHH student, two Deaf students' journaling together with an adult other than the teacher, and between a Deaf and hearing student journaling. The journal between the teacher and the student gave the exclusive and exceptional chance for the teacher to personally interact with the student in a written form. It allowed for direct communication with the student, and again, gave the student an opportunity to choose the topic, which in turn, allowed for a free flow of thought and writing opportunities. Journaling with other students, hearing or Deaf, and other adults allowed the Deaf or Hard-of-Hearing students to interact with different writing styles and also exposed the student to different topics.

For a student to achieve both reading and writing, small steps must be taken to ease the acquisition of independent learning and thinking, because reading and writing are so closely interrelated. One of these steps is to acknowledge that English has a separate

syntax and semantic form from ASL. Akamatsu (1988) took a writing sample of summaries of different stories. After the students were taught that reading and writing are both performed in English, and that English is not American Sign Language, the students' writing samples "appeared to be better writing samples" (p. 298) than before the students learned the discrepancies between the two languages.

A study by Maxwell (1985) compared Deaf children with both Deaf and Hearing parents in terms of writing. The study compared the writing of the parents and found that hearing parents used virtually no writing with their Deaf child, unlike the Deaf parents who used writing in and for a variety of functions. It appeared that Deaf parents not only used writing in their daily writing habits but also used writing in their Cultural interplays. For example, Deaf parents utilized writing or text for watching television (caption shows and movies), communicating on the phone (TDD or TTY), as well as to communicate in the family (i.e., notes to other family members). Deaf children of hearing parents in this study were not socialized into writing for personal, C/cultural, or familial uses.

Language plays a major role in educating Deaf and Hard-of-Hearing writers to become fluent English writers. Educators should demonstrate that while American Sign Language is a language, it does not have a written form. American Sign Language users must understand that writing English is a wholly different and separate skill than "speaking" ASL. With the knowledge that American Sign Language cannot and should

not be written, young Deaf writers might be able to move forward and learn to write in correct English.

There is a need for parents, educators, and teachers to give Deaf and Hard-of-Hearing students exposure to the written form of English. It seems to be a repeated pattern that reading and writing comprise a package -- an interwoven activity -- for becoming literate, which cannot be separated. If the child is exposed to reading materials, print and writing might become a part of the child's environment, and as such, a part of the child. Deaf and Hard-of-Hearing children should be given the opportunity to write because the writing process offers a unique and valuable opportunity for the Deaf child to see that pen and paper can afford them the opportunity to see written English as a tool for both reading and writing.

### *Early Literacy*

The range of contributions to early literacy is seemingly endless. For the purpose of this dissertation, research in terms of early literacy will focus on the interactions or events of parents with their child(ren) and material or artifacts that influence reading and writing. It has long been believed that literacy is a process that starts before a child enters into a formal school setting (Mandel, 2001; Morrow, 1990). Connecting home literacy experiences and reading achievement appears to be a starting point for later success (Heath, 1980; Morrow, 2001; Sulzy, 1985).

Modeling reading (Morrow, 1990) demonstrates to children multiple examples of reading; allowing children to see their parents read for pleasure, as well as for a purpose, helps children to see that parents rely on reading. By reading for enjoyment, parents pattern a behavior that can lead children to read for pleasure also, as well as begin a lifelong love affair with books. Reading with a purpose can also validate the need to expand further the reading skill.

Writing with and for their children (Teale & Sulzby, 1986, 1987) also permits parents to aid in the early literacy process. Writing is a skill parents can build upon in order to facilitate later achievement in school. Modeling writing allows children to see their parents utilizing and valuing skills needed in an academic setting.

A strong verbal interaction between parent and child during storybook time seems to add to the overall achievement of success in school literacy (Baker, Mackler, Sonnenschein, & Serpell, 2001; Watson et al., 1994). Reading together reinforces the above ideology that parents value reading. Reading with their child in a storybook setting additionally encourages the development of reading. The parent and child have an opportunity to expand the child's vocabulary, interact with print, and reinforce values that are important in schools.

Another major component of a strong communication interaction between children and parents is the building of schema, which allows the children to rely on their prior knowledge when reading and writing (Yaden, 2000). By building schema, the child

has an opportunity to go from the known to the unknown (Schniederman, 1985), meaning that the child can take what they know in terms of their own lives and apply the idea to areas they do not know. The interaction between the parent and the child in discussing different events, ideas, and/or concepts will later aid the child in school literacy by expanding the schema of the child.

Discussing not only newly introduced books, but also familiar books between an adult and child helps to scaffold the child's understanding of the book (Morrow, 2001). Referring to the previous philosophy, building schema is invaluable. Discussing material and/or artifacts that are both old and new appears to be helpful in early literacy. Talking about new books and their contents allows parents to introduce new ideas. Discussing books that have already been read is also important in succeeding in literacy. Allowing children to expand or build on their knowledge can lead them to a deeper understanding of the text.

Some parents with lower levels of literacy themselves, however, tend to put more value on the artifacts of literacy than on their own involvement with their child. These parents rely more heavily on reading materials than on talking to their children. Parents who rely more on the book or text to expose the child to language tend not to elaborate in a discussion with the child. Additionally, parents from higher literacy levels and lower literacy levels have opposing views on what is involved in early literacy. Parents with a lower literacy level do not view such things as talking, drawing, writing, reading, and/or

exposing child to different events as part of the literacy process. Parents with higher literacy levels tend to not only think that the above examples might lead to higher literacy levels but also do them repeatedly with their child (Fitzgerald, Spiegeil, & Cunningham, 1991).

In terms of predicting success in early literacy, there appears to be a strong link between not only parent involvement, but also in the materials that parents provide the children (Griffin, 1997). Books, in a large selection of genre, are appropriate for youngsters (Watson et al., 1994). There is a large array of reading interests for all children; therefore, there should be a larger array of books on various subjects from which children can choose. By allowing children to pick not only the books that they are interested in, but also by introducing new types of literature to children, parents encourage growth in reading, as long as the stories are well developed and age appropriate (Morrow, 1989).

Repeated interaction with the same books, rereading the same book again and again, increases the likelihood that the child(ren) will pick that book again (Teale & Sulzby, 1987). While parents, at times, may loath the idea of reading "that book again," children seem to embrace the concept of rereading. Revisiting, and thus, reinforcing the same text helps the child to see print as stationary. It also allows the child to begin to predict readings. Repeated readings permit children to see the same word printed constantly, thus allowing the child to start to recognize the print.

In reference to materials and artifacts for reading, books are most commonly thought of as tools. Yet the list of materials and artifacts are not limited to books at all. Additional materials or artifacts that aid in early literacy are wordless picture books (Jalongo et al., 2002), a print rich environment (Neuman, 2004), drawing at home (Genishi & Dyson 1984), recipes, grocery lists, address books, white and yellow pages (Watson et al., 1994) and symbolic print, such as maps (Whitehurst & Lonigan, 2001). Regular exposure to materials and artifacts, like going to the library or having ample books in the child's room (Watson et al., 1994), allows for growth in early literacy. The actual reading artifacts are not the only aid in building literacy. Creating an environment in which the child(ren) can act out stories supports the enrichment of early literacy (Ferguson, 1999).

Early literacy, then, is a multilevel process introducing young children to reading and writing. Parents and artifacts/materials are priceless to the child, both acting independently of each other and in unison to increase (1) communication between parent and child in terms of reading, (2) modeling behavior that is conducive to literacy, and (3) interaction between the parents and children with the literacy artifacts and/or material. Another major factor in the promotion of early literacy, therefore, is literacy objects.

### *Bilingual-Bicultural*

Bilingual-Bicultural ideology supporters demonstrate a strong link with the children's first language and competency of that language with the children's learning a

second language with proficiency (Krashen, 1992; Cummins, 1994, 1996). If Spanish, French, German, Japanese, and/or other language speakers can become proficient, not only in their native language, but also in English, then it might be possible to transfer the philosophies, research, and pedagogies of Bilingual-Bicultural language learning to the Deaf and Hard-of-Hearing research as well.

The concept of using students' first language ($L^1$) to facilitate the learning of a second language ($L^2$) is seminal research in the arena of Bilingual Education (Krashen 1992). Krashen's theory of using a students' native language to build on a students' learning of a second language is still an important theory today (Gopaul-McNicol, 1998).

Another equally important, as well as, seminal research concept in Bilingual Education was introduced by Cummins (1994, 1996). Cummins introduced the theory of Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). BICS is the communications skill used in everyday language for everyday needs. CALP is a higher understanding of language. In terms of language, BICS is needed to learn CALP. For Bilingual Education, students need to learn not only BICS in their native language but also in a second language in order to better achieve CALP in the second language (Gopaul-McNicol, 1998).

It may be said that for spoken language to achieve balance in two tongues, BICS should be utilized first in order to reach CALP in reading comprehension. However, BICS seems to be utilized concurrently with CALP (Fillmore, 1982). In terms of literacy,

coupling BICS and CALP seems to be necessary for a students' comprehension in the classroom when reading and writing in a second language.

Additive and Subtractive Bilingualism play another role in the research of Bilingual Education. In Additive Bilingualism, a person is proficient in their primary language and uses their knowledge of their first language to acquire a second language. Because of a strong foundation in the first language, the second language of the person is not negatively impacted. In Subtractive Bilingualism, a person, on the other hand, is not an expert in their first language. By learning a second language at the same time as the first language, both languages are compromised (Cummins, 1984; Gopaul-McNicol, 1998).

Balanced and Non-Balanced Bilingualism is another concept that affects Bilingual Education. The notion of balanced Bilingualism refers to a person who is fluent, in all aspects of their vernacular, in two languages. A person who is considered a non-balanced Bilingual is stronger in their dominant language than in their second language. Non-balanced Bilingual persons are more dominant in the United States (Gopaul-McNicol, 1998; Hamayan & Damico, 1991).

While the topic of Bilingual-Bicultural education might seem to be in the forefront in terms of a relatively new and/or unsuccessful ideology of educating bilingual students, the utilization of students' first language to teach a second language was fundamental in the formation of this country (Heath, 1983). Historically, a subculture

gathered in one region of the United States and sent their children to a local public school where the children were taught in their native language, and then transferred their knowledge of that language to English. Since that time, however, the methodology of teaching in one's native tongue to facilitate English seems to have been abandoned in the public school system. However, as will be seen below, utilizing one's native language to facilitate an understanding of English might indeed lead to an awareness and utilization of both languages.

Research on second language learners is still needed, and more specifically, research on young children is needed as opposed to research on adults. Children's first language should not be invalidated in order to teach a second language. One's first language can be employed to increase and boost the second language (Bernhardt, 2000).

Language, culture, and literacy are not exclusive of each other; all three must be taught, respected, and facilitated in the school as well as the home. By building a community for and of language and learning, growth, in terms of literacy, is enhanced (Cortazzi, 2000; Harris-Martine, 2001). Ultimately, Bilingual Education is a three-way interaction of "cognitive or non-verbal, symbolic and socio-cultural levels (p. 236)" that bolster literacy. Again, there is a call for more research regarding literacy from different disciplines (Gonzalez, 1994).

If children have a strong literacy level in their first language, and then go on to receive language instruction in a second language, these children will make a successful

transition into literacy comprehension of the second language as well (Krashen, 1992; Cummins, 1996). Encouraging not only the children's first language, but also their second language simultaneously, can build both languages in a setting comprised of children who speak in both tongues. Cooperative learning and teaching is not only optimal in terms of socio-cultural facilitation of language, but also cost effective for the school system (Thomas, 1999).

Literacy levels of bilingual children were more successful if the children were given ample time in order to transition their native language to the school language. If the children were given liberal amounts of time to digest each language, they were found to, "acquire deep academic proficiency in two languages, which becomes a valuable resource in adult professional life" (Thomas, 1998, p. 6). In order to use a second language effectively, a child should be allotted a minimum of four years to learn the second language, and possibly eight years, depending on the age that the student began learning the second language. The older the child is, the faster and more effective the learning of the second language occurs, but those children are less likely to lose their accent. Young children struggle more with a second language because they are still learning the first language. Adding a different language at a young age only serves to confuse the child, but younger children are more likely not to have an accent in either language (Collier, 1987a).

The reason why a person or family is learning in a second language may also determine the proficiency of the second language (Ogbu, 1992). If the culture of the

family and/or student sees favor or benefits in a second language, there appears to be a greater aptitude in the second language. If, on the other hand, the culture of the family or student is being ignored and not honored, it appears the likelihood of proficiency is more limited.

A transfer of prior knowledge by the learner facilitates second language development by empowering children in their native language while assisting children's understanding of a second language, thereby encouraging development in both languages (Garcia, 2000). "... Literacy training is a complicated process that involves [not only] reading and writing [but also] ...communication skills such as listening, speaking, and viewing (Garcia, 2000, p. 182)." The interaction of multi-levels of learning in order to facilitate language understanding is important (Segarra, 2000). Growth in terms of literacy is enhanced when there is a community to support language and learning (Cortazzi, 2000; Harris-Martine, 2001).

Social input, such as language, appears to have an impact on literacy. Coupling the social factor of language with cognitive abilities appears to allow interplay within the learner. This interplay of social language and learning can bridge the students' learning in terms of literacy (Fillmore, 1991).

When schools value the language and learning that occur in the home, the transition from Spanish to English in the school will not only be enhanced, but will be better developed (Barillas, 2000). If the schools encourage literacy in parents, literacy in

children of those parents is more successful in school. By aiding the parents in terms of reading and writing, the teachers learn the culture of the parents better and vice versa. Parents and teachers are then given a better understanding of the other's discourse system, which in turn, facilitates a united team for the child (Osterling, 1999).

Statistical averages of bilingual speakers based on socio-economics, prior education, arrival in the United States, print environment and family factors show that children in Bilingual Education did not, in fact, add to the dropout rate. Rather, Bilingual Education encouraged second language speakers to continue their education: "There is no evidence that bilingual education results in higher dropout rates...Bilingual education is part of the cure, not the disease" (Krashen, 1998, p. 6).

Teachers are not being properly prepared to teach bilingual children in terms of language and culture; universities and states must work in conjunction to improve the level of language competency in teachers as well as to facilitate the cultural understandings of the teachers regarding their students (Collier, 1987b). Both prospective and current teachers need to know more about the language of the group they are teaching. Understanding the language of the student and how that language interplays with and in the educational setting enhances teachers' ability to facilitate literacy (Fillmore & Snow, 2000).

The area of Bilingual Education is a multifaceted arena of numerous ideas geared towards a cornucopia of communities, languages, and themes. A recurring theme in the

literature review is the call for more research in the arena of Bilingual-Bicultural children. Another theme is that if children are fluent in one language, then they may go on to become fluent in other languages. Children must also be given ample time in which to develop their primary language before continuing on to a second language. The unification of language, culture, and community plays a unique role in terms of the education of a bilingual child, which leads to the role of parents as a major influence in both language and literacy.

While schools are turning away from Bilingual Education, statistics indicate that Bilingual Education *helps* rather than hinders the educational goals of bilingual children. If teachers were better trained in the philosophies, ideologies, and pedagogies of Bilingual Education, it would benefit the children.

## Conclusion

By examining the eight categories above, (1) Deaf Culture, (2) Deaf Values Understandings and Experiences, (3) Language of the Deaf (ASL), (4) Home Environments of the Deaf, (5) Facilitating School Literacy: Reading for the Deaf, (6) Writing for the Deaf, (7) Early Literacy, and (8) Bilingual-Bicultural (Bi-Bi) research, we can see a rich body of research for all of the above mentioned groupings. By looking at Deaf children with Deaf parents ($D^1$) vs. hearing parents with Deaf children ($D^2$), researchers might begin to marry and bring Deaf Education and Bilingual-Bicultural Education to the forefront of literacy learning for all Deaf and Hard-of-Hearing children

based on language and C/culture. There is a strong overlapping of educational ideas in the area of Deaf Education and Bilingual-Bicultural Education that needs to be infused and bonded more strongly in order to facilitate a deeper understanding of literacy for the Deaf and Hard-of-Hearing. Moreover, while the above literature review is critical in linking the two educational fields of Deaf and Bilingualism together, there is still a gap in the research.

If Deaf children of Deaf adults ($D^1$) were viewed the same as other Bilingual-Bicultural families in the United States whose first language is not English, researchers might be able to apply the theories and philosophies from the discipline of Bilingual Education to Deaf Education. A review of the literature seems to indicate that there are a multitude of similarities in the two fields such as language differences and cultural diversity.

Research indicates that Deaf children of Deaf parents ($D^1$) seem to achieve higher in school literacy than do Deaf children of hearing parents ($D^2$) (Sacks, 1989). Thus far, much of the research linking Deaf children with Deaf parents ($D^1$) to school literacy achievement seems to show that the language shared by the child and the parents elevates the child in terms of language acquisitions, and thus leads to literacy achievement (Lane, 1988, 1993; Sacks, 1989). Moreover, while language is linked to culture, and in some cases education, language alone does not lead to literacy.

As noted in the literature review, research suggests that reading to a Deaf child also is a strong leap pad for the child. Providing environmental print additionally is a tool in leading a child to literacy. Journaling provided Deaf children with an avenue for enhancing written English.

Although much information has been written on the language, Culture, and tools needed in educating Deaf students (i.e., journaling, reading to young children), there is still a lack of research that has looked at what is occurring in the home, besides language, that is fueling higher achievement in school literacy for Deaf children with Deaf parents ($D^1$). In the review of the literature, there is agreement that early literacy events start in the home and that parents play a huge role in the first steps in succeeding in school. While language, C/culture, and education are all critical and valuable to literacy learning, parents, both Deaf and hearing, are still providing their Deaf children with other components of school literacy learning that are not being noted. School literacy has its roots in all of the above-mentioned categories (i.e., language, home, etc.), but what else is happening in the home of Deaf children with Deaf parents ($D^1$) that is facilitating school literacy that is not happening in homes of Deaf children with hearing parents ($D^2$)? What Cultural uniqueness is adding to the literacy learning processes that ($D^1$) is capitalizing on in order to achieve a higher level of literacy proficiency in school?

By doing a survey that asks both hearing and Deaf parents of Deaf children ($D^1$) how they interact with print in their home, more research can be gathered together to fill

in the gap and add to the union of Deaf and Bilingual Education. By examining the differences and similarities between what hearing and Deaf parents report they do with their Deaf child, research might begin to expand.

# CHAPTER III

# METHODOLOGY

The purpose of the present study was to compare the ways in which Deaf and hearing parents engage in literacy events with their Deaf children. The rational for this study is to add not only to the body of knowledge in Deaf Education in terms of literacy, but also to add to the understanding of reading education as a whole. The present chapter describes the research and statistical methods used in this study. Rationale and criteria used to evaluate and determine appropriate methodology are also discussed.

## Research Design

The present study used a quantitative descriptive research design to collect data about parents who are Deaf and those who are hearing regarding their literacy practices with their Deaf children (Campbell, 1963; Cook, 1979; Crewell, 1994). While there are many research designs that could be used in the present study, a survey was chosen because parents of all children have limited free time, and a relatively short Internet survey allowed for more participation by parents with Deaf children. The following research questions guided the survey development and study design:

1. How do Deaf parents of Deaf children ($D^1$) support written English literacy learning in the home?

2. How do hearing parents of Deaf ($D^2$) children support written English learning in the home?
3. What are the differences and similarities between Deaf and hearing parents' support of written English literacy learning in the home?

A survey (Babbie, 1990; Dillion, 2000; Schonlau, 2002) was used to ask Deaf and hearing parents with Deaf children to report how they use written print in the home.

A pilot study was conducted to determine which questions best served the goal of the study by identifying any underlying themes in the literacy use items, as well as identifying the "best" subset of 25 or 30 questions to be included in the final survey. Based on the results of the pilot study, a final survey was conducted, and the data was used to answer the proposed research questions.

*Participants*

Participants for both the pilot and final survey were either Deaf or hearing parents who had at least one Deaf child. The study used non-interactive sampling (Burgess, 1982); therefore, the research collected was not a statistically randomized sampling source. To reach as many parents with Deaf children as possible, a cover letter introducing the project (Appendix A) was emailed to Deaf individuals and Deaf organizations. The survey itself was housed on a web site (Appendix B). The aim was to collect ample data to enable sampling to saturation, which would add to the validity of the data (Erlandson, Harris, Skipper, & Allen, 1993; Lincoln & Guba, 1985).

The cover/introductory letter (Appendix A) was emailed to several Deaf and hard-of-hearing persons as well as hearing people. In the letter, the recipients were directed to the online survey. When the participant entered the online survey, the online survey instructions and information letter was posted (Appendix B). Participants were then asked to complete the survey (Appendix C) if they meet the criteria of having at least one Deaf child or were Deaf themselves. The receiver of the email, regardless of their hearing status, was also asked to forward the email on to any other persons who might fit the participation standards of the survey, thus producing a snowball effect (Patton, 1990). The cover/introductory letter was also e-mailed to major Deaf associations, social groups, newsletters, educational facilities (Dillman, 2000).

*Survey Development*

While a survey was chosen as the research tool in this study, the researcher could find no appropriate survey that has been utilized in previous studies. Therefore, the researcher created a new survey for the purposes of the present research study. Procedures for survey creation and validation were completed in order to ensure a reliable and valid instrument to be used in the final study, including expert commentary for item creation, exploratory factor analysis, and reliability testing of pilot data. The creation of a final survey was based on pilot survey results, confirmatory factor analysis, and reliability testing of the final data.

Based on suggestions from research in survey development, the cover/introductory letter (Appendix A) was designed to be understood by the lay person and not be to be too academic in terms of linguistics or wording (Babbie, 1998), and it was also designed in an easy-to-read form, which was spacious in layout and pleasing in color (Dillman, 2000).

The survey consisted of two parts, literacy assessment questions (Babbie, 1990) and demographic questions. The literacy assessment items used a Likert scale with a range of either "Never, Seldom, Often or Always" or "None, Few, Some or Many" depending on the question asked (Appendix C). The literacy assessment items on the survey were designed to be straightforward and direct (Babbie, 1990). A Likert scale was chosen over a checklist type survey because participants may check off items that do not apply to them in an effort to satisfy the researcher (Dillman, 2000). Color was also used to help the participants distinguish among the four choices in every item (Dillman, 2000). The Likert scale was produced in shades of black, gray, and white and appeared in a long rectangle divided into four equal parts. Each choice was a different shade of gray to distinguish the choices available to the participants. The written words remained black and the background of the page was standard white.

*Demographic Survey*

The demographic questions on the survey appeared at the beginning and end of the survey, even though Babbie (1990) recommends that demographics be placed at the

end of a survey. Dividing up the demographic questions ensured that the two most important participant requirements were met before the survey was completed: the participants' hearing status, and whether or not they have a Deaf child. Additional demographic questions were asked at the end of the survey to help control for the lack of random sampling, including gender, age, race, number of Deaf and hearing children, as well as the children's ages. Participants were also asked the type of school their Deaf child(ren) attends, the highest level of education they personally have completed, their income level, work status, and which quadrant of the United States they live in, as well as if they live in a rural, suburban, or urban area. These demographic variables were analyzed to test for differences and possible relationships among them in relation to the literacy assessment.

*Literacy Assessment*

To create an assessment tool for literacy artifacts in the survey, the researcher called upon several individuals to inquire about what reading and writing materials they had in their home. The individuals questioned, both Deaf and hearing, were all literate families and included students, engineers, stay-at-home parents, teachers, para-professionals, and professionals. The individuals listed a wide range of recourses for reading and/or written text used in their homes.

The list of literacy artifacts were collected and grouped into categories. The categories were then reviewed to ensure duplications were not created. A large array of

categories were determined, ranging from family originated materials (i.e., notes created by family members), written material generated by outside family and friends (i.e., letters from grandma), public publications (i.e., magazines, newspapers), Deaf-related written materials (i.e., TDD conversations, close caption), and family mail (i.e., bill).

After the list of literacy artifacts was sorted, the researcher created survey items from the comments given by the above participants. A total of 76 items were created with some questions asking the same thing, but worded differently to add to the validity of the survey items. These 77 items were given to an initial group of participants, and a factor analysis was conducted to determine which questions would appear on the final survey.

## Procedure

The procedure for the pilot and final survey was the same with the only difference being the number of literacy assessment questions in each survey. The pilot survey contained 77 literacy items, and the final survey contained 25 items.

Participants clicked on the web site link that appeared at the bottom of the e-mail letter. The cover/introductory letter appeared twice: once in an email sent to individuals in the Deaf Community and parent organizations for parents of Deaf children, and the second at the beginning of the survey (Dillman, 2000). The participants were asked at the bottom of the page if they wanted to continue the survey and were asked to answer all the survey questions on the web site.

Upon reaching the second page, the participants saw the consent portion of the survey (Appendix B). If the participant agreed to continue with the survey after reviewing the informed consent, the participant clicked on the "next" sign to continue. By clicking the "next" sign, the individual agreed and consented to participate in the survey.

The participant then indicated whether they were the parent of a Deaf child. If the participant did not have a Deaf child or was not a Deaf individual, the person was allowed to complete the survey; data from hearing parents with hearing children were included in the final analysis due to the low sample size of this group.

At the end of the survey, the participants were given the opportunity to sign up for the incentive described below. To be eligible to win a certificate, a participant entered their email address. The survey was considered complete whether a participant chose to enter their address or not. The last page of the survey announced the end of the survey and thanked the participant for completing the survey.

## Incentive

To ensure the timeliness of the data collection, the researcher offered participants a chance to win a gift certificate of $50.00 from American Express for every one hundred participants. The receivers of the gift certificates were chosen at random. The final question on the survey asked if the participant wanted an opportunity to be chosen for the gift certificate. The participant then entered an e-mail address, which was used to notify the participant if they won the random drawing. Winners were notified by e-mail only.

Participants' e-mail addresses were used only for the drawing of the gift certificate and were removed from the data file and stored separately once the data were collected.

## Confidentiality

One ethical consideration of all human research is confidentiality, particularly for the Deaf Community, which is similar to a small town. As a result, it was imperative that data and personal information remain in the strictest of confidential control. If any survey was returned with a personal attachment, such as their name and address, the information was removed and stored separately from the data. A major concern in the collection of the survey information was to keep all Internet addresses, personal addresses, phone numbers (if applicable), as well as individuals' names and/or screen names confidential to ensure the privacy and protection of those individuals. Upon completion of the survey, all identifying information was removed and stored on a separate disk in a locked filing cabinet. Participants were identified only by a unique code number.

The Internet has become a major component in the world today. Hackers and poachers are commonplace in the cyber world. In order to post the survey on the Internet, a professional webmaster was used. The webmaster set up the first line of defense against intruders. Due to the nature of the survey, which was Internet and computer-based, a professional hacker was employed to build and maintain a firewall that would protect the information gathered regarding the participants of the survey.

## Analysis Plan

*Pilot Study*

The initial survey contained 77 literacy items, as well as the demographics discussed above and was collected from 167 participants. An exploratory factor analysis was conducted to determine if the survey items statistically measured what they were conceptually intended to measure, as well as to identify the best fitting questions included in the final survey. The factor analysis also determined if any underlying themes emerge in the survey items.

It was hypothesized that the items "I talk with my child (ren) after reading a book" (17), we "...connect events that happen in books to our lives..." (19), "I talk with my child(ren) before reading a book" (20), "I talk to my children while reading a book" (22), "...likes to write" (35), "...likes to draw" (36), "...likes to color" (37), "...I stop in the middle, and talk about what is happening in the story" (47), "...my child(ren) will point to a sign, and ask me what it says" (48), "I point out print in the environment..." (49), "My children ask me to read to them" (57), "...asks me what a word means when we are reading" (58), "...asks me what a phrase means when we are reading" (59), we "...talk about books before we read them..." (70), and "...talk about books after we read them" (75) would load together to create a factor called "Communicating with Child(ren)" because these questions ask if the parent and child are discussing a literary event in some manner.

Another theme that was hypothesized to emerge from the factor analysis was the factor "Reading to Children," made up of the items "I read books to my children" (7), "I read lists..."(9), "I read letters..." (11), "I read bills..." (13), "I read magazines..." (16), "I read the same book..." (18), "My child(ren) likes to read the same book..." (21), "I read instructions..." (24), "I read the Bible..." (26), "I read advertisements..." (31), "...I point to letters" (43), "...I point to words" (44), "...I point to phrases" (45), "...recognizes signs in the environment..." (42), "I read the rules when..." (60), "...my children reading without me" (62), "I read web pages..." (74), and "I read to my child(ren) before bed" (76). Many of the questions are related directly and some indirectly with reading to the child.

"Presenting Print" was anticipated to materialize as a factor containing the items "I show books to..." (8), "I show lists..." (10), "I show letters..." (12), "I show bills..." (14), "I show magazines..." (15), "I like to look through and/or read catalogs..." (32), and "I show web pages..." (73).

In addition, "Modeling" was another factor that was hypothesized to appear and was expected to be made up of the items "I leave notes..." (1), "I write notes to..." (2), "I write emails on the computer..." (3), "I hand write letters to..." (4), "I print conversations from the TDD..." (5), "I print conversations from the relay..." (6), "I use the phone book..." (23), "I have books in..." (25), "I borrow books from the library" (27), I help my children with homework..." (28), "I have captions on the television" (29), "I only rent

movies that are captioned" (30), "I have magazines in my home" (33), "I have catalogs in my home" (34), "...writings on the walls" (38), "...drawings on the refrigerator" (39), "...colorings on the refrigerator" (40), "I read for my own enjoyment..." (41), "We have children's books in our home" (46), I only buy or rent video games..." (50), "We have newspapers..." (52), "We have newsletters..." (53), "My child(ren) and I go to the library" (53), "I make lists for grocery..." (55), "I like to read in front..." (56), "I use a list when shopping..." (61), "...go to the bookstore" (63), "...uses the computer" (64), "...list for things I need to do..." (65), "I use the TDD in front..." (66), "...check out books..." (67), "I use the relay service..." (68), "My child(ren) likes to read..." (69), "I surf the internet..." (71), "...on the computer together," (72) and "I write thank-you notes." (77).

*Final Survey*

The final survey contained 25 items selected on the results of the factor analysis of the pilot study. An additional 170 participants completed the final survey. A confirmatory factor analysis was also conducted on the final survey data to test that the same factors from the pilot study emerge in the final survey.

Several dependent variables were calculated for each participant from the literacy assessment items. First, an overall literacy score was calculated by averaging each participant's answer to the final literacy items. For each theme or factor identified in the factor analysis of the pilot study, an average score was calculated by adding the

participant's answers of the items that load in that factor. These dependent variables were used in the analyses mentioned below to test for differences and relationships among the various levels of the independent/demographic variables.

Statistical tests were conducted using SPSS. Exploratory and confirmatory factor analyses were conducted to establish and validate the types of literacy relevant activities. Multivariate Analyses of Variance (MANOVAs) were conducted to test for differences between parent and child hearing status on the literacy relevant activity subscales, as well as interactions between parent and child hearing status with the categorical demographic variables, such as gender, income level, race, setting, education, work status, and geographical area on the literacy relevant activity subscales. Pearson's Product Moment Correlations were conducted to test for relationships between the various literacy relevant activity subscales and the continuous demographic variables, such as age, number of hearing children, and number of deaf children.

# CHAPTER IV

# RESULTS

Parents play a role in the facilitation of language and learning with their children in terms of literacy (Morrow, 2001; Snow, 1999; Vygotsky, 1978; Chomsky, 1965; Heath, 1980). While no one aspect can be identified as the root, source, or cause of literacy, one important component of literacy is the language aspect promoting a baseline for reading and writing. The purpose of this study was to exam the literacy processes of parents for their Deaf children. This online study surveyed both Deaf and hearing parents of Deaf and hearing children in order to explore why Deaf children of Deaf parents ($D^1$) tend to have higher literacy scores than Deaf children with hearing parents ($D^2$).

## Pilot Study

The purpose of the pilot study was to create a survey, as well as to test the validity and reliability of the survey. The initial survey was comprised of 77 literacy use questions. One hundred sixty-seven participants completed the pilot survey. From the factor analysis, eight themes emerged and the results are discussed below.

### *Demographics*

Almost all of the parents (89.2%) were Caucasian, female (82.0%), and had completed at least some college (93.6%). While no participant reported making over $90,000, the other income categories were represented relatively equally. More than half

of the participants reported working part time (54.5%). The south central region of the United States was most represented (35.9%). More than half of participants lived in a suburban area (55.1%) (Table 1).

Table 1

*Frequencies and Percentages of Demographic Variables (Pilot Study, N = 167)*

| | Frequency | % |
|---|---|---|
| Ethnicity | | |
| African American | 1 | .6 |
| American Indian | 1 | .6 |
| Asian | 4 | 2.4 |
| Caucasian | 149 | 89.2 |
| European | 2 | 1.2 |
| Hispanic/Latino | 9 | 5.4 |
| Other | 1 | .6 |
| Education Level | | |
| Some High School | 4 | 2.4 |
| High School Graduate/GED | 10 | 6.0 |
| Some College | 79 | 47.3 |
| BA or BS | 32 | 19.2 |
| Some Graduate School | 10 | 6.0 |
| MA, MS, or MBA | 29 | 17.4 |
| Ph.D. | 3 | 1.8 |
| Income | | |
| Less than $20,000 | 31 | 18.6 |
| $20,000 - $29,999 | 23 | 13.8 |
| $30,000 - $39,999 | 29 | 17.4 |
| $40,000 - $49,999 | 20 | 12.0 |
| $50,000 - $74,999 | 41 | 24.6 |
| $75,000 – $89,999 | 23 | 13.8 |
| $90,000 and Above | 0 | 0.0 |

Table 1, continued

*Frequencies and Percentages of Demographic Variables (Pilot Study, N = 167)*

| | Frequency | % |
|---|---|---|
| Gender | | |
| Female | 137 | 82.0 |
| Male | 30 | 18.0 |
| Work Status | | |
| Part Time | 91 | 54.4 |
| Full Time | 39 | 23.4 |
| As a Stay-at-Home Parent | 37 | 22.2 |
| Geographical Area | | |
| West Coast | 32 | 19.2 |
| East Coast | 44 | 26.3 |
| North Central | 31 | 18.6 |
| South Central | 60 | 35.9 |
| Setting | | |
| Urban | 44 | 26.3 |
| Suburban | 92 | 55.1 |
| Rural | 31 | 18.6 |

As shown in Table 2, the average age of participants was 41 years ($M = 41.41$, $SD = 9.65$). While most parents reported having one Deaf child ($M = 1.08$, $SD = .84$), the number of Deaf children ranged from one to five. Similarly, parents reported having one hearing child ($M = 1.39$, $SD = 1.23$), however, the number of hearing children ranged from one to seven. Table 2 also shows the frequency of participants who had the various

numbers of Deaf and hearing children, as well the mean age and range of those Deaf and hearing children.

Table 2

*Descriptive Statistics of Demographic Variables (Pilot Study, N = 167)*

| | N | Mean | SD | Range |
|---|---|---|---|---|
| Age of Parent | 167 | 41.41 | 9.65 | 4 - 76 |
| Deaf Children | 167 | 1.08 | 0.84 | 1 - 5 |
| Age of 1st Deaf Child | 134 | 13.78 | 9.06 | 0 - 57 |
| Age of 2nd Deaf Child | 31 | 11.81 | 11.27 | 0 - 55 |
| Age of 3rd Deaf Child | 12 | 12.67 | 14.99 | 0 - 54 |
| Age of 4th Deaf Child | 2 | 25.50 | 36.06 | 0 - 51 |
| Age of 5th Deaf Child | 1 | 46.00 | 0.00 | 46 - 46 |
| Hearing Children | 167 | 1.39 | 1.23 | 1 - 7 |
| Age of 1st Hearing Child | 126 | 15.59 | 9.53 | 0 - 48 |
| Age of 2nd Hearing Child | 63 | 13.57 | 9.43 | 0 - 43 |
| Age of 3rd Hearing Child | 24 | 12.75 | 8.13 | 0 - 26 |
| Age of 4th Hearing Child | 9 | 14.22 | 7.97 | 3 - 22 |
| Age of 5th Hearing Child | 3 | 16.67 | 4.93 | 11 - 20 |
| Age of 6th Hearing Child | 1 | 14.00 | 0.00 | 14 - 14 |
| Age of 7th Hearing Child | 1 | 11.00 | 0.00 | 11 - 11 |

Table 3 shows the frequencies for the type of school participants placed their children for hearing parents with Deaf children, Deaf parents with Deaf children, and Deaf parents with hearing children. There was only one deaf parent with hearing children in the pilot study. Both hearing parents with Deaf children and Deaf parents with Deaf

children reported using main stream schools, more so with an interpreter than without, as well as state schools for the Deaf, either staying the dorms or staying home.

Table 3

*Frequencies of School Types for Deaf and Hearing Children of Deaf and Hearing Parents (Pilot Study, N = 167)*

| | Hearing Parents w/ Deaf Children | Deaf Parents w/ Deaf Children | Deaf Parents w/ Hearing Children |
|---|---|---|---|
| Average # of Deaf Children | 1.54 (.86) | 1.22 (.64) | 1.00 |
| Range | 1 - 3 | 1 - 5 | 1 - 3 |
| Main Stream: No Interpreter | 9 | 7 | 0 |
| Main Stream: Interpreter | 20 | 29 | 0 |
| Charter School Using ASL | 6 | 4 | 0 |
| Oral Program | 1 | 3 | 0 |
| Special Day Class | 1 | 9 | 0 |
| Resource Room | 0 | 4 | 0 |
| Home School | 0 | 5 | 0 |
| Deaf State School (Dorms) | 14 | 15 | 0 |
| Deaf State School (Home) | 14 | 22 | 0 |
| Graduated | 8 | 19 | 0 |
| Dropped Out | 1 | 1 | 0 |
| Other | 13 | 27 | 0 |

*Factor Analysis*

A factor analysis was conducted to see if the questions loaded in the same manner as hypothesized. It was predicted that questions might load together based on: communicating with a child, reading to a child, presenting print, and modeling. The factor analyses were also conducted to determine the "best fitting" items to use in the final survey. Based on the findings of the pilot study factor analysis, eight themes emerged.

An unrotated factor analysis revealed 17 initial factors in 14 iterations. Survey questions 4, 8, 16, 26, 28, 41, 42, 46, 47, 49, 50, 51, 56, 60, 63, and 64 were removed from further analyses because their Eigenvalues were relatively low (less than .50) in comparison to other items, as well as having loaded on multiple factors (Appendix E). These 17 factors accounted for 74.68% of the variance. A rotated factor analysis was then conducted on the remaining questions and revealed a 14 factor solution in 15 iterations, accounting for 73.78% of the variance (Appendix F). Survey questions with eigenvalues below .500 were removed, including items 15, 25, 26, 32, 48, 62, 69, and 70. A second rotated factor analysis was then conducted on the remaining questions and revealed another 14 factor solution in 11 iterations, accounting for 77.02% of the variance (Appendix G). Survey questions with eigenvalues below .700 were removed, including items 3, 7, 9, 11, 17, 23, 31, 33, 38, 57, 58, 59, 65, 66, 68, 75, 76, and 77. A third rotated factor analysis was then conducted on the remaining questions and revealed a 10 factor solution in 11 iterations, accounting for 75.26% of the variance (Appendix H). Survey

questions with eigenvalues below .600 were removed, including items 1, 2, 55, and 61. A fourth rotated factor analysis was then conducted on the remaining questions and revealed 9 factors in 7 iterations, accounting for 76.69% of the variance (Appendix I). Six survey questions with eigenvalues below .625 were removed, including items 10, 12, 19, 34, 35, and 45. A final rotated factor analysis on the remaining 25 questions revealed 8 factors in 6 interactions, accounting for 79.03% of the variance (Table 4).

When creating the survey, it was predicted that 77 items would load into four categories (See Chapter 3 for a review of the specific item loading predictions), including (1) communicating with a child, (2) reading to a child, (2) presenting print, and (4) modeling. After a factor analysis was conducted, however, eight factors loaded together and as such, eight different themes emerged. Table 5 below outlines which questions loaded together to form the eight themes.

Six questions loaded together to form a theme; I read the same book to my child(ren) more than once, (2) I talk with my child(ren) before reading a book, (3) My child(ren) like to read the same book again and again, (4) I talk to my child(ren) while reading a book, (5) When reading with my child(ren), I point to letters, and (6) When reading with my child(ren), I point to words. These questions were all related to how parents supported the development of book knowledge. As such, theme one was labeled, "Book Knowledge Development."

Four questions on the survey asked participants about supporting electronic text knowledge with their Deaf child. The questions were: (1) I surf the internet in front of my child(ren), (2) My child(ren) and I are on the computer together, (3) I show web pages to my child(ren), and (4) I read web pages to my child(ren). Thus, this factor was called "Electronic Text Knowledge."

Another four questions asked parents about how they supported non-print symbolic development." The questions were: (1) My child(ren) likes to draw, (2) My child(ren) likes to color, (3) I hang up my child(ren)'s drawings on the refrigerator, and (4) I hang up my child(ren)'s colorings on the refrigerator. Thus, this factor was called "Non-Print Symbolic Development."

Another factor was made up of three questions all related to obtaining print outside of the home (1) I borrow books from the library, (2) My child(ren) and I like to go to the library, and (3) My child(ren) and I check out books from the library. Thus, the fourth theme was titled, "Print Outside of the Home."

Two questions loaded together and were related to the function of text. (1) I show bills to my child(ren), and (2) I read bills to my child(ren). The fifth theme was named "Functional Use of Print."

Two more questions loaded together and were related to the display of informational print, (1) We have newspapers in our home, and (2) We have newsletters in our home. The sixth factor was labeled, "Informational use of print."

Table 4

*Final Eight Factor Loadings of Pilot Data (N = 167)*

| | Factor | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Q5PrintTDD | .014 | .067 | -.061 | .106 | .054 | .055 | **.908** | .114 |
| Q6PrintRelay | -.019 | .129 | .063 | .050 | .048 | .082 | **.886** | .177 |
| Q13ReadBills | .143 | .163 | .009 | .040 | **.886** | .141 | .095 | .068 |
| Q14ShowBills | .083 | .126 | .025 | .110 | **.929** | .025 | .019 | .002 |
| Q18readsame | **.843** | .102 | .165 | .073 | .049 | .000 | -.023 | -.049 |
| Q20talkbefore | **.642** | .231 | .240 | .216 | .159 | -.015 | -.050 | .032 |
| Q21likessame | **.790** | .028 | .180 | .107 | .043 | -.069 | .118 | -.098 |
| Q22talkwhile | **.718** | .055 | .193 | .207 | .159 | -.088 | -.052 | -.048 |
| Q27borrowbooks | .091 | .041 | .061 | **.867** | .071 | .109 | .108 | .027 |
| Q29cationTV | -.072 | .060 | .023 | .047 | .062 | -.131 | .104 | **.816** |
| Q30onlyrent | .081 | .046 | -.019 | .105 | -.002 | .079 | .169 | **.838** |
| Q36kiddraw | .360 | .107 | **.737** | -.023 | -.158 | .012 | .084 | -.081 |
| Q37kidcolor | .419 | .051 | **.736** | .031 | -.157 | -.007 | .090 | -.079 |
| Q39hangdraw | .141 | .172 | **.817** | .202 | .173 | .194 | -.063 | .072 |
| Q40hangcolors | .156 | .139 | **.815** | .220 | .177 | .170 | -.091 | .090 |
| Q43pointletters | **.615** | .253 | .064 | .036 | -.050 | .336 | -.044 | .153 |
| Q44pointwords | **.678** | .314 | .163 | -.016 | .014 | .233 | .027 | .179 |
| Q52newspaper | -.004 | .017 | .114 | .120 | .106 | **.850** | .025 | -.051 |
| Q53newsletters | .068 | .180 | .121 | .096 | .052 | **.863** | .125 | -.020 |
| Q54library | .169 | .276 | .157 | **.860** | .071 | .086 | .048 | .052 |
| Q67checkout | .205 | .219 | .136 | **.879** | .038 | .067 | .030 | .126 |
| Q71internet | .203 | **.799** | .051 | .102 | .049 | .011 | .122 | .016 |
| Q72kidscomputers | .158 | **.860** | .089 | .091 | .117 | .065 | .063 | .040 |
| Q73webpage | .131 | **.911** | .115 | .181 | .069 | .030 | .079 | .049 |
| Q74readweb | .126 | **.851** | .162 | .156 | .131 | .183 | -.021 | .046 |

Note: Bold cell in each row show the highest Eigenvalue for that item.

Table 5

*Principal Factor Loading of the 25 Included Items by Subscale (Pilot Study, N = 167)*

| Subscale/Item # | Item Name | Eigenvalue |
|---|---|---|
| Printed Communication Specific to Deaf Community | | |
| Item 5 | Print TDD | .908 |
| Item 6 | Print Relay | .886 |
| Functional Use of Print | | |
| Item 13 | Read Bills | .886 |
| Item 14 | Show Bills | .929 |
| Book Knowledge Development | | |
| Item 18 | Read Same | .843 |
| Item 20 | Talk Before | .642 |
| Item 21 | Likes Same | .790 |
| Item 22 | Talk While | .718 |
| Item 43 | Point Letters | .615 |
| Item 44 | Point Words | .678 |
| Print Outside of the Home | | |
| Item 27 | Borrow Books | .867 |
| Item 54 | Library | .860 |
| Item 67 | Checkout | .879 |
| Informational/Entertainment Print Specifically for the Deaf | | |
| Item 29 | Caption TV | .816 |
| Item 30 | Only Rent | .838 |

Table 5, continued

*Principal Factor Loading of the 25 Included Items by Subscale (Pilot Study, N = 167)*

| Subscale/Item # | Item Name | Eigenvalue |
|---|---|---|
| Non-Print Symbolic Development | | |
| Item 36 | Kid Draw | .737 |
| Item 37 | Kid Color | .736 |
| Item 39 | Hang Draw | .817 |
| Item 40 | Hang Colors | .815 |
| Informational Use of Print | | |
| Item 52 | Newspaper | .850 |
| Item 53 | Newsletters | .863 |
| Electronic Text Knowledge | | |
| Item 71 | Internet | .799 |
| Item 72 | Kids Computers | .860 |
| Item 73 | Web Page | .911 |
| Item 74 | Read Web | .851 |

Two additional questions that were related to the Deaf Community exclusively in that other communities do not have the need for this particular type of print, (1) I print conversations from the TDD in front of my child(ren), and (2) I print conversations from the Relay in front of my child(ren). The questions related to the exposure to print used

and generated in telephone interact loaded together to form the factor "Printed Communication Specific to Deaf Community."

The eighth and final factor also loaded with two questions. Again, the questions were exclusive to the Deaf Community. The two questions were about the use of print of the understanding of television, (1) I have caption on the television and (2) I *only* rent movies that are captioned. This factor was called "Informational/Entertainment Print Specifically for the Deaf."

Inter-item analyses were conducted to test the consistency between the items within the seven subscales (Table 6). For the six items in the Book Knowledge Development subscale, Cronbach's $\alpha = .861$, for the four items of the Electronic Text Knowledge subscale, Cronbach's $\alpha = .920$, for the four items of the Non-Print Symbolic Development subscale, Cronbach's $\alpha = .865$, for the three items of the Print Outside of the Home subscale, Cronbach's $\alpha = .916$, for the two items of the Functional Use of Print subscale, Cronbach's $\alpha = .896$, for the two items of the Informational Use of Print subscale, Cronbach's $\alpha = .812$, for the two items of the Printed Communication Specific to Deaf Community, Cronbach's $\alpha = .849$, and for the two items of the Information/Entertainment Print Specific to Deaf Community, Cronbach's $\alpha = .621$. These excellent inter-item reliability coefficients show that the items within each subscale are highly consistent with one another. Confirmatory factor analysis of the final survey

data on these eight subscales and their item loadings was conducted to test for reliability across samples.

Table 6

*Inter-item Reliability Scores for the Items in Each Subscale (Pilot Study, N = 167)*

| Subscale | Cronbach's α |
|---|---|
| Book Knowledge Development | .861 |
| Electronic Text Knowledge | .920 |
| Non-Print Symbolic Development | .865 |
| Print Outside of the Home | .916 |
| Functional Use of Print | .896 |
| Informational Use of Print | .812 |
| Printed Communication Specific to Deaf Community | .849 |
| Information/Entertainment Print Specific to Deaf Community | .621 |

## Final Survey

The 25 items identified by the factor analysis from the pilot study were used in a follow-up survey on respondents who had not participated in the original study. One hundred and seventy participants completed the final survey. Data from the final survey was used to confirm the factor loadings of the eight subscales, as well as to identify which aspects of literacy use were used by Deaf and hearing parents with Deaf children, as well

as potential differences on these literacy use subscales between Deaf parents with Deaf Children ($D^1$), Deaf children with hearing parents ($D^2$), and Deaf parents with hearing children ($D^3$).

*Demographics*

Similar to the pilot study, almost all of the parents (85.2%) were Caucasian, female (84.7%), and had completed at least some college (88.8%). As shown in Table 7, while most participants reported an income between $50,000 and $74,999, the other income categories were represented relatively equally. Almost half of the participants reported working full time (44.9%). The east coast region of the United States was most represented in the final survey sample (32.4%); however, the three other geographical areas were also represented. More than half of the participants lived in a suburban area (63.1%).

As shown in Table 8, the average age of participants was 41 years ($M = 40.87$, $SD = 9.60$). While most parents reported having one Deaf child ($M = 1.10$, $SD = .85$), the number of Deaf children ranged from one to six. Similarly, parents reported having one hearing child ($M = 1.48$, $SD = 1.41$), however, the number of hearing children ranged from one to eight. Table 8 also shows the frequency of participants who had the various numbers of Deaf and hearing children, as well the mean age and range of those deaf and hearing children.

Table 7

*Frequencies and Percentages of Demographic Variables (Final Study, N = 170)*

| | Frequency | % |
|---|---|---|
| Ethnicity | | |
| African American | 1 | .6 |
| American Indian | 3 | 1.7 |
| Asian | 2 | 1.1 |
| Caucasian | 150 | 85.2 |
| European | 7 | 4.0 |
| Hispanic/Latino | 7 | 4.0 |
| Other | 2 | 1.1 |
| Education Level | | |
| Some High School | 2 | 1.1 |
| High School Graduate/GED | 16 | 9.1 |
| Some College | 68 | 38.6 |
| BA or BS | 34 | 19.3 |
| Some Graduate School | 20 | 11.4 |
| MA, MS, or MBA | 32 | 18.2 |
| Ph.D. | 4 | 2.3 |
| Income | | |
| Less than $20,000 | 28 | 15.9 |
| $20,000 - $29,999 | 24 | 13.6 |
| $30,000 - $39,999 | 27 | 15.3 |
| $40,000 - $49,999 | 19 | 10.8 |
| $50,000 - $74,999 | 39 | 22.2 |
| $75,000 – $89,999 | 20 | 11.4 |
| $90,000 and Above | 19 | 10.8 |

Note: Variables where levels of frequencies not adding to 170 and percentages not adding to 100% reflect missing data.

Table 7, continued

*Frequencies and Percentages of Demographic Variables (N = 167)*

| | Frequency | % |
|---|---|---|
| Gender | | |
| Female | 149 | 84.7 |
| Male | 27 | 15.3 |
| Work Status | | |
| Part Time | 39 | 22.2 |
| Full Time | 79 | 44.9 |
| As a Stay-at-Home Parent | 58 | 33.0 |
| Geographical Area | | |
| West Coast | 49 | 27.8 |
| East Coast | 57 | 32.4 |
| North Central | 43 | 24.4 |
| South Central | 27 | 15.3 |
| Setting | | |
| Urban | 42 | 23.9 |
| Suburban | 111 | 63.1 |
| Rural | 23 | 13.1 |

Note: Variables where levels of frequencies not adding to 170 and percentages not adding to 100% reflect missing data.

Table 9 shows the frequencies for the type of school participants placed their children for hearing parents with Deaf children, Deaf parents with Deaf children, and Deaf parents with hearing children. Similar to the pilot study, both hearing parents with

Deaf children and Deaf parents with Deaf children reported using main stream schools, more so with an interpreter than without, as well as state schools for the Deaf, staying home. There were only five hearing parents with hearing children in the final study, thus this group was not included in further analyses.

Table 8

*Descriptive Statistics of Demographic Variables (Final Study, N = 170)*

| | N | Mean | SD | Range |
|---|---|---|---|---|
| Age of Parent | 176 | 40.87 | 9.60 | 20 - 78 |
| Deaf Children | 176 | 1.10 | 0.85 | 0 - 6 |
| Age of 1st Deaf Child | 143 | 11.53 | 8.33 | 1 - 42 |
| Age of 2nd Deaf Child | 35 | 10.83 | 8.32 | 0 - 33 |
| Age of 3rd Deaf Child | 11 | 11.61 | 9.24 | .75 - 31 |
| Age of 4th Deaf Child | 2 | 6.50 | 0.71 | 6 - 7 |
| Age of 5th Deaf Child | 1 | 4.00 | | 4 - 4 |
| Age of 6th Deaf Child | 1 | 1.00 | | 1 - 1 |
| Hearing Children | 176 | 1.48 | 1.41 | 0 - 8 |
| Age of 1st Hearing Child | 128 | 15.54 | 12.11 | 0 - 100 |
| Age of 2nd Hearing Child | 76 | 15.41 | 14.00 | 0 - 100 |
| Age of 3rd Hearing Child | 34 | 13.79 | 18.14 | 0 - 100 |
| Age of 4th Hearing Child | 10 | 22.20 | 28.63 | 6 - 100 |
| Age of 5th Hearing Child | 5 | 11.20 | 8.87 | 4 - 26 |
| Age of 6th Hearing Child | 5 | 7.60 | 9.96 | 0 - 24 |
| Age of 7th Hearing Child | 2 | 14.00 | 8.49 | 8 - 20 |
| Age of 8th Hearing Child | 1 | 4.00 | | 4 - 4 |

Table 9

*Frequencies of School Types for Deaf and Hearing Children of Deaf and Hearing Parents (Final Study, N = 170)*

| | Hearing Parents w/ Deaf Children | Deaf Parents w/ Deaf Children | Deaf Parents w/ Hearing Children |
|---|---|---|---|
| Average Number of Deaf Children | 1.19 (.42) | 1.65 (1.11) | .11 (.57) |
| Range | 1 - 3 | 0 - 6 | 0 - 3 |
| Main Stream: No Interpreter | 23 | 7 | 0 |
| Main Stream: Interpreter | 40 | 11 | 3 |
| Charter School Using ASL | 8 | 13 | 0 |
| Oral Program | 8 | 3 | 0 |
| Special Day Class | 7 | 10 | 0 |
| Resource Room | 3 | 5 | 0 |
| Home School | 4 | 7 | 0 |
| State School for Deaf (Stay in Dorms) | 5 | 10 | 0 |
| State School for Deaf (Stay at Home) | 10 | 21 | 0 |
| Graduated | 17 | 7 | 0 |
| Dropped Out | 0 | 1 | 0 |
| Other | 33 | 5 | 0 |

*Confirmatory Factor Analysis*

A varimax rotated factor analysis was conducted to confirm the factor loadings of the 25 items for the eight subscales (Book Knowledge Development, Electronic Text Knowledge, Non-Print Symbolic Development, Print Outside of the Home, Functional Use of Print, Informational Use of Print, Printed Communication Specific to Deaf Community, Information/Entertainment Print Specific to Deaf Community) found in the pilot study. The confirmatory factor analysis identified six factors accounting for 76.84% of the variance. Table 10 shows the factor loadings of each of the 25 included items sorted into the original subscales identified in the pilot study. The bold values identify which factor the item loaded on for the present sample.

As shown in Table 10, the items loading on the factors, Book Knowledge Development, Electronic Text Knowledge, Non-Print Symbolic Development, Information/Entertainment Print Specific to Deaf Community were completely confirmed. Items originally loading separately on Print Outside of the Home and Informational Use of Print loaded on one factor, thus, the combined factor was called "Informational Use of Print". Items originally loading on the Printed Communication Specific to Deaf Community factor still loaded together, however the items, Functional Use of Print also loaded with these items, thus this combined factor was "Deaf Print Communication and Functional Print".

Table 10

*Confirmatory Rotated Factor Loadings of Final Data (N = 170)*

| Subscale/ Item | Item Name | Factor 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| **Printed Communication Specific to Deaf Community** | | | | | | | |
| Item 5 | Print TDD | .005 | .114 | -.078 | -.108 | **.795** | .181 |
| Item 6 | Print Relay | .029 | -.033 | .204 | -.120 | **.743** | .042 |
| **Functional Use of Print** | | | | | | | |
| Item 13 | Read Bills | .025 | -.140 | .305 | .224 | **.651** | .163 |
| Item 14 | Show Bills | -.082 | .099 | .170 | .178 | **.712** | .153 |
| **Book Knowledge Development** | | | | | | | |
| Item 18 | Read Same | .281 | .135 | .079 | **.608** | .003 | -.462 |
| Item 20 | Talk Before | .499 | .306 | -.108 | **.526** | .059 | -.095 |
| Item 21 | Likes Same | .446 | .110 | -.048 | **.464** | .051 | -.437 |
| Item 22 | Talk While | .279 | .286 | -.082 | **.627** | .045 | -.294 |
| Item 43 | Point Letters | .135 | .125 | .152 | **.691** | .000 | .020 |
| Item 44 | Point Words | .108 | .047 | .226 | **.671** | .012 | .081 |
| **Print Outside of the Home** | | | | | | | |
| Item 27 | Borrow Books | .025 | **.803** | .133 | .288 | -.206 | .151 |
| Item 54 | Library | .154 | **.852** | .000 | .258 | -.077 | .036 |
| Item 67 | Check Out | .112 | **.847** | .137 | .305 | -.049 | .072 |
| **Informational/Entertainment Print Specifically for the Deaf** | | | | | | | |
| Item 29 | Caption TV | .009 | .012 | -.028 | -.027 | .245 | **.846** |
| Item 30 | Only Rent | .006 | .002 | -.075 | -.075 | .287 | **.816** |
| **Non-Print Symbolic Development** | | | | | | | |
| Item 36 | Kid Draw | **.790** | .062 | .152 | .136 | -.007 | .041 |
| Item 37 | Kid Color | **.851** | .082 | .120 | .062 | .052 | .019 |
| Item 39 | Hang Draw | **.799** | .125 | .095 | .154 | -.080 | -.044 |
| Item 40 | Hang Colors | **.795** | .115 | .092 | .203 | -.011 | -.085 |
| **Informational Use of Print** | | | | | | | |
| Item 52 | Newspaper | .076 | **.651** | -.028 | -.150 | .258 | -.102 |
| Item 53 | Newsletters | .222 | **.587** | .029 | -.012 | .192 | -.273 |
| **Electronic Text Knowledge** | | | | | | | |
| Item 71 | Internet | .090 | -.076 | **.789** | .032 | .036 | -.073 |
| Item 72 | Kids Computers | .168 | -.017 | **.800** | .147 | .063 | -.085 |
| Item 73 | Web Page | .108 | .134 | **.772** | .128 | .149 | -.043 |
| Item 74 | Read Web | .016 | .218 | **.703** | .020 | .285 | .122 |

Note: Varimax Rotation with Kaiser Normalization

Inter-item analyses were also conducted to test the consistency between the items within the six final subscales (Table 11). For the six items in the Book Knowledge Development subscale, Cronbach's $\alpha = .807$, for the four items in the Electronic Text Knowledge subscale, Cronbach's $\alpha = .808$, for the four items in the Non-Print Symbolic Development subscale, Cronbach's $\alpha = .867$, for the two items in the Information/Entertainment Print Specific to Deaf Community subscale, Cronbach's $\alpha = .878$, for the five items in the Informational Use of Print subscale, Cronbach's $\alpha = .839$, and for the four items in the Deaf Print Communication and Functional Print subscale, Cronbach's $\alpha = .776$. These high inter-item reliability coefficients show that the items within each subscale are consistent with one another. Table 12 shows the principal factor loading for each item sorted by the final six subscales.

Table 11

*Inter-item Reliability Scores for the Items in Each Subscale (Final Study, N = 170)*

| Subscale | Cronbach's α |
|---|---|
| Book Knowledge Development | .807 |
| Electronic Text Knowledge | .808 |
| Non-Print Symbolic Development | .867 |
| Informational Print | .839 |
| Deaf Communication Print and Functional Print | .776 |
| Information/Entertainment Print Specific to Deaf Community | .878 |

Table 12

*Principal Factor Loading of the 25 Included Items by Subscale (Final Study, N = 170)*

| Subscale/Item # | Item Name | Eigenvalue |
|---|---|---|
| Book Knowledge Development | | |
| Item 18 | Read Same | .608 |
| Item 20 | Talk Before | .526 |
| Item 21 | Likes Same | .464 |
| Item 22 | Talk While | .627 |
| Item 43 | Point Letters | .691 |
| Item 44 | Point Words | .671 |
| Non-Print Symbolic Development | | |
| Item 36 | Kid Draw | .790 |
| Item 37 | Kid Color | .851 |
| Item 39 | Hang Draw | .799 |
| Item 40 | Hang Colors | .795 |
| Electronic Text Knowledge | | |
| Item 71 | Internet | .789 |
| Item 72 | Kids Computers | .800 |
| Item 73 | Web Page | .772 |
| Item 74 | Read Web | .703 |
| Deaf Print Communication and Functional Print | | |
| Item 5 | Print TDD | .795 |
| Item 6 | Print Relay | .743 |
| Item 13 | Read Bills | .651 |
| Item 14 | Show Bills | .712 |
| Print Outside of the Home | | |
| Item 27 | Borrow Books | .803 |
| Item 52 | Newspaper | .651 |
| Item 53 | Newsletters | .587 |
| Item 54 | Library | .852 |
| Item 67 | Checkout | .847 |
| Informational/Entertainment Print Specifically for the Deaf | | |
| Item 29 | Caption TV | .846 |
| Item 30 | Only Rent | .816 |

*Literacy Use Subscales*

Based on the results of the factor analysis and the inter-item consistency ratings found for each subscale, the use ratings of the items in each subscale were averaged to create six subscale scores for each participant. These subscale scores were then used as dependent variables in further analyses. An overall literacy use score was created by averaging participants' scores for each item.

As shown in Table 13, on the four-point scale, for all participants, all six subscales had relatively moderate use ratings. Overall literacy use was 1.99 ($SD$ = .41), corresponding to "seldom" on the likert scale. Information/Entertainment Print Specific to Deaf Community had the highest scores ($M$ = 2.41, $SD$ = .93), followed by Book Knowledge Development ($M$ = 2.28, $SD$ = .62), Non-Print Symbolic Development ($M$ = 2.25, $SD$ = .69), Informational Print ($M$ = 2.01, $SD$ = .75), Electronic Text Knowledge ($M$ = 1.97, $SD$ = .77), and the lowest ratings were given to Deaf Print Communication and Functional Print ($M$ = 1.06, $SD$ = .70).

Pearson's Product Moment Correlations were also conducted to test for relationships between the subscales. As shown in Table 14, small to moderate significant correlations (Cohen & Cohen, 1975) were found between most of the six subscales, indicating that while the subscales were related, they were measuring different aspects of literacy relevant activities.

Table 13

*Descriptive Statistics of Literacy Use Subscales (N = 170)*

| | Mean | SD | Range |
|---|---|---|---|
| Book Knowledge Development | 2.28 | 0.62 | 0 – 3.17 |
| Electronic Text Knowledge | 1.97 | 0.77 | 0 – 3.50 |
| Non-Print Symbolic Development | 2.25 | 0.69 | 0 – 3.00 |
| Informational Print | 2.01 | 0.75 | 0 – 3.00 |
| Deaf Print Communication and Functional Print | 1.06 | 0.70 | 0 – 3.50 |
| Information/Entertainment Print Specific to Deaf Community | 2.41 | 0.93 | 0 – 3.00 |
| Overall Literacy Use | 1.99 | 0.41 | .28 – 2.88 |

Informational Print had a significant, positive relationship with Non-Print Symbolic Development, $r(176) = .292$, $p < .01$, Electronic Text Knowledge, $r(176) = .160$, $p < .05$, and Book Knowledge Development, $r(176) = .432$, $p < .01$. Non-Print Symbolic Development also had a significant positive relationship with Electronic Text Knowledge, $r(176) = .243$, $p < .01$, and Book Knowledge Development, $r(176) = .528$, $p < .01$. Electronic Text Knowledge was also significantly positively correlated with Book Knowledge Development, $r(176) = .241$, $p < .01$, as well as with Deaf Print

Communication and Functional Print, $r(176) = .299$, $p < .01$. As expected, Deaf Print Communication and Functional Print was significantly positively related to Information/Entertainment Print Specific to Deaf Community, $r(176) = .339$, $p < .01$. These positive correlations indicate that participants who use one particular type of literacy activity are likely to use these other types. The only significant negative correlation found between the subscales was with Information/Entertainment Print Specific to Deaf Community and Book Knowledge Development, $r(176) = -.214$, $p < .01$, such that an increase use in book knowledge literacy activities was related to a decrease in entertainment print specific to the deaf, and vice versa.

Table 14

*Pearson Product Moment Correlations between the Six Subscales (N = 176)*

| Subscale | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 1. Book Knowledge Development | .241** | .528** | .432** | .013 | -.214** |
| 2. Electronic Text Knowledge | | .243** | .160* | .299** | .009 |
| 3. Non-Print Symbolic Development | | | .292** | .039 | -.081 |
| 4. Informational Print | | | | .062 | -.023 |
| 5. Deaf Print Communication and Functional Print | | | | | .339** |
| 6. Information/Entertainment Print Specific to Deaf Community | | | | | |

Note. * $p < .05$; ** $p < .01$

One goal of the present study was to identify if there was a difference in the amount and type of activities used to support literacy between Deaf parents and hearing parents when interacting with their Deaf child. A Multivariate Analysis of Variance on the six subscales between deaf parents with hearing children, Deaf parents with Deaf children, and hearing parents with Deaf children (hearing parents with hearing children were not included in analyses due to the low number of respondents who fell into that category) revealed a significant multivariate test, $F(12, 326) = 8.36$, $p < .001$, indicating that at least some of the groups differed from each other on at least one of the subscales. Examination of the univariate tests revealed that significant differences occurred for each of the six subscales, all $F$s, $p < .05$ (Table 15).

As shown in Table 15, Tukey's Post Hoc tests revealed that hearing parents with Deaf children ($M = 2.33$, $SD = .59$) had significantly greater use scores for Non Print Symbolic Development than Deaf parents with hearing children ($M = 1.91$, $SD = .98$), and that Deaf parents with Deaf children did not significantly differ from either group ($M = 2.27$, $SD = .66$). Similar patterns were seen for Electronic Text Knowledge. Hearing parents with Deaf children ($M = 2.06$, $SD = .80$) had significantly greater use scores for Electronic Text Knowledge than Deaf parents with hearing children ($M = 1.58$, $SD = .75$), and that Deaf parents with Deaf children did not significantly differ from either group ($M = 1.97$, $SD = .66$).

Table 15

*Average Literacy Use Subscale Scores for Deaf Parents with Hearing Children, Deaf Parents with Deaf Children, and Hearing Parents with Deaf Children*

| Subscale | N | Mean | SD | *F* | *p* |
|---|---|---|---|---|---|
| Non-Print Symbolic Development | | | | 4.12 | .018 |
| Hearing Parent/Deaf Child | 100 | 2.33[a] | 0.59 | | |
| Deaf Parent/Deaf Child | 43 | 2.27[ab] | 0.66 | | |
| Deaf Parent/Hearing Child | 28 | 1.91[a] | 0.98 | | |
| Informational Print | | | | 8.90 | .000 |
| Hearing Parent/Deaf Child | 100 | 2.21[a] | 0.65 | | |
| Deaf Parent/Deaf Child | 43 | 1.75[b] | 0.85 | | |
| Deaf Parent/Hearing Child | 28 | 1.74[b] | 0.75 | | |
| Electronic Text Knowledge | | | | 4.36 | .014 |
| Hearing Parent/Deaf Child | 100 | 2.06[a] | 0.80 | | |
| Deaf Parent/Deaf Child | 43 | 1.97[ab] | 0.66 | | |
| Deaf Parent/Hearing Child | 28 | 1.58[b] | 0.75 | | |
| Book Knowledge Development | | | | 23.30 | .000 |
| Hearing Parent/Deaf Child | 100 | 2.43[a] | 0.45 | | |
| Deaf Parent/Deaf Child | 43 | 2.32[a] | 0.64 | | |
| Deaf Parent/Hearing Child | 28 | 1.63[b] | 0.73 | | |
| Deaf Print Communication and Functional Print | | | | 3.40 | .036 |
| Hearing Parent/Deaf Child | 100 | 0.96[a] | 0.62 | | |
| Deaf Parent/Deaf Child | 43 | 1.28[b] | 0.84 | | |
| Deaf Parent/Hearing Child | 28 | 1.11[ab] | 0.68 | | |
| Information/Entertainment Print Specific to Deaf Community | | | | 16.72 | .000 |
| Hearing Parent/Deaf Child | 100 | 2.12[a] | 1.08 | | |
| Deaf Parent/Deaf Child | 43 | 2.94[b] | 0.20 | | |
| Deaf Parent/Hearing Child | 28 | 2.77[b] | 0.42 | | |

Note: Subscale means with different superscripts differed significantly from Tukey's Post Hoc test, $p < .05$.

Tukey's Post Hoc tests also revealed that hearing parents with Deaf children ($M$ = 2.21, $SD$ = .65) had significantly greater use scores for Informational Print than Deaf parents with Deaf children ($M$ = 1.75, $SD$ = .85) and Deaf parents with hearing children ($M$ = 1.74, $SD$ = .75). Opposite trends, however, were seen for Information/Entertainment Print Specific to the Deaf Community. Hearing parents with Deaf children ($M$ = 2.12, $SD$ = 1.08) had significantly less use scores for Information/Entertainment Print Specific to the Deaf Community than Deaf parents with Deaf children ($M$ = 2.94, $SD$ = .20) and Deaf parents with hearing children ($M$ = 2.77, $SD$ = .42).

Hearing parents with Deaf children ($M$ = 2.43, $SD$ = .45) and Deaf parents with Deaf children ($M$ = 2.32, $SD$ = .64) had significantly greater use scores for Book Knowledge Development than Deaf parents with hearing children ($M$ = 1.63, $SD$ = .73). Hearing parents with Deaf children ($M$ = .96, $SD$ = .62) had significantly less use scores for Deaf Print Communication and Functional Print than and Deaf parents with Deaf children ($M$ = 1.28, $SD$ = .84), while Deaf parents with hearing children ($M$ = 1.11, $SD$ = .68) did not significantly differ from either group.

Two way MANOVAs between parent-child hearing status and the various demographics revealed no significant interactions between status and parent's gender, income level, work, setting, geographical area, or education level on any of the use subscales or average use (all $F$s, *ns*).

In addition, Pearson's Product Moment Correlations were conducted to test the relationships between age, number of Deaf and hearing children with average literacy relevant activity use, as well as with the six subscales for all participants, and for each parent-child hearing status group.

As shown in Table 16, age of the parent was significantly correlated to book knowledge development, informational print, Deaf print communication and functional print, and information/entertainment print specific to the Deaf community. While significant, the relationship between parent age and book knowledge development was small and negative, indicating that as age of the parent increased, use of book knowledge related literacy activities decrease, and vice versa, $r(176) = -.154$, $p < .05$. Age of the parent was positively correlated with informational print, $r(176) = .190$, $p < .05$, Deaf print communication and functional print, $r(176) = .367$, $p < .01$, and information/entertainment print specific to the Deaf community, $r(176) = .280$, $p < .01$, indicating that as the parents' age increased, so did the use of these types of literacy relevant activities, and vice versa.

When examining the same relationships for hearing parents with Deaf children, age of the parent was positively correlated with Deaf print communication and functional print, $r(100) = .443$, $p < .01$, and information/entertainment print specific to the Deaf community, $r(100) = .382$, $p < .01$, indicating that as the parents' age increased, so did the use of Deaf print communication and functional print, as well as the use of

information/entertainment print specific to the Deaf community literacy relevant activities, and vice versa.

Table 16

*Pearson's Product Moment Correlations between Parent Age and the Six Literacy Relevant Activity Subscales by Parent-Child Hearing Status (N = 176)*

| | All Parents 176 | Hearing Parents w/ Deaf Children 100 | Deaf Parents w/ Deaf Children 43 | Deaf Parents w/ Hearing Children 28 |
|---|---|---|---|---|
| Average Use | .126 | .156 | .090 | .469* |
| Book Knowledge Development | -.154* | -.145 | -.269 | .114 |
| Electronic Text Knowledge | -.042 | -.136 | .089 | .282 |
| Non-Print Symbolic Development | -.096 | -.138 | -.272 | .237 |
| Informational Print | .190* | .170 | .324* | .096 |
| Deaf Print Communication and Functional Print | .367** | .443** | .336* | .328 |
| Information/Entertainment Print Specific to the Deaf Community | .280** | .382** | -.156 | .299 |

Note. * $p < .05$; ** $p < .01$

For Deaf parents with Deaf children, age of the parent was positively correlated with informational print, $r(43) = .324, p < .05$, as well as Deaf print communication and functional print, $r(43) = .336, p < .01$. As parents' age increased, so did the use of informational print and Deaf print communication and functional print, and vice versa.

For Deaf parents with hearing children, however, the only significant relationship with age was the average literacy relevant activity use, $r(28) = .469, p < .05$, indicating that as parents' age increased for Deaf parents with hearing children, there was an increase in use of overall literacy relevant activities, and vice versa.

Number of Deaf children was significantly positively related to average use, $r(176) = .240, p < .01$, book knowledge development, $r(176) = .256, p < .01$, and Deaf print communication and functional print, $r(176) = .215, p < .01$. As number of Deaf children increased, the use of overall literacy relevant activities, book knowledge development, and Deaf print communication and functional print also increase, and vice versa. However, when these correlations were looked at for each of the parent-child hearing status groups individually, no significant relationships were found between the number of Deaf children an individual had and their use of literacy relevant activities or the various subscales (Table 17).

Pearson's Product Moment Correlations of use of literacy relevant activities and the six subscales with the parents' number of hearing children revealed no significant relationships for all participants or for any of the parent-child hearing status groups,

hearing parents with Deaf Children, Deaf parents with Deaf Children, and Deaf Parents with Hearing Children (Table 18).

Table 17

*Pearson's Product Moment Correlations between Number of Deaf Children and the Six Literacy Relevant Activity Subscales by Parent-Child Hearing Status (N = 176)*

| | All Parents 176 | Hearing Parents w/ Deaf Children 100 | Deaf Parents w/ Deaf Children 43 | Deaf Parents w/ Hearing Children 28 |
|---|---|---|---|---|
| Average Use | .240** | .017 | .159 | .198 |
| Book Knowledge Development | .256** | .007 | -.142 | .101 |
| Electronic Text Knowledge | .043 | -.139 | -.064 | .176 |
| Non-Print Symbolic Development | .127 | .001 | .101 | .018 |
| Informational Print | .083 | .027 | .037 | .328 |
| Deaf Print Communication and Functional Print | .215** | .108 | .235 | .113 |
| Information/Entertainment Print Specific to the Deaf Community | .058 | .095 | -.136 | .109 |

Note. * $p < .05$; ** $p < .01$

Table 18

*Pearson's Product Moment Correlations between Number of Hearing Children and the Six Literacy Relevant Activity Subscales by Parent-Child Hearing Status (N = 176)*

| | All Parents | Hearing Parents w/ Deaf Children | Deaf Parents w/ Deaf Children | Deaf Parents w/ Hearing Children |
|---|---|---|---|---|
| | 176 | 100 | 43 | 28 |
| Average Use | .043 | .064 | .043 | .203 |
| Book Knowledge Development | -.060 | .029 | -.142 | .134 |
| Electronic Text Knowledge | -.032 | -.040 | -.064 | .168 |
| Non-Print Symbolic Development | .105 | .049 | .101 | .350 |
| Informational Print | .060 | .091 | .037 | -.126 |
| Deaf Print Communication and Functional Print | .100 | .038 | .235 | .257 |
| Information/Entertainment Print Specific to the Deaf Community | -.014 | .043 | -.136 | .075 |

Note. * $p < .05$; ** $p < .01$

*Summary*

The goal of the present study was to compare home literacy activities other than language relations of Deaf parents with Deaf children ($D^1$) and hearing parents with Deaf Children ($D^2$), however after data collection, a third focus group of Deaf parents with hearing children emerged and showed differences on types of literacy relevant activities. Hearing Parents with Deaf children reported significantly greater use of non-print symbolic development and use of electronic text than Deaf parents with hearing children, however Deaf parents with Deaf children fell in the middle of the two. Hearing Parents with Deaf children also reported significantly greater use of informational print and use of entertainment print specifically for the Deaf than Deaf parents with hearing children and Deaf parents with Deaf children. Hearing Parents with Deaf children and Deaf parents with Deaf children reported significantly greater use of book knowledge development than Deaf parents with hearing children. Hearing Parents with Deaf children reported significantly less use of print communication specifically for the Deaf than Deaf parents with Deaf children, however Deaf parents with hearing children fell in the middle of the two. Hearing Parents with Deaf children and Deaf parents with Deaf children reported significantly greater average use of all the literacy items than Deaf parents with hearing children. Chapter five further discusses these findings.

# CHAPTER V

# DISCUSSION

The purpose of this research study was to compare home literacy interactions of Deaf parents with Deaf children ($D^1$) and Deaf children with hearing parents ($D^2$). This Internet survey study was designed to explore what behaviors and interactions parents report doing with their Deaf children, other than language and/or communication style relations between the parent and child. Chapter five summarizes the results of the Internet survey and presents a discussion of the findings. This chapter explores the implications of the survey findings and discussed further insights for research.

To review, the current document was created in order to better understand the differences and similarities between ($D^1$) and ($D^2$) in terms of academic literacy. Beginning with an introduction to the topic, chapter one explores the history of Deaf Education and ponders the marriage of Bilingual-Bicultural interactions of the two disciplines. From this exploration gaps in the literature was noted. One of the gaps noted, there is a further need for examining the blending of Deaf Education and Bilingual-Bicultural Education. Another gap noted was the need to research the interactions for Deaf and hearing parents with Deaf children with the understanding that language, regardless of mode, style, or vocal/verbal/vision production, is vital but that the process between parent and child is not limited to language and/or communication style. Coupled

with language and/or communication style, another component between parent and child needs to be understood and noted. From these gaps, a purpose for this research study was noted and the following research questions were raised:

1. Is there a difference in the amount and type of activities used to support literacy between Deaf parents and hearing parents when interacting with their Deaf child?
2. How do Deaf parents of Deaf children ($D^1$) support written English literacy learning in the home?
3. How do hearing parents of Deaf children ($D^2$) support written English learning in the home?
4. What are the differences and similarities between Deaf and hearing parents' support of written English literacy learning in the home?

In order to better understand previous research, chapter 2 was created to examine eight categories that relate to Deaf and Hard-of-Hearing children and literacy. The categories are: (1) Deaf Culture, (2) Deaf Values, Understandings and Experiences (3) Language of the Deaf (ASL), (4) Home environments of the Deaf, (5), Facilitating School Literacy: Reading for the Deaf (6) Writing for the Deaf, (7) Early Literacy, and (8) Bilingual-Bicultural (Bi-Bi) research.

In order to collect data of this quantitative study, chapter 3 outlined a qualitative methodology of an Internet survey. In the methodology section of this document, the

formation of the survey, distribution, and collected data was reviewed. An analysis plan was described and tools utilized in the statistical evaluation of the data were documented.

In chapter 4, factor analysis and ANOVA were conducted on the data. After statistically analyses, qualitative tools were noted, the results from the data were documented. Tables show the results and explanations of these results given.

The conclusion of this document is to summarize the results of the Internet survey and present a discussion of the findings. This chapter also explores the implications of the survey findings and discusses further insights for research

At this time, an interesting development should be noted. To help reduce people who were not ($D^1$) or ($D^2$) from taking the survey and providing information that was untruthful, the survey allowed for both Deaf and hearing parents of both Deaf and hearing children to answer the questions. Because all people were allowed to participate in the survey, more usable information was collected and an originally unexpected group of parents appeared. This new group of Deaf parents of hearing children ($D^3$) provided insights that might not have otherwise been noted between ($D^1$) and ($D^2$).

*Research Question 1*

The first research question presented in this document asked: Is there a difference in the amount and type of activities used to support academic literacy between Deaf parents and hearing parents when interacting with their Deaf child? Statistically speaking the amount of book knowledge reported by both Deaf and hearing parents indicated that

both parents showed approximately the same amount of discourse related to academic literacy when interacting with their Deaf child.

*Research Question 2*

The second research question asked: how do Deaf parents of Deaf children ($D^1$) support written English literacy learning in the home? From the survey, it appears that ($D^1$) support written literacy learning in the home by book knowledge and print communications specifically for the Deaf. ($D^1$) also supported the use of overall literacy support more than the other groups in the study.

*Research Question 3*

Another question asked in support of this dissertation was: how do hearing parents of Deaf children ($D^2$) support written English learning in the home? It seems from the data presented in this study that ($D^2$) report supporting the use of non-print development, the use of electronic text, the use of informational print, and use of entertainment print specifically for the Deaf.

*Research Question 4*

The final question asked: what are the differences and similarities between Deaf and hearing parents' support of written English literacy learning in the home? The findings of this Internet survey reported that ($D^1$) and ($D^2$) do in fact have both differences and similarities in terms of supporting written English literacy learning in the home.

Both ($D^1$) and ($D^2$) seem to significantly support the use of book knowledge in their home with their Deaf child. Both parents also appear to support their Deaf child in the overall use of literacy items.

Both ($D^1$) and ($D^2$) did not report the same exposure to non-print symbolic print, use of electronic text, exposure to informational print, use of entertainment print specifically for the Deaf, and the use of print for communication specifically for the Deaf.

*Electronic Text Knowledge and Non-Print Symbolic Development*

In both the "Electronic Text Knowledge" and "Non-Print Symbolic Development," ($D^2$) reported significantly greater use of electronic and non-text symbolic development than ($D^3$). ($D^1$), however, fell in between ($D^2$) and ($D^3$). The findings in this category are important because hearing people, in general, are more literate than Deaf people, which stems from the knowledge that Deaf students are behind their hearing counterparts in terms of academic literacy reading only on average at the fourth grade level (Gannon, 1998; Kampfe, et al. 1987; Marschark, 2003; Ridgeway, 1993; Sacks, 1989; Sullivan & Schulte, 1992). Therefore, it is not surprising that ($D^2$) scored higher than ($D^1$) or ($D^3$).

However, ($D^3$) reported significantly lower scores on the literacy use subscales of electronic text and non-print symbolic development than ($D^2$), thus the following questions arise (1) why are these types of literacy use scores not similar for ($D^2$) and ($D^3$)

when the parents of either Deaf or hearing children are Deaf? In addition (2) why did ($D^1$) not score significantly lower then ($D^2$) but rather in the middle?

It may be that Deaf parents, ($D^1$) and ($D^3$), regardless of the hearing status of the child, tend to use sign language with their children (Lane, 1988, 1993; Sacks, 1989). Research must therefore look beyond the language and/or communication modes issue to discuss the differences between ($D^1$) and ($D^3$) in terms of supporting electronic text and non-print symbolic development. In terms of why ($D^1$) and ($D^3$) reported lower interactions than ($D^2$) in this area, there may in fact be a *Cultural* issue at play. It is interesting to note here that one of the main comments reported by participants of the survey questioned language and the issue of language surrounding literacy for the Deaf. Many parents, both Deaf and hearing, asked why the survey did not ask for which communication mode was facilitated in the home (i.e. signing or oral, ASL versus Spoken English). Many parents felt the need to add which language or communication model the family used. This may indicate that not only do researchers tend to document which mode of communication best supports academic literacy for the Deaf, but parents may think that language is the only main issue at play also. Again, research needs to look beyond language – in this case, Culture needs to be explored.

In terms of Culture, history, and heritage, many Deaf parents want Deaf children (Gannon, 1981; Lane, 1988, 1993; Ladd, 2003; Sack, 1989). Thus, it would appear that in regards to supporting electronic text and non-print symbolic development, while the

language of ($D^1$) and ($D^3$) are in fact the same with the parent and the child, the Culture of the parent and child is not the same. For ($D^1$) the parent and the child share in the same Deaf Culture and Deaf Community, however for ($D^3$) the parent and the child do not share in the same Deaf Culture or Community albeit they do share a culture. Because these groups do not share the same Culture between parent and child, the parents might view the value of supporting electronic text and non-print symbolic development differently. Furthermore, while ($D^1$) reported more use of electronic print and non-text symbolic print than ($D^3$) were not significantly different from either. Because there were no significant differences between the two Deaf parent groups, it would seem that, the link in using electronic print and non-text symbolic print might be Cultural not necessarily the relationship with or between the parent and child.

The Deaf Community supports events or groups (i.e. Deaf Clubs, Deaf Storytelling Festivals, Deaf Bowling League) that offer the opportunity for Deaf people to come together and personally interact and share information with one another (Ladd, 2003). In these groups, parents might indeed be obtaining information that might otherwise be supported by electronic print and non-text symbolic print. Meaning that the Culture of the Deaf facilitates type of literacy on a face-to-face level.

*Informational Use of Print and Information/Entertainment Print Specifically for the Deaf*

($D^2$) reported significantly greater scores on the literacy use subscales "Informational Use of Print" and "Information/Entertainment Print Specific for the Deaf"

than both ($D^1$) and ($D^3$). These findings are contradictory to the research of Maxwell (1985). Contrary to Maxwell's finding that Deaf children become socialized into the use of caption and instrumental uses of print by their Deaf parents, the findings in the present study indicate the opposite. In fact, hearing parents appeared to be socializing their Deaf children far more than Deaf parents with either Deaf or hearing children in the area of informational print use of entertainment print specifically for the Deaf. This may be due to the fact that the Deaf Community has long been isolated from the venue of visual media due to the fact that movies and television both informational (the news) and entertainment wise have not been captioned for the Deaf.

While caption for the Deaf is now more readily available, it is still common for news not to be captioned. If the news is captioned, it is often of inferior quality and as such, much information is lost. Therefore, information via print from captioning is not always a reliable source for the Deaf Community.

Not only was the Deaf Community isolated from visual interactions, but also low academic literacy levels may be at play. Ordering the newspaper may have been viewed as a waste of money and time due to the fact that reading is difficult, un-enjoyable, or simply hard.

Culturally speaking, storytelling has played a large role in the perpetuation of the Deaf Community and its Culture (Gannon, 1981; Lane, 1988, 1993; Ladd, 2003; Sack, 1989). While written print or text is valued in the hearing world, print or text is not

valued the same way in the Deaf world regarding informational or entertainment print. Again, visual media has not been available to the Deaf Community as it has been to the hearing world. The Deaf Community has long valued storytelling (Ladd, 2003). Storytelling has served many functions. Storytelling has been used to pass down the history of the Deaf from one generation to the next. It has also been used to preserve the language (At one time, there was a movement in the United States to stop the use of ASL. Deaf children were not allowed to sign. In the dorms at the schools for the Deaf, Deaf students signed to each other to communicate, entertain, and ultimately preserve the language)(Gannon, 1989). Storytelling also provides the Community an opportunity to share information in a venue that the they was accustomed to viewing. Therefore, in terms of obtaining information through print, the Deaf Community may not find newspapers or newsletters as worthy as storytelling.

Bilingual research indicates (Cortazzi, 2000; Harris-Martine, 2001) that language, culture, and literacy are not exclusive from each other and ultimately; a three-way interaction of "cognitive or non-verbal, symbolic and socio-cultural levels (p. 236)" occurs that increase literacy (Gonzalez, 1994). Based on the current findings, it may be that because the components of language, culture and academic literacy were not linked in a familiar manner symbolically, cultural, or non-verbally, the value of the written text is changed. The text may, in fact, have been devalued in the minds of the Deaf parents.

The above findings might signify that the value that the Deaf Community places on information and entertainment might actually come from personal interactions, exposure to visual language and the passage of history and entertainment through the hands, not through print. What may be then valued in the Deaf Community in terms of the facilitation of information and entertainment is not in the esteem of print but in the significance of sign.

*Book Knowledge Development*

($D^1$) and ($D^2$) reported significantly greater use of book knowledge development than ($D^3$). This finding is encouraging because research seems to indicate that reading to children at a young age may provide a cornerstone for their academic literacy learning process (Heath, 1980; Morrow 2001). Previous research has also indicated that ($D^1$) tend to be more successful in academic literacy than ($D^2$) (Kanpfe et al., 1987; Kuschè et al., 1983; Lane, 1988, 1993; Livingston, 1997; Lieberman et al., 2004; Maxwell, 1985; Moores & Sweet, 1990; Ritter-Brinton & Stewart, 1992; Sacks, 1989; Schilling, 1993; Sullivan & Schulte, 1992). It appears then, that ($D^1$) is demonstrating the same values of early literacy as seen in ($D^2$). These findings are also compatible with the findings of Andrews and Zmijewski (1997). The researchers' report linked not only literacy activities both in reading and writing found in the home of Deaf families, but also, specifically whole storybook telling that helped Deaf children connect print to reading skills.

In terms of the ($D^1$) obtaining the same significance as ($D^2$) in the findings, the parallel is also encouraging. Akamatsu & Andrews (1993) indicated that one element scaffolding academic literacy in Deaf children is the interaction with the text(s). The researchers went on to also say that significant involvement of the parent(s) is vital as well as significant to the Deaf child's independent academic literacy growth and development. Parents play a large role in the academic literacy process (Mandel, 2001; Morrow, 1990) regardless of language, culture, and cognition. By modeling (Morrow, 1990) the value of personal interactions with books by both Deaf and hearing parents is establishing and instilling values of academic literacy.

Because findings in this survey of ($D^1$) reporting high book knowledge, ($D^1$) may indeed feel that because their language at home is comfortable, that they are not abandoning their first language by learning to read and write in English. By valuing the language in their home, ($D^1$) can then know that learning to read and write in English will not compromise the language used at home (Livingston, 1997). By modeling the book behavior (Morrow, 1990), communicating about the story or text, and encouraging book knowledge (Baker, Mackler, Sonnenschein, & Serpell, 2001; Watson, et al., 1994), both Deaf and hearing parents are sending a message to their children that values academic literacy.

Obgu's (1992) research may also be applicable to the above discovery that ($D^1$) obtaining the same significance as ($D^2$). Ogbu (1992) noted in his findings that if a

C/community sees favor or benefits in a second language, there appears to be a greater aptitude for the second language. It seems that both the Deaf Culture and hearing cultures see the opportunity in academic literacy and therefore encourages book knowledge.

The finding that ($D^2$) reported a greater use of book knowledge than ($D^3$) may be due to the fact that hearing persons tend to be more literate than Deaf persons (Gannon, 1998; Kampfe, et al. 1987; Marschark, 2003; Ridgeway, 1993; Sacks, 1989; Sullivan & Schulte, 1992). Therefore, hearing parents may have an academic advantage over Deaf parents in terms of facilitating academic literacy processes.

One important finding from the present study was that ($D^3$) used book knowledge significantly lower with their children compared to both ($D^1$) and ($D^2$). Again, it may be that Culture is separating the parents and the children. ($D^1$) share not only a language but also a Culture among their family members, unlike ($D^3$) whose family members may share a language but not a "C"ulture (Gannon, 1981; Lane, 1988, 1993; Ladd, 2003; Sack, 1989). The parent is in the Deaf Culture and the child is in a hearing world. While Hearing Children Of Deaf Adults (CODA) are the only people that may be privy to Deaf Culture and its Community, the children are still outsiders. ($D^3$) may be valuing the Cultural aspects of knowledge (i.e. passing information through storytelling). By not passing knowledge through ASL, ($D^3$) are choosing simply not passing knowledge to their children via through books or otherwise.

Another interesting finding was that as the number of Deaf children increased per parent, the utilization of book knowledge also increased. As parents have more than one Deaf child, their use of book knowledge increases. This finding may indicate that the parents have had an opportunity to be socialized with and become familiar with the knowledge that exposing children, all children, to books and knowledge of books is vital in the academic literacy process (Morrow, 1990, 2001).

Another view may be that in accordance with Public Law 94-142 (Strong, 1990), all children regardless of their different abilities have a right to a public education from the ages of 0 to 21. A medical doctor or audiologist should refer parents to an educational support institute when it is discovered that a child is Deaf. It is extremely common for parents to be advised or introduced to educational settings for their Deaf child before preschool age. As the parents learn more about Deafness and the educational choices available to them, it is common for the parents to receive an abundant amount of literature about how to address the child's needs including but not limited to, how to best teach a Deaf child to read. It would seem from the small but positive correlation between the number of Deaf children a parent has and the increased use of book knowledge that parents are getting information on how to best begin the academic literacy process. Regardless of the fact that the parent is Deaf or hearing, information to the parent regarding the academic literacy process of their Deaf child seems to be effectively generated in the educational arena.

Findings in the present study also indicated that as the age of both Deaf and hearing parents increased, the utilization of book knowledge use decreased. Meaning that older parents read less or point out words and letters less to the Deaf child. The assumption here may be that all parents, Deaf and hearing, interact less with their child as that child grows in terms of academic literacy.

This decrease may just be a natural decline in the utilization of storybook time parents and children share. As children grow and demands on both the child and the parent change, so do the literacy practices in the home. However, the child, begins to grow in academic literacy as well as in other areas of their life. The parent can then encourage and facilitate academic literacy activities other than pointing to letters and words in a text. Parents might begin to facilitate other academic literacy processes such as helping with homework or reading magazines with their child, and encouraging independent reading time for both the parent and child. Consequently, while the decrease from parents in the use of book knowledge might appear, at first, to be a negative development, it may in reality point to a natural progression of academic literacy within families. A progression of learning that encourages children to develop independent academic literacy skills.

*Printed Communication Specifically for the Deaf Community*

A TDD is tool (a piece of equipment) used to facilitate phone communication between either two Deaf people or between a Deaf person and a hearing person. The term

"Relay" refers to a free service provided to all people, Deaf and hearing that connects Deaf and hearing together on the phone. For example, a Deaf person would use their TDD to call the Relay Service. The Relay Service would bridge the gap of communication for voicing what the Deaf person typed and typing what the hearing person said and vice versa.

In the present study ($D^2$) reported significantly less use of print specifically for the Deaf than ($D^1$) and ($D^3$). These findings concur with Maxwell (1985) who reported that ($D^1$) tended to use writing for conversational, personal and instrumental reasons and that ($D^2$) utilized virtually no writings.

Again, what is noteworthy is that ($D^3$) did not engage in the same behaviors of print communications specific for the Deaf Community as that of ($D^1$). Print or not print communications from Deaf equipment may be related to sharing a Culture between a parent and a child as stated in prior findings. The Deaf Community has often been wary of the hearing world (i.e. forming "Deaf families" and distrusting the hearing world as a whole). It is also not uncommon for hearing children to interpret for their Deaf parents (Sacks, 1989). It may be that the findings are based on a distrust of all hearing people, including children. Another view might be that the Deaf parent is protecting the hearing child from yet another "interpreting" opportunity. In the confines of this study, it is unclear to the reasoning of why ($D^3$) do not print communications from TDD or the Relay as compared to ($D^1$).

The questionnaire also found that as the number of Deaf children increased per parent, regardless of the auditory status of the parent, the use of Deaf print use also increased. As the experience from the parent of having a first Deaf child to another grows, the parent becomes familiar with the knowledge of how to communicate via the TDD, but also see or has the need to utilize print from the TDD or Relay. The need to communicate not only with one child, but also with and between the two or more Deaf children may have increased. Deaf print may indeed provide a tool for intercommunication in a family. This relationship may also indicate that there is both an experienced parent and a need for printed intercommunication for all the Deaf children.

In addition, as the age of the parent increased, the utilization of Deaf print use also increased. This finding might point to an awareness of tools and equipment available to Deaf and Hard-of-Hearing persons. When hearing parents first discover Deafness in a child, the amount of information provided by medical and educational professionals can be overwhelming. Because Deaf parents are familiar with TDD, the information received regarding TDDs is of common knowledge. Most parents of Deaf children are hearing (90% of Deaf children are born of hearing parents {Gannon, 1998; Sacks, 1989}) and the amount of new information given to these parents is large indeed. In most states, TDDs are free if there is a Deaf person in a home, regardless of age. The Relay service is also free. Upon finding that a child is Deaf, phone communication for that child is usually not

a priority. As the child grows older and the needs for both the parent and the child change and develop, the awareness and need for the utilization of Deaf print may increase also.

In the case of Deaf parents who become older and increase the utilization of Deaf print use, it may be that the parents need to interact with more persons on behalf of the child, thereby increasing the need for the use of the TDD and Relay service.

*Using Literacy Item and Artifacts*

($D^1$) and ($D^2$) reported significantly greater averages in the use of literacy items and artifacts than ($D^3$). Early literacy literature adopts the view that many items and artifacts are indeed tools in the acquisition of academic literacy. Numerous researchers point to other resources along with books that function as reading materials such as pictureless wordbooks, maps, and recipes (Jalongo, et al., 2002; Neumann, 2004; Genishi & Dyson, 1984; Watson, et al., 1994; Whitehurst & Lonigan, 2001). As seen in this finding both ($D^1$) and ($D^2$) used the power of multiple tools to facilitate exposing literature to the child (Griffin, 1997).

Once again, the frontrunner in this category is not ($D^3$). Because both ($D^1$) and ($D^2$) seem to use literacy items and artifacts in a similar manner, again the suggestion is that Culturally there is a disconnect between parent and child in ($D^3$)'s family unit.

*General Findings*

As age of both Deaf and hearing parents increased, the overall use of all literacy items/artifacts and interactions increased as well. In other words, when all factors were

averaged to create an overall literacy use variable, the average use of all literacy components increased with the age of the parent, which may indicate that as all parents age, their reliance on literacy, literacy items/artifacts, literacy processes, literacy knowledge, and literacy exposure increases. This increase of dependency on academic literacy may be due to simply growing as a parent and the socialization that is inherent to living and learning (Vygotsky, 1978).

The final finding indicates that there were no interactions between the auditory status of both the parent and the child related to income level, work, setting or education on any subscales or averages used in the survey. "Income level" here refers to the average amount of monitory compensation a parent earns. The meaning of the term "work" in the survey refers to if the parent was employed full time, part time, or was a stay at home parent. "Setting" asked parents to approximately identify the region of their home. In addition "education" asked the parent to identify the highest level of education completed. These findings are indicative of the fact, that regardless of income levels, work, setting and/or education, literacy use is valid in the parent-child relationship (Taylor, 1988).

*Limitations*

As with all research, the significance of a study is to add to the body of knowledge. It would be arrogant to assume that a study of any kind will answer all

questions in a complete arena. As such, this study presents restrictions to the extent of its answers to the questions posed.

Only families with Internet access were utilized to complete the survey. The Internet is a tool not employed by all people in the United States and as such, the numbers of person available to answer the questions to the survey becomes imperfect.

Data collected from surveys does not always allow an in-depth look at the whole academic literacy acquisition process (Dillman, 2000). The survey utilized in this study is an instrument used to measure a finite amount of information.

Due to the complexity in terms of the academic literacy learning process, the literature review was limited to early literacy learning. As stated above, the outcome of this research is to observe but a portion of the process. The literature available to researchers related to academic literacy is abundant. For this study, only a small portion of the literature was applied to this analysis.

Three unexpected limitations grew out of the survey. One of the findings from the statistical analyses indicated that there were a disproportionate number of mothers and fathers who completed the survey. Because not enough males completed the survey, an analysis comparing mothers and fathers could not be analyzed.

Another finding that was not expected was the large number (90%) of Caucasians who completed the survey. Due to this restraint, an analyses comparing and contrasting races could not be done.

Finally, there were not enough "n" in all cells, meaning that there was not enough information given by participants, in order to conduct tests regarding the interaction between geographical areas and status.

*Comments by Participants*

All participants were given the opportunity to give their open-ended comments. Whether to be viewed as limitations or further study issues may vary in the eye of the reader. Nevertheless, these comments provide valuable information form the perspective of literacy use and the Deaf Culture.

Many comments either asked why the home language was not asked or gave the language utilized in the home. Participants who were Deaf readily commented on how sign or American Sign Language had played a large role in the academic literacy process. ($D^1$) and ($D^3$) offered examples of how learning American Sign Language opened their eyes to a multitude of things including reading and writing. At times some ($D^2$) commented on their choice of language and/or communication style that they chose to provide their child as if the parents were defending themselves from opponents of the opposite playing field. Regardless of the language and/or communication style the parents utilized at home, it would seem that all parents, Deaf and hearing are aware of the issue of language and communication style related to academic literacy. All felt the need to express the positive and negative attributes of the struggle they are facing in relation to how to better educate Deaf children in terms of academic literacy.

In retrospect, there may have been an error in the manner is which the survey was presented that caused the participants to add comments regarding the language used at home. In the participation page of the survey (Appendix A), it stated that the research related to the survey was to "compare Deaf parents' interactions with their Deaf children to those of hearing parents with Deaf children in relation to language and literacy." Because of the ample research available in terms of a linguistics (Coutin, 2000; Harris, 2001; Vaccari & Marschark, 1997) and literacy (Kanpfe et al., 1987; Kuschè, et al., 1983; Lane, 1988, 1993; Livingston, 1997; Lieberman et al., 2004; Maxwell, 1985; Moores & Sweet, 1990; Ritter-Brinton & Stewart, 1992; Sacks, 1989; Schilling, 1993; Sullivan & Schulte, 1992) related to Deaf children, a goal of the present research to explore relationships with ($D^1$) and ($D^2$) on the assumption that something other than language and/or communication style is occurring. Research indicates that language is the stepping-stone for academic literacy (Chomsky, 1965; Halliday, 1975; Heath, 1982, 1996; Morrow, 2001; Snow, 1999; Sacks, 1989). Learning does not occur in a vacuum (Vygotsky, 1978). It might also be said that literacy does not only include language and/or communication style. Therefore, in conjunction with language and/or communication style and academic literacy, the gap in the existing research was "what else is facilitating academic literacy in Deaf children." Based on the above, the introduction to the survey may have been written to the participant with the false assumption that language and/or communication style, while vital to academic literacy, was not the main inquiry.

Worth noting were also the emails from parents with older Deaf children. These emails commented on the fact that their child had left the home or were out of school and that the parents were not interacting on a one-on-one early literacy level anymore. In the pilot study, the issue of parents with older Deaf children was addressed. The survey asked the participants to reflect back if their child was older and recall interactions between the parent and child. Although the change was made in the final survey, comments from parents regarding this issue were still received.

Smaller amounts of emails were not comfortable with the question regarding the location of the participants' home (i.e. North, South, East or West). In addition, another small amount of emails gave their insight into educational tools that appeared to be achieving academic success in their district and/or school.

*Summary*

To reiterate, the significance of this study was to add to the body of knowledge in the quest for academic literacy learning for the Deaf and Hard-of-Hearing. As such, this investigation acknowledges many restrictions to the extent of its answers to the questions posed, however, some seemingly valuable information was found.

From the data collected in this study, there was a promising amount of similarities in characteristics being carried out in the home by ($D^1$) and ($D^2$). The pursuit of ensuring a higher level of academic literacy learning for Deaf children by both Deaf and hearing

parents seems to indicate a desire by all to support, help, and facilitate a value of academic literacy cherished by most people.

Unfortunately, the reports that Deaf people tend to have a lower academic literacy level in the United States averaging only a fourth grade level (Gannon, 1998; Kampfe, et al. 1987; Marschark, 2003; Ridgeway, 1993; Sacks, 1989; Sullivan & Schulte, 1992) still appear to be truthful. This truth may sadly be seen in the academic literacy interactions of ($D^3$). Overall, ($D^3$) reported the lowest level of academic literacy interactions as noted in this current document. If a Deaf student is behind in terms of reading and writing, that student will grow up to become the next generation of "parents." The new parent will then pass on knowledge or lack there of to the new child as seen in the responses presented in this document.

This survey aspired to examine the interactions of ($D^1$) and ($D^2$) and use the comparison to better understand the academic literacy process. It became clear that both Deaf and hearing parents create literate children in a similar manner. It may be that the larger disconnect of academic literacy learning with Deaf and Hard-of-Hearing students is not in the home but rather outside of the home.

Again, we must go back to the research; there is a call for a deeper understanding of Deaf Education in a Bilingual-Bicultural setting (Evan, 2004; Prinz, 1998; Swanwick, 2002, 2005). Based on the findings discussed above, researchers, administrators, teachers, parents and teaching universities must look beyond language and/or communication style

and explore the Culture of the Deaf. The Deaf Community and their Culture have unique and different views, compared to the hearing culture, on a multitude of issues in their lives ranging from storytelling to marriage. By examining, applying and valuing the knowledge of Deaf Culture with the understanding that language and/or communication style is the cornerstone of academic literacy, reading and writing levels for the Deaf and Hard-of-Hearing may indeed brake the glass ceiling of a fourth grade academic literacy level (Gannon, 1998; Kampfe, et al. 1987; Marschark, 2003; Ridgeway, 1993; Sacks, 1989; Sullivan & Schulte, 1992).

From the current data a repeated theme emerged - Deaf Culture. Not a general culture, but a Culture of uniqueness and beauty materialized in light of literacy development: a Culture full of value. Deaf Culture may prove to be indispensable in the acquisition of academic literacy among Deaf children. The values, characteristics, heritage and history of the Deaf appear to be a key proponent of the academic literacy learning process that cannot be ignored. It would seem that Deaf Culture must be capitalized on and implemented in order to facilitate academic literacy understanding and literate growth for our Deaf children.

Also, from the current research, investigation and application of research must go beyond the parent level. It would seem from the data and findings that parents both Deaf and hearing are in fact laying the groundwork and thus facilitating the first layers of academic literacy learning with their Deaf children. It would appear that schools for the

Deaf and teacher training universities and colleges may need to enhance the academic literacy teaching of Deaf students. It may be that the language of the Deaf, American Sign Language that is supported by the Deaf Community and their Culture, might service to enlighten teachers, universities and parents to the Culture of the Deaf that seem to add to, develop and enhance academic literacy for the Deaf.

*Future Research*

It has long been suspected that the use of American Sign Language has been the leading element of ($D^1$) exceeding the academic achievement of ($D^2$). In light of the findings in this document, further research is needed to explore the impact of Culture, specifically in relation to academic literacy in the development of Deaf children.

From the findings documented above, ($D^1$) and ($D^2$), have more similarities than differences. The unexpected participants generated by the survey created for this document shed a new light on the findings produced. Further documentation on the difference and similarities of not only ($D^1$) and ($D^2$) are needed, but also comparing and contrasting ($D^1$), ($D^2$) and ($D^3$). It may also be helpful to compare the three sets for families against hearing parents with hearing children.

As there is a call for more research in the field of Bilingual Education (Gonzalez, 1994) and a call for deeper understandings of Bilingual Education in conjunction with Deaf Education (Evan, 2004; Prinz, 1998; Swanwick, 2002, 2005), the present research

concurs and further reports a need for more research directly related to Deaf Education as a Bilingual model focusing on Culture.

REFERENCES

Akamatsu, C. T. (1988). Summarizing stories: The role of instruction in text structure in learning to write. *American Annals of the Deaf, 133(4),* 294 - 302.

Akamatsu, C. T. (1993). It takes two to be literate: Literacy interact between parent and child. *Sign Language Studies,* 81 - 89.

Albertini, J. & Shannon, N. (1996). "Kitchen Notes, 'The Grapevine', and Other Writing in Childhood." *Journal of Deaf Studies and Deaf Education, 1(1),* 64 - 74.

Andrews, J. F. & Gonzales, K. (1992). "Free writing of Deaf children in kindergarten." *Sign Language Studies, 74,* 63-78.

Andrews, J. F., Winograd, P., & DeVille, G. (1994). Deaf children reading fables: Using ASL summaries to improve reading comprehension.. *American Annals of the Deaf, 139*(3), 95 - 107.

Andrews, J. F. & Zmijewski, G. (1997). "How Parents Support Home Literacy with Deaf Children." *Early Child Development & Care, 127,* 131-139.

Babbie, E. (1990). *Survey Research Methods* (2nd ed.). Belmont: Wadsworth Publishing Company.

Baker, L., Mackler, K., Sonnenschein, S., & Serpell, R. (2001). Parent interaction with their first-grade children during storybook reading and relations with subsequent

home reading activity and reading achievement. *Journal of School Psychology, 39*(5), 415 - 438.

Bandurski, M. and T. Galkowski (2004). "The Development of Analogical Reasoning in Deaf Children with their Parents' Communication Mode." *Journal of Deaf Studies and Deaf Education, 9(2),* 153 - 175.

Barillas, d. R. (2000). "Literacy at home: Honoring parent voices through writing." *The Reading Teacher 53(3),* 302 - 308.

Bellugi, U. & Klima, E. S. (1982). The Acquisition of Three Morphological Systems in American Sign Language. *Papers and Reports on Child Language Development.* Stanford, Dept. of Linguistics, Stanford University: K1-K35.

Bernheardt, E. B. (2000). Second-Language Reading as a Case Study of Reading Scholarship in the 20th Century. *Handbook of Reading Research*, 3, 791 -811. New Jersey, Lawrence Erlbaum Associates.

Bornstein, H., ed. (1990). *Manual communication: Implications for education.* Washington, D.C., Gallaudet University Press.

Burgess, R. C. (1982). *Field Research: A Source and Field Manual.* London, George Allen and Uiwin.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research.* Boston: Houghton Mifflin Company.

Chomsky, N. (1965). *Aspects of a Theory of Syntax*. Cambridge, MA, MIT Press.

Christensen, K. (2000). Emerging Literacy in Bilingual/Multicultural Education of Children Who Are Deaf: A Communication-Based Perspective. *Deaf Plus: A Multicultural Perspective*. Christensen. San Diego, CA, Dawn Sign Press: 41 - 59.

Collier, V. P. (1987a). "The Effect of Age on Acquistition of a Second Language for School." *New Focus, 2,* 1 - 7.

Collier, V. P. (1987b). "University Models for ESL and Biligual Teacher Training." *New Focus, 2,* 81 - 90.

Conant, S., Budoff, M. & Hecht, B. (1986). "Communicative means for communicative ends." *Teaching language-disabled children: A communication games intervention,* 3 - 13.

Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design & analysis issues for field settings*. Boston: Houghton Mifflin Company.

Cook, T. D. & Campbell, D. T. (1979). *Quasi-Experimentation: Design & Analysis Issues for Field Settings.* Boston, Houghton Mifflin Company.

Cortazzi, M. & Hunter-Carsch, M. (2000). "Multilingualism and Literacy Difficulties: Bridging Home and School." *Reading, 34(1),* 39 - 45.

Courtin, C. (2000). "The Impact of Sign Language on the Cognitive Development of Deaf Children: The Case of Theories of Mind." *Journal of Deaf Studies & Deaf Education, 5(3),* 266 - 276.

Creswell, J. W. (1994). *Research design: Qualitative & quantitative approaches.* Thousand Oaks: SAGE Publications.

Cummins, J. (1996). *Negotiating Identities: Education for Empowerment in a Diverse Society.* Ontario, CA, California Association for Biligual Education.

Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method* (2nd ed.). New York: John Wiley &sons, Inc.

Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing Naturalistic Inquirey: A Guide to Methods*. Newbury Park, CA, Sage Publications.

Evans, C. (2004). "Literacy Development in Deaf Students: Case Studies in Bilingual Teaching and Learning." *American Annals of the Deaf, 149(1),* 17 - 27.

Ewoldt, C. (1988). "What parents can do to assist their hearing impaired child in developing literacy." *Perspectives for Teachers of the Hearing Impaired, 6(5),* 8 - 11.

Ewoldt, C., & Saulnier, K. (1994). Young readers and environmental print. *Perspectives for Teachers of the Hearing Impaired, 6*(1), 2-8.

Ferguson, C. J. (1999). Building literacy with child-chonstructed sociodramatic play centers. *Dimensions of Early Literacy, 27*(3), 23 - 29.

Fillmore, L. W. (1982). "Language Minority Students and School Participation:What Kind of English is Needed?" *Journal of Education, 164(2),* 143 - 154.

Fillmore, L. W. (1991). Second-Language Learing in Children: A Model of Language Learning in Social Context. *Language Processing in Bilingual Children.* E. Bialystok. New York, NY, Cambridge University Press: 49 - 69.

Fillmore, L. W. and Snow, C. E. (2000). "What Teachers Need To Know about Language." *Language and Linguistics,* available: http://www.cal.org/resources/teachers.pdf .

Finnegan, M. H. (1987). Promoting reading: All you need is time. *Perspectives for Teachers of the Hearing Impaired., 6(1),* 2 - 4.

Fitzgerald, J., Spiegeil, D. L., & Cunningham, J. W. (1991). The relationship between parental literacy level and perceptions of emergent literacy. *Journal of Reading Behavior, 23*(2), 191 - 213.

Gannon, J. R. (1981). *Deaf Heritage.* Maryland, National Association of the Deaf.

Garica, G. E. (2000). Bilingual Children's Reading. *Handbook of Reading Research Volume III.* New Jersey, Lawrence Erlbaum Associates. pp. 813-834

Genishi, C., Dyson, I., & Hass, A. (1984). *Language assessment in the early years.* Norwood, NJ: Ablex.

Gonzalez, V. and T. D. Yawkey (1994). "Influence of Cognitive, Linguistic, and Sociocultural Factors on Literacy and Biliteracy in Young Bilingual Children." *Literacy and Biliteracy In Children, 115(2),* 230 - 238.

Gopaul-McNicol, S. A. (1998). *Working with Linguistically and Culturally Different Children: Innovative Clinical and Educational Appoarches.* Boston, Allyn and Bacon.

Griffin, E. A. (1997). The unique contribution of home literacy environment to differences in early literacy skills. *Early Child Development & Care, 127 - 128,* 233 - 243.

Hafer, J. C., Richmond-Hearty, E., & Swann, M. (1991). Sowing the seeds of literacy. *Perspectives in Education and Deafness, 10*(1), 115 - 123.

Halliday, M. (1975). *Learning how to mean: Exploration in the development of language.* New York, Elsevier/North Holland.

Harris, M. (2001). "It's All a Matter of Timing: Sign Visibility and Sign Reference in Deaf and Hearing Mothers of 18-month-old Children." *Journal of Deaf Studies & Deaf Education, 6(3),* 164 - 177.

Harris-Martine, D. (2001). ""Grandma's Place": an intergenerational literacy center." *New Advocate, 14(2),* 157 - 160.

Heath, S. B. (1980). The functions and uses of literacy. *Journal of Communication, 30* (1), 123-33.

Heath, S. B. (1982). "What no bedtime story means: Narrative skills at home and school." *Language in Society, 11*, 49 - 76.

Heath, S. B. (1983). Language policies. *Society, 20*(4), 56 - 63.

Heath, S. B. (1983). "Research currents: A lot of talk about nothing." *Language arts 60(8),* 999-1007.

Heath, S. B. (1986). "Taking a cross-cultural look at narratives." *Topics in Language Disorders, 7(1),* 85 - 94

Israelite, N. K. (1988). On readability formulas: A critical analysis for teachers of the Deaf. *American Annals of the Deaf, 133*(1), 14 - 18.

Jalongo, M. R., Dragich, D., Conrad, N. K., & Zhang, A.. (2002). Using wordless picture books to support emergent literacy. *Early Childhood Education Journal, 29*(3), 167 - 177.

Kampfe, C. M. & Turecheck, A. G. (1987). "Reading Achievement of Prelingually Deaf Students and its Relationship to Parental Methods of Communication: A Review of the Literature." *American Annals of the Deaf, 132(1),* 11 - 15.

Kaplan, H. (1996). "The Nature of Deaf Culture: Implications for Speech and Hearing Professionals." *Journal of Academy of Rehabilitative Audiology, 29,* 71 - 84

Kluwin, T. N., & Kelly, A.B. (1991). The effectiveness of dialogue journal writing in improving the sriting skills of young Deaf writers. *American Annals of the Deaf, 136*(3), 284 - 291.

Krashen, S. (1998). "Bilingual Education and the Dropout Arguement." *Discover, 4,* www.ncela.gwu.edu No. 4.

Krashen, S. D. (1992). *Fundamentals of Language Education.* Torrance, CA, Laredo Publishing.

Kusché, C. A., Greenberg, M.. T. & Garfield, T. S. (1983). "Nonverbal Intelligance and Verbal Achievements in Deaf Adolescents: An Examination of Heredity and Environment." *American Annals of the Deaf, 128(4),* 458 - 466.

Ladd, P. (2003). *Understanding Deaf Culture: In Search of Deafhood.* Clevedon, Multingual Matters Ltd.

Lane, H. (1988). "Educating the American Sign Language speaking minority of the United States: A paper for the commission on education of the Deaf." *Sign Language Studies, 58,* 221 - 229.

Lane, H. (1993). *The mask of benevolence: Disabling the Deaf community.* New York: Vintage Books.

LaSasso, C. (1987). What parents of hearing impaired students need to know about student reading levels. *American Annals of the Deaf, 132*(5), 218 - 220.

Lieberman, L. J., Volding, L., & Winnick, J. P. (2004). "Comparing Mother Development of Deaf Children of Deaf Parents and Deaf Children of Hearing Parents." *American Annals of the Deaf, 149(3),* 281 289.

Limbrick, E. A., S. McNaughton, et al. (1992). "Time engaged in reading: A critical factor in reading achievement." *American Annals of the Deaf. 137(4),* 309 - 314.

Lincoln, Y. and E. Guba (1985). *Naturalistic Enquiry.* Beverly Hills, CA, Sage.

Ling, D. (1989). *Foundations of Spoken Language for Hearing-Impaired Children.* Washington, D.C.: Alexander Graham Bell Association for the Deaf.

Livingston, S. (1997). *Rethinking the education of Deaf studies: Theory and practice from a teacher's perspective.* Portsmouth, NH: Heinemann.

Mandel, M. L. (2001). *Literacy development in the early years: Helping children read and write* (4th ed.). Boston: Allyn and Bacon.

Marschark, M. (2003). "Interactions of Language and Cognition in Deaf Learners: From Research to Practice." *International Journal of Audiology, 42,* 41 - 48.

Maxwell, M. (1985). Some functions and uses of literacy in the Deaf community. *Language in Society, 14(2),* 205 - 221.

Maxwell, M. M. (1986). Beginning reading and Deaf children. *American Annals of the Deaf, 131*(1), 14 - 20.

Mettler, R., & Conway, D.F. (1988). Peer reading journals: A student-to-student application of dialogue journals. *Perspectives for Teachers of the Hearing Impaired, 7*(1), 20 - 22.

Miller, K. J., Luckner, J. L. (1992). Let's talk about it: Using conversation to facilitate language development. *American Annals of the Deaf, 137*(4), 345-350.

Moores, D. (1987). *Educating the Deaf: Psycology, principles, and practices.* Boston, Houghton Mufflin Company.

Moores, D. F. & Sweet, C. (1990). "Relationships of English Grammar and Communicative Fluency to Reading in Deaf Adolescents." *Exceptional Children 1(2),* 97 - 107.

Morrow, L. M. (1989). *The effects of small group story reading on children's questions and commnets.* Paper presented at the Cognition and social perspectives for literacy research and instruction, Chicago, IL, National Reading Conference.

Morrow, L. M. (1990). The impact of classroom envirnment changes to promote literacy during play. *Early Childhood Research Quarterly, 5*, 537 - 554.

Morrow, L. M. (2001). *Literacy development in the early years: Helping chidlren read and write* (4th ed.). Boston: Allyn and Bacon.

Neuman, S. B. (2004). The effect of print-rich classroom environments on early literacy growth. *Reading Teacher, 58*(1), 89 - 103.

Ogbu, J. U. (1992). "Adaptation to Minorty Status and Impact on School Success." *Theory to Practice, 31(4),* 287 - 305.

Osterling, J. P., Violand-Sanchez, E., & Von Vacono, M. (1999). "Latino Families Learning Together." *Educational Leadership, 57(2),* 64 -88.

Paterson, J. F. (1995). "Literacy: An emerging Bilingual/Bicultural program for Deaf and CODA children in Australia." *Proceedings of the International Congress on Education, 1,* 93 - 98.

Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods*. Newbury Park, CA, Sage.

Paul, P. V. (1988). ASL and English: A bilingual minority-language immersion program. *CAID News N Notes*, 3 - 5.

Porter, A. (1999). "Sign-Language Interpretation in Psychotherapy with Deaf Patients." *American Journal of Psychotherapy, 53(2),* 163 - 177.

Prinz, P. M., & Strong, M. (1995). The interrelationship between cognition, sign language, and literacy. *Proceedings of the International Congress on Education, 1*, 252-260.

Prinz, P. M. & Strong, M. (1998). "ASL Proficiency and English Literacy within a Bilingual Deaf Education Model of Instruction." *Topics in Language Disorders, 18(4),* 47 - 53.

Reagan, T. (1988). "Multiculturalism and the Deaf: An education manifesto." *Journal of Research and Development in Education, 22,* 1 - 6.

Reagon, T. (2002). "Toward an "Archeology of Deafness": Etic and Emic Contrutions of Identity in Conflicts." *Journal of Language, Identity & Education, 1(1),* 41 - 66.

Reed, V. (1994). *An introduction to children with language disorders*. New York, MacMillian.

Reynolds, K. (1994). "Dialog journals: The next step." *Perspectives for Teachers of the Hearing Impaired, 12(5),* 12 - 16.

Ridgeway, S. M. (1993). Abused and Deaf children: Some factors to consider. *Child Abuse Review, 2*(3), 166.

Ritter-Brinton, K. & Stewart, D. (1992). "Hearing Parents and Deaf Children: Some Perspectives on Sign Communication and Service Delievery." *American Annals of the Deaf, 137(2),* 85 - 91.

Rossell (2003). "The Near End of Bilingual Education." *Education Next, 3(4),* 44 - 52.

Rutherford, S. (1988). "The Culture of American Deaf People." *Sign Language Studies 58,* 129-147.

Sacks, O. (1989). *Seeing voices: A journey into the world of the Deaf.* Berkeley: University of California Press.

Schilling, L. and E. DeJesus (1993). "Development Issues in Deaf Children." *Journal of Pediatric Health Care, 7(4),* 161 - 166.

Schimmel, C. S., Edwards, S. G., & Prickett, H. T. (1999). "Reading?... Pah! (I Got It!) Innovative Reading Techniques for Successful Deaf Readers." *American Annals of the Deaf, 144(4),* 298 - 308.

Schneiderman, E. (1985). Tapping communicative competence: A language intervention strategy for secondary-age Deaf students. *Teaching English to Deaf and Second Language Students, 3*(3), 21-26.

Schonlau, M., Fricker, R. D., & Elliott, M. N. (2002). *Conduction research surveys via e-mail and the web*. Santa Monica: RAND.

Schwartz, S. (1996). *Choices in Deafness: A Parents' Guide to Communication Options*. Maryland, Woodbine House.

Segarra, C. (2000). "Bilignual literacy development: D.K.'s story." *Kappa Delta Pi, 36(4),* 181-183.

Snow, C. E., Burns, M. S., & Griffin, P. (1999). Language and literacy enviroments in preschools. *Preventing reading difficults in young children,* ERIC Digest. *1998.*

Stebnicki, J. A. M. and H. V. Coeling (1999). "The Culture of the Deaf." *Jounral of Transcultural Nursing, 10(4),* 350 -357.

Stokoe, W. (1960). Sign Language Structure: An Outline of the Visual Communication Systems of the American Deaf. *Studies in Linguistics Occasional Papers*. Washington, DC, Gallaudet University Press, pp. 8 - 23

Strong, M., ed. (1990). *Language learning and Deafness*. Cambridge, Cambridge University Press.

Sullivan, P. M. & Schulte, L. E. (1992). "Factor Analysis of WISC-R with Deaf and Hard-of-Hearing Children." *Psychological Assessment, 4(4),* 537 - 540.

Sulzy, E. (1985). "Children's emergent reading of favorite storybooks: a development study." *Reading Research Quarterly, 20(4),* 458 - 481.

Swanwick, R. (2002). "Sign Bilingual Deaf Children's Approaches to Writing: Individual Strategies for Bridging the Gap between BSL and Written English." *Deafness & Education International, 4(2),* 65 - 83.

Swanwick, R. & Watson, L. (2005). "Literacy in the Homes of Young Deaf Children: Common and Distanct Features of Spoken Language and Sign Bilingual Environments." *Journal of Early Childhood Literacy, 5(1),* 53 - 78.

Taylor, D. & Dorsey-Gains, C. (1988). *Growing up literate: Learning from inner-city families.* Heinemann: Portsmouth, NH.

Teale, W. H., & Sulzby E. (Eds.). (1986). *Emergent literacy: Writing and reading.* Norwood, NJ: Ablex.

Teale, W. H., & Sulzby, E. (1987). Literacy acquistion in early childhood: The roles of access and mediation in storybook telling. In D. A. Wagner (Ed.), *The future of literacy in a changing world* (pp. 111 - 130). New York: Pergamon.

Thomas, W. P. & Collier, V. P. (1998). "Two Languages Are Better Than One." *Educational Leadership, 55(4),* 23 - 26.

Thomas, W. P. & Collier, V. P. (1999). "Accelerated Schooling for English Language Learners." *Educational Leadership, 56(4),* 23 - 26.

Vaccari, C. & Marschark, M. (1997). "Communication between Parents and Deaf Children: Implicaitons for Social-Emotional Development." *Journal of Child Psychology & Psychiatry & Allied Disciplines, 38(7),* 793 - 801.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological process.* Cambridge, MA, Harvard University Press.

Watson, L. R., Layton, T. L., & Pierce P. L. (1994). Enhancing emerging literacy in a language preschool. *Language, Speech and Hearing Services in Schools, 25*, 136 - 145.

Whitehurst, G. L., & Lonigan, C. J. (2001). Emergent literacy: Development from pre-readers to readers. In S. D. Neuman, (Ed.), *Handbook of Research in Early Literacy for the 21st Century* . New York: Guilford.

Wilber, S. (1998). "Why American Need Deaf Culture: Culture Pluralism and the Liberal Arts Education." *Sign Language Studies, 58,* 195-204.

Wilcox, S. (1988). "Introduction: Academic Acceptance of American Sign Language." *Sign Language Studies, 58,* 101-108.

Yaden, D. B. J. (2000). Emergent literacy: A matter (polphony) of perspectives. In M. L. Kamil & P. B. Mosenthal (Eds.), *Handbook of Reading Research* (Vol. III, pp. 425 - 454). Mahwah, NJ: Lawrence Elbaum Associates.

# APPENDIX A

## Recruitment Letter

CALLING ALL PARENTS OF DEAF CHILDREN!

Hi! My name is Denyse. I am Deaf. My mom is Hard-of-Hearing and my grandfather was Deaf. I have many other Deaf and Hard-of-Hearing family members. My husband is also Deaf.

I am conducting research in order to fulfill the requirements for a Ph.D. in Reading, and need your help in doing a survey.

***ALL information will be confidential!*** Your email address or other personal information will NOT be given out! There is a potential loss of confidentiality through all email transactions. However, I have taken steps to prevent a potential loss in confidentiality. Again your answers and email address will not be given out.

For every one hundred participants, there will be a drawing for a $50.00 gift certificate for American Express.

To begin the survey click on the web site below.

www.deaf-and-hearing-parents-survey.org
(The name of the web site may change depending
on the availability of web names)

# APPENDIX B

Instructions for Online Survey

Research Study Instructions for:
Online Survey

Purpose: The purpose of the present study is to compare Deaf parents' interactions with their Deaf children to those of hearing parents with Deaf children in relation to language and literacy.

Procedure: The participants will be asked to complete an anonymous online survey, which will be forwarded to the research via the internet.

Risk: There is an extremely minimal risk in participating in this survey. There is a relatively small chance of a breach in confidentially if a hacker invades the field. The researcher, however, has employed three website professionals to insure the confidentially of the participants. The researcher will also follow guidelines set forth by the human rights review standards committee in order to protect the participants further.

Voluntary Participation: **Your participation is completely voluntary and confidential!** You may withdraw from the survey at any time without penalty. Submitting your survey will be your informed consent to participate in this research. You will ONLY be contacted if you enter and have been selected as a winner of the gift certificate.

Privacy and Confidentiality: If any survey is returned with a personal attachment, such as names and addresses, it will be removed and stored separately from the data. A major concern in the collection of the survey information is to keep all internet addresses, personal addresses, phone numbers (if applicable), as well as individuals' names and/or screen names confidential to insure the privacy and protection of those individuals. Upon completion of the survey, all identifying information will be removed and stored on a separate disk in a locked filing cabinet. Participants will then be identified only by a unique code number.

Participation Time: Depending on if the participant receives the pilot test or the completed survey, the time requirement should be between 10 – 25 minutes to complete the questionnaire.

Questions: If participants have questions in regards to the survey, participants may contact the researcher at denysedalewright@sbcglobal.net.

Thank you for your participation!

# APPENDIX C

## Literacy Use Questionnaire

I am a parent of a Deaf child(ren). ? Yes ? No

I am... ? Deaf ? Hearing

1. I leave notes for family members at home ("Please pick up milk today.").

   Never Seldom Often Always

2. I write notes to workers or professionals who might come to my home ("To the Plumber: Please ring the doorbell. Do not knock.").

   Never Seldom Often Always

3. I write emails on the computer to friends, family, or for business in front of my child(ren).

   Never Seldom Often Always

4. I hand write letters to friends, family, or for business in front of my child(ren).

   Never Seldom Often Always

5. I print conversations from the TDD in front of my child(ren).

   Never Seldom Often Always

6. I print conversations from the Relay in front of my child(ren).

   Never Seldom Often Always

7. I read books to my children.

   Never Seldom Often Always

8. I show books to my children.

   Never Seldom Often Always

9. I read lists (shopping list, etc.) to my child(ren).

   Never Seldom Often Always

10. I show lists (to-do list, etc.) to my child(ren).

    Never Seldom Often Always

11. I read letters to my child(ren).

Never Seldom Often Always

12. I show letters to my child(ren).

Never Seldom Often Always

13. I read bills to my child(ren).

Never Seldom Often Always

14. I show bills to my child(ren).

Never Seldom Often Always

15. I show magazines to my child(ren).

Never Seldom Often Always

16. I read magazines to my child(ren).

Never Seldom Often Always

17. I talk with my child(ren) after reading a book.

Never Seldom Often Always

18. I read the same book to my child(ren) more than once.

Never Seldom Often Always

19. My child(ren) and I connect events that happen in books to our lives ("Sally's rabbit looks like *Pat the Bunny*!").

Never Seldom Often Always

20. I talk with my child(ren) before reading a book.

Never Seldom Often Always

21. My child(ren) likes to read the same book again and again.

Never Seldom Often Always

22. I talk to my child(ren) while reading a book.

Never Seldom Often Always

23. I use the phone book (white pages and/or yellow pages) with my child(ren).

Never Seldom Often Always

24. I read instructions with my child(ren).

Never Seldom Often Always

25. I have books in my home.

None Few Some Many

26. I read the Bible or other religious books with my child(ren).

Never Seldom Often Always

27. I borrow books from the library.

Never Seldom Often Always

28. I help my children with homework or other schoolwork.

Never Seldom Often Always

29. I have caption on the Television.

Never Seldom Often Always

30. I ***only*** rent movies that are captioned.

Never Seldom Often Always

31. I read advertisements that come in the mail with my child(ren).

Never Seldom Often Always

32. I like to look through and/or read catalogs with my child(ren).

Never Seldom Often Always

33. I have magazines in my home.

None Few Some Many

34. I have catalogs in my home.

None Few Some Many

35. My child(ren) likes to write.

Never Seldom Often Always

36. My child(ren) likes to draw.

Never Seldom Often Always

37. My child(ren) likes to color.

Never Seldom Often Always

38. I hang up my child(rens') writings on the wall.

Never Seldom Often Always

39. I hang up my child(rens') drawings on the refrigerator.

Never Seldom Often Always

40. I hang up my child(rens') colorings on the refrigerator.

Never Seldom Often Always

41. I read for my own enjoyment in front of my child(ren) (books, magazines, newspapers, etc).

Never Seldom Often Always

42. My child(ren) recognizes signs in the environment (McDonalds, Burger King, Donut Shop, etc.).

Never Seldom Often Always

43. When reading with my child(ren), I point to letters.

Never Seldom Often Always

44. When reading with my child(ren), I point to words.

Never Seldom Often Always

45. When reading with my child(ren), I point to phrases.

Never Seldom Often Always

46. We have child(rens) books in our home.

None Few Some Many

47. When reading, my child(ren) and/or I stop in the middle, and talk about what is happening in the story.

Never Seldom Often Always

48. When driving, my child(ren) will point to a sign, and ask me what is says.

Never Seldom Often Always

49. I point out print in the environment (stop signs, McDonalds).

Never Seldom Often Always

50. I ***only*** buy or rent video games that are captioned (Playstation, X-Box, etc.).

Never Seldom Often Always

51. I write down directions in front of my child(ren).

Never Seldom Often Always

52. We have newspapers in our home.

None Few Some Many

53. We have newsletters in our home.

None Few Some Many

54. My child(ren) and I go to the library.

Never Seldom Often Always

55. I make lists for grocery shopping in front of my child(ren).

Never Seldom Often Always

56. I like to read in front of my child(ren).

Never Seldom Often Always

57. My child(ren) asks me to read to them.

Never Seldom Often Always

58. My child(ren) asks me what a word means when we are reading.

Never Seldom Often Always

59. My child(ren) asks me what a phrase means when we are reading.

Never Seldom Often Always

60. I read the rules when playing a new game with my child(ren).

Never Seldom Often Always

61. I use a list when shopping with my child(ren).

Never Seldom Often Always

62. I notice my child(ren) reading without me.

Never Seldom Often Always

63. My child(ren) and I like to go to the bookstore.

Never Seldom Often Always

64. My child(ren) uses the computer.

Never Seldom Often Always

65. I make a list for things I need to do that day/weekend (Honey Do List) in front of my child(ren).

Never Seldom Often Always

66. I use the TDD in front of my child(ren).

Never Seldom Often Always

67. My child(ren) and I check out books from the library.

Never Seldom Often Always

68. I use the relay service in front of my child(ren).

Never Seldom Often Always

69. My child(ren) likes to read by themselves.

Never Seldom Often Always

70. My child(ren) and I talk about books before we read them (old and new books).

Never Seldom Often Always

71. I surf the Internet in front of my child(ren).

Never Seldom Often Always

72. My child(ren) and I are on the computer together.

Never Seldom Often Always

73. I show web pages to my child(ren).

Never Seldom Often Always

74. I read web pages with my child(ren).

Never Seldom Often Always

75. My child(ren) and I talk about books after we read them.

Never Seldom Often Always

76. I read to my child(ren) before bed.

Never Seldom Often Always

77. I write Thank-You notes with my child(ren).

Never Seldom Often Always

# APPENDIX D

## Demographic Questionnaire

My gender is:

Female Male

My age is _____.

My race is _____.

a. African-American
b. Indian
c. Asian
d. Caucasian
e. European
f. Latino/a
g. Other _____

I have _____ Deaf child(ren).

I have _____ hearing child(ren).

The age(s) of my Deaf child(ren) is(are):

a. ___
b. ___
c. ___
d. ___
e. ___

The age(s) of my hearing child(ren) is(are):

a. ___
b. ___
c. ___
d. ___
e. ___

My Deaf child(ren) attends which type of school:

First Child (Repeated for Each Deaf Child)

a. Mainstream without Interpreter
b. Mainstream with Interpreter
c. Charter School for the Deaf using ASL
d. Oral Program
e. Special Day Class
f. Resource Room
g. Home School
h. State School for the Deaf – in the dorms
i. State School for the Deaf – stays at home at night
j. Has Graduated
k. Is no longer in school – dropped out
l. Other _____
m. Other _____

My highest level of education is:

a. Some high school
b. High school diploma or GED
c. Some college
d. BA or BS
e. Some Graduate school
f. MA, MS, or MBA
g. Ph.D.

The category that best fits my income is:

a. Less than $20,000
b. $20,000 – $30,000
c. $30,000 - $40,000
d. $40,000 - $50,000
e. $50,000 - $75,000
f. $75,000 - $90,000
g. $90,000+

I work:

Part Time
Full Time
As a stay-at-home parent

The category that best fits where I live is:

West Coast
East Coast
North Central
South Central

My home is:

Urban (in the city)
Rural (in the country)
Suburban (near a city or town)

Enter the email address you would like us to use to send your gift certificate if you win one of five American Express gift cards. ***Your email address will NEVER be given out!***

_____@_____

Thank you for your time and participation! Your email address has been entered into the drawing. ONLY winners will be contacted. Once the winner has responded, a gift certificate will be given through the Internet/email or mailed, whichever the winner would like.

Please pass on this survey to others!

# APPENDIX E

## Unrotated Seventeen Factor Solution of Pilot Data

*Initial Seventeen Factor Loadings of Pilot Data*

| | Factor | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Item 1 | .035 | -.006 | .087 | .102 | .043 | .038 | .152 | .145 | -.070 | .126 | .064 | -.109 | .021 | -.073 | .765 | .071 | -.036 |
| Item 2 | .233 | .091 | -.020 | -.086 | .102 | .193 | .085 | .116 | .188 | .234 | -.096 | -.073 | -.233 | .017 | .587 | -.242 | .008 |
| Item 3 | .307 | .507 | .370 | -.123 | .032 | -.041 | -.157 | .026 | -.057 | .119 | .064 | .090 | .006 | .054 | .268 | .232 | .114 |
| Item 4 | .086 | .269 | .383 | -.069 | .151 | .072 | .034 | .188 | -.076 | .283 | .185 | .053 | -.007 | -.299 | .341 | .089 | .158 |
| Item 5 | -.038 | .076 | .155 | .008 | -.041 | .123 | .038 | .040 | .024 | .824 | -.119 | -.021 | .002 | .065 | .118 | .019 | .052 |
| Item 6 | -.080 | .101 | .109 | .070 | -.038 | .082 | -.008 | .037 | .048 | .837 | .041 | .040 | .031 | .106 | .086 | .023 | .045 |
| Item 7 | .617 | .133 | .277 | .167 | .137 | .191 | .009 | -.039 | .118 | .108 | .203 | .293 | .021 | .016 | .031 | .193 | .046 |
| Item 8 | .468 | .129 | .436 | -.001 | .170 | .137 | .074 | .021 | .144 | -.002 | .159 | .284 | .219 | .034 | .091 | .274 | -.052 |
| Item 9 | .238 | .203 | .685 | .131 | .241 | .083 | -.002 | .164 | .047 | .043 | .024 | .114 | .022 | .024 | .040 | .042 | -.035 |
| Item 10 | .184 | .135 | .755 | .138 | .203 | .056 | -.050 | .184 | -.005 | -.023 | .029 | .044 | .131 | -.007 | .094 | -.005 | -.022 |
| Item 11 | .340 | .254 | .635 | .116 | .118 | -.017 | .230 | .080 | .127 | .138 | .008 | .095 | -.133 | -.057 | -.145 | .023 | .129 |
| Item 12 | .190 | .084 | .766 | .126 | .153 | .066 | .103 | .168 | .053 | .061 | .146 | .007 | .034 | -.025 | -.016 | .099 | .021 |
| Item 13 | .058 | .064 | .307 | .102 | .113 | .031 | .131 | .732 | -.054 | .025 | .000 | .060 | .113 | .121 | .135 | .026 | .188 |
| Item 14 | -.012 | .011 | .316 | .094 | .066 | .097 | .059 | .761 | -.099 | -.054 | .090 | .056 | .222 | .019 | .115 | -.022 | .167 |
| Item 15 | .275 | .234 | .567 | -.004 | .201 | .182 | .295 | .170 | -.103 | -.021 | .132 | .005 | .205 | -.035 | .098 | .042 | -.205 |
| Item 16 | .484 | .350 | .466 | .049 | .022 | .191 | .239 | .147 | .093 | .104 | .072 | .030 | -.065 | -.037 | .005 | -.097 | -.103 |
| Item 17 | .698 | .165 | .195 | .141 | .216 | .117 | .068 | .058 | .184 | -.067 | .075 | .081 | -.012 | .134 | -.051 | .153 | -.017 |
| Item 18 | .832 | .036 | .197 | -.001 | .024 | -.020 | .026 | .002 | .145 | -.019 | .023 | .195 | .043 | .015 | .102 | .039 | .042 |
| Item 19 | .685 | .243 | .247 | .134 | .068 | .181 | .167 | .173 | -.003 | -.137 | .041 | -.033 | .067 | .099 | .152 | .031 | .128 |
| Item 20 | .774 | .177 | .080 | .161 | .132 | .059 | .049 | .137 | .087 | -.015 | .123 | -.063 | .073 | .115 | .069 | .099 | .061 |
| Item 21 | .689 | -.046 | .080 | -.039 | -.077 | .083 | .023 | .126 | .310 | .098 | -.031 | .188 | .281 | -.137 | .042 | -.044 | .034 |
| Item 22 | .653 | -.064 | .317 | .115 | -.036 | .084 | -.037 | .057 | .067 | -.086 | .124 | .119 | .231 | -.023 | .043 | .122 | .062 |
| Item 23 | .083 | .112 | .214 | .317 | .156 | .052 | .121 | .607 | -.179 | .168 | .167 | .033 | .058 | -.048 | .161 | -.002 | -.112 |
| Item 24 | .095 | .224 | .473 | .422 | .095 | .075 | -.046 | .307 | .023 | .080 | .085 | .078 | .018 | .046 | .053 | .116 | -.386 |
| Item 25 | .270 | .013 | .084 | .051 | .053 | .202 | .216 | .081 | -.028 | .034 | .129 | -.013 | -.029 | -.041 | -.048 | .710 | .040 |
| Item 26 | .296 | .081 | -.017 | .101 | .070 | .168 | -.128 | .145 | .012 | .201 | .131 | -.019 | .002 | -.030 | -.025 | .053 | .635 |
| Item 27 | .102 | .010 | .059 | -.023 | -.013 | .855 | .111 | .056 | -.018 | .093 | .142 | .098 | .044 | .022 | .044 | .128 | .089 |
| Item 28 | .259 | .122 | .262 | .456 | -.013 | .252 | -.021 | .087 | .371 | .061 | .015 | .169 | .106 | .043 | .036 | .226 | -.078 |
| Item 29 | -.022 | .065 | .090 | -.004 | -.055 | .069 | -.035 | .021 | -.017 | .134 | -.017 | -.086 | .079 | .772 | -.117 | -.102 | .035 |
| Item 30 | .055 | .039 | -.128 | .137 | -.061 | .133 | -.036 | .148 | -.038 | .287 | .042 | .094 | -.059 | .701 | .043 | .102 | -.084 |
| Item 31 | .202 | .310 | -.039 | .021 | .170 | .005 | .087 | .629 | .216 | .096 | -.039 | .091 | -.169 | .145 | -.006 | .088 | -.137 |

*Initial Seventeen Factor Loadings of Pilot Data (Continued)*

| | Factor | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Item 32 | .404 | .225 | .196 | .012 | .152 | -.008 | .175 | .534 | .180 | -.091 | .110 | .042 | -.097 | -.071 | -.128 | .142 | -.206 |
| Item 33 | .220 | .102 | .074 | .054 | .214 | .129 | .525 | .155 | -.036 | -.040 | .152 | .111 | .134 | -.108 | -.097 | .087 | -.306 |
| Item 34 | -.005 | .223 | .103 | .027 | .016 | .111 | .656 | .261 | .065 | .074 | -.043 | .141 | .071 | -.156 | .043 | .094 | .037 |
| Item 35 | .202 | .106 | .010 | .325 | .151 | .041 | .138 | .014 | .662 | .066 | .134 | .026 | .222 | .018 | -.137 | -.092 | .137 |
| Item 36 | .286 | .078 | .060 | .095 | .074 | -.003 | .057 | -.049 | .800 | .013 | .235 | .059 | .032 | -.019 | .037 | .088 | -.050 |
| Item 37 | .355 | -.007 | -.009 | .162 | .097 | .044 | .013 | -.057 | .769 | .037 | .240 | .109 | .071 | -.032 | .039 | .007 | -.029 |
| Item 38 | .335 | .104 | .161 | .213 | .001 | .242 | .161 | .054 | .244 | .009 | .550 | .005 | .232 | .030 | .066 | .050 | -.027 |
| Item 39 | .206 | .125 | .128 | .138 | .119 | .127 | .131 | .084 | .253 | -.008 | .823 | .090 | .055 | .017 | .021 | .094 | .053 |
| Item 40 | .235 | .095 | .120 | .141 | .124 | .142 | .112 | .087 | .247 | -.024 | .818 | .093 | .028 | .030 | .017 | .094 | .047 |
| Item 41 | .355 | .289 | .154 | .014 | .412 | .110 | .133 | .118 | -.046 | -.033 | .101 | .074 | .221 | -.039 | .173 | .279 | -.165 |
| Item 42 | .149 | .268 | .260 | .340 | .118 | .187 | .021 | .120 | .183 | .039 | .069 | .123 | .349 | .002 | .006 | .463 | -.146 |
| Item 43 | .364 | .146 | .077 | .114 | .165 | .102 | .131 | .118 | .079 | .111 | .088 | .681 | -.033 | -.029 | -.173 | -.021 | -.146 |
| Item 44 | .402 | .192 | .154 | .221 | .056 | .025 | .036 | .085 | .139 | .095 | .103 | .725 | .049 | .018 | -.014 | .131 | -.034 |
| Item 45 | .335 | .240 | .127 | .297 | .180 | -.052 | .208 | .116 | .074 | .025 | .030 | .590 | .035 | .100 | -.086 | .014 | .223 |
| Item 46 | .406 | .202 | .082 | .145 | .113 | .132 | .096 | -.024 | .293 | -.049 | .132 | .200 | .089 | -.085 | .017 | .427 | .092 |
| Item 47 | .471 | .139 | .148 | .461 | .159 | .172 | .102 | .034 | .114 | .004 | .206 | .108 | .155 | .067 | -.074 | .064 | .109 |
| Item 48 | .345 | .248 | .089 | .558 | .065 | .075 | .023 | .203 | .192 | .142 | .159 | .194 | .011 | .078 | .070 | .040 | -.070 |
| Item 49 | .383 | .269 | .159 | .440 | .145 | .114 | .149 | .184 | .116 | .048 | .087 | .323 | -.007 | -.058 | .098 | -.049 | -.066 |
| Item 50 | -.010 | .162 | -.043 | .236 | .039 | .180 | .256 | -.114 | .094 | .031 | .052 | .285 | .236 | .359 | .339 | -.025 | .083 |
| Item 51 | .096 | .228 | .223 | .308 | .402 | .212 | .143 | .155 | -.059 | .074 | .097 | .215 | .161 | .031 | .309 | -.192 | -.151 |
| Item 52 | .036 | -.004 | .020 | .037 | .029 | .044 | .831 | .047 | .048 | -.002 | .110 | -.037 | .040 | .073 | .119 | .100 | -.036 |
| Item 53 | .067 | .113 | .087 | .147 | .106 | .058 | .788 | .005 | .066 | .124 | .093 | .088 | -.061 | .065 | .106 | -.012 | .006 |
| Item 54 | .245 | .228 | .114 | .169 | .136 | .799 | .094 | .051 | .066 | .052 | .109 | -.029 | .112 | .066 | .097 | .047 | .007 |
| Item 55 | .115 | .005 | .324 | .110 | .736 | .109 | .070 | .130 | .205 | -.007 | .059 | .072 | .128 | -.052 | .091 | .072 | .050 |
| Item 56 | .502 | .268 | .127 | .092 | .514 | .166 | .113 | .079 | -.008 | -.018 | -.034 | .117 | .098 | -.010 | .087 | .258 | -.143 |
| Item 57 | .674 | .116 | .030 | .293 | .154 | .173 | -.037 | .043 | .233 | .102 | .152 | .206 | -.014 | .010 | .011 | -.036 | -.025 |
| Item 58 | .267 | .157 | .086 | .634 | .132 | .065 | .087 | .154 | .299 | .046 | .154 | .185 | .055 | .257 | .117 | .092 | .038 |
| Item 59 | .219 | .206 | .107 | .661 | .149 | -.026 | .094 | .137 | .264 | .062 | .097 | .094 | .048 | .253 | .112 | .071 | .181 |
| Item 60 | .330 | .236 | .175 | .361 | .413 | .091 | -.022 | .074 | .028 | -.001 | .119 | .191 | .048 | .096 | -.152 | .071 | -.156 |
| Item 61 | .188 | -.017 | .260 | .208 | .748 | .022 | .079 | .156 | .225 | .024 | .060 | .061 | .013 | .016 | -.010 | .078 | .057 |

*Initial Seventeen Factor Loadings of Pilot Data (Continued 2)*

| | Factor | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Item 63 | .282 | .271 | .137 | .171 | .217 | .426 | .098 | .034 | .084 | .001 | -.032 | .018 | .391 | -.073 | .010 | .081 | .035 |
| Item 64 | -.135 | .450 | .253 | .293 | .137 | .175 | .087 | .026 | .176 | -.041 | .031 | .264 | .345 | .216 | .047 | .095 | -.081 |
| Item 65 | .093 | .047 | .309 | .109 | .584 | .117 | .217 | .195 | -.083 | .156 | .238 | .104 | .138 | -.129 | .081 | -.185 | .133 |
| Item 66 | .098 | -.079 | -.137 | .118 | .190 | -.057 | .267 | -.069 | .060 | .597 | .059 | .153 | .181 | .353 | -.001 | -.001 | .014 |
| Item 67 | .254 | .171 | .100 | .155 | .138 | .815 | .063 | .025 | .055 | .034 | .102 | .020 | .106 | .153 | .056 | .074 | -.010 |
| Item 68 | .185 | .128 | -.164 | .150 | .197 | -.134 | .080 | .050 | -.037 | .555 | .097 | .150 | .140 | .439 | .090 | -.089 | .060 |
| Item 69 | .231 | .267 | .075 | .022 | .169 | .192 | .100 | .116 | .175 | .128 | .141 | .095 | .677 | .122 | -.090 | .046 | -.014 |
| Item 70 | .504 | .293 | .045 | .456 | .192 | .132 | .257 | .110 | .141 | .160 | -.034 | -.026 | .117 | .019 | .018 | .059 | -.007 |
| Item 71 | .196 | .743 | .189 | .115 | .135 | .033 | -.009 | -.008 | -.023 | .081 | .042 | .078 | .233 | .044 | .145 | .167 | -.124 |
| Item 72 | .166 | .774 | .127 | .188 | .050 | .086 | .172 | .140 | .088 | .057 | -.005 | .129 | .062 | .041 | -.039 | -.031 | .143 |
| Item 73 | .167 | .835 | .101 | .169 | -.006 | .187 | .082 | .133 | .063 | .098 | .094 | .109 | .103 | .032 | -.011 | -.024 | -.046 |
| Item 74 | .173 | .769 | .234 | .207 | -.004 | .144 | .205 | .130 | .063 | .013 | .157 | .063 | .041 | .043 | -.023 | -.011 | .055 |
| Item 75 | .583 | .363 | .104 | .391 | .117 | .155 | .133 | .056 | .063 | .019 | .226 | -.084 | .086 | -.106 | -.081 | .153 | .018 |
| Item 76 | .643 | .133 | .002 | .367 | .158 | .162 | -.033 | -.086 | .068 | .105 | .208 | .178 | -.075 | -.077 | -.037 | -.035 | .040 |
| Item 77 | .279 | .078 | .261 | .529 | .205 | .164 | .258 | -.021 | -.033 | .065 | .107 | .060 | .123 | -.209 | -.101 | -.051 | .079 |
| Item 63 | .282 | .271 | .137 | .171 | .217 | .426 | .098 | .034 | .084 | .001 | -.032 | .018 | .391 | -.073 | .010 | .081 | .035 |
| Item 64 | -.135 | .450 | .253 | .293 | .137 | .175 | .087 | .026 | .176 | -.041 | .031 | .264 | .345 | .216 | .047 | .095 | -.081 |
| Item 65 | .093 | .047 | .309 | .109 | .584 | .117 | .217 | .195 | -.083 | .156 | .238 | .104 | .138 | -.129 | .081 | -.185 | .133 |
| Item 66 | .098 | -.079 | -.137 | .118 | .190 | -.057 | .267 | -.069 | .060 | .597 | .059 | .153 | .181 | .353 | -.001 | -.001 | .014 |
| Item 67 | .254 | .171 | .100 | .155 | .138 | .815 | .063 | .025 | .055 | .034 | .102 | .020 | .106 | .153 | .056 | .074 | -.010 |
| Item 68 | .185 | .128 | -.164 | .150 | .197 | -.134 | .080 | .050 | -.037 | .555 | .097 | .150 | .140 | .439 | .090 | -.089 | .060 |
| Item 69 | .231 | .267 | .075 | .022 | .169 | .192 | .100 | .116 | .175 | .128 | .141 | .095 | .677 | .122 | -.090 | .046 | -.014 |
| Item 70 | .504 | .293 | .045 | .456 | .192 | .132 | .257 | .110 | .141 | .160 | -.034 | -.026 | .117 | .019 | .018 | .059 | -.007 |
| Item 71 | .196 | .743 | .189 | .115 | .135 | .033 | -.009 | -.008 | -.023 | .081 | .042 | .078 | .233 | .044 | .145 | .167 | -.124 |
| Item 72 | .166 | .774 | .127 | .188 | .050 | .086 | .172 | .140 | .088 | .057 | -.005 | .129 | .062 | .041 | -.039 | -.031 | .143 |
| Item 73 | .167 | .835 | .101 | .169 | -.006 | .187 | .082 | .133 | .063 | .098 | .094 | .109 | .103 | .032 | -.011 | -.024 | -.046 |
| Item 74 | .173 | .769 | .234 | .207 | -.004 | .144 | .205 | .130 | .063 | .013 | .157 | .063 | .041 | .043 | -.023 | -.011 | .055 |
| Item 75 | .583 | .363 | .104 | .391 | .117 | .155 | .133 | .056 | .063 | .019 | .226 | -.084 | .086 | -.106 | -.081 | .153 | .018 |
| Item 76 | .643 | .133 | .002 | .367 | .158 | .162 | -.033 | -.086 | .068 | .105 | .208 | .178 | -.075 | -.077 | -.037 | -.035 | .040 |
| Item 77 | .279 | .078 | .261 | .529 | .205 | .164 | .258 | -.021 | -.033 | .065 | .107 | .060 | .123 | -.209 | -.101 | -.051 | .079 |

# APPENDIX F

## First Rotated Fourteen Factor Solution of Pilot Data

*Initial Rotated Fourteen Factor Loadings of Pilot Data*

| | Factor | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Item 1 | .067 | .051 | .025 | .048 | .160 | .173 | .038 | -.130 | .153 | .146 | .154 | -.196 | -.075 | .658 |
| Item 2 | .165 | .037 | .013 | .009 | .074 | .081 | .154 | .171 | .222 | -.137 | .008 | -.021 | -.001 | .714 |
| Item 3 | .328 | .503 | .404 | -.124 | -.141 | .038 | -.008 | -.086 | .152 | .113 | -.028 | .083 | .043 | .215 |
| Item 5 | -.039 | .074 | .174 | -.041 | .047 | .055 | .117 | .036 | .804 | -.095 | -.070 | .012 | .086 | .168 |
| Item 6 | -.089 | .131 | .111 | .002 | .002 | .037 | .079 | .059 | .806 | .067 | -.012 | .058 | .141 | .115 |
| Item 7 | .586 | .176 | .256 | .196 | .016 | -.030 | .209 | .083 | .099 | .247 | .137 | .338 | -.015 | .063 |
| Item 9 | .223 | .220 | .688 | .101 | .013 | .190 | .080 | .028 | .027 | .061 | .228 | .150 | .039 | .052 |
| Item 10 | .210 | .193 | .707 | .084 | -.040 | .247 | .073 | -.017 | -.001 | .048 | .276 | .007 | -.027 | .020 |
| Item 11 | .288 | .209 | .681 | .181 | .228 | .105 | -.019 | .137 | .116 | .007 | -.033 | .178 | -.056 | -.052 |
| Item 12 | .203 | .098 | .750 | .084 | .126 | .222 | .080 | .050 | .044 | .164 | .150 | .015 | .005 | -.022 |
| Item 13 | .080 | .083 | .260 | .094 | .111 | .798 | .037 | -.025 | .090 | .023 | .091 | .024 | .082 | .062 |
| Item 14 | .050 | .053 | .232 | .055 | .056 | .844 | .114 | -.052 | .022 | .076 | .112 | -.052 | .001 | -.035 |
| Item 15 | .298 | .284 | .480 | -.087 | .332 | .210 | .179 | -.096 | -.034 | .132 | .306 | -.006 | -.027 | .038 |
| Item 17 | .668 | .178 | .209 | .168 | .096 | .014 | .120 | .165 | -.124 | .110 | .153 | .204 | .154 | .074 |
| Item 18 | .819 | .059 | .206 | .054 | .024 | -.014 | -.010 | .142 | .008 | .037 | .020 | .213 | .002 | .073 |
| Item 19 | .674 | .253 | .248 | .196 | .165 | .207 | .188 | .015 | -.079 | .040 | .000 | -.020 | .037 | .136 |
| Item 20 | .755 | .210 | .067 | .213 | .057 | .116 | .066 | .084 | -.054 | .135 | .126 | .046 | .108 | .144 |
| Item 21 | .734 | .014 | .031 | -.076 | .046 | .123 | .081 | .346 | .155 | -.033 | .016 | .120 | -.116 | -.054 |
| Item 22 | .726 | .030 | .254 | .012 | -.008 | .087 | .091 | .066 | -.012 | .186 | .078 | .039 | -.037 | -.075 |
| Item 23 | .058 | .174 | .152 | .188 | .149 | .628 | .033 | -.146 | .094 | .161 | .224 | .118 | .000 | .173 |
| Item 25 | .332 | .017 | .157 | -.049 | .279 | .030 | .204 | -.113 | -.085 | .329 | -.034 | .116 | .116 | .016 |
| Item 26 | .336 | .030 | -.025 | .292 | -.195 | .236 | .183 | -.002 | .321 | .141 | -.086 | -.038 | -.181 | -.035 |
| Item 27 | .124 | .021 | .041 | -.038 | .126 | .069 | .866 | -.028 | .117 | .163 | -.020 | .076 | .006 | .016 |
| Item 29 | -.019 | .053 | .087 | .049 | -.049 | .026 | .065 | .002 | .186 | -.051 | -.049 | -.142 | .755 | -.157 |
| Item 30 | .020 | .045 | -.105 | .099 | -.015 | .099 | .128 | -.035 | .242 | .068 | -.079 | .167 | .749 | .087 |
| Item 31 | .139 | .292 | -.032 | -.014 | .122 | .521 | -.021 | .206 | -.057 | -.047 | .070 | .339 | .213 | .252 |
| Item 32 | .353 | .203 | .223 | -.039 | .236 | .444 | -.026 | .213 | -.241 | .104 | .033 | .274 | .032 | .078 |
| Item 33 | .202 | .130 | .060 | -.030 | .591 | .107 | .123 | .003 | -.153 | .124 | .265 | .187 | .006 | -.079 |

*Initial Rotated Fourteen Factor Loadings of Pilot Data (Continued)*

| | Factor | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Item 34 | .010 | .214 | .106 | .009 | .682 | .251 | .102 | .076 | .079 | -.033 | -.018 | .106 | -.114 | .009 |
| Item 35 | .185 | .117 | .013 | .378 | .114 | .047 | .063 | .711 | .104 | .095 | .143 | .014 | -.022 | -.160 |
| Item 36 | .269 | .087 | .082 | .049 | .062 | -.088 | -.008 | .787 | -.007 | .273 | .063 | .116 | -.001 | .105 |
| Item 37 | .321 | .021 | .007 | .150 | .013 | -.093 | .045 | .772 | .025 | .249 | .113 | .145 | -.015 | .065 |
| Item 38 | .351 | .162 | .113 | .163 | .190 | .081 | .248 | .276 | .027 | .551 | .091 | -.047 | .056 | -.056 |
| Item 39 | .185 | .136 | .109 | .142 | .131 | .109 | .126 | .265 | .031 | .823 | .108 | .096 | -.030 | -.006 |
| Item 40 | .205 | .102 | .107 | .159 | .112 | .103 | .142 | .257 | -.003 | .815 | .108 | .112 | .000 | .000 |
| Item 43 | .290 | .148 | .080 | .093 | .155 | .061 | .108 | .094 | .072 | .055 | .162 | .755 | -.011 | -.108 |
| Item 44 | .372 | .218 | .158 | .165 | .060 | .071 | .035 | .128 | .129 | .157 | .061 | .693 | .036 | -.084 |
| Item 45 | .303 | .225 | .147 | .364 | .178 | .154 | -.034 | .085 | .123 | .040 | .093 | .554 | .015 | -.164 |
| Item 48 | .302 | .297 | .111 | .454 | .055 | .175 | .076 | .194 | .073 | .192 | .106 | .234 | .167 | .084 |
| Item 52 | .031 | -.001 | -.004 | .060 | .831 | .043 | .050 | .044 | .032 | .123 | .037 | -.060 | .042 | .097 |
| Item 53 | .004 | .106 | .103 | .193 | .758 | .011 | .050 | .066 | .167 | .106 | .057 | .099 | -.005 | .133 |
| Item 54 | .214 | .257 | .097 | .171 | .108 | .073 | .820 | .087 | .034 | .095 | .143 | -.002 | .061 | .106 |
| Item 55 | .112 | .037 | .359 | .103 | .077 | .155 | .120 | .210 | -.028 | .074 | .688 | .113 | -.055 | .084 |
| Item 57 | .600 | .129 | .051 | .349 | -.027 | .007 | .184 | .249 | .044 | .134 | .121 | .316 | .030 | .087 |
| Item 58 | .228 | .178 | .109 | .628 | .092 | .165 | .088 | .295 | .035 | .204 | .120 | .198 | .289 | .067 |
| Item 59 | .191 | .212 | .139 | .708 | .074 | .166 | .006 | .251 | .068 | .138 | .121 | .105 | .252 | .066 |
| Item 61 | .154 | -.013 | .325 | .219 | .079 | .145 | .037 | .223 | -.035 | .068 | .659 | .196 | .017 | .112 |
| Item 62 | .405 | .390 | -.002 | .115 | .029 | .160 | .195 | .232 | .212 | .073 | .402 | -.214 | .124 | -.207 |
| Item 65 | .074 | .081 | .271 | .143 | .190 | .261 | .120 | -.056 | .191 | .163 | .617 | .108 | -.214 | .078 |
| Item 66 | .105 | -.045 | -.181 | .186 | .260 | -.066 | -.041 | .034 | .597 | .028 | .294 | .130 | .320 | -.021 |
| Item 67 | .228 | .204 | .095 | .140 | .079 | .035 | .836 | .067 | .022 | .100 | .152 | .051 | .144 | .076 |
| Item 68 | .154 | .156 | -.201 | .248 | .061 | .060 | -.116 | -.036 | .575 | .041 | .259 | .140 | .378 | .080 |
| Item 69 | .322 | .385 | -.030 | -.037 | .136 | .165 | .238 | .235 | .200 | .124 | .385 | -.074 | .138 | -.344 |
| Item 70 | .470 | .332 | .063 | .427 | .289 | .093 | .145 | .171 | .087 | -.030 | .181 | .076 | .067 | .094 |

*Initial Rotated Fourteen Factor Loadings of Pilot Data (Continued 2)*

| | Factor | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Item 71 | .202 | .812 | .179 | -.002 | .034 | -.005 | .038 | -.023 | .070 | .103 | .190 | .069 | .073 | .062 |
| Item 72 | .116 | .773 | .142 | .228 | .158 | .158 | .085 | .103 | .084 | -.025 | -.021 | .145 | -.006 | -.030 |
| Item 73 | .115 | .862 | .082 | .129 | .102 | .124 | .180 | .084 | .077 | .067 | -.005 | .146 | .032 | .009 |
| Item 74 | .118 | .772 | .215 | .234 | .200 | .141 | .148 | .070 | .009 | .134 | -.032 | .109 | .013 | .003 |
| Item 75 | .546 | .405 | .120 | .347 | .168 | .050 | .167 | .098 | -.057 | .242 | .084 | .044 | -.062 | .003 |
| Item 76 | .543 | .135 | .037 | .469 | -.040 | -.096 | .184 | .091 | .049 | .169 | .089 | .305 | -.091 | .052 |
| Item 77 | .255 | .116 | .272 | .518 | .260 | .040 | .192 | .014 | .053 | .072 | .219 | .065 | -.213 | -.133 |

# APPENDIX G

## Second Rotated Fourteen Factor Solution of Pilot Data

*Second Rotated Fourteen Factor Loadings of Pilot Data*

| | Factor | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Item 1 | .022 | .009 | .083 | .154 | .042 | .152 | -.129 | -.089 | .094 | .134 | .058 | .104 | -.087 | .783 |
| Item 2 | .174 | .046 | -.002 | .090 | .141 | .049 | .165 | -.018 | .185 | -.146 | .050 | -.051 | .032 | .716 |
| Item 3 | .339 | .502 | .390 | -.145 | -.008 | .037 | -.104 | .083 | .143 | .119 | -.006 | -.156 | .043 | .218 |
| Item 5 | -.042 | .077 | .173 | .016 | .125 | .075 | .041 | -.006 | .836 | -.087 | -.067 | -.060 | .047 | .143 |
| Item 6 | -.101 | .125 | .130 | -.019 | .089 | .045 | .065 | .062 | .823 | .071 | -.025 | -.024 | .107 | .119 |
| Item 7 | .602 | .189 | .224 | .008 | .212 | -.017 | .094 | .334 | .105 | .224 | .164 | .159 | -.028 | .056 |
| Item 9 | .231 | .222 | .664 | .008 | .084 | .180 | .010 | .163 | .032 | .053 | .267 | .106 | .019 | .074 |
| Item 10 | .210 | .178 | .707 | -.039 | .083 | .239 | -.044 | .049 | -.011 | .060 | .270 | .119 | -.036 | .076 |
| Item 11 | .312 | .238 | .668 | .254 | -.022 | .086 | .136 | .176 | .094 | .000 | .081 | .083 | -.020 | -.061 |
| Item 12 | .212 | .101 | .736 | .130 | .087 | .233 | .048 | .045 | .030 | .163 | .191 | .050 | .007 | .000 |
| Item 13 | .094 | .101 | .239 | .115 | .034 | .824 | .002 | .041 | .071 | .016 | .104 | .045 | .092 | .076 |
| Item 14 | .059 | .057 | .220 | .053 | .113 | .883 | -.021 | -.023 | .000 | .068 | .086 | .037 | .003 | .000 |
| Item 17 | .678 | .204 | .170 | .092 | .121 | -.009 | .176 | .183 | -.116 | .081 | .219 | .127 | .162 | .065 |
| Item 18 | .837 | .064 | .173 | .018 | -.005 | .001 | .143 | .202 | .021 | .027 | .030 | .023 | -.011 | .054 |
| Item 19 | .708 | .266 | .219 | .178 | .188 | .204 | .001 | -.023 | -.082 | .059 | .030 | .141 | .065 | .120 |
| Item 20 | .783 | .230 | .023 | .053 | .072 | .119 | .085 | .022 | -.025 | .145 | .162 | .137 | .112 | .097 |
| Item 21 | .713 | -.011 | .061 | .058 | .090 | .113 | .348 | .163 | .122 | -.028 | -.031 | -.115 | -.099 | -.002 |
| Item 22 | .722 | .016 | .268 | .010 | .100 | .087 | .068 | .084 | -.049 | .189 | .062 | -.042 | -.004 | -.031 |
| Item 23 | .094 | .187 | .094 | .125 | .047 | .668 | -.143 | .103 | .147 | .181 | .222 | .150 | -.044 | .121 |
| Item 27 | .126 | .027 | .031 | .130 | .865 | .073 | -.010 | .067 | .094 | .133 | -.003 | -.074 | .021 | .021 |
| Item 29 | -.003 | .065 | .074 | -.026 | .067 | .006 | -.007 | -.149 | .185 | -.031 | -.013 | .005 | .808 | -.171 |
| Item 30 | .006 | .034 | -.081 | -.019 | .131 | .086 | -.039 | .216 | .236 | .069 | -.106 | .089 | .738 | .127 |
| Item 31 | .131 | .324 | -.069 | .110 | -.027 | .459 | .208 | .313 | -.049 | -.081 | .147 | -.035 | .204 | .252 |
| Item 33 | .205 | .134 | .007 | .572 | .138 | .125 | .012 | .182 | -.118 | .125 | .270 | -.062 | -.020 | -.103 |
| Item 34 | .018 | .234 | .101 | .704 | .104 | .230 | .083 | .099 | .058 | -.032 | .047 | -.093 | -.074 | .007 |
| Item 35 | .192 | .117 | .022 | .113 | .067 | .054 | .720 | .039 | .109 | .127 | .130 | .344 | -.011 | -.144 |

*Second Rotated Fourteen Factor Loadings of Pilot Data (Continued)*

| | Factor | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Item 36 | .271 | .094 | .059 | .049 | -.004 | -.090 | .802 | .107 | .003 | .257 | .094 | .013 | -.015 | .097 |
| Item 37 | .338 | .024 | -.013 | .010 | .053 | -.090 | .776 | .130 | .044 | .250 | .130 | .099 | -.027 | .045 |
| Item 38 | .351 | .131 | .134 | .190 | .260 | .102 | .277 | .019 | .011 | .563 | .023 | .144 | .046 | .002 |
| Item 39 | .206 | .138 | .098 | .145 | .133 | .092 | .246 | .108 | .018 | .839 | .132 | .083 | .003 | -.001 |
| Item 40 | .230 | .106 | .089 | .123 | .148 | .086 | .238 | .115 | -.007 | .830 | .139 | .096 | .027 | -.007 |
| Item 43 | .277 | .128 | .077 | .150 | .115 | .036 | .077 | .795 | .065 | .063 | .149 | .060 | -.022 | -.072 |
| Item 44 | .352 | .192 | .184 | .062 | .041 | .058 | .133 | .770 | .093 | .151 | .030 | .115 | .032 | -.012 |
| Item 45 | .296 | .234 | .164 | .206 | -.040 | .125 | .102 | .618 | .066 | .041 | .123 | .274 | .077 | -.105 |
| Item 52 | .027 | -.009 | .001 | .828 | .054 | .029 | .025 | -.026 | .020 | .135 | .015 | .090 | .045 | .145 |
| Item 53 | .013 | .107 | .107 | .770 | .054 | -.009 | .044 | .120 | .155 | .110 | .060 | .203 | -.002 | .168 |
| Item 54 | .219 | .247 | .086 | .096 | .829 | .077 | .078 | .012 | .045 | .108 | .120 | .164 | .050 | .115 |
| Item 55 | .137 | .070 | .286 | .085 | .121 | .144 | .195 | .072 | -.009 | .087 | .781 | .021 | -.024 | .048 |
| Item 57 | .617 | .129 | .029 | -.046 | .193 | .020 | .255 | .321 | .074 | .130 | .108 | .332 | -.006 | .079 |
| Item 58 | .218 | .172 | .135 | .086 | .097 | .161 | .329 | .291 | .020 | .191 | .086 | .624 | .276 | .142 |
| Item 59 | .191 | .223 | .157 | .073 | .009 | .171 | .291 | .186 | .052 | .138 | .114 | .676 | .262 | .118 |
| Item 61 | .196 | .039 | .230 | .077 | .035 | .143 | .214 | .124 | .010 | .071 | .782 | .140 | .031 | .041 |
| Item 65 | .095 | .092 | .219 | .205 | .126 | .255 | -.073 | .099 | .188 | .181 | .635 | .118 | -.175 | .079 |
| Item 66 | .136 | -.040 | -.230 | .243 | -.026 | -.015 | .047 | .089 | .655 | .027 | .244 | .202 | .281 | -.059 |
| Item 67 | .240 | .196 | .077 | .071 | .843 | .044 | .055 | .059 | .033 | .112 | .138 | .123 | .136 | .078 |
| Item 68 | .182 | .155 | -.233 | .065 | -.108 | .090 | -.026 | .132 | .599 | .044 | .198 | .248 | .368 | .074 |
| Item 71 | .198 | .795 | .169 | .020 | .054 | -.003 | -.033 | .090 | .086 | .124 | .154 | -.015 | .054 | .083 |
| Item 72 | .153 | .809 | .110 | .171 | .089 | .161 | .124 | .103 | .094 | -.029 | .046 | .139 | .023 | -.073 |
| Item 73 | .137 | .874 | .055 | .103 | .188 | .130 | .097 | .133 | .088 | .070 | .007 | .077 | .037 | -.010 |
| Item 74 | .125 | .784 | .202 | .199 | .151 | .134 | .088 | .127 | .001 | .124 | -.018 | .222 | .023 | .020 |
| Item 75 | .553 | .421 | .094 | .148 | .180 | .061 | .121 | .046 | -.019 | .248 | .108 | .282 | -.081 | -.036 |
| Item 76 | .582 | .152 | -.007 | -.059 | .194 | -.066 | .105 | .281 | .097 | .165 | .098 | .445 | -.124 | -.003 |
| Item 77 | .283 | .126 | .248 | .246 | .208 | .082 | .039 | .062 | .097 | .061 | .206 | .534 | -.254 | -.151 |

# APPENDIX H

## Rotated Ten Factor Loadings of Pilot Data

*Rotated Ten Factor Loadings of Pilot Data*

| | Factor | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Q1Notes | .233 | .025 | .213 | -.132 | .040 | .323 | -.393 | .400 | .135 | -.191 |
| Q2workers | .395 | .042 | .006 | .104 | .115 | .238 | -.320 | .465 | -.155 | -.029 |
| Q5PrintTDD | -.039 | .072 | .063 | .001 | .085 | .038 | .059 | .843 | -.062 | .174 |
| Q8PrintRelay | -.122 | .118 | .062 | .055 | .060 | .018 | .122 | .837 | .063 | .191 |
| Q10Showlists | .220 | .254 | .697 | .031 | .103 | -.087 | .131 | .116 | .040 | -.174 |
| Q12Showletters | .211 | .180 | .643 | .081 | .120 | -.009 | .115 | .097 | .194 | -.114 |
| Q13ReadBills | .123 | .132 | .752 | -.086 | -.026 | .258 | -.019 | .041 | .068 | .240 |
| Q14ShowBills | .097 | .107 | .776 | -.149 | .026 | .155 | -.074 | -.026 | .151 | .177 |
| Q18readsame | .824 | .100 | .098 | .193 | .051 | -.007 | .248 | -.026 | .025 | -.019 |
| Q19connectevents | .678 | .298 | .292 | .070 | .257 | .196 | .031 | -.118 | .025 | .081 |
| Q20talkbefore | .693 | .230 | .197 | .232 | .177 | .051 | .078 | -.069 | .076 | .093 |
| Q21likessame | .753 | .046 | .026 | .233 | .058 | -.006 | .173 | .094 | .058 | -.026 |
| Q22talkwhile | .686 | .055 | .248 | .087 | .156 | -.082 | .200 | -.044 | .197 | -.065 |
| Q27borrowbooks | .092 | .040 | .047 | -.063 | .852 | .118 | .054 | .108 | .156 | .041 |
| Q29cationTV | -.043 | .077 | .060 | .044 | .053 | -.096 | -.044 | .078 | -.052 | .818 |
| Q30onlyrent | .059 | .031 | -.048 | -.042 | .122 | .038 | .117 | .249 | .062 | .757 |
| Q34havecat | .010 | .257 | .190 | .018 | .083 | .661 | .107 | .042 | -.009 | -.078 |
| Q35kidwrite | .158 | .171 | .030 | .752 | .038 | .125 | .111 | -.010 | .145 | .138 |
| Q36kiddraw | .307 | .118 | -.064 | .760 | -.017 | .041 | .029 | .050 | .291 | -.048 |
| Q37kidcolor | .344 | .058 | -.074 | .776 | .048 | .019 | .082 | .037 | .260 | -.033 |
| Q39hangdraw | .145 | .148 | .181 | .353 | .195 | .143 | .123 | -.008 | .795 | -.003 |
| Q40hangcolors | .159 | .115 | .183 | .354 | .216 | .126 | .125 | -.035 | .787 | .013 |
| Q43pointletters | .283 | .158 | .070 | .102 | .120 | .155 | .757 | .064 | .097 | -.038 |
| Q44pointwords | .389 | .235 | .111 | .126 | .034 | .094 | .724 | .123 | .178 | .020 |
| Q45pointphrases | .293 | .276 | .190 | .179 | -.011 | .234 | .678 | .007 | .022 | .108 |
| Q52newspaper | .019 | -.003 | .031 | .073 | .098 | .857 | .024 | -.011 | .088 | .020 |
| Q53newsletters | .015 | .137 | .062 | .125 | .095 | .807 | .151 | .125 | .094 | -.012 |
| Q54library | .194 | .273 | .136 | .128 | .845 | .117 | -.011 | .065 | .086 | .061 |
| Q55grocery | .032 | .034 | .617 | .506 | .232 | .081 | .176 | .038 | -.119 | -.184 |
| Q61listshop | .073 | -.002 | .578 | .562 | .154 | .107 | .236 | .023 | -.135 | -.082 |
| Q67checkout | .200 | .209 | .121 | .127 | .877 | .077 | .057 | .050 | .063 | .115 |
| Q71internet | .142 | .774 | .172 | .073 | .108 | -.006 | .122 | .145 | .022 | -.037 |
| Q72kidscomputers | .123 | .851 | .141 | .125 | .074 | .152 | .129 | .028 | -.010 | .092 |
| Q73webpage | .115 | .905 | .075 | .066 | .174 | .081 | .102 | .082 | .092 | .061 |
| Q74readweb | .119 | .839 | .164 | .074 | .141 | .203 | .108 | -.003 | .152 | .045 |

# APPENDIX I

## Rotated Nine Factor Loadings of Pilot Data

*Rotated Nine Factor Loadings of Pilot Data*

| | Factor | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Q5PrintTDD | .064 | .018 | -.036 | .074 | .093 | -.005 | .085 | .900 | .126 |
| Q6PrintRelay | .108 | -.082 | .073 | .076 | .078 | .065 | .062 | .873 | .165 |
| Q10Showlists | .258 | .264 | .040 | .658 | .103 | .140 | -.082 | .112 | -.181 |
| Q12Showletters | .164 | .211 | .182 | .653 | .142 | .147 | -.014 | .084 | -.133 |
| Q13ReadBills | .108 | .097 | -.013 | .807 | .004 | .049 | .230 | .058 | .166 |
| Q14ShowBills | .075 | .050 | -.013 | .860 | .073 | -.002 | .124 | -.016 | .094 |
| Q18readsame | .092 | .826 | .191 | .074 | .042 | .263 | .006 | -.026 | -.021 |
| Q19connectevents | .294 | .693 | .086 | .281 | .251 | .050 | .211 | -.126 | .076 |
| Q20talkbefore | .237 | .720 | .236 | .148 | .164 | .089 | .068 | -.082 | .117 |
| Q21likessame | .028 | .752 | .250 | .021 | .057 | .186 | .004 | .123 | -.060 |
| Q22talkwhile | .047 | .718 | .180 | .223 | .168 | .169 | -.045 | -.039 | -.051 |
| Q27borrowbooks | .028 | .083 | .035 | .065 | .871 | .055 | .120 | .110 | .023 |
| Q29cationTV | .093 | .008 | -.002 | .052 | .016 | -.099 | -.071 | .108 | .824 |
| Q30onlyrent | .030 | -.005 | .005 | -.030 | .138 | .191 | .005 | .177 | .814 |
| Q34havecat | .249 | .019 | .017 | .196 | .081 | .117 | .663 | .061 | -.113 |
| Q35kidwrite | .168 | .216 | .713 | -.007 | -.014 | .073 | .130 | .098 | .059 |
| Q36kiddraw | .103 | .285 | .816 | -.073 | -.028 | .076 | .018 | .068 | -.075 |
| Q37kidcolor | .048 | .341 | .804 | -.102 | .025 | .110 | .004 | .068 | -.061 |
| Q39hangdraw | .115 | .035 | .740 | .261 | .282 | .179 | .136 | -.114 | .042 |
| Q40hangcolors | .083 | .050 | .735 | .258 | .300 | .180 | .118 | -.141 | .060 |
| Q43pointletters | .144 | .199 | .150 | .059 | .133 | .835 | .103 | .017 | -.028 |
| Q44pointwords | .212 | .293 | .224 | .116 | .060 | .819 | .041 | .066 | .039 |
| Q45pointphrases | .275 | .275 | .162 | .142 | -.028 | .710 | .206 | .003 | .113 |
| Q52newspaper | -.005 | .048 | .103 | .032 | .094 | -.001 | .887 | -.007 | .022 |
| Q53newsletters | .135 | .028 | .150 | .052 | .096 | .153 | .820 | .115 | -.002 |
| Q54library | .272 | .194 | .161 | .121 | .839 | .028 | .102 | .056 | .052 |
| Q67checkout | .215 | .213 | .137 | .089 | .864 | .077 | .067 | .045 | .111 |
| Q71internet | .788 | .180 | .059 | .114 | .101 | .119 | .011 | .126 | .010 |
| Q72kidscomputers | .848 | .132 | .112 | .134 | .061 | .143 | .150 | .048 | .072 |
| Q73webpage | .894 | .086 | .125 | .099 | .186 | .135 | .075 | .068 | .055 |
| Q74readweb | .822 | .078 | .170 | .199 | .160 | .158 | .190 | -.028 | .041 |