

University of Massachusetts Amherst
ScholarWorks@UMass Amherst

Doctoral Dissertations

Dissertations and Theses

July 2019

Navigating Mainstream Environments: The Impact of Modality Selection for Children with Cochlear Implants

Kristine Plasse

Follow this and additional works at: https://scholarworks.umass.edu/dissertations_2



Part of the [Bilingual, Multilingual, and Multicultural Education Commons](#)

Recommended Citation

Plasse, Kristine, "Navigating Mainstream Environments: The Impact of Modality Selection for Children with Cochlear Implants" (2019). *Doctoral Dissertations*. 1585.
https://scholarworks.umass.edu/dissertations_2/1585

This Open Access Dissertation is brought to you for free and open access by the Dissertations and Theses at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Doctoral Dissertations by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

Navigating Mainstream Environments:
The Impact of Modality Selection for Children with Cochlear Implants

A Dissertation Presented

by

KRISTINE M. PLASSE

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

May 2019

College of Education

© Copyright by Kristine M. Plasse 2019
All Rights Reserved

Navigating Mainstream Environments:
The Impact of Modality Selection for Children with Cochlear Implants

A Dissertation Presented

By

KRISTINE M. PLASSE

Approved as to style and content by:

Denise Ives, Chair

Seon Yeong Yu, Member

Sarah F. Poissant, Member

Jennifer Randall
Associate Dean of Academic Affairs
College of Education

DEDICATION

To my parents, Rejean and Marilyn Remillard,
for always believing in me more than I believed in myself.
To my husband, Mark, and our sons, Mark Jr. and Matthew,
for giving me the courage to start this endeavor
and the encouragement to see it through.

ACKNOWLEDGEMENTS

I would like to thank Dr. Denise Ives, my Committee Chair, for your constant support and encouragement over the past five years. You taught me to think in new ways about both my students and my teaching and helped me conceive of a project that would allow me to grow as both a researcher and educator. I would also like to thank Dr. Seon Yeong Yu and Dr. Sarah Poissant, Committee Members, for your support in gaining new insights into, not only my doctoral work, but my work as a teacher of the Deaf. To all of my professors and my cohort at UMass in the Language, Literacy and Culture concentration, thank you for challenging me to see education through a new, wider lens.

I would especially like to thank “Allie” and “Kelsey”. I was your teacher, but you taught me more than I could ever teach you. You inspired this work and I am forever grateful. You can do anything that you set your mind to. To “Laurie” and “Mike”, thank you for allowing me to research your children. It is because of you that they will grow up to be whomever they choose. To “Ms. L.” and “Mrs. V.”, I was amazed every day by your ability to provide such rich access to students who relied on different modalities. Your dedication and commitment to all of your students was, and continues to be, awe-inspiring.

To all of my colleagues throughout my career, it is an honor to have worked alongside each of you. You have all taught me so much about Deaf education and I am grateful to call each of you my friend.

Finally, to my husband, Mark, and our sons, Mark Jr. and Matthew, I hope you always know how much I love you and how grateful I am every day for you. To my father, Rejean Remillard, my mother-in-law, Joan Plasse, my sister and her husband,

Karen and Michael Pelletier, and to all of my family, I appreciate all of the support and encouragement you have always provided. Thank you all for being by my side for this journey.

ABSTRACT

NAVIGATING MAINSTREAM ENVIRONMENTS:
THE IMPACT OF MODALITY SELECTION
FOR CHILDREN WITH COCHLEAR IMPLANTS

MAY 2019

KRISTINE M. PLASSE, B.S., UNIVERSITY OF MASSACHUSETTS AMHERST

M.E.D., SMITH COLLEGE

Ed.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Denise Ives

Communication is a fundamental component in education. For children who are deaf, cochlear implantation provides access to spoken communication; however, that access is different from that which typically hearing students experience. Because cochlear implants (CIs) have made it possible for many deaf individuals to communicate through spoken language, controversy exists in the education field as to which modes of communication should be considered for children who are deaf and have CIs in mainstream classrooms. This dissertation discusses a qualitative multi-case study that was conducted using ethnographic methods in order to examine the communication practices of two students with cochlear implants in a mainstream educational setting where spoken English and sign language were presented in tandem throughout most of the school day. This study employs Ethnography of Communication (Hymes, 1972), Multiliteracies (New London Group, 1996) and Social Semiotics (Kress, 2013) as theoretical frameworks and Hymes' SPEAKING model (Kaplan-Weinger & Ullman, 2015), multimodalities (Kress, 2000, 2013) and Deaf Gain (Bauman & Murray, 2014) as

tools for analysis in order to examine these students' modality selection in different contexts and under various environmental conditions. This study also analyzes how these various modalities impact these students' educational access, receptive and expressive communication, communicative practices, and identity development.

Results of this study indicate that audition was the primary modality utilized by the focal participants, but they used their agency to select various combinations of modalities to support their access to spoken language. While they may identify as hearing, Deaf, or "DeaF" (McIlroy & Storbeck, 2011), the impact of their agentic modality selections may promote a "Multimodal User" identity.

Key words: cochlear implants (CIs), Deaf, DeaF, mainstream, ethnography, modalities, identity, Ethnography of Communication, Multiliteracies, Social Semiotics, SPEAKING model, multimodalities, Deaf Gain

PREFACE

Communication is fundamental in education. Thus, receptive communication, how information is understood, and expressive communication, how one sends messages to others, are critical to accessing one's education. However, there are unique communication challenges for children who are deaf and hard-of-hearing, particularly in mainstream settings where language is primarily spoken and moves rapidly between and among teachers and students. As a teacher of the Deaf in a mainstream setting, I have observed that children who are deaf or hard-of-hearing often miss some or a majority of these communicative exchanges and rely, at least in part, on other modalities in order to participate.

I have had the pleasure of working with children who are deaf/hard-of-hearing, their families, their teachers and other specialists in helping determine, implement and evaluate the communicative modes that would best support each child's unique language and learning styles. Moreover, I have worked with many students who have cochlear implants. The cochlear implant (CI) is comprised of both external and internal components. Externally, a microphone detects environmental sounds. This sound is sent to a speech processor, which converts the sound into electrical impulses that are sent across the skin via a coil to an electrode array in the cochlea, which stimulates the auditory nerve. While many cochlear implant recipients have significantly improved access to sound, hearing through a CI does not provide access to the degree that typical hearing affords, especially under less than optimal listening conditions (Wilson & Dorman, 2008).

For centuries, there have been two primary, but opposing, philosophies in educating children who are deaf and hard-of hearing. This debate continues today with children who have cochlear implants. The oralist camp promotes an auditory-oral approach which utilizes spoken language for both receptive and expressive communication (Baynton, 1996; Sorkin et al., 2015; Sugar & Goldberg, 2015), while the manualist camp promotes the use of American Sign Language (ASL) combined with the written form and possibly spoken or signed forms of the majority language (Grosjean, 2001, 2010; Snoddon, 2008).

Consequently, parents who have children who are deaf have many choices to make including whether they should consider cochlear implantation, whether to choose a school for the deaf or mainstream educational setting, and which communicative modality/modalities to employ. Two primary communicative options may be available to students who have cochlear implants in mainstream environments including 1) the primary use of spoken language with use of the CI(s) and speechreading and 2) a combination of spoken language and sign language. If sign language is utilized in the mainstream classroom, a sign language interpreter may be necessary. Therefore, parents, in conjunction with educational staff and other professionals, such as audiologists and speech-language pathologists, need to determine how to promote access to receptive and expressive communication for their child who has one or two CIs in the classroom.

Children who are deaf and have one or two cochlear implants present with unique communication challenges. While they have access to spoken language, that access is not as robust as that of typical listeners and is further impacted by environmental factors such as noise (Humphries et al., 2014; Leigh et al., 2014; Melton & Higbee, 2013; Vermeulen

et al., 2012; Zanin & Rance, 2016), distance (Crandell & Smaldino, 2000), and reverberation (Vermeulen et al., 2012; Zanin & Rance, 2016). Additionally, the possible impact of unreliable access to language in the early stages of typical language development, before cochlear implantation, is another factor to consider (Humphries et al., 2014). While many professionals in the field of Deaf education promote spoken language as the only means by which these children should communicate (Geers et al., 2017), sign language is another option that can be considered (Snoddon, 2008). Nevertheless, these children may use various modalities. However, there is a gap in the research with regards to studying how children with cochlear implants access communication by employing different modalities including audition, sign language, speechreading, print, visual perception and tactile perception in educational settings.

This dissertation research is comprised of a qualitative multi-case study, using ethnographic methods, in order to examine the communicative practices of two children with cochlear implants in a mainstream educational setting where spoken English and sign language are presented in tandem throughout most of the school day. Additionally, this study considers other modalities such as speechreading, print, visual perception, and tactile perception. Specifically, the study examines these students' modality selection in different settings and environments and analyzes how these various modalities, and the agentic choice to use them, impact their educational access, receptive and expressive communication, communicative practices, as well as identity performances.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	v
ABSTRACT	vii
PREFACE.....	ix
CHAPTER	
I. LITERATURE REVIEW	1
A. History of Deafness: An Introduction	1
B. Manualism: European Roots	2
C. Oralism: Striving for Spoken Language	3
D. Technological Innovations.....	4
1. Cochlear Implants: Hearing Electrically	4
2. Pediatric Cochlear Implantation	6
E. Language Options Today.....	6
F. Cochlear Implants and Communication Options.....	11
1. Informing Parents	11
2. Sign Language Varieties.....	12
G. Developing Identity	15
1. Identities of Difference	16
2. Linguistic Minority or Disabled	17
3. Bilingual Identities	19
H. Mainstream Education Today.....	20
1. Listening in a Mainstream Classroom.....	21
I. Discussion.....	23
II. THEORETICAL PERSPECTIVE	25
A. Ethnography of Communication	25
B. Multiliteracies	28
1. Meaning-Making	29

2. Multiliteracy Pedagogy.....	31
C. Social Semiotics	32
D. Tools for Inquiry.....	34
1. Hymes' SPEAKING Model	34
2. Multimodalities.....	35
3. Deaf Gain.....	37
E. Research Questions.....	39
III. METHODOLOGY	41
A. Introduction	41
B. Participants	43
1. Focal Participants	43
2. Parents	46
3. Teachers.....	46
C. Researcher Positionality	47
D. Research Context	48
E. Setting.....	50
1. Second Grade Classroom.....	50
2. Preschool Classroom	51
F. Methods	52
1. Data Collection	54
a. Fieldnotes.....	54
b. Transcripts	56
i. Interviews with Parents and Teachers	56
ii. Interview with Focal Student.....	57
c. Artifacts	57
d. Research Memos.....	57
i. Initial Memos.....	58
ii. Integrative Memos	59
2. Data Analysis.....	59
3. Grounded Theory.....	61

a. Open Coding	62
b. Identifying Themes	64
c. Focused Coding	64
IV. FINDINGS: MODALITY SELECTION	68
A. Introduction	68
1. Parent Information and Background.....	68
2. Choosing Cochlear Implantation	71
3. The Benefit of Sign Language	73
4. Modality Choices.....	76
5. Focal Participants: Accessing Communication at School	79
B. Allie	82
1. Opting to Listen	82
2. Sign Language for Clarity	85
3. Speechreading: “I Can Read Their Lips”	87
4. Visual Perception: Seeing More than Most.....	89
5. Tactile Perception: Feeling Sound.....	91
a. Feeling Music	91
b. Tactile Perception for Alerting	93
6. Combinations of Modalities	94
a. Audition, Sign Language, Speechreading & Print	94
b. Audition, Sign Language & Speechreading	97
c. Audition & Print	100
C. Kelsey	101
1. Managing Her Hearing: Audition as the Primary Mode	102
2. Emergence of Sign Language as a Modality	103
3. Visual Perception: Noticing Details	104
4. Learning the Importance of Print.....	106
5. Combinations of Modalities	108
a. Audition, Sign Language & Speechreading	108
b. Audition, Sign Language, Speechreading, Visual Perception.....	111
c. Audition & Speechreading	114
D. Teacher Reflections	116
E. Conclusion	118

V. FINDINGS: CONSIDERING CONTEXT	124
A. Introduction.....	124
1. Importance of the School Environment.....	125
B. Teacher Directions	126
1. Allie: Closing the Gap	126
2. Kelsey: Noise and Amplification Impact Agentic Choices.....	128
C. One-to-One with Teacher	130
1. Allie: Modality Selections in Close Proximity.....	130
2. Kelsey: Promoting Auditory Perception.....	132
D. Small Groups	134
1. Allie: The Importance of the Listening Environment & Proximity ...	135
2. Kelsey: Improving Auditory Access to Peers.....	136
E. Watching Videos	139
1. Allie: Independently Selecting Modalities	139
2. Kelsey: Finding Her Agency	142
F. Stories Being Read Aloud	145
1. Allie: Choosing ASL	145
2. Kelsey: Independently Choosing Among Modalities.....	147
G. Conclusion	148
VI. FINDINGS: SOCIAL SEMIOTICS AND IDENTITY	152
A. Introduction	152
B. Hearing Identity	154
1. Allie: Managing Differences to Align with Peers	154
2. Kelsey: Reliance on Hearing	156
a. Finding Similarities with Others.....	158
C. Bicultural Identity.....	160
D. Bilingual or Multilingual Identity.....	162

1. Allie: Using Two Languages	162
2. Kelsey: Different Ways to Express the Same Ideas	163
E. Deaf Identity	165
1. Kelsey: An Emergent Deaf Identity	165
2. Allie: Owning a Deaf Identity	166
3. “Deaf” Identity: Is It More Than Being “deaf”?	169
F. Parent Perspective.....	170
G. Conclusion	171
VII. DISCUSSION	175
A. Introduction.....	175
B. Ethnography of Communication: Dell Hymes’ View of the Data.....	175
1. Communicative Competence and Identity	176
2. Why Use Other Modalities?	177
C. Analyzing Data Using a Multiliteracies Framework	180
1. A Pedagogy of Designs	181
a. Testing Designs.....	182
b. Adding Designs	183
c. Designing Through Touch	186
d. Designing Identities	186
D. Applying a Social Semiotics Perspective	189
1. Identity Through Agentic Choices	189
2. Contexts and Agency	191
3. Socially Constructing Identity	193
4. “Multimodal User” Identity	195
E. Conclusion.....	197
1. Next Steps.....	202
2. Contribution to the Field.....	203
3. Limitations.....	206
APPENDICES	207
A. SECOND-GRADE CLASSROOM PLAN	208
B. PRESCHOOL CLASSROOM PLAN	209

C. PARENT INTERVIEW QUESTIONS210
D. TEACHER INTERVIEW QUESTIONS211
E. *I BELIEVE I CAN FLY*212
F. KELSEY’S RENDITION OF NY TRAFFIC213
BIBLIOGRAPHY214

CHAPTER I

LITERATURE REVIEW

A. History of Deafness: An Introduction

The history of the Deaf¹, particularly the history of the education of children who are deaf in the United States, is one that has themes that have been repeated over hundreds of years and continues to be repeated today. The primary struggle has been between two opposing educational approaches. While the oralists have promoted spoken language (Baynton, 1996; Sorkin et al., 2015; Sugar & Goldberg, 2015), the manualists have promoted a bilingual approach with sign language and the written and/or spoken form of the majority language (Grosjean, 2001, 2010; Snoddon, 2008).

For many parents, determining how best to educate their deaf child is a decision that causes great angst as philosophical differences that have historical roots are pervasive. Moreover, several technologies have been created to help those with limited, or no hearing, have access to sound. These technologies include hearing aids and cochlear implants.

The advent of the cochlear implant (CI), technology aimed at providing access to hearing through electrical stimulation (Wilson & Dorman, 2008), further positioned the oralist and the manualist camps against each other. For children who have cochlear implants, access to spoken language is increased, but they still do not have “normal” hearing (Wilson & Dorman, 2008; Wolfe & Schafer, 2015). The following literature review will analyze how the oralist and manualist philosophies were shaped historically,

¹ “Deaf”, with the uppercase “D”, signifies alliance with the signing community, while “deaf”, with the lowercase “d”, signifies alliance with the majority hearing society (McIlroy & Storbeck, 2011).

their impact on children with cochlear implants, various forms of sign language, and how identity may be influenced by language and technology.

B. Manualism: European Roots

In *Hand, Heart, & Mind: The Story of the Education of America's Deaf People* (1994), Walker explains the critical role that Thomas Hopkins Gallaudet had in the education of the deaf. Gallaudet lived in Connecticut, next door to a doctor named Mason Fitch Cogswell, whose daughter was deaf. In 1815, Cogswell sought Gallaudet's help in teaching his daughter and Gallaudet traveled to Europe to find methods for teaching the deaf. He explored both the oralist and manualist philosophies; however, the Braidwoods, who practiced an oralist approach, refused to teach him. Consequently, Gallaudet studied at the National Institute for Deaf-Mutes, which utilized a manualist approach, and returned to America with Laurent Clerc, a deaf student from the National Institute. Gallaudet and Clerc spent fifty-two days on their trip to New England and in that time Clerc learned English and Gallaudet learned French sign language. "What came off the boat in New England, though, was not watered-down French, but instead, through the collaboration of the two men, a true American Sign Language (ASL)" (Walker, 1994, p. 31-32).

When Gallaudet returned to Connecticut in 1817, he founded the first school for the deaf in the United States, the *American Asylum for the Deaf and Dumb*, and manualism was the philosophy (Baynton, 1996). This school would eventually become known as the American School for the Deaf (Van Cleve & Crouch, 1989). Furthermore, "the American School became very important because it provided a place for deaf people to come together and for their culture to develop. Essentially the school ignored

lipreading and speaking techniques” (Walker, 1994, p. 33). Sign language was the method of communication and deaf teachers were hired (Van Cleve & Crouch, 1989).

C. Oralism: Striving for Spoken Language

While educators in the nineteenth century saw sign language as a means for teaching children who were deaf, in the twentieth century many educators prohibited the use of sign language and attempted to suppress its use by all who were deaf (Bauman & Murray, 2014, p. xvi). Cohen (1995) explained, “The history of deaf education has been marked by a single goal: to get deaf people to communicate like hearing people” (p. 165).

Horace Mann proposed that oral methods be used in American schools to teach deaf students in the 1840s. However, his recommendation did not gain momentum until after the Civil War. An oral school was founded in 1867 in New York City and then the Clarke Institution for Deaf Mutes opened shortly thereafter in Northampton, Massachusetts (Van Cleve & Crouch, 1989). In *Through Deaf Eyes*, it was explained that, “Oral schools for deaf children opened in the late 1860s. They did not teach sign and, in fact, outlawed its use. Instead they began speech training, teaching deaf children to generate sounds, to mimic the mouth shapes and breathing patterns of speech. And if children knew what speech looked like, the oralists thought, they could learn to read lips” (Hott & Garey, 2007).

Additionally, many hearing teachers of the deaf charged that the use of sign language should be banned, as should the minority languages of other minority groups (Van Cleve & Crouch, 1989). Furthermore, Baynton explained that oralism was the method of choice made for many deaf children because hearing people viewed it as superior to sign language, not because it proved more effective. “It is no coincidence that

oralist theory began to transform deaf education in the United States during the same period that evolutionary theory was radically changing how Americans defined themselves and their world” (1996, p. 37).

It is important to note; however, that many deaf adults were not opposed to teaching speech to deaf children, they opposed the exclusion of sign language because it separated these children from the signing community (Baynton, 1996). Moreover, Cohen, in her book *Train Go Sorry: Inside a Deaf World* (1995), explained “Many hearing parents, typically besieged by grief and guilt over having a deaf child, perceived in oralism an alluring promise. Deaf children who could use their voices and understand English speech seemed less alien, more intelligent. In other words, more hearing. Normal” (p. 13). Cohen (1995) further explained “In the basest stereotype, speaking has been equated with the higher classes and higher intellect, signing with the lower” (p. 118).

D. Technological Innovations

1. Cochlear Implants: Hearing Electrically

In France in 1957, Djourno and Eyries were the first to implant a device in order to stimulate the auditory nerve electrically. While this patient could perceive when some environmental sounds were present, he could not discriminate speech. Dr. William F. House, having read about the work of Djourno and Eyries, sought to find a way to stimulate the cochlea electrically (Wilson & Dorman, 2008). In 1961, House and Doyle successfully completed the first cochlear implant procedure using a single electrode (Mudry & Mills, 2013; Wilson & Dorman, 2008). Because speech discrimination remained low with the single channel electrode, the multichannel electrode array was

created (Mudry & Mills, 2013; Wilson & Dorman, 2008). Adult cochlear implantation was authorized in 1985 by the Food and Drug Administration (Gifford, 2013).

A cochlear implant is comprised of both external and internal components. Externally, a microphone detects environmental sounds and these sounds are sent to a speech processor. The speech processor converts the sound into electrical impulses. These impulses are sent across the skin via a coil to an electrode array in the cochlea, which stimulates the auditory nerve. Because most hearing loss is a result of damage to the hair cells in the cochlea, the cochlear implant operates by circumventing the damaged hair cells and providing direct stimulation to the auditory nerve (Wilson & Dorman, 2008).

In the 1980s it was “believed that CIs would provide only an awareness of environmental sounds and possibly speech cadences to their users” (Wilson & Dorman, 2008, p. 2). Since their inception, many improvements have been made to CIs; however, Wolfe and Schafer (2015) report, “most cochlear implant systems possess 12 to 22 active stimulating sites... which pales in comparison to the 3,500 inner hair cells that process spectral information in the normal cochlea” (p. 94). Wilson and Dorman (2008) explained that the typical implant user today is able to communicate effectively under optimal listening conditions when the topic is familiar; however, extraneous noise significantly impedes an implant user’s ability to engage in conversation. Moreover, a study conducted by Cray et al. (2004) analyzed telephone use among adults who had been implanted at least twelve months prior to the study being initiated. A majority of those who indicated that they did use the telephone, also indicated that they could understand unknown individuals speaking about topics that were unfamiliar.

2. Pediatric Cochlear Implantation

It was not until 1990 that pediatric cochlear implantation was approved by the Food and Drug Administration (Gifford, 2013). While the surgery helped some adults perceive sound, the risks of long-term stimulation by electrodes for children was unknown (Clark, 2003; Walker, 1994). Moreover, it took decades for cochlear implants to attain the level of sophistication they currently possess. Presently, under optimal listening conditions, with “predictable conversations”, the typical implant recipient can effectively communicate. Environmental noise; however, significantly impedes this communication (Wilson & Dorman, 2008, p. 1). As a means of combating the deleterious effects of environmental noise and distance, FM (frequency modulated) systems may be used at school (Ling, 1989). Ling explains, “...an FM unit effectively brings the teacher’s speech as close to the child as her [the teacher’s] mouth is to the microphone” (1989, p. 86).

Additionally, age at implantation is an important consideration. A study conducted to determine the impact of age of implantation on more than 400 children in Australia by Dettman et al. (2016), reports that earlier implantation yields greater communication outcomes compared to children implanted later. These researchers concluded that, compared to children implanted at older ages, children who have significant hearing losses who receive cochlear implantation before two years of age demonstrate improved speech perception outcomes and improved expressive speech and language skills if implanted before they are one year old.

E. Language Options Today

As a result of universal newborn hearing screening programs, many children today, who do not have normal hearing, are identified within weeks of birth and have access to early intervention and more advanced technology than in years past (Grosse et al., 2018). These advances can promote listening and speech skills (Sugar & Goldberg, 2015). In a literature review by Lederberg et al. (2013), the authors set out to compare the language development differences among children using different language modes. In Garcia and Wei (2014), a “mode” is explained by Bezemer and Kress as “‘a socially and culturally shaped resource for making meaning’ (image, writing, speech, moving image, action, artifacts)” (p. 28). Lederberg et al. (2013) found that when choosing the language mode to which a deaf child will be exposed, three models are prevalent. These three include spoken language alone, a natural sign language, or spoken and sign language simultaneously. Moreover, parents receive opinions by professionals, family members, as well as friends who may be deaf or hard of hearing, and these influence the language mode chosen. Furthermore, by having access to various modalities, transmediation may occur. Siegel (1995) explained, “...transmediation is grounded in the idea... that alternative sign systems (linguistic, gestural, pictorial, musical, constructive, and so on) are available for making sense of human experience... language nearly always accompanies meanings constructed through alternative modes” (p. 460).

It is also important to recognize that many hearing parents do not develop fluent signing skills (Lederberg et al., 2013). Sorkin et al. (2015) report that there can be negative consequences when a family, who is not fluent in ASL, uses this as a primary mode of communication with a deaf child. They state, “Research shows that when a family is not fluent and ASL is given emphasis, the child’s language and reading levels

fall behind because the family cannot provide the needed environment to foster an accelerated trajectory of language learning” (p. 1).

In contrast, following a bilingual model, Napoli and Handley (in Mellon et al., 2015) disagree that families need to achieve a level of fluency in sign language, but indicate that using some level of sign language promotes communication. While there is the potential for increased speech and listening skills for children with cochlear implants, the question of whether sign language could provide a benefit to these children in the acquisition of language remains. Humphries et al. (2014) discussed the importance of sign language for children. They explained,

As sign language experience fosters development of neural pathways associated with visual attention abilities as well as language abilities, it is actually useful for learning to produce speech. Learning a sign language at the earliest possible age is a pathway to learning spoken language, and learning a spoken language is a prerequisite to learning to speak it (p. 114).

Consequently, by providing children who have cochlear implants with sign language models, they may, as Humphries et al. (2014) claim, have the potential for greater language and speech development. Humphries et al. (2014) further note that using sign language with a child who has a cochlear implant allows the child to develop language while he or she is learning how to use the CI. They explain, “A CI intervention that restricts the child to using spoken language as the single mode of communication does not give that ‘ease of language usage’ to the deaf child” (p. 116). Additionally, according to Snoddon (2008), who conducted a study of an early intervention program in Canada, deaf children with cochlear implants develop strong language skills in bilingual environments. Snoddon concluded that early intervention programs are not considering current research in the language development of children with cochlear implants; and

therefore, parents are not given the opportunity to make informed choices on language options. Petitto (2014) notes that there is no foundation for the apprehension that exposing young deaf children to sign language will prevent or delay spoken language development and instead may provide advantages in reading and language. Moreover, Snoddon (2008) contends, and I strongly agree, that the utilization of sign language allows the child to be able to receive more linguistic information, which correlates to stronger expressive language in written and spoken forms.

However, Knoors and Marschark (2012) explain that the majority of deaf children, who happen to be from hearing families, do not have access to a bilingual education that promotes fluency in sign language. Furthermore, Mayer and Leigh (2010) explain that, because the cochlear implant promotes the use of receptive language through listening and expressive language through spoken language, a bilingual approach is being used less frequently with this population. Following an oralist approach, these authors explain that, with newborn hearing screenings and earlier cochlear implantation, the acquisition of spoken language development following age-appropriate norms is considered to be a more reasonable expectation than it had previously. Nevertheless, these researchers acknowledge that the extent of generalizability is unknown. A study by Geers et al. (2017) further supported the benefits of parents using spoken language alone with children who have cochlear implants. They found that these children exhibited stronger perception and production of speech than children exposed to sign language. Additionally, this study found that by the end of elementary school, children who were exposed to sign language had lower reading comprehension scores than children who had no exposure to sign language. Moreover, Mayer and Leigh (2010) argue that there is no

evidence that a bilingual program for students who are deaf promotes gains comparable to the language and literacy levels of hearing peers.

Nittrouer et al. (2016) conducted a study of children with cochlear implants with regard to their skills in phonological awareness, how words are structured, and morphosyntax, the knowledge of how words can be combined to create meaning. This study found that by second grade, students with CIs who had not been exposed to sign language had stronger morphosyntactic skills than those students with CIs who had been exposed to sign language, though the specific form of sign language (i.e., ASL, PSE) was not specified. Geers et al. (2011) conducted a study on children with CIs from elementary through high school and reported that higher levels of speech perception and production, as well as stronger language and literacy skills, were found with those who did not use sign language.

In contrast, a study conducted by Davidson et al. (2014), evaluated the spoken English language development of children who have CIs and who have deaf parents who use ASL. Since birth these children had access to ASL and then after cochlear implantation had access to both ASL and spoken English. These children were compared to hearing children of deaf parents who use ASL. Both groups are considered bimodal bilinguals as they use both spoken language and a sign language. This study found that the children who are native signers and have CIs performed similarly to their native signing hearing counterparts in their use of spoken English, vocabulary, syntax, phonological awareness, articulation, and literacy skills. These children also scored similarly to the norms documented for monolingual hearing peers. This study concluded

that developing early sign language skills, prior to cochlear implantation, can promote the development of spoken language skills comparable to hearing peers.

F. Cochlear Implants and Communication Options

1. Informing Parents

How do cochlear implant users develop a cultural identity? Are they members of the majority hearing world, the minority Deaf world, or can they be part of both worlds? Hyde et al. (2010) used a mixed methods approach to look at the sources of information for parents who are considering implantation for their children. Parents considering implantation valued the input from other parents whose children had cochlear implants, but most had little if any contact with members of the Deaf community in making their decisions. Most of the information given to parents came from professionals in the field including medical teams, audiologists, and educational teams. This review revealed that information on the use of sign language, in terms of bilingualism, was not seen as a valuable option for parents; rather, these parents saw spoken language as the goal. Here, we again see the effects of the oralist philosophy.

Providing parents with information regarding bilingualism and the Deaf community at different stages in the implantation process may help parents to recognize that there is a space for bimodal language choices (Hyde et al., 2010). Humphries et al. (2014) explain that parents do not need to become fluent in sign language in order for there to be benefits from a bimodal bilingual approach. Furthermore, a bimodal bilingual approach has a positive impact on social-emotional development, facilitates the learning of a second language, allows access to communication when the cochlear implant cannot be used, and facilitates communication with the Deaf community (Mitchiner et al., 2012).

Nevertheless, Hyde et al. (2010) reported that, while most parents in this study viewed spoken language as the goal for their children before the cochlear implant surgery, in follow-up interviews some did report varying degrees of sign language use after cochlear implantation.

Additionally, not all children with CIs develop adequate auditory/oral language skills, particularly if they are implanted after 3.5 years of age (Mitchiner et al., 2012). In a bimodal bilingual approach, “sign language is typically viewed as a bridge to or support for spoken language” (p. 4). Grosjean (2001) wrote, “Counting solely on one language, the oral language, because of recent technological advances is betting on the deaf child’s future. It is putting at risk the child’s cognitive and personal development and it is negating the child’s need to acculturate into the two worlds that he/she belongs to” (p. 114). Grosjean, in his 2010 article, *Bilingualism, Biculturalism, and Deafness*, further explained that bilingualism, like that for other children who use a minority language, is the only way for children to acculturate into their two worlds. “Through contact comes knowledge, and the transmission of culture. Deaf people use their special schools and clubs to gather vital missing pieces, not only in terms of education but also in terms of group identity and self-esteem” (Cohen, 1995, p. 208). In this way, language equates to culture.

2. Sign Language Varieties

There are many forms of sign language that are in use, but only three of these will be discussed here. These include American Sign Language (ASL), Pidgin Signed English (PSE) and Simultaneous Communication (SimCom). William Stokoe, a professor at Gallaudet University, was intrigued by sign language and with a grant, began Gallaudet’s

Linguistic's Lab in 1957 (Nomeland & Nomeland, 2012). Working with Cronenberg and Casterline, Stokoe studied Deaf individuals signing and discovered that American Sign Language was comprised of rules (Nomeland & Nomeland, 2012).

In 1960, Stokoe published his findings in a book, *Sign Language Structure: An Outline of the Visual Communication Systems of the American Deaf*. His research showed that sign language was a complete language distinct from English. He claimed that sign language, although in a visual mode, was more than gestures and that it was a true language in itself (Nomeland & Nomeland, 2012, p. 109).

Then, in 1965, Stokoe, Casterline and Cronenberg created a dictionary of ASL. It was titled, *A Dictionary of American Sign Language*. In this dictionary, signs were identified by their formation, which included handshapes; where they were located; specific movements; as well as by their meaning in English (Nomeland & Nomeland, 2012, p. 109). "The words of ASL are signs; like the words of oral languages, they are constructed from a small set of building blocks; not consonants and vowels, to be sure, but movements, handshapes and orientations, and bodily locations. In ASL, the basic signs undergo regular changes to convey part of speech, derivation, compounding, and more" (Lane et al., 2011, p. 3). Stokoe wrote that specific rules are inherent in using sign language as is true in all languages, whether in their standard or non-standard forms (1976).

Moreover, Stokoe coined the label, "American Sign Language" (Nomeland & Nomeland, 2012, p. 109). Lane et al. (2011), in their book, *The People of the Eye: Deaf Ethnicity and Ancestry*, explained that "language", while used for communication, represents "ethnicity, and identity, and a force for social cohesion.... ASL signers hold very dear the communicative, cultural and emblematic functions of their language" (p. 3).

While ASL is recognized as the language used by the Deaf, Pidgin Signed English (PSE) is a “dialect of ASL” (Reilly & McIntire, 1980, p. 151). PSE is not a language in itself. “Pidgins are classically defined as languages that develop between two diverse linguistic communities in contact. Pidgins generally have a narrow but usually well-defined social context and no native speakers” (Reilly & McIntire, 1980, p. 151). Therefore, PSE is a sign form that utilizes the signs from ASL in Standard English word order (Nomeland & Nomeland, 2012; Reilly & McIntire, 1980). Reilly and McIntire (1980) explain, “PSE represents a mixture of the features of both modalities, integrating the temporal linearity of English with the visual-kinetic features of ASL” (p. 153). Nomeland and Nomeland (2012) further explain that PSE may eliminate some grammatical markers such as articles and endings on words that are found in Standard English.

Although children who are deaf have limited access to spoken language and strong sign language models are not readily available, many deaf children use a combination of spoken language supported by sign language to some degree (Knoors & Marschark, 2012). Knoors and Marschark (2012) added and I agree, “...the unavailability (impossibility?) of fluent language models from an early age for deaf children with hearing parents is at least a comparably large problem. One possible solution to this impasse is sign-supported speech (SSS) or simultaneous communication (SC)...” (p. 294). Sign-Supported Speech (SSS), also known as Simultaneous Communication (SC) or SimCom, is a sign language form that follows the syntactical structure of the majority language, rather than the language of the Deaf community (i.e., American Sign Language) (Knoors & Marschark, 2012). In SimCom, the spoken and signed modalities

are utilized at the same time, utilizing both the auditory and visual modalities inherent in a bilingual approach. Knoors & Marschark explained, "... many deaf students today, both with and without cochlear implants, appear quite comfortable using spoken language and sign language together" (2012, p. 295). Lederberg et al. (2013) explain that the use of SimCom allows children with residual hearing to receive the linguistic information bimodally and, for children without residual hearing, they will see the structure of the majority language.

Blom and Marschark (2015) conducted a study on the use of SimCom in college classrooms for students with cochlear implants. They found that college students benefited from SimCom when the material presented was more difficult, but not when it was deemed easy by the student. Blom and Marschark explained, "When auditory information is missed, misheard, or is novel, SimCom can provide such students with redundant verbal signals that can either compensate for what is missed or provide implicit reassurance that information was heard correctly" (2015, p. 128). They further concluded that SimCom would benefit students with cochlear implants under less than optimal listening conditions.

G. Developing Identity

Communication can impact identity. Identity, specifically "social identity", refers to one's group affiliation and can include participation in large groups, such as those defined by race and gender, or smaller groups such as classrooms (Bloome et al., 2005). Thus, identities, from the constructivist view, may vary as they are formed through social interactions (Shin, 2013). McIlroy and Storbeck (2011) discuss the emergence of deaf identities. They identify three different identity types, which include deaf, Deaf, and

“DeaF”. The term “deaf”, with the lowercase “d”, is used to identify someone who is more aligned with the majority hearing society. “Deaf”, with an uppercase “D”, signifies membership in a signing community and “DeaF”, with an uppercase “D” and “F”, signifies a bicultural identity by “building on the opportunities of both communities they live within on their own terms” (p. 497). Garcia and Cole (2014) explain, “Deaf communities convincingly show us that it is language users who decide who they want to be, and who choose their languaging and identifying accordingly” (p. 101). Moreover, bilinguals who are deaf tend to have “horizontal identities”, which are identities formed from peers rather than parents, while bilinguals from other minority groups have “vertical identities”, identities passed down from one’s parents (Solomon, 2014, p. x).

1. Identities of Difference

While there are several forms that identity can take, Moje and Luke (2009) indicated that identity can signal “difference”. Here they argue that “difference” in identity is generally seen regarding one’s group affiliations. They wrote, “The contexts in which both children and adults live their lives continually expose them to new people, new ideas, new information – about themselves and the groups with which they identify” (p. 420). A study by McIlroy and Storbeck (2011) found that some deaf or hard-of-hearing students who had participated in mainstream schools noted feeling different from their hearing peers because of the accommodations needed. They also commented on the difficulties they experienced in trying to keep up with the expectations held for the hearing peers and the isolation from these peers which made them feel “excluded” (p. 502-503). One of the interviewees noted that this exclusion may have been caused by her inability to accept her own deafness. Christopher Dehahn, a parent of children with

cochlear implants, explains in the documentary *Through Deaf Eyes*, “Don’t assume the technology will fix your child because it won’t. My children are both very high-functioning oral deaf children, young adults. But they are deaf. They are still deaf. They will always be deaf” (Hott & Garey, 2007).

Consequently, deafness is constructed in different ways. “The ‘medical model’ of deafness defines the deaf person as having an impairment when compared to their hearing, ‘normal’ peers.... The ‘social model’ of Deafness recognizes that it is the hearing world that excludes Deaf people” (Skelton & Valentine, 2003, p. 454-455). Disability Studies, whose focus is primarily on attention to inclusion rather than “otherness” (Ware, 2005), contributes to an understanding of identity construction for individuals who are deaf. Disability Studies sets out to identify similarities rather than differences (Ware, 2005). Peters (2005) illustrates that disability is not in the student, but in society’s inability to provide access to diverse students. Therefore, the goal of Disability Studies is to free students from the labels they have been socially assigned and empower them to gain insights into their own abilities and identities. In this way, Cohen (1995) explains, “The National Association of the Deaf rejects the representation of deaf people as having an impairment; it characterizes them instead as having enhanced vision” (p. 207). Skelton and Valentine (2003) further explain that while the “D/deaf” are constructed as individuals with a disability, Deaf individuals are members of a linguistic minority. Deaf children are like other bilingual children who will belong, to some extent, to both the majority hearing world and the minority Deaf world (Grosjean, 2001).

2. Linguistic Minority or Disabled

For centuries, the deaf have been viewed through a lens of disability rather than

diversity. Humphries (2014) wrote, “Historical views of deaf people by hearing people dominated the social landscape to the extent that even deaf people themselves believed that their bodies were damaged and their capabilities were limited.... The problem was society and its designs, not the bodies of deaf persons” (p. 60). Moreover, Deaf children are part of a linguistic minority (Charrow & Wilbur, 1989). Charrow and Wilbur write,

It is only when they are required to look, perform, behave and achieve like hearing children that they begin to see themselves as ‘not normal’ – as opposed to merely deaf. For all intents and purposes however, a deaf child with no other handicaps is ‘normal’, and very comparable in many ways to a minority child whose native language is not English” (1989, p. 103).

Nevertheless, the disability view persists as Senghas and Monaghan (2002) explain, “The *medical model of deafness* is one based on deficit theory and holds that deafness is the pathological absence of hearing and that such a hearing-impaired individual is therefore disabled because of faulty hearing” (p. 78). Consequently, Woodward (1989) noted that, in some respects the difficulties faced by the Deaf are more severe than other minority groups because the Deaf are seen from a lens of pathology.

Likewise, deaf individuals who use ASL should not be viewed as disadvantaged. Rather, they are part of a linguistic minority and part of a rich and enduring community (Charrow & Wilbur, 1989). Charrow and Wilbur (1989) wrote, “...once deaf children are considered in the same light as other non-English-speaking minority children, with their own language, culture and social conventions, their educational lot and their relations with the hearing world are bound to improve” (p. 115). However, any child who is part of a linguistic minority must learn when to use the majority language and when to use the minority language, but while switching between languages they must learn to manage the stigma of multilingualism (Senghas & Monaghan, 2002).

3. Bilingual Identities

Garcia and Cole (2014) indicate that studies of Deaf culture reveal that individuals perform their identities, moment-by-moment, by the selection of a language. Ofelia Garcia's concept of "dynamic bilingualism", derived in part from her studies of Deaf bilingualism (as cited in Garcia & Cole, 2014), demonstrates that the plurilingual use of languages is a practice utilized by individuals rather than employing them as unrelated languages that they possess (Garcia & Cole, 2014). This is in contrast to the concept of additive or subtractive bilingualism (Garcia & Wei, 2014). Garcia and Cole explain "Dynamic bilingualism goes beyond the linearity of additive and subtractive bilingualism and encompasses a plurilingualism in action, a 'plurilinguaging' that puts at the center the meaning-making practices that people use in order to communicate" (2014, p. 106). This is significant when considering the various modalities (i.e., speech, sign language, speechreading, print) available to deaf children with or without cochlear implants.

Garcia and Wei (2014) further explain that languaging is not linear because all of the linguistic resources that an individual possesses are always in play as one's linguistic repertoire. Because of this, Garcia views "translanguaging" as a pedagogical tool that highlights the complexity of the languaging that bilinguals employ (Garcia & Cole, 2014). "Translanguaging transgresses the reified categories of language, exposing meanings and histories buried within fixed language systems and identities" (Garcia & Cole, 2014, p. 107). Moreover, translanguaging is a pedagogy that calls on all of one's bilingual language resources in communicative practices (Garcia & Cole, 2014).

Similarly, Moje and Luke (2009) explain that learning, and the social aspects of interaction, lead to identity formation. In this view, identities are constructed socially, but include how one identifies oneself as well as how one is identified by others. These authors wrote, “Learning, from a social and cultural perspective, involves people in participation, interaction, relationships, and contexts, all of which have implications for how people make sense of themselves and others, identify, and are identified” (p. 416). This could lead to the development of different identities across various contexts (Moje & Luke, 2009). Garcia and Cole (2014) explain, “Deaf communities convincingly show us that it is language users who decide who they want to be, and who choose their languaging and identifying accordingly” (p. 101). Consequently, Moje and Luke (2009) posit that identities are always in flux depending on social situations that occur at various times and in interactions with others. Deaf children, who utilize both spoken and signed languages, are able to interact in different ways with two diverse communities and therefore their identity formation could be bilingual. Furthermore, Grosjean (2001) emphasized that we have a “duty” to teach deaf children in a bilingual manner so that they can communicate with both the minority Deaf community and the majority hearing community (p. 114).

H. Mainstream Education Today

With regards to children who have cochlear implants, their anticipated educational outcomes are improving. “Mainstream education is now considered to be a realistic option for the majority of CI children with normal learning potential, by both parents and professionals” (Vermeulen et al., 2012, p. 38). Primary difficulties found in the mainstream include high levels of noise and/or reverberation (Vermeulen et al., 2012;

Zanin & Rance, 2016). Zanin and Rance (2016) explained that, “despite recent technological advancements in HA [hearing aid] and CI technology, these devices are not yet able to overcome the effect of background noise and reverberation on speech intelligibility” (p. 727). Additionally, Vermeulen et al. (2012) explained that it is difficult for children with CIs to learn incidentally, which is another factor that may contribute to difficulties in mainstream classrooms. It was therefore recommended that itinerant teachers closely monitor how children with CIs in mainstream settings are accessing communication as well as academic content. These researchers further noted that itinerant teachers should focus on teaching these children with CIs to identify communication misperceptions or any information that is unclear, as well as promote strategies to repair communication difficulties.

1. Listening in a Mainstream Classroom

Listening environments, including classrooms, are affected by the distance between the speaker and listener(s), reverberation, background noise, and the signal-to-noise level, or level of the speaker’s voice in relation to the background noise (Crandell & Smaldino, 2000). Crandell and Smaldino (2000) further explain that there tend to be frequent fluctuations in background noise within a classroom over time. They wrote, “Background noise in a classroom affects the child’s ability to perceive speech by masking the acoustic and linguistic cues that are available in the teacher’s spoken message” (p. 364). Moreover, the combination of noise and reverberation have a greater impact than the two alone (p. 365). Additionally, the further the distance is from the speaker to the listener in a classroom, the more background noise and reverberation negatively impact the reception of the message. Within the direct sound field, or

distances relatively close to the speaker, there is “minimal interference from room surfaces” (p. 366). At further distances, the acoustic pattern of speech is changed due to reverberation. Crandell and Smaldino (2000) explain, “Because there is a linear decrease in the intensity of the direct sound, and because the absorptive characteristics of structures in the room absorb some frequencies more than others, the reflected sound reaching the listener will contain a different acoustical content in the intensity, frequency, and temporal domains” (p. 366). They go on to explain that, in a classroom, the direct sound field is a small area close to the speaker, thus “maximum speech perception” is only within close proximity to the teacher (p. 366).

For students who have cochlear implants, the impact of distance, noise and reverberation can pose significant challenges in a classroom. In a study conducted by Whitmal and Poissant (2009), source-to-listener distance (SLD) was measured in relation to the direct field, or sound source. They explained, “intelligibility for implant users can improve when SLD is reduced. While modest improvement may occur as SLD decreases within the reverberant field, striking and important improvements are seen when distance decreases enough to place the listener within, or even close to, the direct field” (para. 52). This direct field was noted as being approximately one meter in larger classrooms. They further explained that this effect is more evident in larger rooms where close proximity to the speaker was out of the reverberant field, but this did not occur in smaller classrooms in which all listening positions are in the reverberant field. Whitmal and Poissant (2009) further make the case for the use of FM systems, which can “replace the reverberated signal reaching the listener with a clean near-field signal” (para. 53). Thus, FM systems reduce the deleterious effects of distance, noise and reverberation.

I. Discussion

Is it possible that both oralism and manualism offer substantive tools for students who are deaf and have CIs? As this literature review has shown, not all children with cochlear implants are taught to use sign language. Kretschmer et al. (2010) reported on a research study they conducted which evaluated the language development of a child who received one cochlear implant when she was 17 months old and who did not use sign language as a modality. While this child's early language skills, before cochlear implantation, were below those of typically hearing children, after she received the cochlear implantation, she made language gains that paralleled typically hearing children. Nevertheless, for other children and their families, sign language has allowed them to more quickly and efficiently communicate at an earlier age with less frustration and this has led to improved access to language and literacy (Knoors & Marschark, 2012; Lederberg et al., 2013; Mellon et al., 2015; Mitchiner et al., 2012; Snoddon, 2008).

Since a majority of deaf children have hearing families, this is the only language minority group that does not share a familial cultural affiliation (Baynton, 1996; Woodward, 1989). While the Deaf are viewed by many as a linguistic minority (Charrow & Wilbur, 1989), this distinction is further impacted by a deficit view of deafness in which individuals who do not have "normal hearing" are viewed as disabled (Senghas & Monaghan, 2002). Perhaps, rather than finding one singular approach, all available modalities can be considered so that all deaf children achieve their potential through the emergence of strong language and identity development. The books, articles, and documentaries presented in this review shed light on the ongoing struggle for society to

find an educational approach that values individuality and diversity for all children, deaf and hearing, rather than seeing difference as “other” (Ware, 2005).

While this literature review has demonstrated that there is a great deal of research on how some children with cochlear implants utilize audition and how others utilize audition and sign language, there are more modalities to consider. There is a gap in the research with regards to identifying the numerous modalities that children who have cochlear implants may utilize within communicative events. The following dissertation research will document how two children who have cochlear implants use audition, sign language, speechreading, print, visual perception and tactile perception to access communication. It will further consider how these modality selections impact, or are impacted by, identity performances.

CHAPTER II

THEORETICAL PERSPECTIVE

A. Ethnography of Communication

“Ethnography of communication”, a term coined by Dell Hymes (Kaplan-Weinger & Ulman, 2015), is one of the theoretical frameworks used in this qualitative multi-case study. In ethnography of communication, language and its impact on human behavior is examined (Kaplan-Weinger & Ulman, 2015). Two critical questions employed in this approach include identifying the communication skills that are requisite in the community being observed and how these identified skills are learned (Saville-Troike, 2003). “The ethnography of communication is thus not just a method but a coherent theoretical approach to language. Hymes provides a theoretical basis for language in ways of speaking, which accounts for the diversity and efficacy of actual human communication in terms of the ideas of means of speech and speech economy” (Johnstone & Marcellino, 2010, p. 8). Furthermore, Saville-Troike (2003) notes that Hymes’ view was that “...*language is first and foremost a socially situated cultural form*, and with his call for a synthesizing approach which would emphasize that recognition and understanding of much of linguistic form cannot be separated from how and why it is used” (p. 253). Consequently, Hymes focused on language’s social function above its grammatical construction (Johnstone & Marcellino, 2010). “He was fundamentally concerned with linguistic diversity, and so, perhaps most importantly, he demanded that language study be grounded in ethnographic observation rather than introspective theorizing” (p. 2). Moreover, he promoted an etic approach to analysis (Johnstone & Marcellino, 2010). It is the differences inherent in communication style that allows for

ethnographic analysis of language in its social form (Johnstone & Marcellino, 2010).

Senghas and Monaghan (2002) explain the importance of Hymes' model in studying Deaf communities.

The approaches of Hymes and other sociolinguistic researchers recognize the heterogeneity of actual speech communities and treat linguistic variation as not (always) merely "error" or troublesome noise, but as possible indices of social context relevant to the communicative action. Thus, notions of register, dialects, and sociolects become interesting and useful, and integral even in the study of syntax and morphology (p. 81).

Consequently, communicative competence will be explored in this study.

“Communicative competence”, conceived by Dell Hymes in 1966, is “defined as knowledge of how to use language appropriately within various communities and various situations” (Kaplan-Weinger & Ulman, 2015, p. 12). Hymes' theory holds that the understanding of language use is learned before the grammatical aspects of language can be employed (Saville-Troike, 2003). Additionally, this competence may be flexible (Johnstone & Marcellino, 2010). Gumperz and Hymes explained in *Directions in Sociolinguistics: The Ethnography of Communication* (1972), “...students of communicative competence deal with speakers as members of communities, as incumbents of social roles, and seek to explain their use of language to achieve self-identification and to conduct their activities... the central notion is the appropriateness of verbal messages in context or their acceptability in the broader sense” (p. vii).

Furthermore, Hymes, in *On Communicative Competence* (1972), explained that children develop a “repertoire of speech acts”, use this repertoire in varying contexts and judge their success by the reactions of others (p. 277).

Moreover, membership in a community includes acquiring and demonstrating communicative competence. For children who are deaf, being able to move between both

the Deaf and hearing communities may be important. Social, as well as cultural knowledge, are also necessary to fully comprehend and use language (Saville-Troike, 2003). “The verbal code may be transmitted on oral, written, or manual (signed) channels. The relative load carried on each channel depends on its functional distribution in a particular speech community, and thus they are of differential importance in the linguistic repertoire of any individual or society” (Saville-Troike, 2003, p. 19). Saville-Troike (2003) further explains that “... sounds must be produced in language-specific but regular sequences if they are to be interpreted as a speaker intends; the possible order and form of words in a sentence is constrained by the rules of grammar; and even the definition of a well-formed discourse is determined by culture-specific rules of rhetoric” (p. 10). Identifying a language’s social function is paramount to understanding the significance of the contextual meaning of specific communication events (Saville-Troike, 2003).

Consequently, this study will analyze the communication practices of the primary participants in multiple communities of practice. “Communities of practice are plural, and that resonates with our having multiple identities that change through time” (Kaplan-Weinger & Ullman, 2015, p. 45). Speech communities, according to Gumperz (1986), share a common language, but that language does not need to be the only language of the community. Nevertheless, members of a speech community must share a common understanding of social rules for communicating regardless of the selection of language choice. Johnstone and Marcellino (2010) explain that a “speech community” is not determined by a shared language, but rather by a common understanding of rules for language use. “This definition moves the ethnographer away from questions of grammar,

and grammatically- possible utterances, to questions of coherence and efficacy in the socially-situated use of language” (p. 7).

Two significant considerations must be understood when using an ethnography of communication theoretical framework. First, sign language, though not dependent on vocalization, meets all of the requirements of a language. Saville-Troike (2003) notes,

In signing, a range of visual behaviors in addition to hand movements (which would be considered nonverbal in speech) operate on the verbal dimension. These include some facial expressions, which may even function at a syntactic level in this code. The nonverbal dimension of sign language includes the silence deliberately induced by closing the eyes or averting eye gaze (p. 116-117).

Second, Saville-Troike (2003) goes on to explain that it is very important, when describing manual communication, to carefully document the positions and movements of the body as well as the direction and degree of this movement.

B. Multiliteracies

Ten scholars met in New London, New Hampshire in 1994 to engage in discussions around educational inequities. This group became known as the New London Group (Cope et al., 2018). The New London Group “convened to respond to changing communication technologies, issues of power, and the importance of cultural and linguistic diversity in a globalized world” (Gebhard & Ives, 2012, para. 1). Moreover, the New London Group, in their article, *A Pedagogy of Multiliteracies: Designing Social Futures* (1996), explained how they sought to find ways to prevent individual differences from negatively impacting educational progress. They agreed that literacy pedagogy was changing in the face of increasing access to communication through new forms of media. In their Multiliteracy pedagogy, which has origins in literacy pedagogy, individual differences are viewed as resources and multimodalities are at play any time learning

occurs. This group of researchers focused on discussing how literacy pedagogy was changing, but they found discrepancies in the outcomes for diverse learners. The New London Group (1996) wrote, "...we should... rethink the fundamental premises of literacy pedagogy in order to influence practices that will give students the skills and knowledge they need to achieve their aspirations" (p. 63). They further explained that they chose the term "multiliteracies" because it reflects the great diversity present in communicative interactions (p. 64). They wrote, "A pedagogy of multiliteracies... focuses on modes of representation much broader than language alone. These differ according to culture and context, and have specific cognitive, cultural, and social effects" (p. 64). According to the New London Group, diversity in a classroom is beneficial for all students. "When learners juxtapose different languages, discourses, styles, and approaches, they gain substantively in meta-cognitive and meta-linguistic abilities and in their ability to reflect critically on complex systems and their interactions" (1996, p. 69). The New London Group explained,

These old meanings of 'access' and 'mobility' are the basis for models of pedagogy that depart from the idea that cultures and languages other than those of the mainstream represent a deficit. Yet in the emergent reality, there are still real deficits, such as a lack of access to social power, wealth, and symbols of recognition. The role of pedagogy is to develop an epistemology of pluralism that provides access without people having to erase or leave behind different subjectivities (1996, p. 72).

In this way, in a Multiliteracies framework, it is critical that educators identify, implement, and promote varied and innovate ways to access students' unique and individual ways of learning.

1. Meaning-Making

The New London Group stated that “meaning-making is an active and dynamic process, and not something governed by static rules” (1996, p 74). Gebhard and Ives (2012) explained that the concept of “available designs” was conceived by the New London Group to describe how learners utilize various modalities and create new meanings that can be shared. “Available designs include the various meaning-making systems at a learner’s disposal” (Gebhard & Ives, 2012, para 3). The New London Group (1996) explained that “Designing” takes the meanings extracted from “Available Designs” and transforms them into new knowledge or new meanings. Furthermore, “The Redesigned” is a term the New London Group (1996) developed to explain how these new meanings, that are formed through “Designing”, become new resources for “Available Designs”. In this way, meanings are taken, changed, and then accessible for future use as “Available Designs” (p. 74-76). “Through these processes of Design, moreover, meaning-makers remake themselves. They reconstruct and renegotiate their identities” (New London Group, 1996, p. 76). Therefore, Multiliteracies acknowledges students as “transformative agents” in light of their diversity (Cope et al., 2018, p. 6).

While Multiliteracies draws upon various modes of meaning including visual, linguistic, audio, spatial and gestural means, “multimodality” is the term used to describe how these modes can be inter-related (New London Group, 1996, p. 78). One key consideration in Multiliteracies is that language is a mechanism for making meaning and multimodalities are used in each instance of meaning-making (New London Group, 1996). “It is the role of the teacher to ensure that all learners experience transformative pedagogies, that they expand their repertoire of meaning-making resources... the learner should know what they have learned and how their repertoires of meaning-making have

expanded” (Cope et al., 2018, p. 7). Consequently, this pedagogy for teachers encourages them to promote each student’s diversity and unique ways of making meaning (Cope et al., 2018).

In considering “Designs” and multiliteracies, the New London Group (1996) pointed out that different “Available Designs” are located within diverse contexts. “The metalanguage of multiliteracies describes the elements of Design, not as rules, but as an heuristic that accounts for the infinite variability of different forms of meaning-making in relation to the cultures, the subcultures, or the layers of an individual’s identity that these forms serve” (p. 88). The individuality that each student brings to the classroom is a critical component of their ability to access the curriculum and the recognition of this diversity by educators is the key in finding ways to promote each child’s potential. “Every act of meaning both appropriates Available Designs and recreates in the Designing, thus producing new meaning as The Redesigned” (New London Group, 1996, p. 88). Therefore, this idea of “Designing” also indicates an individual’s agency in the meaning making process.

2. Multiliteracy Pedagogy

The New London Group (1996) identified four factors that comprise pedagogy, the act of educating and acquiring knowledge. The first is “Situated Practice” which indicates that knowledge is constructed in specific contexts within particular settings, while considering learners’ identities and creating trust between learners and teachers. The second factor is “Overt Instruction”, in which teachers scaffold learning so that the students can recognize how their learning can be applied in new ways (p. 83-86). Therefore, “Overt Instruction” is the conscious act of teachers to scaffold learning in

order for the learner to access new information, which can be used to continue to increase knowledge. “The goal here is conscious awareness and control over what is being learned...” (New London Group, 1996, p. 86). The third factor is “Critical Framing”, which the New London Group indicated occurs when learners practice what they have learned in new situations and, in this way, new learning occurs (p. 86-87). Consequently, “Critical Framing” gives students the skills to look critically at what they are learning and recognize its applications in other domains. Finally, “Transformed Practice” is a reflective act in that it assesses the extent or impact of learning as it applies to different contexts, not only for the learner, but for the teacher as the transmitter of new skills. The New London Group (1996) explained, “In Transformed Practice we are offered a place for situated, contextualized assessment of learners and the learning processes devised for them” (p. 87).

Subsequently, Cope and Kalantzis (2009), two members of the original New London Group, explored how this Multiliteracy pedagogy had changed over the decade since it had been posited. They looked at ways this framework can and is being applied in consideration of the current technological and increased multimodalities inherent in this new era. They found that these new literacies lead to new identities. “The logic of Multiliteracies is one which recognizes that meaning making is an active, transformative process, and a pedagogy based on that recognition is more likely to open up viable lifecourses for a world of change and diversity” (p. 173). An openness to new ways of accessing information is critical in this ever-changing technological era.

C. Social Semiotics

The theory of Social Semiotics posits that an individual's ability to make meaning is predicated on communicative interaction (Kress, 2013). Kress (2013) explained "...it is a theory about meaning-making as sign-making with all the modes which are available in a culture, where sign-making is seen as the semiotic work of social agents" (p. 132). Therefore, Social Semiotics (Kress, 2013) is the act of making meaning utilizing all possible modes at any given time as a result of a communicant's agency, or ability to make choices. Choosing which modality or combination of modalities to use in different situations and under varying circumstances is critical for individuals who are deaf and are important for these two case studies. Kress (2013) explains that "it is assumed that sign-, meaning- and knowledge-making are the effects of communication in social environments, with their potentials and constraints..." (p. 121). Thus, the theory of Social Semiotics focuses on how individuals use their agency to make meaning during communicative exchanges (Kress, 2013).

Moreover, this theory states that new and varied modality choices are available during each communicative exchange and looks to identify the modes that are available as well as the modality choices made by individuals in order to construct meaning (Kress, 2013). Kress (2013) goes on to describe the theory of Social Semiotics as presenting "a dual focus: on the *agency* of the *makers* of signs in social environments and on the *resources used* in the making of signs.... Multimodality provides the tools for the recognition of all the modes through which meaning has been made and learning has taken place" (p. 133).

However, the choice to use a modality or to choose not to use a modality is also of great significance (Kress & Selander, 2012). Teachers and students are "designers" of

educational practices and the critical component is recognizing that learning is an active process by both teacher and student. Analysis of learning must involve evidence of this action over a period of time (Kress & Selander, 2012, p. 265-266). Kress and Selander (2012) went on to explain, “Choice derives from and rests on the ‘interest’ of the maker of the sign, who is at the same time the maker of the meaning” (p. 267). These choices are contingent upon the available modalities and the limitations of the setting. Here, “meaning-making” is an active agentic choice (p. 267). Additionally, as “sign-makers”, agency is seen in both the transmitter of the communication as well as the receiver; however, the significance of the communication from the transmitter, due to individual experiences, may not be the same as that attributed to the communication by the receiver (p. 267). Kress and Selander (2012) further explain, “social action as *interaction* is the generative basis of meaning: an ongoing, ceaseless chain of rhetorically motivated selection, (re-) designed transformation/interpretation” (p. 267). Furthermore, Kress and Selander (2012) indicate that mean-making is identity-making. In other words, the theory of Social Semiotics supports an understanding of learning as meaning-making through agentic choices which lead to formation of identities. Understanding the modality choices made by the focal participants during communicative exchanges and how that impacts future modality selection is critical for this study.

D. Tools for Inquiry

1. Hymes’ SPEAKING Model

Dell Hymes, the architect of the Ethnography of Communication (Johnstone & Marcellino, 2010; Kaplan-Weinger & Ullman, 2015), created the “SPEAKING model” which is a mnemonic that is used by researchers to analyze communicative competence

(Kaplan-Weinger & Ullman, 2015, p. 43-44). Each letter in the SPEAKING mnemonic represents an aspect of a speech event that can be analyzed (Kaplan-Weinger & Ullman, 2015).

Within the SPEAKING model, “S” stands for “setting” which includes identifying when and where a speech event occurs as well as a physical description of the surroundings. “P” stands for “participants”, and is a description of who participates and the role they maintain in a speech event. “E” stands for “ends” and are the purposes, goals, and results of the speech event. “A” stands for “act sequence” and is the organization of the speech acts contained within the speech event. “K” stands for “key” and represents the tone in which participants communicate. “I” stands for “instrumentalities” which is the channel(s) or form(s) of communication employed in the event. “N” stands for “norms” and are the rules and expectations for interaction and understanding of the interaction. Finally, “G” stands for “genre”, the category of speech acts that comprise the speech event (Johnstone & Marcellino, 2010, p. 7-8; Kaplan-Weinger & Ullman, 2015, p. 43-44). As part of an inductive approach to data collection within this ethnographic study, Hymes’ SPEAKING model will be used to analyze each speech event that is part of the collection of data sources.

2. Multimodalities

While communicative exchanges will be the primary units of analysis used to answer the research questions, the modalities, or modes, available and utilized by the focal participants will be analyzed within each exchange. Modes are the resources individuals use to construct knowledge (de Saint-Georges, 2013; Kress, 2013) and are the means by which individuals interact with the world (Kress, 2000, 2013). “*Modes* are

socially made and culturally available material-semiotic resources for representation. *Multimodality* attends to the distinctive affordances of different modes” (Kress, 2013, p. 132). Moreover, Cope and Kalantzis (2009) argued that the different modalities include language that is written or oral and those that are represented auditorily, tactily, gesturally, or spatially. Gestures, facial expressions, posture, and timing add to the physical act of movement of hands or arms. This is significant when we consider sign language as a modality that uses body position, facial expression, and timing to add meaning to the message.

In classrooms, “language” is considered the primary means of communicating, but language is not a singular modality, it is a multimodal resource (Jewitt, 2014). Jewitt (2014) explained that multimodalities are used in all communicative exchanges, but each modality has a different function within the exchange. Additionally, the choices people make in selecting modes are meaningful and multimodal choices are social. Jewitt (2014) wrote, “...multimodality expands the focus of interaction, moving away from interaction as linguistic to explore how people employ gesture, gaze, posture, movement, space and objects to mediate interaction in a given context” (p. 37). This view holds particular meaning for this ethnographic study as the use of spoken language, sign language, speechreading, print, visual perception, and tactile perception are observed as tools utilized by and for two children with cochlear implants in mainstream classrooms as well as in the larger school environment and during outside activities.

Additionally, Cope and Kalantzis (2009) explained that, while parallelism allows meaning to occur in more than one modality, that meaning is never exactly the same among the different modalities. They concluded that the consideration of multimodalities

is important in a Multiliteracy framework because of how parallelism, the way various modalities support one another, and incommensurability, the differences inherent in the different modalities, are at play.

3. Deaf Gain

The majority hearing culture continues to maintain a view of deafness as a deficit. Moreover, the concept of Deaf Gain maintains that for a person who is deaf, there is no “loss” of the auditory sense as it would be for a hearing person (Burke, 2014). “To many in the deaf community, being deaf has nothing to do with ‘loss’ but is, rather, a distinct way of being in the world, one that opens up perceptions, perspectives, and insights that are less common to the majority of hearing persons (Bauman & Murray, 2014, p. xv). Additionally, Deaf Gain tells us that there is a difference between “sensation”, “perception” and “attention” (Dye, 2014). Matthew Dye (2014) explains that “sensation” refers to how the sensory organs sense information, “perception” refers to how the brain understands those signals which is dependent on one’s experiences, and “attention” is the act of choosing which stimuli to focus on (p. 194-195).

It is now recognized, through a Deaf Gain perspective, that children learn a signed language in the same manner and time frame that hearing children learn spoken language. Additionally, both languages are processed comparably (Petitto, 2014). In fact, Petitto (2014) explains that there are distinct advantages for deaf children who use sign language from a young age in comparison to their hearing counterparts who do not. “Early exposure to a signed language in young deaf visual learners changes their visual processing and visual attention, a change that, in turn, has later ‘upstream’ positive impact on higher cognition, language, and literacy, as well as on social-emotional self-

regulation” (Petitto, 2014, p. 71). Petitto (2014) also indicated that children who use sign language develop language typically. This evidence further supports the view of sign language as a valuable modality.

Some proposed advantages of deafness include improved performance on spatial and visual memory and creation of images (Hauser & Kartheiser, 2014), speechreading skills that are a benefit in noisy environments or across distance (Leigh et al., 2014), as well as heightened somatosensory (tactile) acuity (Napoli, 2014). Loeffler (2014) explained that a heightened tactile perception allows deaf individuals to appreciate music through vibrations as well as through sign language. Additionally, Dye (2014) states that Deaf individuals have heightened peripheral vision. He explained, “when combined with strategic decisions about seating, head movement, and so forth, it does allow excellent visual monitoring of the environment” (p. 206).

With regard to Deaf Gain, Garcia and Cole (2014) explain that hearing children utilize oracy and literacy to learn language; however, children who are deaf incorporate literacy, oracy and signacy. For deaf and hard-of-hearing children, oracy includes speechreading and/or spoken language and signacy incorporates the visual components of hand shape and movement with facial expression in the receptive and expressive use of sign language. Garcia and Cole (2014) contend that the signacy component may possibly lead to Deaf children who are bilingual developing a greater degree of languaging skills than hearing children who are bilingual. “Signacy further means that languaging capacities are expanded, now encompassing not only the modalities of sound of spoken language and visual images of written language, but also visual movement that makes up signed languages...” (p. 102). Therefore, these additional modalities add to the wealth of

language tools the child can use to access communication. Garcia and Cole (2014) went on to add, “...not only is the linguistic repertoire of a deaf child much richer than that of a hearing child, but its development is also more complex and relies heavily on at least three dimensions: the family context, the age at which the person became deaf, and the person’s degree of deafness” (p. 103). Consequently, these three dimensions impact how a child would utilize the various modalities.

E. Research Questions

The concept for this study began with my interest in the communicative practices of children who have cochlear implants, particularly the various modalities they may employ to access communication. However, there is a gap in the literature in this regard. Therefore, the primary question of this qualitative study is, what are the focal participants’ communicative practices in receptively and expressively participating in communicative exchanges? Communicative practices are the ways individuals use language in various social settings (Kaplan-Weinger & Ullman, 2015). These social settings are where the communicative events in which an exchange of information occurs. Moreover, communicative exchanges are the pattern of receptive and expressive communication that occur between individuals during a communicative event.

Three sub-questions will assist in addressing this primary question of communicative practices. First, what are the various modalities that the two focal participants used during communicative events in these two mainstream classrooms, in the school environment, and during activities outside of school? Kress and van Leeuwen, as cited in Garcia and Wei (2014), explain that modes have varying capacities and limitations for supporting meaning making. The modalities considered by the primary

researcher include spoken language, signed language, written language, speechreading, visual perception, and tactile perception. While being attentive to these modalities, this researcher constantly considered that other modalities could have been at play. Therefore, are there other modalities that these students are employing when they are accessible? What do these students accomplish by utilizing various modalities?

The second guiding question in this study was to identify the contexts, and the environmental conditions within those contexts, which prompted these children who have cochlear implants to use one modality or a combination of modalities. For example, under what classroom conditions does a child with CIs listen and speechread the teacher rather than watch the signed interpretation? How does classroom noise, distance from the teacher, and access to the teacher's face support some modality selections over others? How is a student's choice of modalities impacted when they are only able to use one CI, rather than two? Do these students actively seek alternative modalities if they are unsure of the communication that is occurring? If so, in what ways do they request other modalities so as to improve their participation in communicative exchanges? The third sub-question in this study was to analyze how social semiotics and the focal participants' selection of modalities may impact their identity performances. Conversely, do the focal participants' identity performances influence their modality selections?

These three theoretical frameworks and the three tools for analysis that were presented were used to analyze the data collected in light of these research questions. Moreover, the methodology utilized in this study, which will further support this analysis, is discussed in the following chapter.

CHAPTER III

METHODOLOGY

A. Introduction

This study is a qualitative multi-case study. Qualitative research seeks to discern and explain social phenomena within their contexts (Kamberelis & Dimitriadis, 2005). Utilizing a case-study methodology, researchers collect qualitative data on a particular group or individual and look for patterns over a period of time (Creswell, 2008). As this study is phenomenological, I was engaged in analyzing the focal participants' communicative practices from their point of view. Utilizing a paradigm that is constructivist/interpretivist, phenomenology is “the study of direct experience taken at face value and one which sees behavior as determined by the phenomena of experience...” (Qutoshi, 2018, p. 217). Qutoshi (2018) goes on to explain that “it is the researcher whose expertise matters to a great extent in gaining a deeper level of insight about the personal knowledge of the research participant” (p. 220).

For this study, I conducted 78 observations of two students who have cochlear implants while they participated in their mainstream school environments and in communicative interactions outside of school. During observations, I made jottings on the various modalities that were available and utilized by these students while documenting what was occurring in these environments that may have led to their particular modality choices. This phenomenon was observed and documented repeatedly during observations that ranged from 15 minutes to one hour. Within 12 hours of the observations, these jottings were written up as fieldnotes. Additionally, memos were written throughout data collection to document my questions, insights I wanted to note

related to my experience as a Teacher of the Deaf, and possible connections to previous observations. I also conducted nine interviews, which were recorded and transcribed. Four impromptu conversations with parents and teachers were also documented. Finally, I collected artifacts that included emails, student-drawn pictures, and classroom materials the focal participants completed. The fieldnotes, memos, transcripts and artifacts comprise my data sources.

My research questions pertain to identifying the modalities available to, and chosen by, students who have cochlear implants while in mainstream classes and during outside activities; the circumstances that occur to promote their use of one or multiple modalities; and how social semiotics and identity performances may promote modality selection by these participants. By utilizing this qualitative case study methodology, I documented and analyzed the focal participants' communicative practices, specifically their modality choices, in different environments and analyzed possible environmental reasons for these selections.

Two primary participants were the focus of these case studies. Both students have cochlear implants and participate in mainstream classrooms within a public school. The purpose of these two case studies is to document their modality choices as part of their communicative practices in the school environment where spoken English and sign language are presented in tandem throughout a majority of the school day. Modality choices include spoken language, sign language, speechreading, print, visual perception, and tactile perception. Additionally, observations occurred outside of school to analyze the available modalities and the participants' modality selection in different environments.

B. Participants

A total of six participants took part in this study. For confidentiality, pseudonyms were given to each participant, as well as the school. The two focal participants are siblings who attend “Northeast Pine Elementary School”; one is a second grader and one is a preschool student. They both utilize bilateral (right ear and left ear) cochlear implants. Both their mother and father also participated, as did their classroom teachers.

1. Focal Participants

Two focal participants were the primary focus of this multi-case study. The first focal participant is “Allie”, a seven-year-old girl in second grade who has two CIs. Parents reported that she passed the Universal Newborn Hearing Screening (UNHS). When Allie was almost two-years-old, she was identified with a significant hearing loss. Allie was just over 2.5 years old when she received a cochlear implant for her right ear and six months later she received a cochlear implant for her left ear. The model of the cochlear implant processors, the external component that Allie wore, changed during this study. At the beginning of this study, Allie had bilateral Nucleus 6 processors and before the study concluded had received Nucleus 7 processors, which was the newer model.

Allie uses both spoken and signed language for communication at home and at school, though expressively she primarily uses spoken language. She has received regular auditory and speech therapy since being identified with a hearing loss. Allie has access to sign language throughout all academic and extracurricular activities at school. Allie also has access to an FM (frequency modulated) system at school with two separate microphones. One FM microphone is for improved access to the teacher’s spoken language. And a second FM microphone improves access to peers’ spoken language. This

second FM microphone is also used by Allie, via an auxiliary cord, to access auditory information on a personal laptop. Allie stopped utilizing both FM systems near the start of this study, but she was not able to give a clear reason for rejecting them. Consequently, a soundfield system was introduced to the class, which projects the teacher's voice throughout the whole classroom, but therefore can only be used during whole group communication by the teacher. Moreover, I support Allie daily, in her classroom, for 1 hour and individually, for therapy, for 30 minutes.

“Kelsey”, Allie's sister, is the second focal participant. Kelsey is a four-year-old preschool student. Like Allie, she passed the UNHS. Kelsey's hearing had been monitored regularly by an audiologist due to Allie's hearing loss. At four months of age, Kelsey was identified with a mild to moderate sensorineural hearing loss. Kelsey was fitted with bilateral hearing aids at 6 months of age. Like Allie, she has received regular auditory and speech therapy since being identified with a hearing loss. Kelsey received a cochlear implant in her right ear when she was approximately 1.5 years old. She then received a cochlear implant in her left ear when she was three. She is currently wearing N7 processors. Moreover, Kelsey is a preschool student who primarily uses spoken language at home and at school, but does receptively use some sign language to support her comprehension. Expressively, Kelsey relies almost exclusively on spoken language, but is beginning to use some sign language expressively with her mother. Kelsey also has access to an FM system at school, which is used consistently by the teacher when she speaks with Kelsey and occasionally is used by peers, with teacher direction, when Kelsey is in small groups. Each day I support her in her classroom for 2 hours and individually for therapy for 30 minutes.

Both focal participants have been identified with Pendred syndrome, which is the etiology of their deafness. Pendred syndrome is a recessive disorder typically resulting in progressive bilateral hearing loss that is sensorineural in nature (van Nierop et al., 2015; Wémeau & Kopp, 2017). Sensorineural hearing losses occur in the inner part of the ear (Blume, 2010). Because Pendred syndrome is generally progressive, most individuals have hearing for a short period of time, though their hearing may fluctuate (van Nierop et al., 2015). Moreover, van Nierop et al. (2015) conducted a study to determine the auditory perception outcomes for patients with Pendred syndrome post cochlear implantation. This study indicated significant gains in perception of speech for children after cochlear implantation. “Due to the combination of the fluctuating hearing loss and to their considerable capacity for brain plasticity, children with Pendred syndrome adapt relatively fast to cochlear implantation” (van Nierop et al., 2015, p. 391). Furthermore, Allie and Kelsey have participated in auditory rehabilitation and intensive speech therapy since their hearing losses were identified. Expressively, they both present with occasional misarticulations, but their speech intelligibility is very good.

Wilson and Dorman (2008) report that typical cochlear implant users communicate without difficulty in quiet environments when engaged in predictable spoken communication, but may have difficulty in less than optimal listening environments. Wolfe and Schafer (2015) report, “most cochlear implant systems possess 12 to 22 active stimulating sites... which pales in comparison to the 3,500 inner hair cells that process spectral information in the normal cochlea” (p. 94). Drennan et al. (2014) explain “The primary limitation with all sound processors is the inability of users to recognize speech in noise, to recognize tonal speech, and to hear musical melodies” (p.

57). Consequently, while listening under optimal listening conditions with a cochlear implant may allow an individual user to access communication effectively, the presence of less than optimal conditions, as are prevalent in classroom settings, poses listening challenges.

2. Parents

Allie and Kelsey live with both their mother, “Laurie” and their father, “Mike”. Both parents are professionals who work outside the home. Several years before her children were born, Laurie studied Deaf Education and became fluent in American Sign Language; their father has been taking sign classes since Allie’s deafness was detected and he is proficient in Pidgin Signed English. Pidgin Signed English (PSE) utilizes signs from ASL in English word order, but does not utilize all of the grammatical markers of English (Nomeland & Nomeland, 2012; Reilly & McIntire, 1980). There is no known history of hearing loss in either family.

3. Teachers

Allie’s classroom teacher, “Ms. L.”, and Kelsey’s classroom teacher, “Mrs. V.” also agreed to participate in this study. Ms. L. has worked in the district where this study takes place for more than three years and has worked as a second-grade teacher in Northeast Pine Elementary School for the past two years. Mrs. V. has worked in the district for more than 15 years, teaching preschool through grade two, and she has worked at Northeast Pine Elementary School for the past two years as a preschool teacher. Neither teacher had ever had a student who was deaf or hard-of-hearing in their classrooms prior to these students.

A comprehensive in-service was conducted before the start of the academic year in which both teachers were informed of Allie and Kelsey's use of cochlear implants. Our consulting audiologist and I discussed how cochlear implants work, basic maintenance and troubleshooting of cochlear implants, how to use an FM System, classroom accommodations, and how to work with sign language interpreters. I also explained how I, as the teacher of the Deaf, would be working in each of their classrooms each day as both a support to communicative information as well as academic content.

C. Researcher Positionality

I have been a teacher of the Deaf (TOD) for this district for more than twenty years and have worked in every level of all of its schools. Currently, I work in five schools, including "Northeast Pine Elementary School". As one of the TODs for the department of Deaf Education, I help to coordinate the services for all of the students in the district who are deaf or hard-of-hearing. These services include auditory/oral therapy; direct academic support; sign language training and support; daily hearing aid and cochlear implant monitoring; FM and soundfield troubleshooting; evaluation and analysis of students' auditory, language, and academic skills in spoken and/or sign language; and consultation and training for teachers, support staff, and parents. Additionally, I communicate directly with all district administrators to ensure services are delivered effectively.

My training to become a teacher of the Deaf was in the oralist philosophy, which provided me a background in promoting spoken language and speechreading. I am proficient in ASL and fluent in Signed English, a form of sign language that follows English grammar rules (Knors & Marschark, 2012). Nevertheless, as I am not a certified

interpreter, when I am providing support in sign language to the focal participants, I am “facilitating” communication, rather than “interpreting”. When I am in a classroom, I am working as both teacher and facilitator. In this way, I support not only a student’s access to language, but support their receptive and expressive language, vocabulary skills, and comprehension of academic content as well. I also continually monitor amplification devices and the classroom environment to ensure these students can access all aspects of communication with teachers and peers.

Furthermore, my positionality as teacher and researcher with a communication difference provides me with a unique lens through which to observe my students and their modality selections during communicative events (Peters, 2005). At the age of five, I was diagnosed with a severe stutter and until early adulthood had significant difficulty communicating through spoken language. This challenge has made me keenly aware of the different ways in which individuals express themselves and consequently played a key role in my decision to become a teacher of the Deaf.

D. Research Context

The research site for this study is an elementary school in a large, diverse, urban district in the northeastern United States. This district hosts students from a wide range of economic, racial, and ethnic groups. Special Education services, including Deaf education support by itinerant teachers of the Deaf, including myself, are available district-wide. Other Special Education personnel include special education teachers at all grade levels, speech-language pathologists, psychologists, social workers, occupational therapists, and physical therapists. This district also has a consulting audiologist and employs several sign language interpreters.

The school in which the study takes place, identified by the pseudonym “Northeast Pine Elementary School”, supports more than 300 neighborhood students in preschool through fifth grade. Northeast Pine Elementary School supports students who are deaf or hard-of-hearing, not only in the services provided, but by displaying information related to hearing loss, deafness, and sign language. For example, signs are posted around the school that remind students of the importance of facing the person they are talking to and speaking one at a time. These posters are not specifically aimed at supporting students who are deaf or hard-of-hearing, but rather are presented as good communication practices for all individuals. Other posters throughout the school display images of ASL signs to promote access to sign language. These posters are changed frequently to allow all students to learn numerous signs each year. After-school sign language classes are offered to students who are interested in learning ASL and many teachers invite the teachers of the Deaf and interpreters into their classrooms to teach songs in sign so that their classes can perform in spoken English and sign language at assemblies.

Additionally, the library at this elementary school has numerous books that represent characters of various ethnicities, cultures, family structures and abilities. Research by Favazza et al. (2017), demonstrates the importance of embedding books within schools that depict children of different abilities in the literature children have access to. Favazza et al. wrote, “...infusing high-quality materials that reflect diversity, in *all* schools, is a first step in supporting social inclusion and positive attitude development at the very age when attitudes of acceptance or rejection are being formed” (2017, p. 659). Moreover, the library at Northeast Pine Elementary School offers books that

contain deaf characters or the use of sign language depicted in positive ways. Two examples are *Hands & Hearts: With 15 Words in American Sign Language* (Napoli, 2014) and *Dad and Me in the Morning* (Lakin, 1994). *Hands & Hearts: With 15 Words in American Sign Language* (Napoli, 2014) is a children's book which depicts a mother and daughter sharing a day at the beach together. They use sign language, but there is no clear indication if one, both, or neither of them are deaf. Another book that can be found is *Dad and Me in the Morning* (Lakin, 1994). This is the story of a young boy, presumed deaf because he uses a flashlight to see his father's lips in the dark, and his father, who goes to see the sunrise on the beach and they use sign language and speechreading to communicate.

E. Setting

A majority of the observations occurred in the focal participants' classrooms. Other observations took place in the music room, auditorium, gymnasium, playground, soccer field, and a community swimming pool.

1. Second Grade Classroom

When entering the second-grade classroom, on the immediate right is a long table. Student desks take up the full center section of the room. The desks are grouped into 4 or 5 pods of desks, making up working groups. At the front of the room, to the right of the door, is the smartboard. To its immediate right is a chair and beside the chair is a small table with a pencil sharpener. To the right of the table is a bookshelf of children's books. To the left of the smartboard is a chair and immediately perpendicular to the chair is the teacher's desk. To the left and behind the teacher's desk is a window with a horseshoe shaped table in front of it. On the back wall of the classroom, to the immediate left of the

main door, is a long countertop with cabinets above and below it. To the left of the cabinets, just inside the door, is a cart for laptops and headphones. Additionally, on the first day of each month, Ms. L. changes the students' seats. However, Allie moves between only two seats; these seats provide her the best access to seeing the teacher and the facilitator/interpreter. One desk is by the teacher's desk, facing away from the teacher's desk with Allie's left ear facing the smartboard. The other seat Allie alternately sits at is at the far end of the front row facing the teacher's desk with Allie's right ear toward the smartboard. Those of us who facilitate/interpret for her have seats available near both of these seats. (See Appendix A).

In this second-grade classroom, the morning typically begins with the students completing seat-work that Ms. L. has put on the smartboard. The students then gather on the carpet for the morning meeting and often watch a school-wide video. After that, the days are very different with at least two specials classes every day, which include music, library, PE, art and Spanish. Throughout the day, Ms. L. incorporates whole groups, small groups, seat-work, and computer/iPad work. She also reads to the students daily during their snack time. Allie is in the classroom all day, except for when she works with me directly for 30 minutes.

2. Preschool Classroom

When entering the preschool classroom, on the immediate right is a bathroom. Just beyond the bathroom door is a shelf. Around the shelf, the room expands to the right where there is a sensory table and play kitchen. On the back wall, perpendicular to the play kitchen, are windows and this area contains several centers: blocks, science center, and the class library. The teacher's desk makes up the final section of that wall.

Perpendicular to the teacher's desk is the smartboard with a large rug in front of it. On the next wall, leading to the main classroom door, is a long countertop with cabinets above and below and a sink in its center. The painting center is on the far right of this wall. Between the cabinets and the door is a sensory table with sand. There are 3 groups of student tables in the center of the room, with shelves separating them. These shelves contain various games, puzzles, and other toys. By the smartboard, the teacher has her chair to the right of the smartboard and a small free-standing board is to the left of the chair. (See Appendix B).

When the students arrive to their preschool classroom in the morning, they follow a routine. They are to wash their hands, sign in on the white board as a way of practicing writing their names, put a stick with their name on it in one of two baskets labeled "bringing lunch" or "buying lunch", and then they can choose to play in one of four or five centers that Mrs. V. has set up for them. After students have played in centers for a while, they meet with Mrs. V. on the carpet and discuss who is at school, the weather, and what their day will look like. These students also attend two specials classes every day, which include music, library, PE, art and Spanish. They work in centers at least twice each day, go outside twice, and have a rest after lunch. Mrs. V. reads at least two stories to them every day and they also sing and dance to videos on the smartboard.

F. Methods

The methods for this study include observations, interviews, and the collection of artifacts. During observations, my role varied between observer and participant observer. I typically carry a clipboard with me to classrooms to note vocabulary, grammar, or concepts that I need to review with my students. During this study, my clipboard, while

still used to take notes on areas I needed to work on with my students, also became where I recorded my jottings in the classroom, school environment, and at outside events. My jottings consisted of single words or phrases that would later help me to remember all that I observed. On several occasions, I needed to record a brief conversation and I would take the time to do this in order to ensure accuracy.

As an observer, while I was in the classroom, school environment, or at outside events, I was sitting within view of the focal participants, observing their communicative practices and taking jottings. As a teacher of the Deaf, my presence as an observer happens several times each week in order for me to assess my students' comprehension of classroom communication. Additionally, every day I am a participant observer as I actively support my students' communication by signing what is being said in the classroom and explaining vocabulary and concepts. Undoubtedly, my presence as observer or participant observer influences my students' modality selection and attention to communication because they recognize that I am there in order to support their receptive and expressive communication and am watching how they navigate their environments. I intervene if they show any signs of needing support, whether I am there as an observer or a participant observer. I also facilitate language through sign language when an interpreter is not present. Consequently, my responsibilities as a teacher were primary throughout this study, but I quickly recognized that my jottings, while both observer and participant-observer, served to support my students' academic progress because I was paying attention, not only to what they could produce as oral or written responses, but their modality choices also helped to signal what they understood or needed more support with.

Furthermore, documenting the role my positionality and reflexivity played was also critical when collecting data and was documented in memos. Positionality, according to Kaplan-Weinger and Ullman (2015), is the relationships one has with those being studied and this directly impacts observations and the interpretation of those observations. Consequently, positionality allows researchers to contemplate their own assumptions regarding their research. Moreover, my reflexivity as a researcher is the acknowledgement of the impact that my personal experiences and background have on my analysis of observations. Reflexivity will allow me to explain how I understand the data, given my positionality (Kaplan-Weinger & Ullman, 2015).

1. Data Collection

Informed consent was obtained by both parents and both teachers. Parents also gave consent for observations of their two children, Allie and Kelsey. Additionally, Allie gave her assent to be part of the study. Data collection began February 26, 2018 and ended June 19, 2018. Data sources include fieldnotes of observations, transcripts of interviews, and artifacts.

a. Fieldnotes

Fieldnotes were written based on my observations of these focal participants in their classrooms, within the school environment, and during out of school activities. I conducted 78 observations from February 26, 2018 to June 19, 2018. These included 37 observations of Allie, 38 observations of Kelsey, and 3 observations of them together. In all, I observed Allie for 24.2 hours and Kelsey for 21.75 hours. While conducting observations, jottings were made and then used to complete the writing of fieldnotes.

Jottings were typed as fieldnotes following Hymes' SPEAKING model (Hymes, 1972; Kaplan-Weinger & Ullman, 2015). Using this model, I paid careful attention to and documented where the event took place, the time of the event, and the tools used (i.e., soundfield, smartboard, computers); the individuals involved in the event and what they did during the event (i.e., student, teacher, facilitator); the participants' objectives when entering the event and the end results; the content and sequence of messages shared; the attitude among participants (i.e., understanding, frustration); the forms of communication used; the expectations that were understood by the participants; and the types of interaction that comprised the event such as direct instruction, watching a video, or listening to a story. Moreover, fieldnotes were completed within twelve hours of the observations to ensure that as much detail as possible was documented. Forty-nine pages of fieldnotes were written for Allie and 43 pages of fieldnotes were written for Kelsey.

Both teachers were observed in interactions with these focal participants. I also emailed both teachers so they could provide confirmation or clarification of some observations. Furthermore, observations of the primary participants outside of school included observing their interactions during participation in both soccer and swimming. Parents were contacted via email or phone and permission was received to conduct each observation outside of school.

Of 37 observations of Allie, 19 observations were in her second-grade classroom, 2 were in the music room, 7 were in the auditorium, 2 were in the gymnasium, 2 were outside on the school grounds, 3 were at the soccer field, and 2 were at a community swimming pool. Of 38 observations of Kelsey, 29 observations were in the preschool classroom, 2 were in the auditorium, 2 were in the music room, 1 was in a specials room,

1 was outside on the school grounds, 2 were at a community swimming pool, and 1 was at a community gymnasium.

b. Transcripts

A total of nine interviews were conducted. I interviewed each parent and each teacher once and interviewed Allie on five separate occasions. All interviews were audio-taped and then transcribed within 36 hours. A total of 46 typed pages of interviews were obtained. Additionally, I wrote notes after four impromptu conversations that were either face-to-face or via phone with parents and teachers.

i. Interviews with Parents and Teachers.

One interview was conducted with each of my primary participants' parents and classroom teachers in the school in which the study took place. These were all semi-structured interviews as an outline of questions was produced prior to each interview, but as discussion progressed, some questions were discarded and new questions asked that expanded on previous discussion. Parent interviews were conducted in order to understand how they discovered their children were deaf, their reasons for choosing cochlear implantation while continuing to use sign language, and how they view their children's modality selection. The interview with Laurie, the mother of the focal participants, lasted 47 minutes and the interview with Mike, the focal participants' father, lasted 39 minutes. Additionally, interviews were conducted with each teacher so as to gain information on their view of the modalities available in the school environment, those modalities that are utilized by the primary participants, as well as the environmental conditions they believe contribute to those selections. The interview with Ms. L., second-grade teacher, lasted 35 minutes and the interview with Mrs. V. lasted 42 minutes. (See

Appendix C for a sample of parent interview questions and Appendix D for a sample of teacher interview questions).

ii. Interview with Focal Student

Because it is important to understand the modality choices that my participants make, interviews with my second-grade focal participant were critical for this case study. While observations indicate the choices made and may give possible reasons for the choices, asking the second-grade focal participant why she made specific modality choices in different observations could provide reasons and ideas outside the scope of my observational lens. Therefore, I interviewed Allie, my second-grade primary participant. Saville-Troike (2003) explains, “Children themselves often have definite ideas about the nature of language, how it is learned, and how it is used, but while children have been frequent objects of observation by ethnographers, they are seldom interviewed” (p. 248). All interviews were audio-taped and then transcribed within 36 hours. Each interview with Allie lasted between four and fourteen minutes.

c. Artifacts

Artifacts were collected and include emails to and from teachers and parents, some drawings the participants made, and spelling lists from the second-grade class. Several times I emailed the parents and teachers of these focal participants to get their feedback on what I had seen in the classroom so as to provide confirmation or clarification from other observations the teachers had made or evidence the parents had from home.

d. Research Memos

Memos were written so as to allow me to consider my observations, interview transcripts, and artifacts in light of my experiences as a teacher of the Deaf. These memos

further enabled me to provide background knowledge or contemplate the implications specifically related to deaf education due to reflexivity. Charmaz (2014) notes, “researchers... are obligated to be reflexive about what we bring to the scene, what we see, and how we see it” (p. 27). Throughout data collection and at each stage of coding and analysis, I wrote memos. Occasionally, these memos were written on my clipboard as I made jottings. I would note questions I had about what I was observing such as why modalities were being chosen. Recursivity played a role in memo writing as I wrote several memos regarding analyzing an observation in light of an interview or seeing connections between what Allie told me and what I observed in class. Furthermore, as I continued to code my data and find themes, I made memos that compared and contrasted various observations.

i. Initial Memos

Initial memos were written throughout data collection so as to allow the primary researcher to engage in a continuous dialogue about the data that was being collected, the possible categories, and potential theories (Birks & Mills, 2015; Creswell, 2008). By using memos “...the researcher explores hunches, ideas, and thoughts, and then takes them apart, always searching for the broader explanations at work in the process” (Creswell, 2008, p. 447-448). Emerson et al. (2011) explain that memos can be used to focus on particular interactions observed in a communicative exchange or to highlight a theme observed across observations.

Many of my initial memos reflected upon my experiences as a teacher of the Deaf. I constantly wrote notes regarding how the acoustics of the classrooms may have been contributing to the focal participants’ ability to use audition alone and in other

memos I wrote questions regarding how the classroom acoustics may have promoted their need to watch the signed interpretation, look at the teacher's face for speechreading, or move to have a better view. I have also read quite extensively about Deaf Gain and several questions were asked in my memos such as "Is Allie feeling the music?", "Did Kelsey feel the teacher's chime, hear it, or both?" In all, I wrote 82 initial memos.

ii. Integrative Memos

Writing integrative memos allows the researcher to find common themes among the data as well as "theoretical connections between fieldnote excerpts and the conceptual categories they imply" (Emerson et al., 2011, p. 195-196). It is at this time that decisions on primary themes and subthemes needed to be made. Emerson et al. (2011) indicate that some themes need to be discarded while others are further explored. Ensuring theoretical saturation of themes identified through sampling the data obtained is critical (Bloor & Wood, 2006). My integrative memos were used to compare categories to consider how frequently they were used and if there were similarities and differences among the different exchanges or events. I frequently asked questions, comparing observations, in order to highlight similarities and differences. In all, I wrote 24 integrative memos.

2. Data Analysis

While the units of analysis are the communicative exchanges within the school environment, particularly the classrooms in which these focal participants are students, as well as some activities outside of school, it is also important to consider communicative practices and communicative events. Kaplan-Weinger and Ullman (2015) explain that, "Practices can be understood as our socially influenced norm-governed actions, as well as those that defy norms. They are governed by things we 'just know', most of the time. So,

our multimodal expressions... are shaped by the communities we belong to and their norms” (p. 71). Here, practices are guided by established rules. Barton et al. (2000) explain that, “Events are observable episodes which arise from practices and are shaped by them” (p. 8).

Utilizing Dell Hymes’ SPEAKING framework, multimodalities, and Deaf Gain, each communicative exchange was analyzed so as to be able to compare how the focal participants’ deafness led to distinct ways for them to engage in the communicative events. For example, one communicative event that was observed several times occurred when Ms. L. and Mrs. V. read stories to their classes. The communicative practices in these classrooms were for the teachers to be reading the words from the stories, the interpreter or facilitator would sign the story, and the children would receptively gain an understanding of the story. Moreover, the communicative exchanges, which began and ended with each event, were expressively in spoken English by the teacher and a form of sign language by the interpreter or facilitator. The focal participants’ modality choices, such as the use of audition, sign language, and speechreading were documented and Deaf Gain further explained these participants’ ability to access these forms of communication.

Numerous observations of the same events, such as reading lessons, writing lessons, stories read by teachers, and math lessons, were documented and analyzed in this study and patterns were identified and categorized. Events were identified and categorized by the objectives that the individuals, particularly adults, were seeking to attain. Additionally, each event had a clearly identifiable beginning and ending. Each event was coded according to when it occurred, where it occurred, who was participating, its duration, and the various modalities that occurred throughout the event. The

communicative exchanges that occurred during these communicative events are the units analyzed in this data. For each communicative exchange, specific modalities and environmental factors, such as noise and distance from the speaker, were identified and coded. “Careful thought and preliminary, tentative analyses can suggest finer-grained aspects of interactions to focus on, new scenes and topics to be investigated, additional questions to be asked and followed up, and interesting comparisons to notice” (Emerson et al., 2011, p. 123). During observations, questions were raised and further explored during subsequent observations, interviews, and emails.

3. Grounded Theory

The entire corpus of data, including fieldnotes from observations, interview transcripts, and artifacts, were coded using a grounded theory approach (Kamberelis & Dimitriadis, 2005). Grounded theory focuses on individuals engaged in interactions with others (Creswell, 2008). Moreover, Kamberelis and Dimitriadis (2005) explain that grounded theory “...highlights the ways data ‘speak back’ to us in surprising ways” (p. 142). Greckhamer and Koro-Ljungberg (2005) explain, “...grounded theory might be viewed as a systematic and controlled approach for qualitative analysis with clearly specified analytical procedures...” (p. 730-731). The first procedure in grounded theory involves analyzing each line of fieldnotes and coding them with all possible themes or ideas. Once this is complete, focused coding allows the researcher to go through each line of fieldnotes again and code with identified topics that were found through open coding. While reading fieldnotes and coding, memos are also written that tie observed topics and phenomena together. It is through this process of constantly comparing the data, that theories can be generated (Emerson et al., 2011).

This inductive approach to research allowed me to gather and analyze the data in order to identify themes regarding the focal participants' use of modalities in various communicative exchanges as well as environmental circumstances that promoted specific modalities. Open coding, the identification of themes, as well as focused coding, allowed for the analysis of the communicative practices of my participants by identifying key features of their communicative exchanges within communicative events.

a. Open Coding

In using grounded theory, the data were first coded using open-coding and evidence from the data was used to identify categories or themes related to communication.

“Codes... take a specific event, incident, or feature and relate it to other events, incidents, or features, implicitly comparing and distinguishing this one from others” (Emerson et al., 2011, p. 180). Thus, all collected data must be considered (Creswell, 2008). Emerson et al. (2011) explain that for open-coding, each line of fieldnotes will be read and any and all ideas, possible themes, or connections will be documented. Categories, as well as sub-categories, will be generated (Creswell, 2008).

My initial coding consisted of analyzing each line of fieldnotes and documenting which modalities or combinations of modalities were being used. In doing this, I found 23 separate codes for my focal participants' receptive communication such as “auditory only”; “auditory, speechreading, sign language, knowledge of print”; “auditory speechreading, sign language and visual (not print)”; and “auditory and tactile” to name a few. I also found nine other characteristics that were observations of my participants' ability to access information. These included “advocating for oneself”, “Deaf identity”, “familiarity/routine”, “providing clarification”, “seeking clarification for oneself”,

“fatigue”, “waiting for eye contact from person speaking”, “identity of difference”, and “Deaf Gain”. In memos, these were noted and became part of the analysis.

My second round of initial coding identified 14 contexts that occurred repeatedly. For a large majority of the data, the contexts I identified were based on activities such as “teacher reading a story to the class”, “teacher giving directions”, “participating in school-wide assembly”, and “working on the computer”. Other activities I identified focused on the focal participants’ roles in communication such as “gaining better line-of-sight” and “difficulties with only one CI being used”.

Additionally, Emerson et al. (2011) explain that asking questions as part of open coding allows the researcher to consider what is observed, how these observations relate to previous observations, as well as the researcher’s experiences in the field and profession. They write, “in qualitative coding we ask questions of data in order to develop, identify, elaborate, and refine analytic categories and insights” (Emerson et al., 2011, p. 175). Specifically, Emerson et al. (2011) explain that questions should center on what is taking place and the order of the events, questioning what may seem ordinary, asking what these events mean for those being observed, and considering how observations may relate to previous observations.

Several memos were written during open coding that asked questions of the data I was seeing. Many of these questions centered around considering access to communication and why the focal participants chose particular modalities or combinations of modalities. One question that was asked several times centered around why the focal participants chose particular seats or moved their seats. Were they intentionally trying to improve access to audition, speechreading, sign language, a picture

in a book, or words on a screen? Additionally, when these focal participants did make modality choices, how did the context and environmental factors influence those choices?

b. Identifying Themes

Themes are ideas from coding and categorizing that a researcher chooses to focus analysis on. Once central themes are identified, fieldnotes are sorted according to these themes with some fieldnotes fitting into multiple thematic categories. The meaning of these categories will be explored (Emerson et al., 2011). After reading my data several times and completing initial coding, I recognized that there were specific modality choices that were prevalent across settings and that each focal participant used with great frequency, either as a single modality or in combination. Ten of the most frequently used modalities or combinations of modalities were further analyzed and became themes. Some of these themes included “audition alone”; “audition, sign language and speechreading”, “audition, sign language, speechreading, and print” and “audition, sign language, speechreading, and visual perception”. My second round of initial coding yielded five contexts that were found with great frequency and identifying these contexts became my second set of themes. These contexts included “teacher giving directions”, “working one-to-one with teacher”, “small groups”, “teacher reading stories”, and “watching videos”. Many memos were written in order to consider why some modalities were used with greater frequency than others during one observation, but not in other similar contexts.

c. Focused Coding

In focused coding, the researcher has a set of ideas or possible themes in mind as the fieldnotes are reread. Here, the researcher goes through all of the notes that have been

categorized by particular themes and may elaborate on some and combine others through newly identified connections (Emerson et al., 2011). “In focused coding, the researcher constantly makes comparisons between incidents, identifying examples that are comparable on one dimension or that differ on some dimension and, hence, constitute contrasting cases or variations” (p. 192). When variations are noted, an attempt will be made to identify the cause of the variation. It is through focused coding that the researcher may begin to see patterns as a story of the participants emerge and it is important to question the similarities and differences in those patterns, as well as the conditions that were present (Emerson et al., 2011).

After initial coding and finding initial themes, I began focused coding. I went through the data again, highlighting when the focal participants utilized those individual modalities or combinations of modalities and the frequency of each. I made a chart of their frequency and worked to identify similarities and differences between the events in which the exchanges took place. For my second round of focused coding, I found five contexts that occurred repeatedly. These included “the teacher giving directions”, “working one-to-one with the teacher”, “working in small groups”, “watching videos”, and “the teacher reading stories”. I then went through my data again and began documenting what was happening in the classroom during these events that could have impacted my students’ modality selection within each of the identified contextual events.

I again coded line-by-line and identified five environmental factors that I consistently made note of throughout data collection. The identification of environmental factors were based on my experiences as a teacher of the Deaf for more than twenty years and reflected how I consistently watch my students as they participate in mainstream

environments. These factors included noise levels in the room, line-of-sight of the teacher and interpreter/facilitator, amplification being used, environmental distractions which could be anything from students moving around the classroom to small groups engaged in different activities, and distance from the sound sources (i.e., teachers, peers, videos).

It is important to note that the school, in which the study took place, has sound systems in the ceiling of each classroom and these sound systems project the sounds from the smartboard. Therefore, whenever a smartboard is mentioned, the sound automatically comes from three speakers in the ceiling of the classroom. For noise levels, a judgment had to be made as to the loudness, as no technical measure (i.e., sound pressure level meter) was available to this researcher. Additionally, since the classrooms were large, distances from the speaker that are within three feet are considered close proximity or within the direct field (Whitmal & Poissant, 2009). Furthermore, for the purposes of this study, listening from 3-10 feet is considered a moderate distance and beyond 10 feet is considered a great distance. While analyzing the contexts and the environmental circumstances concurrently, similarities and differences across time between these participants, and individually across different observations, became clear.

Many memos were written while doing focused coding. These memos pertained to comparing and contrasting various events, which contained similar codes and categories. For example, why did the focal participant, during one observation during teacher directions, seek sign language interpretation, but not in other observations? I also wrote memos that primarily consisted of questions I had about the contexts, as well as my thoughts on why the focal participants may have chosen different modalities in those contexts. Moreover, my memos reflected my experiences as a teacher of the Deaf as well

as an individual with a communication difference.

Consequently, data analysis, employing grounded theory, ensures all analysis and subsequent conclusions are supported by multiple observations as well as confirmation strategies, such as conversations with teachers and parents, so as to identify themes. Several emails were sent to parents and teachers and some phone calls were made that addressed questions or discrepancies that were noted during observations or analysis. On several occasions, Allie was also asked why she chose a particular seat or modality to support her access to communication.

While each communicative exchange of a communicative event was coded and patterns were identified, grounded theory further supported the analysis of these patterns by highlighting the similarities and differences found within the communicative exchanges that occurred during the communicative events. Finally, Ethnography of Communication, Multiliteracies, and Social Semiotics were the theoretical lenses used to analyze the focal participants' communicative practices. These theoretical frameworks and the tools of Hymes' SPEAKING model, multimodalities, and Deaf Gain were used to analyze how these students' deafness provided distinct ways for them to access communication using a variety of modalities and given their heightened perceptions during communicative exchanges within various communication events.

The next chapter begins with background information obtained through interviews with the parents of the focal participants. This information lends itself to providing a unique and critical lens through which to analyze the findings regarding modality choices that their children make. The chapter then goes on to discuss how these focal participants utilize modalities individually and in combination.

CHAPTER IV

FINDINGS: MODALITY SELECTION

A. Introduction

The concept for this study began with my interest in better understanding the communicative practices of students who have cochlear implants. There is great diversity among all students and those with cochlear implants are no different. While an understanding of two young children's communication practices cannot be generalized to all students with cochlear implants, perhaps it can begin the discussion of the myriad ways individuals, who utilize cochlear implants, can access communicative information.

The first guiding question, and the focus of this chapter, was to identify the modalities that the focal participants used during communicative events. The second was to identify what circumstances supported the focal participants' use of one modality or combination of modalities, and the third question was to analyze whether social semiotics and identity influence the focal participants' modality selection. Understanding the background of both focal participants, understanding the choices their families made, as well as the impact of that decision, lends itself to a better understanding of the observations that were conducted and the considerations that went into analyzing their significance.

1. Parent Information and Background

I had the opportunity to meet and interview both parents of the focal participants individually. Questions were prepared in advance so as to ask similar questions and engage in discussions on the same topics. (See Appendix C). Additionally, I was able to ask questions of the parents when I saw them in the school, during their children's soccer

and swimming practices, and we also conversed through email. I was particularly interested in their children's initial identification as having a hearing loss, their subsequent deafness, the journey to cochlear implantation, and their ability to use various modalities to support their comprehension and language development.

In face-to-face conversations or interviews with both parents individually, both Laurie, the children's mother, and Mike, the children's father, reported that there was no history of hearing loss on either side of their family. Laurie explained that their story was unique because, prior to having the children, she earned a Bachelor's Degree in Deaf Education with a focus on Early Childhood Intervention and Deaf Education. She then worked at a school for the Deaf. Mike said that they did not begin to suspect that Allie could be deaf until she was around 21 months old. Laurie added they had recognized that Allie was not following directions the way the son of a friend, who was one day younger, was. Laurie said,

She turned two in May and that January before she turned two, we had gone away with friends, whose son was literally a day younger than Allie and we noticed that he was kind of following directions and just had more speech than Allie. We happened to have a pediatric appointment right after that weekend that we had gone away. So, when we went, we brought it up with our pediatrician and we are forever grateful... She said, 'let's call Birth-to-3, have them do an evaluation, and if she doesn't qualify, they'll come back in six months to see if she's made progress' So, we had Birth-to-3 come out and she did qualify when they came that time.... They said to us, 'whenever we have a child that qualifies for communication or speech, we always like to go and get their hearing evaluated'.

Laurie went on to say that Mike took Allie for this hearing test alone. “I didn’t feel I had to take off from work for it because we didn’t think she had a hearing loss. And as a baby she would, when she was sleeping, if the dogs barked really loudly, it would wake her up, so we didn’t suspect a hearing loss even with everything that I knew.” That first audiological evaluation was “inconclusive”. Laurie went on to explain that her husband called her and said, “‘They’re not sure if it’s because of her age and she’s never really been in a booth, or she might have a hearing loss’. Then we suspected that they probably suspected she had a hearing loss because they got us in really quickly for the follow-up appointment and that one we went to together”. Consequently, Allie was found to have a significant hearing loss and was fitted with bilateral hearing aids when she was 21 months old.

The first indication that Allie began using different modalities was discussed when Mike explained why her hearing loss was not easily identified. He explained that Allie was “good at faking it because she would use the dogs to respond to us if we called her from the other room. And she heard enough that she could kind of fake it. And we also learned too that she was really good at lipreading and still is.” Laurie further explained how Allie used the dogs.

They (dogs) knew whenever we called Allie’s name, usually there was food involved. So, they would always come and then she would always follow the dogs. Or if someone knocked on the door, the dogs would go and then Allie would just follow. So, we realized that was one way that she definitely had learned to compensate and I think that’s the one that has stood out the most for both of us.

This indicates that from an early age Allie was supporting her access to communicative information through visual perception of movement, in particular the movement of her dogs. Mike added that no one among their family or friends suspected Allie had a hearing loss. He said, "...we would call for her (Allie) and then the dogs would respond.... when Laurie would come home, the dogs would go bolting to the door and she (Allie) would connect that and follow the dogs.... She used whatever she could."

However, with Kelsey, she was identified at four months of age because her hearing was being monitored regularly. Laurie explained, "... we started the process immediately with Kelsey and she was fitted with hearing aids when she was 6 months old. So, Kelsey was different; she got intervention as soon as she started losing her hearing." Mike further noted that they did not see Kelsey using the kinds of compensatory strategies that Allie used. He explained that she was much younger when she was identified and her lipreading skills have not developed to the level Allie's are at. He noted,

Sometimes we'll actually have a conversation with Allie and then realize, when she walks away and we're trying to get her attention, that she didn't have her implants on.... But Kelsey doesn't do that, because I think she was in a much different place and had hearing aids much earlier; she also maintained her hearing on the left side for... quite a bit longer at a higher level.

Here, because Allie did not have access to auditory information for a period of time, she developed strong speechreading skills, indicative of Deaf Gain. In contrast, Kelsey, who has always had access to some degree of hearing, is not as strong a speechreader.

2. Choosing Cochlear Implantation

With regards to what she knew about implants, Laurie said, “I guess what I knew about implants was actually really negative.... I remember the scars that the children had and it was a much larger device... I remember saying that if I ever had a child with hearing loss, that I would not get them implanted. So, the little bit I did know about them, I guess you could say I wasn’t for them.” Mike reported not knowing a great deal about implants before Allie became a candidate for cochlear implantation and he explained that what he learned in the beginning was very different from what he knows now. He explained that the surgery and the outcomes had changed significantly since his wife, who had trained to be a teacher of the Deaf, had learned about them while she was in college. “We were actually initially very anti-cochlear implant.” It was their audiologist, who recommended they discuss the procedure with a surgeon, who “opened the door to that conversation”.

Laurie pointed out that they did not feel they needed to rush to make a decision regarding cochlear implantation, but that she did begin signing more with Allie once her hearing loss was detected. She discussed a turning point when she met with a teacher of the Deaf, who had been her mentor. Laurie explained, “She said, ‘when she’s a teenager, no matter what you do, she’s gonna hate you for it’. And it was such a simple statement, but it just made me, it felt like it almost gave me permission though for us to go ahead with the implants. I was so afraid of some people that I respected in the Deaf community and I knew their views on implants.” She went on to say,

And I never wanted my child to feel that we were trying to change her, but we always wanted to give her every opportunity. So, we read up more about implants and we saw how much the technology has changed and the success of kids with

implants. So, I think we felt like, everything we had read, the later you do it, the harder it is for the brain to really make the changes to the implant and it's harder to learn how to use the implant. So, I think we felt like, you know what? Let's do it and if she's not successful with it, we sign. If she is successful with it, that's great; she has another access to the community. And, if she hates it, that's fine too and she can make that decision when she's old enough.

With regards to cochlear implantation, Mike explained that they see it as a tool that parents give their kids, similar to any tools parents give to help their children navigate their environments. "And for them an implant is one of their tools. Do they have to use it? No. If Allie decides at 12 that she doesn't want to use her implants and she wants to be Deaf, then she'll be Deaf.... That's her choice."

Allie received her first cochlear implant, a Nucleus 5 processor (N5), when she was just over 2.5 years old and wore a hearing aid on the opposite ear. Allie received her second cochlear implant, also an N5, six months later. In 2016, Allie received Nucleus 6 processors and currently has Nucleus 7 processors. Kelsey received her first cochlear implant, a Nucleus 6 processor, when she was almost 1.5 years old and wore a hearing aid on the opposite ear. Kelsey received her second cochlear implant, a Nucleus 7 processor, when she was 3. She currently has bilateral Nucleus 7 processors.

3. The Benefit of Sign Language

I asked both parents why they chose to use sign language with their children when they had decided to proceed with cochlear implants. Mike explained that he saw what sign did to support their children, particularly Allie. He said that Allie, when she was

young, would frequently wake up crying, but as soon as they found out about her hearing loss and mom started signing more, they saw an immediate change.

And then as she got older... as her speech started to develop, we actually saw her learning concepts in sign language and then associating those concepts with speech and then it actually would help progress her speech because it wasn't as hard for her to comprehend the concept, but it was just the speech had to be brought to it. It was actually really interesting to see it from that perspective and then you would watch her learn all these things and then it was all sign and then three weeks, four weeks later, it's all words and she wasn't using the sign any more.

He added that initially Allie's spoken language resembled an ASL grammar structure.

When I asked Laurie about using sign with her children, she said,

Well, first our children are deaf.... They were given a tool that gives them access to speech sounds, but it's technology and, as we all know, anything can go wrong with technology. And being deaf isn't for us a disability; there's such a rich culture and there's so much there and so much history, and signing is part of their identity as being deaf. It allows them to connect with other people in a world that Mike and I will never understand. And again, we want them to be able to make those choices and when they're older, if they want to be completely ASL, that's awesome.

The decision to choose cochlear implantation is still controversial. In a study by Hyde et al. (2010), it was reported that several parents felt the Deaf community held negative attitudes towards the use of cochlear implants. They added that, "...many

parents were acutely aware of the responsibility of making a decision for their child that would profoundly affect that child's future life" (p. 172). These authors also noted that sign language as a modality, with or without cochlear implantation, is an option that should be discussed with parents.

It is important to note that the decision to use sign language with children who have cochlear implants also remains controversial. Given early identification of hearing loss through newborn screenings, as well as earlier cochlear implantation, Mayer and Leigh (2010) argue that sign language is not necessary for these children to support spoken language acquisition, which is the language of a great majority of their families. Conversely, Humphries et al. (2014) explain that children who are deaf and have cochlear implants are actually learning language. They write, "Perception of the child as a language learner, rather than someone in need of rehabilitation or training, is a different construct of what needs to be done post-implant and allows for more flexibility and involvement of factors other than speech that contribute to language and literacy development" (p. 111). Humphries et al. (2014) add that the bimodal use of both spoken language and sign language promotes the acquisition of language during critical language development periods. Additionally, since using sign language improves visual attention and language development, it may be a useful tool in promoting spoken language. Moreover, being able to communicate in both spoken language and sign language allows individuals to interact with deaf and hearing individuals.

Moreover, Garcia and Cole (2014) explain, "Deaf communities convincingly show us that it is language users who decide who they want to be, and who choose their languaging and identifying accordingly" (p. 101). Thus, Allie and Kelsey's parents chose

to use spoken language and sign language simultaneously in order to give their children access to both the majority hearing and minority Deaf communities, so that they could each make their own decisions regarding communication. Consequently, which modalities these focal participants choose is important to analyze.

4. Modality Choices

Both parents stated that Allie and Kelsey do primarily focus on their hearing and speech. Mike believes that Allie and Kelsey rely on their hearing for approximately 70% of all of their communication; however, in less than optimal listening environments, they probably only rely on hearing 60% of the time, with the next greatest communicative tool being sign language. He did add that Allie, more so than Kelsey, can depend on sign language exclusively if she needed to, which may signal a Deaf and/or bilingual identity forming. Allie can understand someone using only sign language as well as she can understand someone using only spoken language under optimal listening conditions. He also noted that Allie's receptive sign language skills have increased considerably since she has had an interpreter in her classroom at all times, which has been the last two school years.

Moreover, Mike explained that Kelsey, unlike Allie, wakes up and wants her CIs immediately, whereas Allie will go for a period of time without them. Typically, he and Laurie need to tell Allie to get her implants. Allie will even watch TV on the weekends for long periods of time without her implants on. He believes it is more natural for her to not hear than it is for Kelsey. He said, "I think Kelsey is far more hearing-based than Allie." Laurie went on to explain that Allie, because she went a period of time not accessing sound, is more comfortable with her implants off. She said, "I think because

she spent part of her critical language years in silence, she's more comfortable without her implants." Additionally, Laurie told me that Allie has recently been asking her to sign more and she is reporting to her parents that she uses sign language receptively more often now at school. "She's starting to tell us that there's times during the day when, especially if she feels like she's being distracted by her peers, that she'll use her interpreter." Laurie further explained that Allie and Kelsey probably focus primarily on hearing because they attend public school. She said, "They're in an environment that really fosters learning through auditory. So, most of their day they're using it."

However, Laurie pointed out that both children enjoy and utilize sign language, though Allie relies on it much more than Kelsey because Kelsey has almost always had access to sound. She explained,

Kelsey's sign is starting to emerge and she's starting to be more interested and it's cute because sign class is over and it's not starting again until the summer and she is asking us when it is. Sometimes we'll see her kind of babbling in sign. I'll use it with Kelsey when it is really a loud environment and I know she really can't hear me, and she doesn't sign back. She'll usually repeat back (verbally) what I sign to her, I think to make sure for herself that she did understand it. Then I say, 'yeah, that's what I just said' and then she'll answer me verbally. But, I think she's not really confident with it, even though she's been exposed to it her whole life.

With regard to their signing abilities, Mike added, "Allie actually is really pretty good at signing voice off and does a really good job. Kelsey, like I said, she'll try to do it, but then it becomes a lot more gibberish."

Laurie recounted a recent incident in which she and Allie were running a 5K race together. Half way through the race, they were running alongside an older gentleman who was breathing very loudly and they could not get away from him. “And I could tell it was really upsetting her and it was an uncomfortable breath noise that he was making. It was really loud. And she (Allie) looked at me and said, ‘I’m taking off my implants’ and I thought, ‘I wish I could.’” Allie gave the CIs to her mom and after a short time said, “I actually think I run faster without them” and she was right. Laurie said she ran the second half of the race faster than the first. Laurie attributes this to her being able to focus better.

Moreover, Laurie did note that Allie and Kelsey may switch modalities in louder environments. She recounted another recent incident when Kelsey thought her CI was not working while they were in the pool area because it was just a difficult listening situation. Laurie checked the CI and confirmed it was working, but Kelsey insisted she could not hear. Laurie told her she could not hear either. Laurie added that she told the swim coach that Kelsey may have a harder time following verbal directions due to the noise in the pool area, so Kelsey would need to watch more and copy what the kids did. In this way, Kelsey would be much more dependent on her visual modality to ensure she understood the directions. Laurie explained that she also provided sign support to Kelsey during the swim lesson.

Laurie reiterated that Allie and Kelsey are very different in that Kelsey, while she can go longer without her CIs in the morning than she used to, is generally the first to ask for them. Allie is more comfortable when her CIs are off than Kelsey is. “I think Allie is more confident without her implants whether people sign or not. I think she’s developing some other skills that allow her to access the hearing community without her implants.”

In this way, the modality choices that Allie and Kelsey make may be very different because their compensatory strategies are different.

5. Focal Participants: Accessing Communication at School

Allie and Kelsey have bilateral cochlear implants. Listening through their cochlear implants (CIs) is one of their modality choices. In addition to their CIs, several additional amplification options are available in school to support their auditory perception. FM (frequency modulated) systems improve the signal-to-noise ratio for students by transmitting the teacher's voice via a transmitter that the teacher wears. This signal is sent to receivers that the students wear on their personal amplification devices or to speakers in the classroom. An FM device provides amplification over noise in the environment or over distance between teacher and student(s) (Anderson & Goldstein, 2004).

Allie and Kelsey both have access to personal FM systems. These systems are comprised of FM receivers that attach to their cochlear implants, as well as teacher transmitters (microphones) that transmit the signal to the receivers. Along with these, both students have access to auxiliary cords that connect their FM transmitters to audio devices such as laptops and iPads. Moreover, a soundfield system was introduced to the second-grade classroom after this study began. This type of amplification system contains a teacher transmitter (microphone) that transmits the signal to a classroom speaker that is audible by all individuals in the classroom. It should be noted that Allie stopped wanting to use her personal FM in March, shortly after this study began. We had her FM system checked by an audiologist to ensure it was working properly and it was. When I asked Allie why she no longer wanted the FM, she continually said she just did not like it. Both

parents expressed that they believed it set her apart from her classroom peers, perhaps indicating an identity of difference that was negative. Allie continued to refuse the FM system, so a soundfield system, which amplified the teacher's voice to the entire classroom, was introduced in April. A soundfield system reduces the negative effects of noise in a classroom (Duarte da Cruz et al., 2016). Additionally, soundfield amplification is available in both classrooms when the smartboard is being used to show videos.

While a cochlear implant may provide individuals with improved access to auditory stimulation, these individuals may benefit from access to various modalities. In particular, students with CIs who are learning language as well as academic material, may incorporate auditory information with sign language, print, speechreading, visual perception, and tactile perception in the receptive communication process. Moreover, it is the focal participants' communicative practices, in choosing various modalities singly or in combination, that are of primary interest in this study.

Allie and Kelsey have access to sign language throughout their day, both in school and at home. Three forms of sign language are used with these participants. One is American Sign Language (ASL), which is recognized as a language (Nomeland & Nomeland, 2012; Stokoe, 1976). Second, Pidgin Signed English (PSE) utilizes signs from ASL in English word order, but does not utilize all of the grammatical markers of English (Nomeland & Nomeland, 2012; Reilly & McIntire, 1980). Third, Simultaneous Communication (SimCom) refers to the use of both spoken and signed English (Blom & Marschark, 2015; Burke, 2014). SimCom allows the person signing to provide auditory, speechreading, and sign language opportunities simultaneously (Nomeland & Nomeland, 2012). When facilitating/interpreting is occurring for the focal participants, this is not

SimCom, as another individual, other than the facilitator/interpreter, is speaking.

Additionally, for the purposes of this study, when one individual is said to be using spoken English and sign language simultaneously, the two modalities are standard spoken English and Pidgin Signed English (PSE). This indicates that what is being signed is in English word order, but all grammatical markers, such as articles and the copula, will not be present; however, the spoken form will be in standard English with all grammatical markers present.

Visual perception, print, speechreading, and tactile perception are also identified in this study. Visual perception, as referenced in this study, refers to anything the participants can see, aside from speechreading and print. Visual perception refers to pictures, videos, individuals playing instruments, and noticing movements of others. Moreover, these language supports do not require prior knowledge, though prior knowledge, particularly of music, may be part of an individual's repertoire. Reading text and speechreading, while requiring visual perception, are considered separate modalities as prior knowledge is required to gain information from print and speechreading. Moreover, knowledge of print is necessary for reading and comprehending text and can be used as a modality alone. Similarly, speechreading can be utilized as a modality alone. Burke (2014) explained that, while often referred to as "lipreading", speechreading is much more than watching an individual's lips. Speechreading refers to gaining information from watching an individual's face, neck, and gestures. It also requires linguistic knowledge of the spoken language being used, the context of the exchange, and familiarity with the speaker and topic (p. 14-15). Finally, tactile perception is another modality analyzed in this study. According to Napoli (2014), tactile perception is touch.

Napoli (2014) wrote, “By *touch*, then, I mean the entire somatosensory system, a complex system that processes information via muscles, bones, organs, blood vessels, the skin, and the epithelia....” (p. 211). The variety of modalities available to these focal participants are available at different times and under different circumstances. Choosing them is indicative of their agency.

The first guiding question of this study was to identify the modalities that the two focal participants used during communicative events. Since more than one modality was generally available during any communicative exchange within a communicative event, it was impossible to know with certainty which modalities were being employed; however, by paying attention to body position, eye movements, and head movements, hypotheses could be gleaned. I began by identifying when individual modalities were used to the exclusion of others and then analyzed the use of combinations of modalities.

The use of just one modality did not occur throughout communicative events, but rather was identified during communicative exchanges within communicative events. Following is an analysis of the two focal participants and their use of modalities, individually and then in combination. These modalities include audition, sign language, speechreading, visual perception, and tactile perception. The use of print as a modality was not identified in isolation, but was identified in combination with other modalities. This analysis begins with Allie and will then discuss Kelsey’s modality selections.

B. Allie

1. Opting to Listen

Allie relied to a great extent on her ability to access auditory information through her cochlear implants. She relied on audition, alone or in conjunction with another

modality, throughout a great majority of the events observed. Moreover, there were occasions when she only used auditory information or indicated her reliance on it. Within 37 observations of Allie, there were 72 communicative events. Within these 72 events, I documented nine instances in which Allie indicated her reliance on audition. It must be noted that during many events it was difficult to be certain if Allie was exclusively using audition because multiple modalities were available, but in several observations Allie indicated through her actions that she was choosing audition.

The following example demonstrates that Allie was consciously choosing seating in the whole group that would promote her ability to access auditory information from the smartboard. While she may not have been relying solely on audition, she was choosing to use her auditory modality to its greatest potential.

During an observation in March in the second-grade classroom, Ms. L. had the children come to the carpet to see an introductory video for the magazine they were going to read. I was standing to the right of the smartboard. Allie took a seat in the third row on the carpet, near the student desks, opposite where I was standing. I asked her in ASL if her seat was good because I was concerned other students were blocking her view. She pointed up to the ceiling and then back to the screen, which was explanation enough. When I looked up, I could not believe it; she had chosen a seat directly under the speaker in the ceiling. Here, Allie is consciously choosing the auditory modality as one of her modes. As the lesson went on, she did use sign language, speechreading, and print, but her conscious choice of seating indicated her desire to have access auditorily. This observation indicates Allie's strong reliance on hearing as one of her modalities and her conscious decision to employ it.

During another observation, Allie relied on her hearing alone when Ms. L. was standing beside her and speaking to her. Evidence was found through this observation that Allie was only utilizing her hearing, as there were no other modalities available.

While conducting an observation in April, I noted that the second-grade classroom was very quiet as the children worked independently at their desks. Allie raised her hand and Ms. L. came over to her and stood to her left side. Allie showed Ms. L. her rough draft of the pictures for the fable she was going to write. Allie did not look up at the teacher, but was looking at the drawings she had made. The teacher told her they were good and then gave her index cards and a pen to do her final draft. Ms. L. gave her some directions to keep in mind as she worked, such as to be sure her sentences matched her pictures and to remember to use capital letters at the start of sentences and punctuation marks at the end. Allie nodded her understanding. Since these directions were the next steps in the activity, Allie was utilizing only audition as there was nothing in her drawings to support her comprehension. Furthermore, she could not speechread her teacher. Ms. L. then asked her to take her sketch back out and Allie responded immediately by taking her draft out of her folder. Again, Allie could not have anticipated this. I was sitting in the chair to the left of the smartboard, but Allie did not look up at me at all, further indicating her reliance on hearing.

This observation revealed that, under optimal listening conditions, Allie was able to rely solely on her auditory modality. It is important to note that Ms. L. was using familiar vocabulary and, while Allie could not anticipate exactly what the teacher would say, she would know that what her teacher was talking about had to do with the fable.

It is also important to note that on three occasions I documented that Allie was using only one CI, but each time this occurred she wore the CI that was towards the smartboard, where the teacher usually stood when teaching whole group lessons. (See Appendix A). On two occasions, Allie chose only her left CI when her seat was closest to the teacher's desk and on one occasion she wore only her right CI when her desk was across the room, but facing the teacher's desk. In this way, even though Allie was not getting the full benefits of her CIs, she was consciously choosing which CI to wear in order to promote her auditory access to the teacher.

2. Sign Language for Clarity

In addition to relying on her hearing, there were times when Allie used sign language for receptive and expressive communication. While her receptive knowledge of sign is quite advanced, her expressive sign language, while less developed, was a resource for her. The following example occurred when I was observing Allie in her classroom and further data was revealed through conversations with Allie's mother.

Allie demonstrated, during several observations, that she used sign language for clarity. The following observation occurred in March, when Allie was not using her FM, while playing a game with the class meant to improve their understanding of telling time. Allie was having difficulty understanding how time is represented numerically and, by providing her an explanation in ASL, she was able to understand and then participate in the game without further supports.

Ms. L. passed out Bingo sheets with pictures of clocks with different times in each block. At the top of each column, where "BINGO" usually goes, were 5 numbers ranging from 1-12, representing one hour per column. Each student had different

numbers heading their columns. Ms. L. pulled slips of paper with times on them from a small box. The first time called was 3:00. The teacher said, “three o’clock” and I signed “3” while shaking my hand back and forth to indicate the time in ASL. Allie looked at me with a puzzled look and signed “100”. I quickly realized she was thinking that the “00” in “3:00” was “100”. I signed in ASL, “time o’clock (*fingerspelled*) mean hour zero zero, hundred not, sign 3 (*shaking hand*)”. Allie nodded her head and smiled, indicating she understood. Then she signed “ok” and went back to work.

During this observation, Allie looked to me for interpretation in sign language to clarify when she did not understand a new concept. This is further supported by information gleaned during an interview with Ms. L. I asked Ms. L. what she sees Allie doing to aid her comprehension when she does not understand. She indicated that Allie’s first compensatory strategy is to look at the interpreter.

A second example of Allie relying on sign language occurred when the school was listening to a student concert in the auditorium. One of the songs was in an African language and Allie was able to understand the lyrics because the interpreter was signing the translation in ASL.

Allie, a peer, and I were sitting in the first row, left of center of the stage. There were three rows of risers in front of the stage. The interpreter was sitting to the left of the risers, left of us. The band performed acoustical pieces for the first half of the concert. For the second half of the concert, the chorus came onto the stage to sing. The interpreter was asked to move farther to the left of the stage in order to accommodate all of the students in the choir, making Allie’s line-of-sight much less direct. I told Allie that the

interpreter had to move, but she could look towards him to see him interpreting. She indicated that she could read the students' lips.

When the first song began, it was in an African language. Within ten seconds, Allie looked at the interpreter and she watched him sign the song in ASL. He had the English translation, so Allie was likely one of the only students in the audience who understood the meaning of the song. Allie glanced at the chorus occasionally, but relied approximately 85% of the time on the interpreter. This could indicate a bilingual or Deaf identity, as she was able to understand a song by seeing the ASL translation. The next three songs were in English, but each contained some rounds. She watched the interpreter approximately 50% of the time during these songs. Also, when she was watching the interpreter sign songs she knew, she started copying some of the signs, indicating her interest in signing. Perhaps this is also further evidence of the formation of a Deaf or bilingual identity, as well as an indication that she has an identity of difference in relation to her peers, a difference that is positive.

Here we see that Allie is able to make the choice of whether or not to use the sign modality and demonstrates that she uses it to support her comprehension, but can also watch the chorus when she prefers. Furthermore, while Allie may be identifying as bilingual or Deaf, she may also be recognizing that being able to understand ASL is a positive difference in terms of identity. It is evident from these observations that Allie is comfortable with sign language and actively uses this modality as a strong support as well as a way of accessing information, possibly without peers being aware.

3. Speechreading: "I Can Read Their Lips"

A critical part of Deaf Gain has been in increasing an understanding of how the brain incorporates sensory input from various modalities (Dye, 2014). Moreover, Leigh et al. (2014) explain that Deaf individuals with heightened skills in utilizing speechreading, use this modality for support in comprehending spoken language under less than optimal listening conditions. Additionally, this increase in speechreading ability was the focus of a study by Auer and Bernstein (2007) in which they determined that “early-onset hearing loss is associated with an expanded range and increased level of speechreading ability, which is likely, at least in part, an outcome of the need to rely on visual speech for the acquisition of spoken language followed by lifelong reliance on visual speech” (p. 1164). This suggests that, because Allie had experienced a period of time without auditory input before she developed language, her speechreading skills may be more developed than someone, such as Kelsey, who has always had some degree of auditory perception. Furthermore, the following observation reveals that Allie recognizes her speechreading skills and actively utilizes them.

As previously indicated, I conducted an observation in May during a school concert in the auditorium. The band played during the first half, but the interpreter needed to move his seat far to the side when the chorus came on stage. I tapped Allie and told her, using SimCom, that the interpreter had to move because of the chorus, but he would be signing further to her left (pointing). Allie quickly responded, “I can read their lips”, indicating the students. Here, Allie indicated that she could depend on speechreading as a modality. What Allie did not realize at the time was that one of the songs would be in an African language and she would not be able to speechread because speechreading requires knowledge of the language being used (Burke, 2014). However, her confidence

in knowing that she is a skilled speechreader in English indicates her ability to use this modality as a lone resource. This observation reveals Allie's dependence on speechreading and, because she utilizes it frequently, this observation further indicates her confidence.

Interviews with Allie and her father further supported Allie's use of speechreading as a modality. Mike explained during an interview that Allie, in particular, has incredibly strong speechreading skills. Moreover, he indicated that she is able to use speechreading when viewing individuals peripherally, so it may be more difficult to determine when Allie is using speechreading as a modality, as well as how significant that modality is to her. Consequently, during an interview with Allie, I asked her if she used speechreading. She told me that she uses speechreading a lot and had been since she was little. She added, "I do it in the night too when I have no implants". These interviews confirm that Allie has very strong speechreading skills. They also indicate that she is aware that she relies on speechreading, particularly when she does not have access to auditory information.

4. Visual Perception: Seeing More than Most

"Perception", with regards to the visual modality, is defined by Dye (2014) as the process of interpreting signals stimulating the optic nerve into an understanding of the world around us, which is affected by an individual's past experiences and assumptions (p. 194). Dye (2014) explained that individuals who are deaf monitor their environment with their visual perception, rather than with their auditory perception as hearing individuals do. Furthermore, Dye (2014) explained that research needs to be conducted to determine "whether changes that occur in the visual system are a result of Deaf Gain or

whether the use of a visual sign language is the driving force and thus may be more properly characterized as Sign Gain” (p. 193-194). The following example demonstrates that Allie’s visual skills, whether due to Deaf Gain or Sign Gain, are a useful tool that she employs frequently.

During an observation of Allie during a soccer practice in June, I observed how Allie used vision to an enhanced degree. I noted that Allie was on the field and during a play, kicked a ball to a teammate behind her without looking behind her. This may suggest that Allie has a very strong sense of peripheral visual perception. Furthermore, during a discussion with Mike while the children were swimming, he said, “They (his children) see so much more.... The stuff Allie sees peripherally is more than most people see straight on.” While it may not always be evident, Allie is able to use her peripheral vision to access her environment.

Furthermore, Allie used this enhanced vision to support her academically, specifically to organize her learning. I generally review Allie’s spelling words with her each week and give her the spelling tests, primarily because she needs a very quiet environment for this activity. Audition and speechreading are the only modalities available for this activity since some signs would give hints as to the spelling of words. Typically, the spelling lists that Ms. L. gives to her class have two patterns that need to be learned. I emailed Ms. L. regarding Allie’s use of the patterns to support her in learning the spelling words. I wrote,

Last week, when I was working on the spelling words with Allie, she immediately started looking for the pattern. She very quickly noticed the ou/oo pattern and made a two-column chart for herself. She also noticed that the words with “ou” had “ld”

after them and questioned how the /l/ could be in that word. She then counted the words in each column and found that there were 7 “oo” words and 3 “ou” words... When I gave her the test, she drew a line down the page and labeled the columns “oo” and “ould”. She also added the numbers “7” and “3” on the bottom. As I read her the words, she put them each in their columns and then counted them at the end to be sure she had the right amount. Have you seen her using patterns or reminders when she works?

Ms. L. replied, “That was very clever. I haven’t noticed that before in the classroom, but she is very in-tune to the hints I give when I introduce the words. When I repeat the hint, she is right along with me or even finishes my thought before I say it.” Here we see how Allie, who uses vision to an advanced degree, can also use it to learn classroom material. It is clear that Allie has found ways of improving her academic skills that revolve around her enhanced visual perception.

5. Tactile Perception: Feeling Sound

Tactile perception is a modality that Deaf individuals may employ to aid comprehension. Napoli (2014) explains that tactile perception is part of the somatosensory system. There were only a few examples of Allie using tactile perception, perhaps in part because it is a modality that is not visible to observers. There were; however, instances where tactile perception was identified by Allie during this study. Allie indicated in several different observations that she experiences music and is able to recognize when someone is close to her through tactile perception.

a. Feeling Music

Loeffler (2014) explains that sound travels through the skin in the same manner that it travels through the auditory channel. She adds, "...sound can be detected as vibration conducted through the body by haptic means" (p. 442). During the following observation, Allie tells me that she feels the music. Allie has been taking violin lessons since she was four years old. She currently takes violin lessons twice each week at school. During one of her lessons in May, I went with her as her facilitator. I noted that Allie was using audition and was intently watching the teacher play her violin for a majority of the lesson. Near the end of the class, the teacher asked the students to sit and then asked a few children, who had learned a new song, to play it for the group. I watched Allie swaying to the rhythm as they played. I signed in ASL, "You listen song how?" Allie immediately signed back to me, "feel". Here, Allie indicated that she was feeling the music, most likely in addition to hearing it and watching it being played.

Additionally, during an interview, Allie was able to explain that she can access music through tactile means. During this conversation with Allie regarding how she listens to music, she explained how she relies a great deal on tactile perception. She told me that when she plays the violin, her chin feels the music and she further indicated that she feels tactile perception more when her implants are off. She told me that she also enjoys playing guitar. She said, "I feel it and when I don't have my implants on, I just feel it... And the drums are actually easy. I can feel from our wooden floor." She added that she feels the beat when she dances as well. While an observer cannot know for certain whether an individual is using tactile perception, Allie was able to tell me that tactile perception allowed her to access music through a medium such as her wooden violin or the wooden floor.

b. Tactile Perception for Alerting

During another interview with Allie, she indicated that, with her CIs off and no line-of-sight, she can detect when individuals are moving around. Allie explained how she uses tactile perception at night when her CIs are off and she can feel when Kelsey is walking into their bedroom. She said, “You’re gonna freak out. I don’t know how I can feel, hear Kelsey’s feet stompin on the floor.... She’s like walkin like this (demonstrates tip toeing)... I know it’s weird. My bed is really high. It’s not touchin the ground or anything. There’s just dressers under it.” This conversation indicated that Allie recognized that gaining information from tactile perception was a skill she utilized, but that this skill was rare. Consequently, this may have been an identity performance in which she saw her diversity as positive.

Allie’s father also indicated, during an interview, that Allie used tactile perception to detect movement, as well as talking. Mike reported that Allie often takes her implants off at home, but she turns when they enter the room; she feels them enter. He also noted that they can get Allie’s attention, when she is in another room with her implants off, by stomping on the floor. Mike further explained that Allie tells them that she can feel them talk. He added, “If I’m putting them to bed and her implants are off and I’m talking to Laurie outside the room, she’ll (Allie) get mad and actually get annoyed that I’m talking.” In this way, Allie’s father recognized her ability to employ tactile perception due to her recognition of movement and speaking when both are out of her line-of-sight.

Print was the only modality not found to be used in isolation, as a means of communication, when other modalities were available. Nevertheless, it should be noted that Allie is reading on grade level. While Allie has demonstrated her ability to rely on

one modality at a time, she was generally observed to utilize a combination of modalities. These combinations were found to range from two modalities, to five modalities, during a communicative event.

6. Combinations of Modalities

Six modalities have been identified during this ethnographic study. These include audition, sign language, speechreading, print, tactile perception, and visual perception. While each of these individual modalities provide information, there are numerous combinations of these modalities that were identified as contributing, some to greater or lesser degrees, to Allie's receptive communication process. This unique mix of combinations appears to be dependent on the environment, the availability of modalities, and Allie's ability and desire to choose them. Because of this, numerous combinations were identified. I was able to identify when Allie was using some modalities, given the timing of her responses, as well as how she sought alternate modalities. However, some of the analysis contained in this report is hypothesized and based on the availability of modalities and my perception of the focal participants' use of modalities given my background in Deaf education.

a. Audition, Sign Language, Speechreading & Print

The most frequently used modality combination chosen by Allie was audition, sign language, speechreading, and print. I found examples of this modality combination in 21 events in which Allie was observed.

One example of this modality combination occurred during an observation of Allie in the auditorium in February during a school assembly. During this event, Allie employed audition as her only modality to listen to directions after being instructed to

close her eyes; print, audition, speechreading, and sign language to follow along reciting a poem; and sign language to support her understanding, particularly when audition was more difficult or when she was fatigued.

Allie was wearing two CIs and her FM microphone was put on the stage. Moreover, Allie and a peer sat in the reserved seating in the front row in front of the interpreter. I was sitting perpendicular to Allie at the left side of the stage, with direct line-of-sight of Allie. The students were asked to be silent and close their eyes. Allie and I have spoken about this; she knows that she does not need to close her eyes, but she chose to do so. The audience was then asked to do some breathing for a mindfulness activity and Allie followed along, even though her eyes remained closed. It should be noted that this is a familiar activity for the students. The students were then asked to open their eyes and remain silent, and again Allie followed the directions. A banner was then raised by some older students. The banner had an inspirational poem on it that one of the students had written. The audience was asked to read the poem aloud with the teacher who was leading the assembly. I noticed Allie's eyes moving along the banner as she was reading along, but she fell behind and stopped trying to repeat. She glanced at the interpreter, who was using PSE and mouthing the words on her lips, to aid Allie's ability to follow along. Allie moved her eyes between the banner and the interpreter several times. This demonstrates that Allie was using audition, sign language, speechreading, and print. When a group of students came on to the stage and spoke, Allie looked to the interpreter. I noted that the students were more difficult to hear because they were not using a microphone and spoke relatively softly.

During this observation, Allie demonstrated that, with her FM system engaged, she was able to follow along auditorily alone, with her eyes closed, during a familiar activity. Moreover, she did so without any difficulty. Additionally, Allie used print to follow along when the audience was reading a poem, but when she had trouble keeping up, she turned to the interpreter for sign language and perhaps speechreading support. She also watched the interpreter more when kids were speaking, as they were harder to hear. Nevertheless, she watched the interpreter the most at the end of the assembly, fatigue possibly being a factor.

Another example of Allie using audition, sign language, speechreading, and print occurred in the second-grade classroom during a lesson on English grammar and syntax. Allie used these four modalities at varying times and in various combinations to access communication. She also questioned a specific sign that was used, indicating her interest in sign language and perhaps indicative of her identity.

As Ms. L. began a lesson on grammar, she moved close to the smartboard, standing to the left of it while I stood to the right. Ms. L. put the morning work on the board to review it. She began with sentences that needed to be corrected. I began using PSE with lip movements in standard English. As Ms. L. spoke, I could see Allie looking at me, but not continuously. She appeared to be looking at the teacher and the smartboard, using audition, sign language, speechreading, as well as print. One of the sentences read, “the farmer feeded his sheeps all winter”. The teacher read the sentence in its incorrect form, while I signed it and indicated the article “the”, past tense marker “-ed”, and the plural “s”, but Allie did not look directly at me. Allie was looking at the smartboard, probably relying on audition, speechreading from the teacher, and print. It is

possible that Allie was watching me sign peripherally. Then, Ms. L. asked for a volunteer to give her one correction. Allie immediately raised her hand and said, “fed”. We have been working on irregular past tense verbs, so it was great to see the carry-over. On another sentence, Allie raised her hand and was able to make a correction to the contractible form “I’m” which was written without the apostrophe, though Allie did not know the term “apostrophe”; she called it a “comma”. Another sentence used the pronoun “we” and Allie looked at me quizzically when I signed “we”. She signed “our” with a questioning look. She did not put the word on her lips. I used PSE to sign and say without voice, but with lip movements, “we (sign) mean w-e, our (sign) mean o-u-r” giving the sign and its translation in spelling. She repeated what I signed and nodded her understanding. Here, not only was Allie demonstrating her use of multiple modalities and her strong understanding of English syntax and grammar, but she was also supporting her own knowledge of sign by questioning the signs used, perhaps indicative of a bilingual or Deaf identity.

b. Audition, Sign Language & Speechreading

The use of audition, sign language, and speechreading occurred during seven events within observations of Allie. In the following example, Allie was participating in a practice for the talent show with two friends. This first event occurred while I rehearsed with Allie and her friends before they performed on stage during the practice. We see Allie using audition, sign language, and speechreading during this event.

There was a talent show practice one day after school in June. Allie and two friends were preparing to perform a song at this year’s talent show. The song is *I Believe I Can Fly* (Kelly, 1996). (See Appendix E). Allie and one peer will sign while the other

will sing. This afternoon, Allie was wearing two CIs. The auditorium was very loud. Allie's interpreter could not stay, so I was there to facilitate. Allie and one of her friends, who was also signing in the show, said they needed to watch me sign the song while they performed today, but I did not know how the interpreter interpreted the song. The interpreter had sent a video of him signing his interpretation home to both girls' parents last week. I knew they had been practicing, but I thought they were unsure in front of an audience. I asked the three girls, using spoken English and PSE, to go out in the hall with me and I pulled out my copy of the lyrics. When we were in the hall, the third girl started singing the song so I could get the tempo. I noted that it appeared that Allie was listening to her friend sing as Allie swayed slightly to the song. Using spoken English and PSE, I asked Allie and her friend, who was going to sign, to show me what they remembered and they did. I quickly recognized how the interpreter had interpreted the song and when I started to sign to model the song, I also spoke the words silently on my lips, as I was familiar with the song. We practiced and the girls felt ready to go on stage. Here, we see Allie relying on her hearing as she swayed while her friend sang. She also most likely used audition, speechreading, and sign language while I was talking to her and as the three girls practiced with me.

The second example took place while Allie was in the auditorium for the talent show practice. Even though Allie only used audition and speechreading to interact with her friends, she used audition, sign language, and speechreading when directions were given and while she was performing on stage.

After rehearsing outside the auditorium, Allie, her two friends, and I went back into the auditorium and Allie took her seat in the center of the front row with both peers

on her left side. Her group was going to be 60th of 64 acts. They had brought their music on a CD and it was marked with where to start the music because they were not singing or signing the first part since they only had 2.5 minutes and the song was over four minutes long. I stood in front of the stage, while directions were given by the organizer of the show, in order to sign for Allie. The organizer, using a standard microphone, asked the students in the auditorium to be quiet and the noise reduced significantly. Allie looked between the organizer and me. I signed, in PSE with lip movements, everything the organizer said, including directions and reminders so that Allie could use audition, speechreading, and sign language. Here, Allie may have been speechreading both the organizer and me. Today, each act only had 30 seconds to perform. I asked Allie in spoken English and PSE if she wanted me to interpret the individual acts and she said no. She chatted with her two friends who were both on her left side, demonstrating her reliance on speechreading and audition. I hypothesized that Allie specifically chose this seating so that she could speechread her two friends simultaneously.

When it was their turn, the three girls went up. I sat in Allie's seat, in front of the stage. When the music started, I indicated the rise and fall of the music by moving my hand to give Allie an idea of where we were in the song and when to start signing. The girls performed beautifully. After 30 seconds, the organizer stopped them and everyone clapped. When they left the stage, Allie, and her friend who was signing, came up to me and said in spoken English that they would practice with the interpreter tomorrow and then practice at home too.

This observation demonstrates that Allie relied on audition, sign language, and speechreading at different times throughout this event. How much she relied on each

modality was unclear, but her eyes were definitely on her friends while they spoke with her and her choice of seating supported her ability to speechread. Allie also moved between watching me and the organizer of the talent show when I was repeating the directions, also indicative of her using speechreading, as well as audition and sign language. Additionally, audition was available, though not as clear as it could have been with an FM system, when the organizer was using a microphone to speak to the children in the auditorium after they quieted down, further supporting Allie's access to spoken language.

c. Audition & Print

Allie's ability to hear through her cochlear implants, as well as her ability to understand print, are significant in this analysis. It is possible for these two modalities to occur simultaneously and frequently they did. Evidence of these modalities being used simultaneously occurred for periods of time during observations of several events. Five events were identified in which Allie used only audition and print. The following observation demonstrates how Allie used her agency to choose print and audition over speechreading and sign language.

During one of the first observations in February, I arrived in the second-grade class as the students were having free time. Allie was on a laptop and her FM microphone was hooked up to the laptop via an auxiliary cord, giving her auditory access. I grabbed my headset and the splitter that I can connect to the laptop so that I can hear what she hears. I pulled up a chair and sat beside her, prepared to interpret anything audible. When she clicked on a video clip of rainbows, I started to ask her if she wanted me to sign, but she did not answer me. She paused the video and was looking at the screen. I asked what she

was looking for and then she pressed the closed captioning sign, “cc”. I asked what that was and she said, “So I can read it too.” She added, “The red line means it’s on.” She then listened to the story and her eyes moved along the closed captioning. She did not look at me for support at all. Here, Allie was actively choosing closed captioning so that she could utilize print as a modality in addition to hearing through her CIs and FM system.

During the following observation, Allie demonstrated her ability to seek clarification when the message she heard did not make sense. She did this by using print in addition to listening to the teacher. In February, when I entered the classroom, Allie was sitting at her desk to the left of the room, in the left most forward position in her group of desks. The teacher was standing in the front of the room, in front of the smartboard, reviewing a daily math sheet. They were on the last section of the worksheet. The teacher was talking about fact families and the problem was to use 8, 9, and 17. Allie was looking down at her sheet, just listening. The teacher said, “8, 9, and 17” and Allie immediately looked up and said, “89 and 17?!” The teacher immediately looked at her, pointed to the smartboard, and said slowly, “8, 9, and 17”. Allie did not appear to look at the teacher, but looked directly at the board as the teacher spoke. Allie nodded her understanding. Here, Allie recognized that what she had heard did not make sense and immediately sought clarification on her own. She was able to get clarification through audition and by looking at the numbers on the smartboard.

C. Kelsey

Kelsey is a student in a mainstream preschool classroom. Within 38 observations of Kelsey, there were 61 communicative events. Following is evidence of her use of

individual modalities and combinations of modalities. With regards to individual modalities, it is clear that Kelsey depended considerably on audition through her cochlear implants. She also depended, to a lesser degree, on visual perception and demonstrated emerging skills in sign language. Kelsey was also observed using multiple modalities at times and those will be discussed. Moreover, it is clear that audition is the modality that Kelsey chooses most often as her primary modality.

1. Managing Her Hearing: Audition as the Primary Mode

I documented seven events in which Kelsey relied primarily on audition. It was frequently difficult to determine if Kelsey was utilizing audition alone because other modalities were available. However, Kelsey did indicate several times, through her actions, just how important hearing was to her. The following observation is one example in which Kelsey verbalized that she wanted her CIs close to her and is, therefore, evidence of her reliance on audition.

One day in April, I had to leave the preschool classroom for a meeting and returned at 1:00. It was naptime. Kelsey rarely naps, but she was napping today. I noted that her CIs were hanging on the magnet board on the wall in front of her mat. I sat and worked at the table near her while she slept. In the past, she has been nervous when she woke up and could not hear. At 1:50, I heard her stirring. I turned to look at her and she was reaching for her CIs. When she had them on she came over to me. I used SimCom to ask, "Why did you put your CIs on the magnet board?" She replied, "For I get them I can hear". I said, "You could ask Mrs.V. to put them in the pink box (case her FM receivers are kept in)?" She said, "I like dem close for I do it". I have seen her CIs hanging on the magnet board on the few occasions she naps. I asked her parents if it was alright that they

were on the board or if they wanted them kept in a safer location. They both said the magnet board was fine since someone is always there to sign for her in case she wakes up. This example is evidence that Kelsey wants to have access to her cochlear implants and audition. She indicated very clearly that she wants to be able to access her cochlear implants immediately upon waking up.

During another observation, Kelsey indicated her reliance on hearing through her desire to have the FM during an unfamiliar activity. Moreover, she clearly indicates her independence in managing her CIs and FM receivers, which further substantiates her reliance on audition.

In an observation in May in the preschool classroom, I noted Kelsey's reliance on audition. I made a note that Kelsey had not wanted her FM receivers when she had arrived that morning. As with Allie, we encourage Kelsey to use her FM system, but allow her to choose. It is important to note that this was the only observation in which Kelsey did not choose to put her FM receivers on. When the class was lining up to go to music, a class she typically does not attend because she usually attends another school on the day her class has music, I asked Kelsey if she was ready to put her FM receivers on and she indicated she was. She then asked if she could attach the receivers herself. I handed her one and she took her right CI, twisted off the battery, twisted on the receiver, and then twisted the battery back on. She put it on her head and then took the left CI off and did the same. She smiled as she put the second one on. Here, Kelsey is choosing her FM system as well as independently putting on her FM receivers; both are indications that she wanted access to auditory information.

2. Emergence of Sign Language as a Modality

Observations did not occur during which Kelsey actively utilized sign language as a modality by itself. It is possible that Kelsey used sign language to support comprehension. Nevertheless, conversations with her mother did indicate that Kelsey may be developing expressive and receptive skills in sign language. During a conversation with Laurie, she mentioned an email I had recently sent her regarding whether Kelsey was using sign language at home. She told me that she does think that Kelsey understands a lot of sign. Laurie explained that when she signs voice off, Kelsey will often do the same. Here, Laurie explained that Kelsey's sign language is increasing, though she is not yet as comfortable with sign language as Allie is.

Moreover, I had also emailed Laurie to suggest, since Kelsey does not typically take naps anymore, that occasionally I could work with her during naptime on improving her sign language skills. Laurie was in strong agreement and added that Kelsey's "receptive skills are getting much stronger... she will often verbally repeat what I sign to her". She added that she would love to see us using stories to increase her confidence with expressive sign and that they could follow-up at home.

While it is evident from conversations with Laurie that Kelsey's receptive skills are improving, no evidence was found that she currently uses this modality as a resource alone at school. However, with some direct instruction in sign language that parents can follow-up with at home, this is a modality that Kelsey may choose to access as a sole modality in the future.

3. Visual Perception: Noticing Details

Visual perception is the act of using what one observes visually to gain an understanding of the world. This understanding is further impacted by both one's

experiences and assumptions (Dye, 2014). The following example indicates how Kelsey is able to notice small details that go unnoticed by most individuals.

I was conducting an observation in the preschool classroom in April when I made the following observation. Mrs. V. asked the children to clean up their centers. When the centers were cleaned up, the teacher called the students to the rug for a story. I sat to the teacher's left, approximately 2 feet away. Kelsey sat in the back row. As the teacher pulled out the book, Kelsey moved closer and sat in the second row, in the center of the group. I asked her in PSE, with lip movements, if she wanted to move closer and she shook her head no. The book the teacher was going to read was *Smelly Socks* (Munich, 2004). The room was very quiet. As the teacher read, I signed in a mix of PSE and ASL. Kelsey glanced at both the teacher and me a bit, but looked more at the book, as she seemed very interested in the pictures. On one page, the main character is in a boat and headed across the river to the city to buy socks. Kelsey shouted out, "I see the sock store". The teacher and I both looked and there was a small building with a sock on it. Mrs. V. then pointed it out to the rest of the class.

When the story was finished and the children moved on to the next activity, Mrs. V. and I discussed how Kelsey noticed the image of the sock store from her seat. We both agreed that this was quite remarkable given that the image of the sock store was quite small and part of a very colorful page. Furthermore, it was not particularly highlighted on the page. We also agreed, both having read the story numerous times, that neither of us had ever noticed that particular part of the picture before. This observation provided evidence that Kelsey's visual perception reflects the effort she puts in to noticing details, perhaps indicative of Deaf Gain.

Kelsey not only noticed details in books, but as the following observation demonstrates, she visually noticed small details within her environment. At the end of April, after I finished signing a video in the preschool classroom, Kelsey silently said “what that” and pointed to my hand. I had a very small orange sticker on the top of my hand. I had changed a student’s battery in another class and I leave the sticker on my hand until I dispose of the battery that I put in my pocket. No other student commented on the sticker, even though I had been in the room for a long time, and when I was signing, many students were watching me. Here, we see that Kelsey was highly observant and recognized when details within her periphery were unique or unusual.

4. Learning the Importance of Print

While Kelsey was only a preschool student and was not reading at the time of this study, there was evidence that she was beginning to utilize print as a modality. One morning in April, I observed that the preschool class came in from recess at 10:30 and then Mrs. V. directed them to choose centers. Kelsey went to the writing center and I went with her. I asked the teacher for the FM microphone. I sat to Kelsey’s right, perpendicular to her. She took a piece of paper and a colored pencil and started drawing. The room was noisy as kids were playing in various centers. She pointed to her picture and said, “Lion, ‘L’ for lion” and wrote an “L”. She then pointed to another part of her drawing and said, “Whale, ‘W’ for whale”. I told her she was right and asked her, using SimCom, to write the “W” by the whale as she had written the “L” by the lion. She did. She then said, “Does ‘H’ start with something?” I said, “Yes, it says /h/, like ‘hot’”. She immediately said, “hop!” I told her that she was definitely ready for kindergarten and she smiled. She then said, “hop end with ‘P’” and I nodded. She wrote “H” and “P” on her

paper. She then made the letter “Y”. The following conversation occurred as she continued drawing with me. I was using SimCom and Kelsey was speaking:

Kelsey: Y starts with W?

Kris: Y says /y/, like “yellow”.

Kelsey: Bear starts with a “B”?

Kris: Yes!

Kelsey: Is that awesome?

Kris: You are doing a great job!

Here we see evidence that Kelsey was developing an awareness of how print can support her comprehension. Her question regarding “Y” starting with “W” was indicative of her rapidly increasing letter/sound associations and her attempt to problem-solve why the name of a letter began with the sound of another letter. Furthermore, this observation was also indicative of her strong auditory skills in which she was able to discriminate the phonemes in words and identify them.

Kelsey also demonstrated that she could use print to support her articulation. One day in May, when I was in the preschool classroom, Kelsey chose the sand table to play in during free choice. I was wearing the FM microphone. One other student was there and, since Kelsey wanted him to wear the microphone. I gave it to him. As she played, I started by sitting behind her and then moved to her right. She said, “beaber” for “beaver” and I got her attention and said, “beaver has a /V/ in it”. I pointed to my lips when I repeated the word “beaver” and signed the “V”. She repeated it slowly with the /V/ and then smiled at me. In this short exchange, Kelsey had used audition, speechreading, sign language, and her beginning knowledge of print.

While evidence was found to indicate that Kelsey used audition, visual perception, emerging sign language skills, and print concepts, it was the combination of these that she chose to employ within her environment, that indicated her agency and perhaps best reflected how she accessed communication.

5. Combinations of Modalities

The six modalities identified during this ethnographic study included audition, sign language, speechreading, visual perception, print, and tactile perception. While each of these individual modalities provided information, there were numerous combinations of these modalities that were identified as contributing, some to greater or lesser degrees, to Kelsey's receptive communication process. In identifying which modalities Kelsey had chosen, I relied greatly upon my background in Deaf education and my understanding of the impact environmental conditions have on access to modalities. I also considered which modalities could be available and paid attention to the timing of Kelsey's responses, her body and head movements, and how she may have changed modalities dependent on her success. Three combinations of modalities were found to be utilized to a great degree by Kelsey. These included audition, sign language, and speechreading; audition, sign language, speechreading, and visual perception of pictures; and audition, sign language, speechreading, print, and visual perception.

a. Audition, Sign Language & Speechreading

Kelsey was observed using this combination of modalities during 22 events. During these observations, she was seen requesting the FM microphone; looking at me to sign for her; and looking towards myself, the teacher, or peers for speechreading support.

Following is an example of Kelsey actively choosing audition to hear a peer, but indicating she needed support to ensure she understood teacher directions.

One afternoon at the end of March, I arrived in Kelsey's preschool class at the end of naptime. Kelsey was awake and playing with Playdoh with two other peers at a table. When I walked in, she called me over by motioning with her hand for me to come towards her. She picked the FM microphone up from the table, handed it to me, and motioned for me to give it to the peer directly across from her. I checked to make sure the microphone was on and handed it to the peer. This peer put it around her neck and Kelsey looked at the peer and smiled, but did not say anything to her friend. The room was very quiet.

Mrs. V. walked close to the table Kelsey was sitting at and stood next to her. She leaned over to be close to Kelsey, called her name, and waited for Kelsey to look at her before she said, "One more minute with Playdoh and then clean up." Kelsey looked at me, indicating she wanted me to repeat what Mrs. V. said to her. Perhaps she missed one of the words Mrs. V. said or wanted assurance she understood her teacher. I used SimCom (spoken English and PSE) to tell her, "Almost time to clean up. One minute." Kelsey nodded her head. I asked her, using SimCom, what I said and she verbally replied, "I clean up soon". Here, audition was not enough; Kelsey sought my help, which came in the form of audition, sign language, and speechreading. While it is difficult to be sure if Kelsey was using both sign language and speechreading, it is likely that she was using some of the features of both to support her understanding.

The following observation reveals how Kelsey could miss auditory information, even when she was in close proximity. While she used sign language and speechreading

to understand that I was intervening to alert her to a peer seeking to interact with her, she used audition and speechreading, with no sign language support, to communicate with this peer who was next to her. Furthermore, Kelsey's desire to interact with peers was clear.

During another observation in April, I arrived in the preschool classroom as the kids were just sitting down for snack. Usually they do this in small groups, as it is one of the centers, but today they were all sitting for snack at the same time. There was a lot of noise. The snack was applesauce and cheerios. I noticed the student next to Kelsey was trying to talk to her, but Kelsey was not looking or responding to this student. I walked over, tapped Kelsey on the shoulder and when she looked, I used SimCom to tell her that the student was talking to her. She looked surprised and looked immediately to the student and they started to talk, with Kelsey most likely relying on speechreading in addition to audition. I sat to the side of the peer and started signing, but Kelsey was not looking at me. Again, using SimCom, I asked Kelsey if she wanted the student to wear the microphone and she said yes. The other student agreed and after this peer had the microphone on, the two continued to chat without my support, but Kelsey was watching her intently. When snack was finished, I told Kelsey in SimCom that we were going to a show in the auditorium and that she could pick a peer to sit in the front row with her and Allie. She nodded okay and I asked which friend. She chose the friend who was currently wearing the microphone. Here, while Kelsey was not depending on sign language to support her communication with her peer, she may have relied on sign language, in combination with audition and speechreading, to recognize that she had missed communication with that peer. I noted that she glanced at my hands as I signed.

Moreover, “friend” and “talk” are both signs she would understand. She also looked directly at the peer as they spoke, most likely using speechreading, in addition to auditory information, as a support.

b. Audition, Sign Language, Speechreading, Visual Perception

Evidence of this combination of modalities was found during 17 events that Kelsey was observed participating in. During the following observation, which occurred in May, Kelsey was at a swim lesson. She was wearing a “swim ear” which is a protective case that one of her CIs goes in to so that she can wear the CI in the water. Mike explained that with the swim ear, the kids hear “well”, but not “clearly”. In the following observation, Kelsey demonstrated that she used speechreading and watched the other children do the drills before she tried them. She also used audition, speechreading, and sign language when talking to her father. Furthermore, she looked to me for sign support, demonstrating her agency in choosing to use as many modalities as possible.

I met Kelsey and her father at the pool. We walked into the pool area and I noticed there were three different pools. One seemed to be for adults only. A second pool was shallow (3.6 feet) with a ramp into it that allowed the kids to walk in, as it had no steps or ladder. The third pool had lanes for swimming laps and a deep area without lanes. The second and third pools connected by a small, approximately eight foot-wide, lane. There was a lifeguard in a high chair at the beginning of the third pool, just past the connection of the two pools. I sat on a bench in front of the second pool, directly behind where Kelsey’s lesson was.

Kelsey walked down the ramp into the second pool and when she got to the area where the other kids were, Mike bent down towards her and signed voice off, but was

moving his lips. I saw him signing “different”, “pay attention”, and “love you”. Kelsey nodded her understanding and joined her class. She put her goggles on. It was very loud in the pool area as there was a lot of reverberation, talking, and splashing. I had to strain to hear what her father was saying to me. The teacher stayed close to Kelsey when she gave directions and Kelsey was watching her, most likely depending a great deal on speechreading. I noted that for every drill, Kelsey was always the second child to participate. It was unclear whether that was by the teacher’s choice or Kelsey’s, but it did allow Kelsey to confirm what she thought the directions were with what she saw one of her peers doing. Kelsey completed every drill very well. She used audition, speechreading, and visual perception to follow other students as she was watching them closely. Additionally, these were probably drills Kelsey did every time she went to swim class, so familiarity and predictability may have played a part. I did note that Kelsey did not talk to any other kids in the pool; perhaps she was shy or it was too loud to hear them well.

The class moved to the third pool, the deeper pool, via the eight-foot lane. Mike told me I could move to the bleachers that were perpendicular to where I was sitting in front of the second pool. In this area of the pool, I noted that there was even more reverberation, but there seemed to be less overall noise. Kelsey pulled herself up and sat on the edge of the pool by the lifeguard chair. Kelsey then pushed her goggles up onto her forehead. She watched people doing laps in the third pool. She again was second in doing the drill called “scoops” where they hang onto a bar that has foam on either end and they alternate arms. The arm not holding the bar “scoops” the water. Kelsey completed that drill twice. Then, Kelsey was hanging on to the wall, just kicking her feet,

when the teacher came up behind her. The teacher started talking, but Kelsey appeared surprised as she jumped slightly when the teacher tapped her. When Kelsey looked at her, the coach repeated the directions, speaking directly to her. Even though Kelsey had access to speechreading from her coach within close proximity, she looked towards me and I repeated the coach's directions in PSE with spoken English on my lips. Kelsey nodded her understanding. Because I was approximately 10 feet from Kelsey and she was wearing swim goggles, speechreading would not have been as effective alone, but combined with sign language, was a stronger support. Again, throughout the swim practice, Kelsey may have had some benefit from audition through the swim ear, but she was most likely depending primarily on speechreading the coach in close proximity and watching the other children do the drills. When she had difficulty, she looked to me for support, knowing I would provide support in both speechreading and sign language.

The next observation demonstrates that in loud environments Kelsey relied to a greater extent on other modalities. During Field Day in May, I noted that there were over 300 children outside on the enormous field that abutted the school on one side, semi-busy streets on two sides and a track on the fourth. The preschool was in one corner of the field; however, it was still loud. For the preschool, the first activity the children participated in for Field Day was a relay race. Mrs. V. had the FM microphone on as she gave directions. Kelsey watched me a lot as I signed in PSE and mouthed the words in standard English. Once she knew the directions, she stopped watching me and watched the kids, most likely gaining information visually from their actions. The first activity was running with a bean-bag on a foam paddle. The kids had to run with it around a cone and back and give it to the next peer. I noted that Kelsey did not go first in any of the

activities, which included kicking a ball around cones, walking backwards around cones, and throwing bean-bags into a bucket. Was she watching her peers to be sure she understood? At the beginning of each activity, Kelsey watched me intently for the directions and then did not look back at me, though I continued to sign in PSE and mouth the words. This further demonstrates that Kelsey used her agency to seek the modalities that would help her understand. She relied more on sign language and visual perception than she typically did under optimal listening conditions.

c. Audition & Speechreading

Another modality combination that Kelsey utilized was audition and speechreading. Five events were identified in which Kelsey used this combination. The following example demonstrates how Kelsey, when presented with various modalities including audition, speechreading, and sign language, actively chose hearing and speechreading as modalities when listening to and communicating with her teacher.

In early May, I was in the preschool classroom where Kelsey was playing in the block center. When Mrs. V. rang the bell, Kelsey alerted immediately to where the teacher was. Mrs. V. was wearing the FM microphone and Kelsey was wearing both CIs. The room became very quiet, very quickly. The teacher explained that they had a few more minutes to play and then they would need to clean up. I noted that Kelsey was watching the teacher intently and did not look at me at all to sign. I asked Kelsey what the teacher said and she repeated the message, indicating to me that she had understood. A short while later, the teacher came by and Kelsey called to her to look at her building. There was moderate noise in the room. Mrs. V. looked at what Kelsey had built, a three-level building with two large swinging doors, and said, “How did you get the triangles to

hang in the middle?” Kelsey showed her, indicating she understood, again while using only audition and speechreading. Mrs. V. then went to get her iPad to take a picture, but as she took the picture, Kelsey leaned in too closely and the whole thing fell. Kelsey laughed and started building again. Here we see that Kelsey was choosing to use her hearing and, by watching the teacher, she was indicating her choice of speechreading. Furthermore, she did not look at me at all for sign support during this observation, indicating she was actively choosing which modalities to utilize.

The following observation further supports Kelsey’s ability to utilize audition and speechreading together to successfully communicate with adults and peers. During another observation in May, I was in the preschool classroom as the students were waking up from their naps. When all of the children had woken up, Mrs. V. called them to the carpet. Kelsey went up to her and asked if she could read her book, the one she had brought from home. The teacher said “of course” and Kelsey ran to get her book. She took the teacher’s seat and the teacher took the chair to the left that I usually use. I stood close to where Kelsey usually sits in order to be able to sign for her. The book was called *Today is the Birthday of the World* (Heller, 2009). Kelsey did a book walk and went page by page, describing what she saw. She did not look at me at all. When the teacher asked a question, Kelsey looked at her and answered. When kids asked a question, the teacher named them and Kelsey looked directly at them. Here, Kelsey was clearly using audition and speechreading. Kelsey talked about the giraffes, the beavers and their dams, and had something to say about each page. She had obviously been read the book many times. She smiled a lot! It is clear from this excerpt that Kelsey was relying on audition and speechreading, but it is important to note that Mrs. V. supported Kelsey’s speechreading

efforts by naming each student who was responding so that Kelsey could immediately look towards them.

D. Teacher Reflections

It is clear that both Allie and Kelsey rely to a greater degree on their auditory perception through their cochlear implants than any other modality. During an interview with Mrs. V., she explained that she believes that there are times when Kelsey can rely solely on her hearing, but generally she thinks Kelsey uses “whatever she can” and she noted that she does not ever see her relying primarily on sign. Mrs. V. added, “I think she definitely checks in with it (sign). I think at a concert or reading a story, but even with stories, I feel that she’s pretty focused in on the book.” Here, Mrs. V. sees Kelsey using sign to clarify or confirm what she heard. Mrs. V. went on to say, “She’s always thinking, she’s always thinking of connecting to something else.” Mrs. V. talked about how recently Kelsey had made a connection to going to New York for her implants when she had made a line of toy cars and it looked like traffic. (See Appendix F). Mrs. V. also noted that Kelsey needs to use her hearing more for certain activities than others given the differences in activities. For example, when playing in dramatic play, she can see what the kids are doing and sees their faces, but at the sand table, the kids are looking down, so she does not have the face-to-face contact and needs to rely on her hearing more.

Both Mrs. V. and I have been encouraging Kelsey to have friends wear the FM microphone, but she needs us to prompt her. Mrs. V. did note that Kelsey seems to understand most of the time, but if she does not, she will ask what something means. She added, “But I think she will clarify and I think she’ll say either, ‘what does that mean’ or

‘what do you mean by that’, or sometimes I think she’s just so expressive with her face alone that I could tell if she doesn’t understand something. I mean, I could see it on her face if she’s thinking about something or has something to say.” She also added that most four or five-year-olds do not ask for clarification. In this way, Kelsey demonstrates how invested she is in understanding. “I think she has been a model for other kids to say ‘what does that mean?’” If Kelsey misunderstands, Mrs. V. tries to explain again in a different way. She added, “I think she’s a wise little girl.”

Ms. L. also indicated, during her interview, that Allie “definitely looks to have that face-to-face conversation and is hoping that she can rely on just either reading their lips or hearing what they’re saying... she’s pretty independent. She wants to hear what the kids are saying...”. Additionally, Ms. L. indicated that Allie primarily used her hearing and speechreading when communicating with her peers. With regards to the FM system and soundfield system, Ms. L. reported that Allie seemed more comfortable in class when amplification, besides her CIs, was available; thus, her greater reliance on the facilitator/interpreter during times when there was no additional amplification. In talking to Ms. L. about her modifications, she explained, “It’s what you do for anybody else, so just making sure that she’s understanding it and watching where I’m standing so she can see me, but other than that, she tries to just do what she needs to do.”

My final question for both teachers was what surprises them most about Allie and Kelsey. Ms. L. said that what surprises her most is how Allie just “makes herself fit in”. She explained, “the fact that she’s never really looking for me to change or make anything different for her. She tries to just go with the flow, even when the kids are reading, and it’s even low for me when I hear them reading, and I want to say ‘read

louder', but she never complains about it and she just either uses the interpreter or figures out a way to fix whatever problem she's having." Mrs. V. explained that she is most surprised by Kelsey's sense of humor and her ability to understand things. "She just has a knowing about her, a wisdom.... I have just loved having her here. She's just an interesting, remarkable little girl."

E. Conclusion

It is clear that audition was the most consistently used modality by both focal participants as it was noted alone or in tandem with other modalities at some point during all events. Choosing modalities requires a conscious choice and this choice is even more imperative when one needs to find ways to compensate for what has been missed or misunderstood. Parents and teachers reported, and observations confirmed, that audition, the use of hearing through their CIs, was the primary modality chosen by Allie and Kelsey.

Conversations with Laurie and Mike revealed that Allie developed compensatory strategies early on. Both parents indicated that Allie had been using different modalities to gain information from infancy, the most significant being visual perception of their dogs moving. Moreover, Allie's ability to use compensatory strategies made it difficult to detect her hearing loss as she used her dogs to alert to environmental cues. Consequently, Allie's hearing loss was not detected until she was 21 months of age. Her parents began using sign language as soon as Allie's hearing loss was diagnosed. Because of Allie's documented hearing loss, Kelsey's hearing was monitored regularly and her hearing loss was identified earlier, thus Kelsey did not need to develop the same level of compensatory strategies her sister had.

Moreover, parents reported that, whereas Kelsey wants her cochlear implants on during all waking moments, Allie will go without them for a period of time. This is indicative of Kelsey's desire to have access to sound in contrast to Allie's comfort when not accessing sound. Nevertheless, audition was the modality of choice at school for both Allie and Kelsey. In order to provide the best auditory signal possible, both students had access to FM amplification as well as soundfield amplification in their classrooms when the smartboard was being used. Allie chose not to continue using her personal FM system after this study began. An educational audiologist tested the FM system with Allie's CIs and determined the system was functioning properly, but Allie continued to reject the FM system. Because of this, Allie did not have any FM amplification when she went to specials classes. She also started wearing headphones over her CIs when she used the computer. She did, however, readily accept a soundfield system that her teacher could use during all whole group activities, which did not single her out as different.

The modalities that were observed during this study included audition, sign language, speechreading, print, visual perception, and tactile perception. The research presented indicates that Allie was able to rely on sign language, independent from other modalities, whereas Kelsey's skills were just emerging. Observations indicate that Allie used sign language as a means to clarify information she missed or misunderstood auditorily, but she did this very subtly, frequently by just moving her eyes. By doing this, most of her classmates probably would have been unaware that she was accessing sign language in these moments. Allie also relied on sign language alone to understand information presented in a different language, as indicated by her watching the signed interpretation of a song in an African language. Additionally, Allie confidently used

speechreading to support her access to auditory information and was able to explain how significant this modality was to her. Visual perception skills allowed Allie to recognize things in her environment to an advanced degree, as evidenced during a soccer practice. This visual perception also helped her organize her environment, such as when learning spelling words. Moreover, Allie verbalized that she used tactile perception when playing instruments as well as to know when individuals were moving or talking when she could not see them.

Kelsey also relied greatly on auditory access through her CIs as evidenced by her desire to have her CIs close to her when napping, as well as her independence in putting on and taking off the FM receivers. Though Kelsey did not rely on sign language as a sole modality, her mother indicated that her receptive and expressive sign skills were emerging and there was evidence of her looking at the signed interpretation, along with access to speechreading, to support her hearing. Moreover, visual perception was a modality that Kelsey regularly employed to access information, whether that information included details in pictures or watching other students perform a task before she did. During observations, both Allie and Kelsey demonstrated their ability to use audition alone with their teachers under optimal listening conditions.

Both students also used combinations of modalities. The three most frequently observed combinations of modalities utilized by Allie were audition, sign language, speechreading, and print; audition, sign language, and speechreading; and audition and print. It is important to note that Allie clearly used audition as her first choice of modalities, but her parents and teachers acknowledged her ability to successfully understand sign language and indicated it was her modality of choice after audition.

However, when someone was signing for her using standard English lip movements, Allie may have been employing audition, sign language, and speechreading, but to what degree each was used was unclear.

Ms. L. noted that Allie relied more on sign language interpretation when FM amplification was not available, but that she sought independence in communicating with peers. Allie demonstrated that she only used audition and speechreading when interacting with her friends and, during these times, appeared to strategically choose seating that would support her ability to speechread. Moreover, Allie typically used audition, sign language, and speechreading when I was interacting with her alone, with her and her friends, or when I was communicating what someone else was saying.

Furthermore, Allie also demonstrated that she used audition and print at times so as to listen and read what was being said simultaneously, rather than looking away from the source to see the information signed or via speechreading. Though Allie may have used multiple modalities at the same time, she also questioned things that were unclear, such as the difference between two signs or when something that she heard did not make sense. While Allie used her agency to choose modalities, she also used her agency to ensure that the information she received was accurate.

Like Allie, Kelsey relied to the greatest degree on her ability to access auditory information through her cochlear implants. The use of the FM system greatly supported her ability to use audition alone. However, when audition was not enough, the combination of modalities that Kelsey was observed using the most was audition, sign language, and speechreading. Like Allie, Kelsey most likely relied on audition and speechreading when interacting with peers or directly with her teacher, but utilized sign

language support in combination with speechreading and/or audition, when she missed a direction or when she needed redirection, such as being alerted to a peer attempting to speak with her.

The second most frequently used combination of modalities for Kelsey was audition, sign language, speechreading, and visual perception. Under very difficult listening conditions, Kelsey relied on speechreading, visual perception of peers, and sign language much more than she appeared to under better listening conditions. Mrs. V. indicated that Kelsey may have used sign as a means of clarification or to confirm, but never as a modality by itself. She also indicated that different activities allowed for different modality choices and Kelsey was seen as very adept at choosing them. Kelsey not only used her agency to select modalities, but to confirm or clarify what she was unsure of.

It is clear from these observations that both focal participants wanted to be able to communicate independently with their teachers and peers and did so by employing audition and speechreading. It is also just as clear that when there was any difficulty with understanding, whether because of the environment or because of the content of the communication, they used their agency to support their access and chose other available modalities. While it appears that Allie tended to utilize sign language as her second modality choice, she was also very comfortable with speechreading and print. Moreover, she indicated her ability to gain information tactily. Kelsey, though she has an emerging understanding of sign language, used visual perception and speechreading with greater frequency. Both of these students made agentic modality choices and it was clear that they did so successfully.

Communicative settings and environmental conditions impacted Allie and Kelsey's modality choices. In the next chapter, specific data related to context and the environment will be discussed and analyzed.

CHAPTER V

FINDINGS: CONSIDERING CONTEXT

A. Introduction

While it is very important to identify and analyze the different modalities that the two focal participants employed, it is also critical to look at what was occurring during similar contexts that promoted the participants' use of modalities within and across different settings. Therefore, the second guiding question in this study was to identify the contexts, and the environmental conditions that occurred within those contexts, in order to analyze how these impacted the modality selection of these two children who have cochlear implants.

This chapter focuses on the contexts in which Allie and Kelsey made modality choices, while considering the environmental factors present. Those factors included the amplification being used (one or two CIs, FM system, sound field system), noise levels in the room, classroom distractions, line-of-sight to teacher and facilitator/interpreter, and distance from the sound sources (teacher, peers, videos). With regard to amplification, it is important to note that the school in which the study took place was equipped with a sound system that, when the smartboard was playing a video with sound, that sound was projected from speakers in the ceiling. While noise could be a distraction, for the purposes of this study, noise was viewed as a level of background noise, which could mask the sound source. For example, students speaking, heating vents, or hallway noise could make it more difficult to hear teacher directions. Moreover, for noise levels, no technical measurement device, such as a sound pressure level meter, was available to this researcher, so a judgment had to be made as to the degree of loudness. Additionally,

classroom distractions could create noise, but also could be someone entering the room, a peer dropping something, or anything else that would draw the participants' attention away from the task at hand. With regards to distance, distances from the speaker or sound source that were within three feet were considered close proximity or within the direct sound field (Crandell & Smaldino, 2000). Consequently, for the purposes of this study, listening from 3-10 feet was considered a moderate distance and beyond 10 feet was considered a great distance.

1. Importance of the School Environment

The school that Allie and Kelsey attend demonstrated its acceptance of diversity through various means. There were books in the library that represented deafness and sign language in positive ways. Posters were displayed around the building that showed ASL signs and others were reminders to promote access to auditory and speechreading information. An after-school program taught students sign language. Many teachers, who wanted to include sign language in their classrooms, asked for resources and help reading books and singing songs in sign language.

Additionally, the principal of this diverse school demonstrated his desire to include sign language as an important resource for the school community. One example of this occurred just before this dissertation was completed. The principal approached me and asked if I, or someone from our team, could help him learn to sign the introduction to the school's winter concert in ASL. He provided us with the script he wanted to share as a welcome, which included introducing himself, welcoming the audience to the show, and sharing how proud he was of the students who were performing. A member of our team met with him on two occasions to review the signs and provided a video of the

introduction in ASL that he could watch. On the evening of the show, one of the interpreters voiced for him during his introduction and this principal expertly executed his introduction in ASL alone. The response from the audience was overwhelmingly positive with cheers and applause. This principal, an individual who espouses a learning environment in which all students are valued for their diversity, exemplified how this can be accomplished.

B. Teacher Directions

I frequently observed both Allie and Kelsey being given directions. Throughout the observations, I found 21 events in which Allie was receiving teacher or coach directions and 14 events in which Kelsey was receiving teacher or coach directions. I found that several of the five identified factors impacted, to some degree, the focal participants' ability to follow directions and thus impacted their modality selections.

1. Allie: Closing the Gap

I found 21 events during which Allie was being given directions. The first example demonstrates that Allie utilized her agency to choose a modality or combination of modalities and adjusted this selection based upon her success.

During an observation in April, before the soundfield system was installed, I observed that Allie used her agency to help her access communication. I noted that the students were getting ready to go to the library and the teacher began talking about a school-wide donation drive and directions for how they could participate. There was a high level of noise and distraction as the students were all putting their books and tools away, pushing chairs in, and moving around. The teacher was by her desk and I was closer to Allie as she moved to get in line. Allie suddenly turned around and began

walking towards the teacher and stopped approximately two feet from her and watched Ms. L. intently as she continued to talk about directions for participating in the drive. Here we see that Allie closed the distance between herself and her teacher in order to have better access to the directions about the drive. It is unclear whether she did this to support her audition, speechreading, or both. She did not, however, look to me for sign language support. This could also be an example of Deaf Gain because Allie's ability to speechread is a tool she is able to use with great success to aid her comprehension.

However, even under the best of circumstances, Allie may miss directions. This became evident during an observation in May while Allie was wearing two cochlear implants, the soundfield system was on, there was little noise in the room, and there were no obvious distractions. Ms. L. passed out some seat-work and stood approximately two feet to Allie's left in front of the smartboard and began to give directions. Allie was looking at her paper and did not look at the teacher. The teacher said, "Be sure you are on letter 'A' and putting your work in the box marked 'A' on the answer sheet. Don't forget to put your name on both papers". Allie was looking at her paper and using her finger to point to the places the teacher had named. I realized she had missed the final direction as she looked at me with a questioning look, which is her signal that she needs clarification. I told her to put her name on both papers and she gave me a nod, indicating her understanding. She quickly put her name on her papers and got to work. Here we see that, even with an optimal listening environment, miscommunications occurred. Allie used her agency to request clarification from me in order to understand all of the directions and then began to work. By using her agency, she was able to fill-in the gaps in information she had missed.

2. Kelsey: Noise and Amplification Impact Agentic Choices

I noted 14 observations of Kelsey during teacher directions. The following example indicates how important FM amplification was to Kelsey's ability to access information auditorily, particularly in the presence of background noise. During an observation in March, during center time, which is generally a loud time because groups of children are playing together in different areas of the classroom, Kelsey relied solely on audition. For this observation, I wrote that Kelsey was playing at the sand table, but did not have visual access to the teacher, as there was a bookcase between them. The teacher rang the bell, indicating it was time to change centers, but Kelsey did not react. Mrs. V. turned on the FM microphone and said, "Hi everyone, you have three more minutes to play". I looked at Kelsey and started to sign; however, she quickly repeated what the teacher said before I finished, indicating that she had heard the directions. I noted in a memo that Kelsey did hear the direction, which could have been anticipated, though she could not see the teacher. It is important to note that Kelsey did not alert to Mrs. V. ringing the bell from a moderate distance, approximately 8 feet, while in the presence of background noise. However, by turning on the FM microphone and eliminating the negative effects of distance, Mrs. V. may have alerted Kelsey to listen to her directions and this overcame the difficulty noise may have presented, thereby eliminating the need to use another modality.

The following observation occurred during a swim class. Several factors negatively impacted Kelsey's access to auditory information. Moreover, Kelsey demonstrated her reliance on visual perception, and perhaps familiarity, to aid her understanding under these difficult listening conditions.

In May, I observed Kelsey at her swim class. I noted that there was a great deal of noise from voices and splashing in the pool area which was further exacerbated by reverberation. Additionally, I noted in my jottings that I needed to strain to hear what Mike was saying to me. Kelsey had only one CI on due to needing the “swim ear” for the cochlear implant and there was a great deal of visual distractions in the pool area from kids doing laps in the pool, jumping in, and parents chatting and moving around the perimeter. Kelsey joined her class and the teacher stayed within three feet of her as she gave directions. Kelsey watched her intently. Moreover, Kelsey never volunteered to do any of the drills first, but always went second. Whether this was by the teacher’s design or Kelsey’s choice was unclear. This observation demonstrates that under difficult listening conditions and with numerous distractions, Kelsey supported her understanding with speechreading and visual perception. During this event, noise and distractions in the pool area negatively impacted her auditory access. Additionally, Kelsey was also impacted by the fact that she was only wearing one CI and, because it was a “swim ear” and was under her swim cap, the CI was not providing the kind of auditory access she experienced typically with bilateral cochlear implants.

Similarly, the following observation occurred during a soccer practice in which Kelsey needed to make agentic choices in the gymnasium when she was trying to understand directions. I noted that because the soccer practice was in a gym, Kelsey had a great deal of difficulty following the coach’s directions. Kelsey had two CIs on, but there was a significant amount of noise from children and parents yelling, which was further compounded by the reverberation of the gym. There was also a great deal of distraction from kids on other teams moving around the gym and parents moving around the

perimeter. While the coach was standing approximately 10 feet in front of Kelsey, Kelsey was watching as he gave each direction and demonstrated how to dribble the ball in a zig-zag around the cones and kick it into the net. Here, Kelsey was most likely using audition, speechreading, and visual perception.

Furthermore, Kelsey, as she had done in swimming class, watched another child complete the drill and then took her turn. She missed and the coach yelled, from approximately 20 feet behind her, to try again. Kelsey did not respond and started running with the ball back to the line. Laurie waved to her and signed “try again, try again”. Kelsey noticed her mom, did try again, and got the ball in the net. Here, in the gym with its reverberation and noise from children and parents, Kelsey was not able to access the coach’s direction from a long distance without visual support in the form of sign language from her mother. Consequently, in loud environments and without access to FM amplification, it is possible that Kelsey was not aware that the coach was giving her this direction. If she heard the direction, she may not have trusted her understanding and needed support in another modality. However, throughout most of the soccer practice, Kelsey sought confirmation from watching another child complete the task first, further supporting her difficulty accessing auditory information.

C. One-to-One with Teacher

For both participants, I found six events in which they were working one-to-one with their teachers. While both students relied primarily on audition when they worked directly with their teachers, they did employ other modalities to aid their comprehension.

1. Allie: Modality Selections in Close Proximity

The first example of Allie working directly with Ms. L. indicated that Allie utilized speechreading and print in addition to auditory perception. During an observation in March, I noted that the class was doing independent seat-work after a lesson on the smartboard about a literary magazine. The room was very quiet with minimal distractions and Allie was wearing both CIs. Allie worked quietly for a couple of minutes and, since she did not ask for my help, I sat in my seat. The teacher went to her desk, which was behind Allie, and after a couple of minutes Allie called her over to show her that her work was done. Ms. L. walked over and stood next to Allie's desk, looked at her paper, and helped her correct a few things. I was ready to sign, but Allie never looked my way. The teacher knelt down and pointed to the magazine as she spoke and Allie looked between the teacher, the magazine, and her paper, utilizing audition, speechreading, and print. Here we see that Allie, under optimal listening conditions, was able to employ speechreading and print to aid her comprehension. Whether she needed to use these modalities is unclear, but since she was looking at Ms. L. as she spoke, and then tracking the words on the page, this indicates that these modalities were in play.

In the following observation, Allie sought sign support when an unfamiliar word was used. I noted that the second-grade classroom was very quiet, with no obvious distractions, as the students were taking a reading test. Allie had both CIs on. When Allie finished her test, she raised her hand and waited for the teacher to come over to her, as had been the direction. Ms. L. came by and stood behind her, but leaned down to be closer. She gave Allie the pretest for the next section of the reading unit and then read the directions to her. Allie followed along on the paper, as I could see her eyes moving steadily across the page and back. Allie did not look at me for the first part of the

directions. Here, Allie was using audition and print. However, after Ms. L. told her the second part of the directions, Allie looked at me with a questioning look, indicating she did not understand. I began signing the directions and Allie gave me a questioning look when I signed the word “sequence”, so I quickly explained, “‘sequence’ mean order, first, second, third”. Allie watched me intently, nodded her understanding, and began working on the pretest. Here, Allie used audition and print during the first part of the directions, but because the second part contained unfamiliar language, Allie chose sign language as a modality for support. Additionally, it should also be noted that Ms. L., during all of these examples, ensured she was in close proximity to Allie and that the environment was quiet as she spoke with her.

2. Kelsey: Promoting Auditory Perception

During the following observation, I was in Kelsey’s preschool classroom in March when I was interacting one-to-one with her. Kelsey used her agency to improve her access to what I was saying. Moreover, when I had trouble understanding her, she only used spoken language to attempt to help me understand. I noted that the classroom was moderately noisy and had distractions as the children were all playing in centers. Kelsey had been playing with another student in the magnet blocks center and I had been approximately three feet from her in case she needed sign support. When the other student left the center, Kelsey was alone. She pulled out the chair next to her and motioned for me to sit down and I did. Kelsey had been wearing the FM microphone around her own neck, but without any adult direction, handed it to me. We were about two feet apart and she had both CIs on. Kelsey was building a multi-layer building and it was already three levels high. She then used three triangles and made fancy doors that

hung from one of the levels. The following conversation took place with me using PSE and spoken English simultaneously. Kelsey only used spoken English.

Me: It looks like you made doors (I did not use the traditional sign for doors, but rather signed the way the doors hung, which was from the top, rather than the side.)

Kelsey did not look at me; she was looking at the structure.

Kelsey nodded.

Me: What did I ask?

Kelsey: doors (she heard me)

Kelsey: It's fun sitting wit you!

Kelsey: I want to be a c.... door.

Me: You want to **MAKE** a kind of door? (Kelsey quickly looked at me when I emphasized the word "make".)

Kelsey: A_____or. (unintelligible)

Me: Did you say store?

Kelsey: No, a car... **door!**

Me: You want to make a carriage door? (I signed it twice with the traditional sign as she was watching very closely.)

Kelsey nodded yes.

I then explained the different sign I was using, comparing it to the traditional sign because of how she built the door. She watched closely and copied the sign. I also broke the word "carriage" into two syllables and supported her pronunciation.

In a memo, I noted that my training taught me to tell a child what I heard when asking for clarification and to probe for their intended message so as to give them an idea

of what I understood, versus what they intended to say, to allow them the opportunity to modify their speech production. It is important to note that Kelsey had given me the FM microphone when I sat beside her, indicating her desire to have access to my verbal communication. Kelsey was also interested in the sign I was using, as it was not the sign she was used to. This observation further demonstrated the importance of close proximity and an FM system when speaking in the presence of background noise. It also indicated Kelsey's strong desire to be understood correctly.

The following day, I observed an example of how Kelsey may have used speechreading and visual cues to support her interactions with her teacher when working one-to-one. I observed that the children were just leaving circle time and going to center time when I arrived. Kelsey chose the block center and I followed her there to provide support and facilitation as needed. There was a moderate level of noise and there were some distractions as children were playing in several centers. After a few minutes, Mrs. V. came by the group and said to Kelsey, "Did you want to make something for your sister?" Kelsey had mentioned to her that she had wanted to make an initial letter poster for Allie like Mrs. V. had done for all of the students in the preschool class. I handed the FM microphone to Mrs. V. and she and Kelsey walked to a small table and they sat across from each other, approximately 2 feet apart. I sat to Mrs. V.'s left, but Kelsey never looked at me while they were talking about the letters in Allie's name and finding pictures to go with them. I noted that Kelsey frequently looked between Mrs. V. and the poster. Here, Kelsey appeared to primarily use audition, with the support of the FM system, speechreading, and visual cues from the poster to support her comprehension.

D. Small Groups

Observations of small groups only occurred during three events with Allie, but during fourteen events with Kelsey.

1. Allie: The Importance of the Listening Environment & Proximity

As the following example indicates, during small groups Allie was found to be using more than one modality at a time. I noted that one day in March, I walked into the second-grade classroom to find that Allie was at the back table with five other children and her teacher. Allie was on the far left of the table, with good visual access to the teacher and the other five students. The room was very quiet, with minimal distractions, since the other students were doing seat-work. Allie was wearing both CIs, but was not using the FM system. I moved to the left side of the teacher, in direct line-of-sight of Allie. The group was working on reading and writing, using a magazine about hamsters. The teacher instructed them to find information on one of their questions. Their first question was, “Where do hamsters live?” Allie looked at me a bit as the teacher gave these directions, but also looked at the teacher, thereby using audition, speechreading, and sign language. Allie was then asked to read a paragraph and the teacher pointed to the text on Allie’s magazine as she read. As each student read, Allie followed along in the magazine, as I could see her eyes tracking. She also turned the page at the right time, indicating that she was keeping pace with the group. She did not look to me for sign support at all. Here, given that the classroom was very quiet and she was in close proximity to the speakers, Allie was able to use her audition, as well as print, to follow along as everyone took turns reading.

The following observation occurred a few hours later and further supports Allie’s ability, under optimal listening conditions, to follow along as peers read. I noted that later

that same day, the group met again to work on using an iPad to find information about hamsters. As was observed earlier, Allie was wearing two CIs and there was minimal noise or distractions. Allie took the same seat and I again stood to the teacher's left. Each student had an iPad. As Ms. L. read a paragraph, I could see Allie's eyes tracking the words on the iPad. She looked up just as the story finished, indicating that she had been listening as well as keeping pace with the reading. As other students read, she did the same. Once again, we see that under optimal listening conditions, having both CIs, and close proximity to the speakers, Allie can track other peers as they read.

2. Kelsey: Improving Auditory Access to Peers

Kelsey, though not choosing to ask a peer directly to wear the FM microphone, demonstrated that, over time, she recognized that she had improved access to peer communication when they wore the FM microphone. The following observations of Kelsey demonstrate her improvement and increased willingness, during the course of this study, to improve her access to peer communications when playing in small groups.

The first example demonstrates that, when there was a moderate level of noise, Kelsey was not choosing to have peers wear the FM microphone in order to improve her access to their spoken communication. In March, I arrived in the preschool classroom as the children were moving to their first centers of the day. I noted a moderate level of noise. Kelsey chose to play at the sand table. She was with two other peers who were both approximately two feet from her, one perpendicular to her left side and one in front of her. This center contained sand toys and trucks in the sand box. Mrs. V. handed me the FM microphone and I asked Kelsey if she wanted a peer to wear it. The following discussion ensued:

Kelsey: No, I want it!

Me: You want to wear it?

Kelsey: I hear better.

Me: You can hear your friend better too (they are in close proximity, so her microphone could possibly pick up both of her peers' voices.)

Kelsey: Yeah

I put the FM microphone around her neck. She played for a few minutes and then looked at me and asked me to shorten the cord. I did not understand at first, but the microphone's antennae was hanging low and she was stepping on it. However, Kelsey did not interact with her peers throughout this observation.

This observation demonstrates that Kelsey was engaged in parallel play with her peers, rather than direct interaction. It is possible that the listening environment was difficult and hearing peers, who tend to speak softly, under less than optimal listening conditions, was difficult. Additionally, because they were playing at the sand table, most of the students would have had their heads down, which would have made speechreading more difficult. However, this observation did indicate Kelsey's understanding that the FM system supports her auditory access. Moreover, the following observation indicates that Kelsey began to recognize that there was a benefit to having a peer wear the FM microphone.

At the end of March, Kelsey began wanting to interact more with her peers. One afternoon, I arrived at the preschool classroom at the end of naptime. Kelsey was awake and playing with Playdoh with two other peers at a table. Her FM microphone was sitting in the center of the table, between her and her two peers. Mrs. V. and I had talked and

decided we would, when possible, place the FM microphone in a position where it may pick up peer communications when Kelsey did not want one specific peer to wear it. We discussed how we needed to be sure the FM microphone would not be picking up too much extraneous noise, such as would occur when children in close proximity were playing with blocks or magnet-tiles. When I walked in, Kelsey called me over, picked up the microphone from the center of the table, and gave it to me. She then motioned for me to give it to the peer directly across from her. I asked the peer if she would wear the microphone and she gladly agreed. Kelsey did not speak directly to this student after she put on the microphone, but this was the first time Kelsey had requested a peer wear the microphone. This observation indicates that Kelsey was purposefully attempting to improve her auditory access to peer communication. Consequently, the next observation, which occurred in May, demonstrates Kelsey's increased understanding of the significance of FM amplification. Here, she clearly indicated that she wanted the FM microphone for her peer and was seen interacting with him.

I arrived in the classroom during snack time. I noted that Kelsey was wearing both CIs. One of the students was celebrating a birthday, so the room was a bit louder than usual. There were some distractions as students were playing at different centers. Kelsey was sitting with two friends and I asked her, using PSE and spoken English simultaneously, if she wanted a friend to wear the microphone. She excitedly pointed to a child at the table with her and said she wanted to go to centers with him. Kelsey went to the sand table and the peer with the FM microphone followed her. The two children played for a while, talking about using the objects in the sand table to build small

structures and move the sand. After a couple of minutes, I engaged in the following discussion with Kelsey:

Me: What do you do if your friend leaves the sand table with the microphone?

Kelsey: I tell the teacher.

Me: Or he gives it to you and you give it to the teacher.

Kelsey: Or I hear myself!

As Kelsey said this last statement, she had the biggest smile. In a memo, I noted that Kelsey was recognizing that she heard better with the microphone, whether that be hearing the teacher, peers, or herself. These observations revealed that Kelsey increasingly became aware that the FM system improved her ability to converse with peers under less than optimal listening conditions.

E. Watching Videos

I found five events in which Allie was watching videos during my observations and eleven events in which Kelsey was watching videos. Both students demonstrated their ability to access various modalities during these events that supported their comprehension of the videos. Moreover, their modality choices were impacted by their familiarity with the videos, videos of live individuals for speechreading versus cartoon characters, as well as new vocabulary presented in the videos. Since Allie is a strong reader, she also used print as a modality when captioning was available.

1. Allie: Independently Selecting Modalities

The first example reveals how Allie used audition, print, and visual perception of videos to support her comprehension. Moreover, because Allie is an avid reader, she used her agency to indicate how significant this modality was for her when closed captioning

was available. During my first observation in February, I arrived at the second-grade class during their free time. The room had a moderate amount of noise as the children were moving to stations. Allie was wearing both CIs and had the FM microphone with her. Allie was on a laptop and her FM microphone was hooked up to the laptop via an auxiliary cord. I pulled up a chair and sat beside her, approximately 1.5 feet from her, prepared to interpret as I had a splitter cord and a headset. I typically use the splitter so that Allie's FM microphone and my headset can be plugged in simultaneously. In this way, I can interpret anything audible. However, Allie shook her head at me, so I did not touch her auxiliary cord. Allie paused the video and was looking at the screen. I asked what she was looking for and then she pressed the "cc" symbol. I asked what that was and she said, "so I can read it too". She added, "The red line means it's on." She then listened to the story and her eyes moved along the closed captioning. She did not look to me to sign at all.

Here we see Allie was choosing to support her auditory comprehension with print, rather than sign language. She could also have been looking at the pictures in the story, as she was not having to look away from the computer. The following observation indicates that, during whole group time in front of the smartboard, Allie actively chose audition.

During an observation in March, Ms. L. called the children to the carpet to watch an introductory video for the magazine they were going to read. I stood to the right of the smartboard, approximately ten feet from Allie. Allie took a seat in the third row on the carpet, near the end of the carpet opposite me. She was wearing both CIs. There were minimal distractions as the students were all preparing to watch the video and the room was quiet. I asked Allie, in sign alone, if her seat was good because I was concerned that

other kids were blocking her view. She then pointed up to the ceiling and then back to the screen, which was explanation enough. When I looked up, I was shocked to see that Allie had chosen a seat directly under the speaker in the ceiling. In this way, she was consciously choosing the auditory modality. The video was about animals in the winter and it had some music in it, though I could not tell if she was tactily accessing it. This video also had captions. Moreover, she did look at me quite a bit. I signed in PSE and mouthed the words in standard English. Allie's line-of-sight was probably very helpful because it was almost diagonal, which would have allowed her to see the video, watch the captions, and see the signs simultaneously. Here, Allie purposefully chose seating to support her auditory access, but also had access to the video, print, and sign. While there was no way to know for certain how much she depended on the captions, she was looking at me for sign support. Nevertheless, Allie indicates in the next example how she could possibly use speechreading to understand videos when live individuals are speaking on the screen.

Two videos were shown on the same day in April, one with live characters and one with cartoon characters. Allie had both CIs on during both videos, the students were quiet, and there were no obvious distractions. When I arrived at the second-grade classroom at 10:45, Ms. L. was just turning on the video, which had been made by students at the school describing that week's school events. I immediately walked to the right side of the smartboard and Allie was sitting at her desk near the teacher's desk, closest to the smartboard. There were a few captions throughout the video indicating changes in topic. The video lasted approximately five minutes and Allie looked at me a lot as I was signing.

I made a memo that Allie did look at the video quite a bit, possibly speechreading the students when possible, but because some of the students were difficult to hear, she looked to me for sign language support in addition to listening to them. Nevertheless, when cartoon characters were on the screen, as is evident in the next example, Allie relied more on sign language and captioning.

Later in the day, the teacher put on another video, this one with two cartoon characters. The purpose of the video was to discuss “inches” versus “feet”. I moved to the right of the smartboard. When the word “abbreviation” came up, Allie looked at me with a questioning look. I quickly explained by pointing to my lips and saying “abbreviation” with no voice and then signing only “abbreviation (signed) mean long word become short, mean same, example i-n, sign for ‘inch’, mean i-n-c-h”. The video also had captions and, while Allie was watching me a lot, I did see her eyes moving from left to right across the screen. This could be an indication of Deaf Gain as Allie was able to use her peripheral visual perception to gain information in two ways from sources that were relatively close, but not in immediate proximity. Moreover, since the characters were in cartoon form, Allie would not have been able to speechread them as she had with the earlier video. Allie also indicated her desire to understand by questioning an unfamiliar vocabulary word.

2. Kelsey: Finding Her Agency

The first observation presented here indicates Kelsey’s agency in choosing to have good line-of-sight with a video, even though it was a video she had seen several times and her auditory access was optimal. While observing in March, the teacher announced, at the end of circle time, that she was going to play a video. The students

were very quiet, there were no obvious distractions, and Kelsey was wearing both CIs. Furthermore, because the smartboard was being used, Kelsey had access to the auditory component through speakers in the ceiling, functioning like a soundfield system as it projected throughout the classroom. This video depicted the alphabet letters, an object beginning with each letter, and the sound each letter makes. There were no individuals depicted, so speechreading was not possible. I moved to the right of the smartboard, facing the class so that I could sign the song. The teacher started the video and I noticed Kelsey moving herself among the students, seeming to try to pick a good place to stand. She was in the second row and then moved to the first row, about 3 feet from the board. This gave her line-of-sight of the board and me. Kelsey copied many of my signs, as did some other students. In a memo, I noted that this was a song we had done many times and Kelsey was getting really good at keeping up with signing it. While Kelsey was familiar with this song, she did watch me sign and she may have benefited from speechreading cues as I sang and signed simultaneously. It is an intricate and fast song, but as she did it more frequently, she was getting more proficient at executing all of the components. Perhaps the intricacy of the signing component led Kelsey to need the visual support to keep her on track with the signs, thus prompting her to improve her line-of-sight. However, in the following example, Kelsey used her agency to indicate when she wanted, and did not want, me to sign for her.

At the end of April, I was in the preschool classroom when the teacher began to play a YouTube version of *A Bad Case of Stripes*, narrated by Sean Astin (1998). During this video, the vibrant pictures in the book were shown and the narrator's face was visible for much of the reading. There was little noise in the room and there were no obvious

distractions. Kelsey was wearing both CIs. I took my place, standing to the right of the smartboard. As soon as I did, Kelsey looked at me and shook her head “no”. I took this to mean that she did not want me to sign. Kelsey was sitting in the middle of the kids in the second row, approximately 5 feet from the smartboard. The smartboard was approximately 3.5 feet from the floor, so she had good line-of-sight. Moreover, the FM microphone was placed near a sound source on the teacher’s desk, in addition to the sound being projected from the ceiling. I moved to the edge of the rug so that I could see Kelsey. At one point, she looked at me, so I started to sign and again she shook her head “no”. This was the first time Kelsey had adamantly refused signed interpretation. It is possible that the visual depiction of the pictures of the book, along with access to speechreading by the narrator, the FM microphone near the sound source on the computer, and access from the smartboard’s loudspeakers in the ceiling, allowed Kelsey good access to the story without the need to look away to see the signing.

However, at the end of the video, the narrator asked what the “moral” was. Kelsey immediately looked at me and I started to sign. She continued to watch me as I signed in PSE and used standard English on my lips, accessing both sign language and speechreading cues. I moved quickly back to my seat to the right of the smartboard. Kelsey kept watching me as I explained, “m-o-r-a-l mean what learn”. In this way, Kelsey used her agency to ask for clarification. As both a teacher and a facilitator during this event, I took the opportunity to help her understand what the narrator was asking. I continued to sign and provide speechreading access until the video was finished and Kelsey watched a great deal. In a memo, I noted that later that afternoon I asked Kelsey if she had read the story before, but she said she had not. Perhaps the pictures were so

vibrant and the speechreading so clear, that Kelsey did not want to be distracted from watching the video until she had difficulty understanding what the narrator was asking. Nevertheless, Kelsey clearly chose sign language and speechreading when she did not understand what was being asked, as no other modalities could provide an explanation.

F. Stories Being Read Aloud

During two events, I observed Ms. L. reading a story to the class and during three events Mrs. V. was reading a story.

1. Allie: Choosing ASL

In the first example, even though Allie had good access to the teacher's voice and there were no obvious distractions in the classroom while a story was read aloud, she appeared to rely heavily on ASL. At the end of March, I entered the second-grade classroom as Ms. L. was reading *Superfudge* (Blume, 1980) to the class. The room was very quiet with no obvious distractions. Allie was wearing both CIs, but she did not want the FM system used. There were a lot of characters in this book and I quickly had to find sign names for them all. Sign names are symbols that represent an individual. These sign names are used frequently so that one does not need to fingerspell a name each time it is used.

Allie was sitting in the front seat, slightly in front and to the right of the teacher's desk. Ms. L. was standing on the rug, approximately four feet from Allie. I was to the teacher's left, about one step in front of her so that Allie had direct line-of-sight of the teacher and myself. I was signing in ASL, so I was not using lip movements. I noted that Allie was watching me intently and did not appear to be looking at the teacher. She laughed appropriately, but slightly behind the other students, as my signing was a couple

of seconds behind the teacher as she read. The word “oreo” came up and Allie looked at me quizzically. I quickly switched to PSE and mouthed the words in standard English “o-r-e-o (*fingerspelled*) ‘oreo’ (*pointing to my lips*) mean cookie, chocolate outside, cream inside, you know it?” She nodded yes and I continued explaining the story, needing to summarize the little that I missed interpreting while I was explaining. I continued signing the story and Allie continued to watch intently.

This example indicates Allie’s choice to rely on ASL to understand a story. While Allie may have been using her hearing as well, this would be difficult as English and ASL have different grammar structures. Additionally, Allie laughed according to when funny events were presented in ASL, which was slightly behind the teacher’s spoken presentation of those events. Moreover, this example indicates that Allie was not relying on speechreading because I did not mouth the words on my lips as I signed in ASL. The following example further supports Allie’s use of ASL when stories were read aloud.

Ms. L. read a chapter of *Superfudge* (Blume, 1980) several days a week and I had an opportunity to interpret the book for Allie again near the end of the book. Allie’s seat had changed and she was now across the room from the teacher’s desk, with her right ear toward the smartboard, facing the teacher’s desk. Ms. L. stood in the center of the room, approximately five feet from Allie and I stood to the teacher’s right, slightly in front of the teacher to give Allie line-of-sight of both the teacher and myself. Again, the room was very quiet with minimal distractions and Allie was wearing both CIs. I again signed in ASL without English lip movements. Because the chapter primarily focused on two characters, I was able to use body language to indicate who was speaking in the chapter, but I had to move another step away from the teacher so as to avoid bumping her. I noted

that Allie watched me no less than 90% of the time, but occasionally looked at the teacher, perhaps for speechreading cues. Although Allie had her CIs on and was within a moderate distance of the teacher, with little noise or distractions present, she still appeared to utilize sign language as indicated by her reactions to the story occurring simultaneously with the slight delay of the sign presentation. Here, we again see that, when stories were read aloud and ASL was an option, Allie chose to rely on the sign presentation and perhaps some speechreading to support her understanding.

2. Kelsey: Independently Choosing Among Modalities

The following example occurred during a read-aloud of an unfamiliar story. During this observation, Kelsey was observed to be watching the sign presentation to a small degree and she moved closer to the teacher in order to have better access to the pictures. Both of these choices are indicative of her agency.

In April, I observed Mrs. V. reading the story *Smelly Socks* (Munich, 2004). Mrs. V. called the children to the carpet for a story and I sat to the teacher's left, approximately 2 feet from her. Kelsey was wearing both CIs and Mrs. V. was using the FM microphone. Kelsey chose a seat in the back row. As the teacher pulled out the book, Kelsey moved closer and sat in the second row, in the center of the group. She was approximately 4 feet from the teacher. I asked Kelsey in PSE, with lip movements, if she wanted to move closer and she shook her head no. The room was very quiet and there were no obvious distractions. As the teacher read, I signed in a mix of PSE and ASL. Kelsey glanced at me a bit, but watched the teacher more, clearly getting more speechreading from the teacher than me because some of my signing was in ASL. Kelsey was also very interested in the pictures of the story. I noted in an earlier explanation of

this observation, that Kelsey noticed a very obscure object in this book, perhaps indicative of Deaf Gain. Kelsey clearly gleans a lot of information from looking at the pictures in books.

This observation indicates that Kelsey was using her agency to improve her access to the pictures, which in turn could have increased her comprehension. Furthermore, decreasing the distance to the teacher may have increased Kelsey's access to speechreading. Moreover, because the FM microphone was being used, Kelsey had optimal access to the teacher's voice. Nevertheless, the following example indicates how significant familiarity is during a read-aloud.

One final observation of stories occurred in May when, after watching a video, Mrs. V. asked the children to sit on the rug for a story. I took my seat to the left of the teacher, moving the bulletin board that was between us so I could get closer. Kelsey was wearing both CIs and Mrs. V. had the FM microphone on. Mrs. V. took out the book, *Oh, A-Hunting We Will Go* (Langstaff, 1991). This is a book that Mrs. V. had read several times and the children read it with her as a song. Kelsey did not look at me at all, but I could see her looking at the pictures in the book and looking at the teacher. I noted that Kelsey easily repeated the lyrics. Here, auditory access, familiarity, as well as the visuals of the pictures, helped Kelsey participate in reading this story as a group activity.

G. Conclusion

This chapter focused on the second guiding question of this study, which was to identify the contexts and environmental conditions that affected the modality selection of the two focal participants. The factors that were considered included amplification, noise levels, distance from the sound source, distractions, and line-of-sight to sound sources. It

is clear, once again, that auditory perception was generally the focal participants' first choice of modalities, the only exception being Allie's proclivity to ASL when her teacher was reading a story aloud.

When being given directions, Allie was observed to move closer to the teacher when there was a great deal of noise and distraction in the classroom, perhaps in order to have better access to speechreading. However, she sought clarification in the form of sign language when she missed a direction. In observations of Kelsey, the importance of the FM system, as a means of reducing the negative impact of noise, became clear when Kelsey was able to understand teacher directions in the presence of noise and without using speechreading cues. Moreover, during swim class and soccer practice in the gym, when noise and reverberation were at very high levels, Kelsey was observed to be watching, not only the coach for directions, but also watching at least one child perform each drill for confirmation. Additionally, when Kelsey missed the coach's direction in the gym, she looked to her mom for sign support to understand the direction.

When working one-to-one with the teacher under optimal listening conditions, Allie was seen to be employing speechreading and print, in addition to listening to auditory information, and then sought sign support when an unfamiliar word was used. When working with me in her classroom, Kelsey indicated the importance of auditory access by handing me the FM microphone to wear. Kelsey also relied primarily on audition, with some support from speechreading and visual cues, when working directly with Mrs. V.

In small groups, Allie was seen to use a variety of modalities including audition, sign language, speechreading, and print at different times. However, when peers were

reading, she focused on audition and print as her primary supports. Additionally, Kelsey demonstrated, through the course of this study, the importance of having a peer wear the FM microphone when she was in small groups, especially under less than optimal listening conditions.

When videos were shown and closed captioning was available, Allie was observed to be using print as a support to listening. This is significant since using print allowed her to keep her eyes on the video in order to see visuals that she could have missed if she looked away to see the sign interpretation. Moreover, when the whole class was watching a video from the smartboard, Allie consciously improved her auditory access by choosing a seat directly under one of the ceiling speakers. When videos contained live characters, Allie watched them more, perhaps for speechreading cues, but if they were difficult to hear, she sought sign support. However, when videos contained cartoon characters and speechreading cues were not available, she sought sign language and used closed captioning as supports. Kelsey also indicated her desire to watch the video, rather than look for sign interpretation, when she had strong auditory access, the video had vibrant pictures, and the narrator could be seen for speechreading support. Nevertheless, she did seek sign support, and perhaps speechreading cues, when unfamiliar vocabulary was used.

During read-alouds by Ms. L., Allie chose to watch the ASL interpretation as indicated by her reactions occurring in time with the sign language presentation, which was slightly behind the spoken presentation. It is important to note that auditory access was available to Allie when Ms. L. read aloud, but her focus appeared to be on the ASL presentation. However, while Kelsey watched some of the sign presentation when stories

were read aloud, she used her agency to change her seat and thus improved her access to speechreading and the visual cues of the pictures. Moreover, familiarity, along with strong auditory access and visuals from pictures in a book, allowed Kelsey to participate easily with her class when Mrs. V. reread a familiar story.

While Allie did lean towards sign language when longer communications, such as when stories were being read aloud, Kelsey did not. Across contexts, Allie relied on sign language with much greater frequency than Kelsey. Both students used some degree of visual cues from pictures or videos when the context permitted. They both also used speechreading to aid their comprehension, but Allie chose this modality with slightly greater frequency than Kelsey. Additionally, because Allie was reading at a grade-appropriate level, she regularly used print, when the context permitted, to support her auditory access. Even considering different communication contexts, the over-arching mode chosen by the focal participants was audition, except for when Allie relied on ASL during read-alouds. Generally, when noise and distance were not factors, disturbances were minimal, and they had a range of auditory amplification, both focal participants were successful auditorily. Familiarity with content also played a key role in the participants' ability to rely on audition alone. However, longer communicative exchanges, such as multi-step directions, or exchanges containing unfamiliar vocabulary, remained difficult.

While context and environmental conditions certainly played a role in Allie and Kelsey's modality selections, their conscious decisions to employ modalities is significant. The following chapter will focus on Social Semiotics and how the focal participants employed their agency.

CHAPTER VI

FINDINGS: SOCIAL SEMIOTICS AND IDENTITY

A. Introduction

The final question of this study was to consider how Social Semiotics and the identity performances of the focal participants influence, or are influenced by, the focal participants' modality selection. Social Semiotics refers to how individuals use their agency to select various modes in order to understand and participate in communicative exchanges (Kress, 2013). Moreover, Kress (2013) explains, "The theoretical and descriptive tools of Social Semiotics provide the means to see *sign-* and *meaning-making* as *learning*; and they allow *learning* to be seen as an instance of *sign-* and *meaning-making*" (p 133). Kress (2013) went on to add that individuals, as learners, create a self-identity through their agentic choices. Therefore, by choosing different modalities and combinations of modalities, these two focal participants may have been performing their identities as deaf, Deaf, "DeafF" (McIlroy & Storbeck, 2011), hearing, bilingual, multilingual, or other. Occasionally, as seen in this study, multiple identities were being performed simultaneously.

During interviews, both parents reported that, while their children had opportunities to interact with other Deaf individuals, it was rare. Laurie said,

Sometimes we fall into a really interesting area too because there's not a lot of families who have kids who have implants who sign. Some Deaf families don't want to interact with us. And we do connect with other families whose kids have implants. The kids get excited when they see other kids. Well, even when we're out in a public

place and they see someone with an implant, or a hearing aid, or signing, they get very excited about that.

Here, Laurie explained that there is still a rift in the Deaf community with regards to undergoing cochlear implantation, as some individuals in the Deaf community do not approve. Cohen (1995) explained in her book, *Train Go Sorry: Inside a Deaf World*, “They (the Deaf community) perceive the medical profession, in its patronizing zeal to ‘cure’ deafness, to be attacking their worth as deaf people and absconding with the community’s most valued and cherished resource, it’s very future: deaf children” (p. 108). Additionally, Laurie explained that finding individuals who have cochlear implants and who sign is still rare.

As this interview went on, Laurie did state that Allie will sign with other deaf individuals who sign. She gave the example of a time when Allie participated in an adaptive ski program. There was a special night for the kids and one of the chaperones was Deaf and she was conversing with Allie in sign. Laurie reported that Allie seemed nervous, but added that her confidence was growing in both receptive and expressive sign.

While identities are performed and can change depending on context and availability of modalities, Allie and Kelsey both understand that they are deaf and unable to hear without their cochlear implants. Whether they call themselves “deaf” or “hearing” is truly the same thing as both indicate their affiliation with the majority culture, a culture that uses spoken language to communicate. It is clear that both Allie and Kelsey identify a large majority of the time with their hearing peers. While either a “deaf” or “hearing” identity may signal affiliation with the hearing community, it further signals that they

need to use more modalities than their peers in order to participate in the majority community. Consequently, Allie and Kelsey may have an identity of difference, whether positive or negative, that corresponds with their modality choices and the reasons for those choices.

B. Hearing Identity

1. Allie: Managing Differences to Align with Peers

There were times at school when Allie clearly identified as hearing, aligning herself with her typically hearing peers. Eight events were observed, during this study, which supported this identity construction. As follows, Allie's preference for the soundfield system over the FM system is one example. I noted that Allie began declining her FM system in March. The FM system was checked by an audiologist with Allie present, and deemed to be working properly, but Allie did not want to use it. When asked what she did not like about the FM system, she repeatedly said she just did not like it. In April, a soundfield system was placed in her classroom so that the teacher's voice could project to the entire class. I told Allie that we could pair her FM system with the soundfield system so that she could have both, but she said she just wanted the soundfield system. After using the soundfield system for a short while, I asked Ms. L. if she had seen any benefits for Allie with this system and she said that Allie did not like to let others know she was struggling, hence she was very accepting of the soundfield system and benefited from it. Ms. L. and I discussed how Allie did not like to be seen as different and, as the only student in the class who had to put on FM receivers and for whom the teacher wore a microphone, she was singled out as in need of support. However, Ms. L. did note that Allie was using the interpreter a little less now that the soundfield system

was in the room. I shared the time Allie came into my room, after I had set-up the soundfield system, and asked if I had put it in her classroom. She told me that she liked it and her friends did too. While the FM system sent the teacher's voice directly to Allie's cochlear implants, the soundfield system was heard by all students in the class, thus improving all of the students' access to the teacher's voice. Additionally, Ms. L. and I discussed how Allie may have been indicating, through her choice not to use the FM system, which identified her as needing assistance, that she did not want to stand out from the other children in her class. In this way, she was identifying with the majority of students in her class and may have been identifying herself as hearing.

Allie's refusal of the FM system, which singled her out, yet acceptance of the soundfield system, which aligned her with her peers, may be indicative of her desire to be like her classmates and thus identify with the majority hearing society. It may also signal her difference in a negative way. Moreover, the following observation demonstrates that Allie's hearing in quiet settings, as well as familiarity, supported her ability to participate in activities in the same way as her peers, thus aligning with them.

I conducted an observation of Allie in the auditorium. When attending any event in the auditorium, the children are frequently asked to close their eyes and participate in a mindfulness activity, which is intended to calm and improve focus for the students. While an auditorium is typically loud and reverberant, during mindfulness activities, this listening environment is relatively quiet. It should be noted that Allie understood that she did not have to close her eyes, but could keep them open in order to speechread and/or use sign language. As indicated previously, during this observation, I noted that Allie

followed the direction and closed her eyes, perhaps indicative of her choice to identify with her hearing peers and perform a hearing identity.

Both of the previous observations indicate that Allie sometimes chose to align herself with her hearing peers by participating in activities in the same way they did, which did not single her out as different. However, there were times when she needed to utilize other modalities in order to participate successfully. One example occurred during a talent show practice when she was in the auditorium with her two hearing peers who were performing with her, one signing and one singing.

I had rehearsed with the three girls in the hallway before they went on stage to perform during the practice. When the girls went back into the auditorium to wait for their turn, Allie led her peers to the center of the front row. She appeared to be carefully choosing her seat and sat with both peers to her left. She chatted with them both, most likely using audition and speechreading; however, since the environment was loud, she was probably relying on speechreading much more than hearing. She did not look to me for support in sign. Here, we see that Allie chose to communicate with her two peers without sign language, which would have been an indication of her diversity. Thus, Allie was identifying with her hearing peers, but most likely used speechreading to support her ability to participate in the conversation. While Allie may have been using a modality that her peers did not need, her peers most likely were not aware of that. Thus, Allie was able to successfully communicate and align with her mainstream peers.

2. Kelsey: Reliance on Hearing

Six observations, one conversation with Laurie, and one email from Mrs. V. were found to indicate that Kelsey was performing a hearing identity. One example occurred

when Kelsey signaled her reliance on auditory information, and thus her hearing identity, by associating a class activity with going to New York for her CIs, as indicated in an email from Mrs. V.

I received an email from Mrs. V. in March. She told me that Kelsey was playing with cars at one of the centers and she made a long, winding row of cars. When Mrs. V. asked her what she had made, she said, “It’s a traffic jam. They’re going to New York to get implants.” Here, Kelsey is indicating how important her CIs are to her as well as how going to New York, which she associates with receiving her CIs, is part of her experience, and thus her identity. (See photo, Appendix F).

This email is indicative of how Kelsey relies on her CIs, as they are discussed during her play activities. In the following example, which occurred during a subsequent play activity, Kelsey recognized the importance of keeping her CIs safe and thus being able to hear.

During an observation in May, I noted that Kelsey was playing with one other student in the class boat. They had fishing poles with magnets on the end and there were letters with magnets on them on the rug. However, Kelsey was trying to fish for her shoe, which had fallen out of the boat. There was moderate noise in this section of the room in front of the smartboard. I was sitting in a chair on the edge of the rug that was in front of the smartboard. I turned on the FM microphone and explained in SimCom that the shoe did not have metal on it, so the fishing pole could not catch it. She said, “It needs a magnet! Watch this! I can fish for my implant!” Before I could stop her, she had taken off her left implant and thrown it overboard and was trying to pick it up with the magnet on the fishing pole. I explained that it was not a good idea because her CI could break and

she said, “Then I need one CI and one hearing aid?” Here, Kelsey recognized the importance of hearing because she thought she would need a hearing aid if she broke one of her cochlear implants. She understood that she needed these devices to help her hear. This is indicative of her concern, as evidenced through the next example, when she could not access auditory information in the pool.

As previously described, Laurie explained during an interview that Kelsey became concerned when they were in the pool area that her CIs were not working. The pool was very loud and Laurie checked the CIs and told her they were working, but Kelsey continued telling her that they did not work. Finally, Laurie told her that she could not hear in the pool area either. Here we see Kelsey’s reliance on audition and her desire to have auditory access, hence identifying as “hearing” and/or “deaf”. Kelsey may have been viewing herself as diverse when she could not hear, but when her mother explained that she could not hear either, Kelsey may have recognized that everyone was likely having trouble hearing in the pool environment. This would further suggest that Kelsey was not identifying as diverse since she recognized that the pool area was a difficult listening environment for her mother as well.

a. Finding Similarities with Others

Two observations and one artifact from Mrs. V. indicated that Kelsey was possibly identifying herself as “deaf”. One example occurred in which Kelsey demonstrated an emergent deaf identity as evidenced through information about a class activity from Mrs. V. In an email exchange with Mrs. V., she told me about a connection Kelsey made to a story that was read in class. I emailed her to clarify. She wrote back about reading the story, *The Farm Concert* (Cowley, 1983) to the class and said,

The book is called *The Farm Concert*.... The farmer needed quiet to sleep. When the animals were quiet, he could sleep because he couldn't hear them. Her connection was she is like him when she does not have her implants; I think she said, 'I can't hear when I don't have my implants' ... but when he can hear, it's like her when she has her implants. AND THEN...later when I read a book where a walrus was wearing a bathing cap... she noticed that his cap came off when he dove into the water. So... 1) there's a great example of her noticing tiny details... and 2) then she said, 'I wear a cap to cover my implants when I swim'. So great."

This example illustrates that Kelsey was making connections to characters in books via their ability, or inability, to hear. While these characters were not deaf, Kelsey may have been identifying with the situation of hearing or not hearing, which she could control by wearing or taking off her CIs. Kelsey does not sleep with her CIs, so she may have been identifying with needing quiet at bedtime, as in the case of *The Farm Concert* (Cowley, 1983), and with being able to wear a CI under her swim cap to have access to auditory information when she swims. Furthermore, she happily shared her connections to the characters with her teacher and peers in a positive way, rather than as something that made her feel different.

In a subsequent observation in May, Kelsey identified with another student who was wearing cochlear implants. I noted that Kelsey entered the preschool classroom after PE while another student with cochlear implants was in the room visiting from another school. Kelsey noticed and said loudly, while looking at me, "She have implants like me!" Mrs. V. said, "I know, you both have implants." I was signing everything being said between the teacher and students using PSE with lip movements. Kelsey watched me

intently, relying on audition, speechreading, and possibly sign language. The intensity with which she watched me may signal Kelsey's desire to ensure she understood everything due to the importance of the situation.

A few minutes later, after the visitor left, the class sat at the tables for snack. I sat beside Kelsey at the snack table. She looked at me very seriously and said, "You know (student). She's deaf". I told her she was right and that she is deaf and she has cochlear implants. Kelsey nodded and smiled. This episode indicates that Kelsey recognized that she was deaf and identified with another student who had cochlear implants. During this observation, Kelsey may have relied to some degree on sign language due to her perceived importance of the situation. These events indicate that Kelsey was aware that there are others who do not hear like her typical peers. Furthermore, she confirmed that there are others, besides she and Allie, who utilize cochlear implants to access spoken communication.

C. Bicultural Identity

As previously indicated, with the exception of Allie relying on ASL when the teacher read a story aloud, both students used some degree of audition during all events that were observed, indicative of their access to auditory information through their cochlear implants, as well as their desire to utilize this modality. While no clear indication of a "DeaF" (McIlroy & Storbeck, 2011) identity was found for Kelsey, there were three observations of Allie in which she indicated her ability to move between an identity that aligned with the majority hearing culture and an identity which aligned with the signing culture, hence performing what McIlroy and Storbeck (2011) refer to as a

“DeaF” identity. The first observation occurred when Allie indicated that she could focus better when running when she did not have her CIs on.

Earlier, it was explained that Allie ran a 5K race with her mother. Laurie recounted that there was a runner who was breathing very loudly and they could not get out of range of hearing this distracting noise, which Laurie stated was upsetting Allie. Consequently, Allie told her mom that she was going to take off her CIs and handed them to Laurie. Allie then went on to run the race faster during the second half of the race. This event indicated that Allie was able to move between the hearing culture and signing culture, moving from one identity to another. Moreover, this observation indicated that circumstances and environmental conditions may support identity shifts within events. While this may signal an identity of difference, it is a positive difference. By taking off her cochlear implants, and therefore eliminating auditory distractions, Allie ran faster in the race. This is something most individuals, like Laurie, cannot do, but Allie discovered that she could.

In Allie’s case, this “DeaF” identity may shift depending on circumstances and the availability of modalities. As indicated earlier, Allie attended a concert in the auditorium. Her interpreter needed to move in order to allow the chorus to assemble on the stage. I told Allie she could look at the interpreter, but she indicated she would speechread the students singing. She began by watching the chorus, indicating her alliance with the hearing community, but quickly looked to the interpreter when she realized she could not speechread the song since it was in a different language. She then primarily watched the interpreter for a majority of the remainder of the song, indicating her possible alliance with the signing community. Nevertheless, when the chorus sang

songs in English, Allie only watched the interpreter approximately 50% of the time, moving between both identities. I also noted that Allie copied some of the signs the interpreter was using, indicative of her interest in sign language and perhaps a positive identity of difference compared to her hearing peers. Here we see that some of the observations indicated that more than one identity was being performed during events.

D. Bilingual or Multilingual Identity

1. Allie: Using Two Languages

Three events were found in which Allie identified as being bilingual. Allie demonstrated that she was a strong receptive and expressive communicator in English as evidenced by her ability to communicate with her peers and teachers under optimal listening conditions, frequently without sign support. However, two events, previously discussed, may indicate that Allie was developing a bilingual identity due to her ability to understand ASL. These two events occurred while Ms. L. was reading *Superfudge* (Blume, 1980) to the class. During both of these observations, I signed in ASL and Allie watched me almost exclusively. This could indicate that Allie recognized that she could understand in ASL, thus signaling a bilingual identity. Moreover, during an interview, Allie verbally indicated to me that she wanted people to know that her family signed without voice and that they were Deaf people. By acknowledging that her family used sign language as a modality alone to communicate, she was indicating her comfort with ASL and thus a bilingual identity.

Allie also indicated her ability to access communicative information presented in ASL during a concert in which a song in an African language was performed. As previously indicated, Allie's interpreter had been given the translation of this song that

the chorus was going to sing. However, when the chorus came onto the stage, the interpreter had to move further to the side which made Allie's line-of-sight more difficult. I told Allie that she could look to the interpreter and pointed in his direction. She told me that she would read the students' lips. However, very soon after this song started, I noted that Allie looked at the interpreter and continued to watch him sign the song in ASL. This was indicative of her comfort with sign language and her decision to employ this modality as a resource. Here, Allie may have indicated a bilingual identity during this concert in which a song was performed in a language other than English and she was able to access it through its translation into ASL. Nevertheless, this could signal that a bilingual and "DeaF" identity were occurring concurrently.

2. Kelsey: Different Ways to Express the Same Ideas

Two events were observed in which Kelsey may have identified as being bilingual or multilingual. The first example of Kelsey performing a multilingual identity may have been evidenced during a March observation in which Kelsey indicated her ability to communicate the same information in three languages.

When I entered the preschool classroom one morning in early March, the kids were playing in small groups. Kelsey had chosen the sand table to play in. I took the FM microphone from Mrs. V. and put it on myself. As Kelsey played, I started by sitting behind her and then moved to her right side, ready to provide sign support if needed. Kelsey noticed that there were velcro numbers behind her place at the sand table. She turned to them, putting her back to me, and started to count, "1, 2, 3, 4, 5, 6", using one-to-one correspondence. The number six was out of order, so she picked up 8 instead and said "6". I said, "Whoa, look closely at the numbers." She stopped and looked at the

numbers. She was not looking at me, just listening. She turned to me and I used SimCom to explain, “1, 2, 3, 4, 5, **6** (emphasizing the 6), 7, 8, 9, 10.” Kelsey turned back, found the “6” and finished accurately. She then turned to me again and said, “I do it in Spanish” and proceeded to count from 1-10 in Spanish. The teacher noticed her doing this and came over to compliment her. We both started clapping for her and she had a big grin on her face. I then said in SimCom, “Can you count in sign?” Her eyes got wide and she said, “yeah”. She counted 1-5 and then looked to me for “6”, which is very tricky, and then finished “7-10” on her own. She said, “I do it three ways!”

Clearly, this could have been an indication of a multilingual identity emerging. Though Kelsey may not have recognized sign language or Spanish as distinct languages from English, she was beginning to recognize that she had different ways of expressing the same ideas. Another example from an observation indicated that Kelsey was recognizing that signing and speaking could be performed in isolation or simultaneously.

In May, I was in the preschool classroom using SimCom with PSE with Kelsey and two other peers Kelsey was playing with. Kelsey was using only spoken English. All of a sudden, Kelsey turned to me and the following conversation occurred:

Kelsey: Why you sign and talk? I was signin last night to Mommy. (*spoken English*)

Kris: voice on or off? (*SimCom with PSE*)

Kelsey: off (*spoken English*)

Kris: What did you talk about? (*SimCom with PSE*)

Kelsey: *moved her fingers as if she was signing fast, but it was like babble*

Kris: What does that mean? (*SimCom with PSE*)

Kelsey: coffee later (*spoken English*)

Kris: coffee later? You don't drink coffee! (*SimCom with PSE*)

Kelsey: *laughed*

While Kelsey was talking about using sign language without voice, indicating that she and her mother were conversing in ASL, she was recognizing that she was understanding sign language as a language all its own, which could indicate the emergence of a bilingual identity. Nevertheless, it was also clear that Kelsey relied on audition to support her comprehension of sign language, while Allie had demonstrated her comprehension of ASL independent of audition or speechreading.

E. Deaf Identity

During this study, both focal participants were attending mainstream classrooms in which they were the only students who did not hear within normal limits. Additionally, both of these students were able to easily communicate through spoken language with peers and adults in the school environment. It is clear that Allie's identification as Deaf, or aligning with the signing community (McIlroy & Storbeck, 2011), was much more pronounced than Kelsey's. Following are examples of Kelsey's early Deaf identity and Allie's growing Deaf identity.

1. Kelsey: An Emergent Deaf Identity

During one event in which Kelsey and I were interacting in her classroom, Kelsey indicated that she used sign language at home with her mother. I asked her if she signed with her voice on or off and she indicated they signed voice off. When I asked her what she and her mother had talked about in sign, she wiggled her fingers, but no identifiable signs were present. Nevertheless, when asked what she had signed to me, she did have a

response, indicating she had wanted to communicate to me in sign alone. While this observation has been previously classified as the emergence of a possible bilingual identity, it could also signify an emergent Deaf identity. Consequently, it could be both. Even though we see an indication that Kelsey had an emergent Deaf identity, this identity performance was identified in only one observation, thus further supporting her reliance on audition. Here we see that, while Kelsey was able to explain that she and her mother used sign language at home with their voices off, she also indicated, through her demonstration, that her expressive sign language skills were still at an early stage.

2. Allie: Owning a Deaf Identity

Seven observations were made during events in which Allie identified as Deaf and aligned with the signing community (McIlroy & Storbeck, 2011). The first example presented is via her clothing. During an observation in March, Allie had been reading quietly at her desk when the timer on the teacher's desk dinged, indicating it was time to start a new lesson. The rest of the class was cleaning up, but Allie had quickly put her book away and was already ready. I noticed her shirt had ASL letters on it. It was a green shirt that said "together" in fingerspelling. The letters were multicolored. We had a very quick conversation in ASL only. I said, "like shirt yours." She said, "thanks, favorite". I asked, "where get?" and she responded "mom friend". I asked, "Mom friend gave you?" She signed, "yes". I signed, "present nice". Here, Allie was wearing a shirt that had ASL letters in bold colors. She was proud to wear the shirt to school where her friends would see it, signifying her as someone who utilizes sign language. While this may have signaled a difference, it also indicated that Allie viewed this diversity as positive.

Moreover, Allie also indicated, in the following example, that she was unique in that she was a Deaf soccer player. At a soccer practice in June, Allie had come up to me during a water break and said, “I was one of the first Deaf kids to play soccer.” I told her that was very interesting. I immediately wondered if this was her attempting to identify as a Deaf individual. I have pictures of several famous Deaf individuals in my office. These include athletes, artists, musicians, and individuals who played a significant role in Deaf culture. While many deaf children play soccer, Allie may not be aware of this. Since Allie was the only Deaf child on her town league for her age group, perhaps she was recognizing that her diversity could be positive.

The following example was perhaps the most significant for Allie’s identity, as she shared her love of sign language with the school community. My final observation for the study occurred on the second to the last day of school. Students who chose to participate in the talent show were able to perform in front of their peers, teachers, school staff, and many family members. There were a total of 64 acts; Allie and her two friends were 60th. The show was outside in the large field where a stage had been erected. One of the interpreters was present. He had worked with Allie and her friends in preparing for the talent show. They planned to sign and sing, “*I Believe I Can Fly*” by R. Kelly (1996). (See Appendix E). Allie and one friend planned to sign the song and the third friend planned to sing along to the recorded version of the song. They only had 2.5 minutes to perform, so they would not be able to sign and sing the whole song, but rather they started with the chorus and then signed and sang the rest of the song.

Allie was nervous as she was getting ready to go on stage. Both of her parents were present and Kelsey had left her class and stood with their parents. I also stood with

them. Allie was fidgeting a bit and looked at me a couple of times with a scared look. I consistently signed in ASL that she would do great and that I could not wait. She nodded her head, indicating her comprehension of my signs.

Finally, it was their turn to go on stage. I sat on the grass with her parents and Kelsey. Her interpreter sat on the grass in front of the stage, in direct line-of-sight of her and her friend who was also signing. The music started and Allie started signing. She appeared to be closing her eyes and losing herself in the music. Was she feeling it? The music was loud. Allie was swaying to the rhythm of the song, possibly hearing it and feeling it simultaneously, and her facial expressions were breathtaking. She had a look of awe each time she signed, "*I believe I can fly... spread my wings and fly away*", slowly demonstrating wings opening and closing, moving higher in the sky. Her expression became more serious as she signed, "*Sometimes silence can seem so loud*", and then she began to smile and nod her head, signaling her belief in the lyrics as she signed, "*There are miracles in life I must achieve, but first I know it starts inside of me.*" Allie performed this song in ASL, and like a true ASL performance, her facial expressions told the story as clearly as her signs did.

I looked at her parents and Laurie was signing the song and Mike was smiling. Kelsey was watching eagerly. As I watched this performance, I started crying and I looked over and her mother was too. I was reminded of a quote by Summer Loeffler in *Deaf Gain: Raising the Stakes for Human Diversity* (2014), "Signing bodies are constantly flowing, expressing ideas, and their faces reflect the emotions as they communicate their thoughts" (p. 446).

Allie and her friends came off the stage and all of their parents were so proud. Allie came over to me and I told her what an amazing job she had done and how proud I was of her. I am sure she could tell that I had had tears in my eyes. She hugged me.

I wrote, “This was my last observation. This song, and the way this eight-year-old girl completely believed in this song, is such an incredible message. Allie and Kelsey can fly and there is no limit to where they can go.”

3. “Deaf” Identity: Is It More Than Being “deaf”?

During an interview with Allie, I asked her if she ever signs with her mom voice off. She told me that they sign voice off in restaurants. She added, “Because I want people to know that we’re Deaf people”. In this way, Allie grouped her mom, perhaps her entire family, as identifying with being Deaf. Her pride in this Deaf identity was evident. However, Allie and Kelsey are the only members of their family who are deaf, or who, without their CIs, are unable to access information auditorily. Perhaps Allie was trying to create what Solomon (2014) describes as a “vertical identity”, an identity “passed down” and shared with her parents (p. x).

Moreover, during a conversation with Laurie, a Deaf identity for both Allie and Kelsey was clear. While I was talking to Laurie on the phone regarding Kelsey’s sign skills, she explained that Kelsey’s receptive skills are good and when she signs voice-off, Kelsey will frequently do the same. Laurie also indicated that Allie sees individuals as signers or non-signers, but this may be her perception of someone’s deafness. As we were talking, Allie came home from swimming class and Laurie asked me to hold on because Allie was signing to her voice off. Here, we see that both Allie and Kelsey are using sign at home, frequently with their voices off. While Allie identified individuals as signers or

non-signers, perhaps instead of Deaf or hearing, she recognized that her mother, the interpreters at her school, and I, are not deaf. Could Allie be attributing a Deaf identity to individuals who use sign language and understand Deaf culture, regardless of their access to auditory information? In essence, does one have to be “deaf” to be “Deaf”?

F. Parent Perspective

My final question for the parents, as was for both teachers, was what surprises them most about Allie and Kelsey. I asked Mike what surprises him most about his children and he said their ability to adapt. He said, “I couldn’t imagine doing some of the stuff that they have to do and the things they have to think about.” Laurie said,

Their resilience. I mean, I think we were surprised with Allie, starting to have the conversations so early about her deafness and how she’s different. And some days she does get frustrated with it. And I think she just wants to understand why she’s deaf and her father and I are not. But at the end of the day, they are both so resilient and it hasn’t stopped them from doing anything. And it reminds me every day, I mean they wake up every day, in this world of ours with a deficit, but it doesn’t slow them down from whatever’s there for them that day. No matter how hard it is, they figure it out.

These parents have provided their children with access to all possible modalities and have supported their decision to use whatever modalities were necessary, at any given time, because Allie and Kelsey need to be in control of their access to communication. As a result, Allie and Kelsey are able to adapt and are resilient. Their identities form and change and they may perform multiple identities simultaneously, but they also recognize that they are successful “Multimodal Users”.

G. Conclusion

Evidence was found throughout this study to support the conclusion that Allie and Kelsey performed different identities at different times and during different situations; sometimes multiple identities were performed simultaneously. Allie and Kelsey identified as hearing, deaf, bilingual/multilingual, Deaf or “DeaF” (McIlroy & Storbeck, 2011). Frequently, these identity constructions were identified in this study via the modalities selected, but it was unclear whether their identity performances influenced their modality selections or whether their modality selections influenced their identity performances.

At various times, both Allie and Kelsey demonstrated their alliance with hearing peers. Because they know they are not able to access auditory information without their CIs, they comprehend that they are deaf, so the terms “hearing” and “deaf”, signaling alliance with the hearing community (McIlroy & Storbeck, 2011), may at times be synonymous attributes for these focal participants. Allie demonstrated her alliance with her hearing peers by her refusal to use the FM system, which set her apart from them. She did, however, readily accept the soundfield system, which benefited every student in her classroom. Allie also demonstrated her alliance with her hearing peers by closing her eyes during a mindfulness activity and by consciously choosing seating that would support her ability to speechread peers in a loud environment while not relying on sign support. Kelsey also aligned with her hearing peers when she described her row of toy cars as the traffic in New York City where she got her CIs, thus giving her access to auditory information. She also verbalized the importance of keeping her CIs safe, signaling her reliance on hearing. Furthermore, Kelsey demonstrated a positive connection to characters in books with regards to their hearing status. Moreover, when

Kelsey saw another student with CIs, she identified with this student as “deaf”, but commented on how they both had CIs, hence they were hearing.

Allie also performed a “DeaF” identity (McIlroy & Storbeck, 2011) when she took her CIs off during a race so as to eliminate a distracting noise, indicating an identity shift within an event. She also relied on her interpreter to understand a song in a different language and copied some of the signs, though she had access to the music auditorily. Moreover, these observations may also be indicative of a positive identity of difference.

With regards to aligning with the signing community, Kelsey demonstrated an emergent Deaf identity when she told me that she and her mother sign voice off at home. Additionally, Allie demonstrated pride in her Deaf identity by wearing a shirt that had ASL printed on it and when she indicated that she was “one of the first Deaf kids to play soccer.” Most significantly, Allie showed the school community that she was proud to be Deaf when she performed a song in sign language. It is also important to note that one of Allie’s classmates also performed the song in sign, providing evidence of the importance of peer support.

Moreover, a bilingual identity was observed when Allie, on more than one occasion, focused primarily on the ASL presentation of a story read aloud to the class, though she had access auditorily, and when she noted that she wanted people to know that her family used sign language. Nonetheless, this could indicate that a “DeaF” and bilingual identity could be occurring simultaneously. Additionally, Kelsey may have identified as multilingual when she demonstrated that she could count from 1-10 in English, Spanish, and sign language. She also may have identified as bilingual when she recognized that both her mother and I sign and speak simultaneously and that she was developing

emergent receptive and expressive sign language skills. Here we see that Allie and Kelsey may have been employing what Garcia and Cole (2014) described as “dynamic bilingualism”, the plurilingual use of languages rather than seeing them as unrelated. Furthermore, Garcia and Cole (2014) explained that language selection is indicative of identity performances, which could suggest a “DeaF” identity for Allie and an emergent “DeaF” identity for Kelsey.

Identities of difference were also noted during this study. While Allie’s rejection of the FM system could have been a negative view of her diversity, she demonstrated that there was a benefit to being able to remove her CIs during a 5K race. Another positive difference was Allie’s assertion that she was “one of the first Deaf kids to play soccer”. Here, she was acknowledging her difference, which was her diversity. Kelsey may have recognized she was needing to perform in ways other students were not when she was encouraged to use the FM microphone with peers, but she also identified positively with characters in books with regards to their ability to hear.

One question I had as I analyzed the data was whether one had to be “deaf” to be “Deaf”. Allie indicated that she wanted people to know that her family was Deaf, though she and Kelsey are the only deaf members of their family. While Allie was indicating her pride in her Deaf identity, she may have been signaling a “vertical identity” with her parents (Solomon, 2014). Additionally, she may have been expressing her belief that one can be “Deaf” if they use sign language and understand Deaf culture, regardless of one’s status of “deaf” or “hearing”.

Nevertheless, upon analysis, by virtue of being in charge of their modality selections, Allie and Kelsey may have been identifying as “Multimodal Users”. These focal

participants knowingly chose and modified their modality selections. Allie and Kelsey are part of a family and school environment that recognizes and celebrates their diversity. They are encouraged to choose modalities and change modalities when necessary. While they may primarily rely on their hearing through their CIs to access communication, they have many different combinations of modalities that they can engage to gain information they may miss auditorily. Thus, by virtue of being agents in their own access to communication, I suggest that they identified as being “Multimodal Users”.

Allie and Kelsey know they are deaf; they know their cochlear implants allow them to hear; they know they can use sign language, speechreading, print, and visual images to support their communication. Most importantly, their agency allowed them to make the modality selections that supported them in each event and they recognized those modalities sometimes needed to be adjusted during events. It was also clear that their identity was developing and, at times, they may have identified with more than one identity depending on the environment they were in. Furthermore, Allie and Kelsey performed their identities in various activities and under different environmental conditions. They consciously chose the modalities that ultimately made them successful communicators. In this way, their identity performances and modality selections influenced each other.

CHAPTER VII

DISCUSSION

A. Introduction

The primary question for this qualitative study was to identify the communicative practices of two focal participants who have cochlear implants and who participate in mainstream environments. The guiding questions focused on identifying the modalities and combinations of modalities these two children utilized, the contexts and environmental conditions that promoted or supported their modality selections, and how semiotics and identity impacted, or were impacted by, their modality choices. Audition, sign language, speechreading, print, visual perception, and tactile perception were the modalities observed. The three most frequently used combinations of modalities were also identified and analyzed for each focal participant. Ethnography of Communication, Multiliteracies, and Social Semiotics provide theoretical frameworks for analyzing the data collected.

B. Ethnography of Communication: Dell Hymes' View of the Data

Using an Ethnography of Communication framework, formulated by Dell Hymes, one considers the effect of language on human behavior (Kaplan-Weinger & Ulman, 2015). Moreover, using this theoretical framework, one examines how and why language forms are learned and used, as Hymes considered language to be a “socially situated cultural form” (Saville-Troike, 2003, p. 253). Thus, “communicative competence”, a concept Dell Hymes formulated, signifies that language learning is directly correlated to contextual and cultural demands (Kaplan-Weinger & Ulman, 2015). Hymes (1972) further declared that individuals determine their success with language based on the

responses from those they communicate with. Consequently, multiple identities can form and change depending on the communities in which language occurs (Kaplan-Weinger & Ullman, 2015).

1. Communicative Competence and Identity

From an Ethnography of Communication theoretical framework, both Allie and Kelsey have developed communicative competence. While Allie went for a period of time without access to spoken language, her communicative competence was revealed by her ability to recognize and react to the movements of her dogs. Furthermore, by following them, she was demonstrating her ability to access information in her environment. In this way, the modality of visual perception performed the function of language. This language form was learned and adopted by Allie as a strategy for understanding information around her.

Additionally, Allie and Kelsey both demonstrated communicative competence in their ability to receptively and expressively use spoken language. Both focal participants demonstrated their desire to improve auditory access in order to use their hearing. Kelsey indicated that she wanted her CIs close to her during naptime so she could put them on immediately upon waking up and she demonstrated her ability to attach her FM receivers which gives her better access to the teacher's spoken language. Moreover, both Allie and Kelsey demonstrated their ability to communicate with peers and adults independently using spoken language. Allie was able to interact with her teacher behind her and answer questions, indicating her understanding. Allie was also able to understand spoken language, perhaps supported by speechreading and line-of-sight, when she and two friends were in the auditorium. This spoken form of language, in both receptive and

expressive communication, was promoted by the use of cochlear implants. While Allie and Kelsey are unable to access auditory information without their cochlear implants, they do access sound with them on. Because they both participate in mainstream educational and extracurricular activities with hearing peers, socially they are empowered to perform hearing identities in order to participate in these activities.

Allie learned sign language because she needed it early on, as indicated by her parents, in order to access communication. Thus, Allie also demonstrated communicative competence in sign language when she was able to ask and receive academic support from me through this modality, when she chose to watch the ASL interpretation of stories that Ms. L. read aloud, and when she watched the sign interpretation of a song sung in an African language. Consequently, it is likely that this has become a modality she utilizes regularly to support her auditory access, generally under less than optimal listening conditions, therefore promoting her communicative competence. While Kelsey was beginning to use sign language, as indicated by her and Laurie describing the use of sign language without voice at home, and watching some of the sign interpretation/facilitation, Kelsey was not yet using sign as a modality by itself. In this way, Allie demonstrated a Deaf identity, while Kelsey's may be emerging in relation to her sign language skills.

2. Why Use Other Modalities?

Ethnography of Communication demonstrates the importance of understanding why modalities are selected. Environmental demands, as identified by an Ethnography of Communication framework, included environmental noise, distance from the speaker, line-of-sight to the teacher and interpreter/facilitator, distractions, and amplification being used. Evidence clearly indicated that, under more difficult listening conditions, both focal

participants chose multiple modalities and changed modalities. Moreover, the contexts in which these factors were present, further supported modality selection.

When receiving directions in the presence of noise and distractions, Allie chose to move closer to the teacher, perhaps as a way to increase her auditory access, but also as a means of greater access to speechreading, rather than looking at the sign presentation. However, under optimal listening conditions and with soundfield amplification, Allie chose to seek clarification in the form of sign language when she did not understand a direction. Here we see that different contexts and circumstances prompted her to seek alternate modalities in order to be successful.

Kelsey demonstrated that her FM system was a great resource to her under less than optimal listening conditions when she was able to understand her teacher's directions through audition alone. Nevertheless, during a swim class, when Kelsey was not able to adequately access auditory information, she used speechreading, but perhaps primarily used her visual perception of other kids completing activities to ensure she understood the directions. Moreover, in the gym during soccer practice, Kelsey watched other kids do the drills prior to her attempt and she looked to her mom for sign support when she realized she missed the coach's direction. These confirming strategies are part of her communicative competence.

Furthermore, quiet conditions and close proximity to her teacher allowed Allie to rely on audition alone to a great degree. However, when unfamiliar vocabulary arose, she sought support through sign language, thus changing her modality selection. Nevertheless, when reading during small groups, Allie focused on audition and print and was able to successfully follow along with her peers. Kelsey, when we were in close

proximity under louder conditions, advocated for me to use the FM microphone. This supported her ability to communicate with me and promoted her language development with a difficult word. Evidence was found that Kelsey's desire to interact with peers increased over the course of this study. Initially, she was seen engaged in more parallel play, but towards the end of the study, she was requesting that peers wear the FM microphone. This is, perhaps, further evidence of her growing communicative competence. Both Allie and Kelsey made choices in these various environments that promoted their success.

When watching videos, it became evident that modality choices were made based on familiarity with the videos and whether characters were live, which allowed for speechreading cues. When the videos were presented on the smartboard, auditory access was improved via soundfield amplification in the ceiling. For Allie, print, in the form of captioning, was also a factor in her modality selections. Sign language was utilized with less frequency when these other modalities were available, perhaps because it would have required that Allie and Kelsey look away from the screen. However, when the word "inch" was used during a video and Allie needed clarification, she turned to me for sign support. Similarly, Kelsey adamantly indicated that she did not want me to sign during one video. However, when an unfamiliar word arose, she looked to me for clarification in the form of sign language and perhaps speechreading. Additionally, Kelsey improved her line-of-sight to see a familiar video, watched, and then participated in signing parts of it. All of these examples support the construction of a "Multimodal User" identity because Allie and Kelsey consciously chose which modalities and combinations of modalities to use in different contexts and under different environmental conditions. Here, they both

demonstrated their desire to understand and made every effort to do so, indicating their communicative competence.

The use of visual perception was another resource both Allie and Kelsey used to varying degrees in different contexts. While Allie relied on visual perception, particularly of her dogs, to gain early access to communication, Kelsey demonstrated her keen visual perception when she noticed a tiny detail on the page of a story Mrs. V. read. While both incidents are evidence of Deaf Gain, they may also indicate how significant the visual modality is to their understanding of language. Here, visual perception is socially situated as both participants wanted access to communicative information. Clearly, there are no hard and fast rules that Allie and Kelsey used to support their communication; they made modality choices and modified their choices when needed. This is also evident in light of a Multiliteracies framework.

C. Analyzing Data Using a Multiliteracies Framework

The New London Group, a group of scholars who met to explore issues of equity and diversity in a changing global technological era (Gebhard & Ives, 2012), created a Multiliteracy pedagogy, which espoused that multimodalities are utilized during all learning (New London Group, 1996). This pedagogy explains that context and culture, along with various language forms, positively impact modality selection. This framework supports promoting each student's unique learning style. Furthermore, learning was seen by the New London Group (1996) as an active endeavor individuals engage in while using multimodalities. The "Available Designs", the modes available to students (Gebhard & Ives, 2012, para 3), are used in "Designing", to make new meanings. These "Designs", when used in new ways, become "The Redesigned". "The Redesigned" then

become new “Available Designs”. (New London Group, 1996, p. 74-76). The New London Group (1996) also identified four factors used in education. “Situated Practice” looks at how knowledge is created within various settings, “Overt Instruction” recognizes how scaffolding is used to provide access to learning, “Critical Framing” allows students to practice their new skills in different domains, and “Transformed Practice” acknowledges the degree of learning for the student and teacher (p. 83-87).

1. A Pedagogy of Designs

This study provides compelling evidence that audition, alone or in tandem with other modalities, was the primary modality utilized by both focal participants. This is significant in light of the fact that both focal participants utilize cochlear implants and have participated in auditory therapy since their hearing losses were discovered. Through interviews, Laurie and Mike indicated that their children primarily relied on auditory information. However, this reliance was seen by both parents as more significant for Kelsey than Allie. It was explained that Allie had gone a longer period of time without consistent access to sound and thus developed more compensatory strategies, such as using visual perception of their dogs to help her alert to cues in her environment. From a Multiliteracy perspective, Allie was using the “Available Designs”, such as the dogs moving, to seek the source of their movement, and by virtue of being successful in responding to environmental cues, this strategy became “Designs” and was used to further access other environmental cues, becoming “The Redesigned”.

Kelsey, on the other hand, was identified earlier and sought her cochlear implants with more frequency and urgency than Allie did. Kelsey did not need to rely on visual perception to begin accessing her environment; therefore, she depends primarily on

audition as her modality of choice. Additionally, since both focal participants attend mainstream programs, their mother indicated that they may seek audition more. Here, the context of interacting primarily with individuals who use spoken language has impacted Allie and Kelsey's inclination to utilize audition through their cochlear implants. In this way, we see the Multiliteracy tenet of context and culture impacting modality selection.

a. Testing Designs

This study indicated that sign language was a modality that Allie and Kelsey used to some degree to support their access to auditory information, but Allie in particular, demonstrated that she was able to use it as a modality alone. For example, during a lesson on telling time, twice Allie asked me in sign language for help. I was able to explain the concept in ASL during both of these occasions and Allie demonstrated her understanding by completing the activity successfully. Here, Allie recognized that sign language was an "Available Design" and she used it to support new learning or new "Designs", which she could then apply as "The Redesigned" when she needed clarification in other academic areas. In a memo I wrote immediately following this observation, I wondered if Allie was using sign language as a way to hide her confusion from her peers since they would not fully understand what we were signing. Furthermore, Allie demonstrated the importance of sign language as a modality when she questioned the difference between two signs. Additionally, Ms. L. indicated that Allie did look to the interpreter for support if she was confused.

Allie also relied on sign language during concerts. On one occasion, I noted that the interpreter had the English translation to a song that was being sung in another language and Allie watched the interpreter almost exclusively. This song was interpreted

into ASL, but Allie had strong enough skills in ASL to be able to understand. She was also seen copying some of the signs the interpreter was using, indicating her enjoyment in using sign language. I did not notice her peers doing this. Summer Loeffler, in *Deaf Gain: Raising the Stakes for Human Diversity* (2014), explains “Although sound is accessible to Deaf people through vibrations of rhythm, sign language can also serve as a medium for bringing the visual rhythm through the ‘window,’ the eyes” (p. 441). This is evidence of how important the sign language modality is to Allie. She recognized that this “Available Design”, using sign language, could be repurposed in order to access information most of her peers probably could not. In this way, sign language became “The Redesigned”.

Allie was observed, on only a few occasions, asking her teacher for clarification. One example occurred when she thought Ms. L. said “89 and 17” when she had said “8, 9 and 17”. Here, the “Situated Practice” of participating in a math lesson became “Overt Instruction” as Ms. L. scaffolded Allie’s learning. She did this by clarifying what Allie misheard by referring her to the smartboard where Allie could access the information herself. Allie could then use this experience as “Critical Framing” in other contexts. “Transformed Practice” occurred for Allie and Ms. L. as they both demonstrated important ways of supporting the exchange of information.

b. Adding Designs

It is important to note that being able to utilize print as a modality can truly only occur after one has attained sound/symbol relationships, as well as basic reading skills. Therefore, Allie utilized this modality much more frequently than did Kelsey. Moreover, Ms. L. nearly always provided access to print, whether on the smartboard, a book, iPad,

paper the students had at their desks, or via closed captioning, thereby making print consistently accessible to Allie without singling her out. This pedagogy of access is part of a Multiliteracies perspective as print is another modality that Allie was able to employ in order to access communication. Moreover, all students were given greater access to instruction via the support of the printed word through a variety of media and modes.

Furthermore, print was a modality that Allie used successfully and occasionally chose over sign language. It is important to note that watching closed captioning allowed her to have a better view of the video she was watching than she would have had if looking between an interpreter and a screen. From a Multiliteracies perspective, this affirms how Allie was able to choose from various modalities and utilize the modality, or modalities, that best supported her access. The “Available Design” of print became a “Design” that Allie chose to utilize when she wanted to have unfettered access to the screen without turning away for sign support. This “Design” became “The Redesigned” when she utilized it in different settings, such as in the auditorium.

While Kelsey was found to utilize combinations of modalities that included print with less frequency than Allie, Kelsey did demonstrate that she was beginning to use sound/symbol relationships to aid her receptive and expressive language. When she mispronounced a word, Kelsey was able to use her beginning knowledge of letter/sound associations, in conjunction with how the word sounded auditorily, how it looked in speechreading, and the signed form of the letter, to correct her speech. In a subsequent observation, Kelsey again used her beginning knowledge of letters/sounds, along with audition, speechreading, and letters in sign, to practice identifying beginning sounds. Her confusion about “Y” starting with a /w/ is indicative of how strong her auditory sense is

when it comes to discriminating individual phonemes. Because Kelsey's teacher spent a great deal of time exposing the students to letter/sound associations through various activities, Mrs. V. demonstrated a Multiliteracy pedagogy that promoted literacy through various play schemes. This "Situating Practice", which occurred during various activities, along with "Overt Instruction", which allowed learning to be scaffolded in order to be transferred to new contexts, allowed for the "Critical Framing" in which Kelsey practiced her emerging skills in different contexts. This resulted in "Transformed Practice" when Kelsey was able to employ sound/symbol relations to improve her articulation. Therefore, from a Multiliteracies perspective, Kelsey was improving her ability to use print as a modality to aid her comprehension.

Additionally, both Allie and Kelsey appeared to be speechreading when the opportunities arose, which was quite frequently. It was not possible to know with any degree of certainty if the focal participants were speechreading their teachers or those whom they spoke with, but they did have a "forced gaze" (Burke, 2014, p. 14), which is an indicator of speechreading. Burke (2014) explained, "I want to suggest that communicating with a constant gaze that is not reciprocal may present interesting implications for Deaf Gain that differ from the experience of signed communication, and that these differences highlight the 'deaf' aspect of Deaf Gain in ways that signed communication cannot" (p. 14). Consequently, this may be an explanation for why both focal participants tended to wait for the person they were speaking with to look at them before they spoke. I noted in my memos that I perceived this as offering the opportunity for speechreading to the other person, but it could have been that, because Allie and Kelsey relied on speechreading, they waited for eye contact in order to improve their own

speechreading abilities. This evidence supports speechreading as a modality that both Allie and Kelsey employed to support their access to communication. Moreover, both teachers were very aware of Allie and Kelsey's need to see them as they spoke and both made a very concerted effort to always face in their direction. This is further evidence of how these teachers understood the modalities that were critical for Allie and Kelsey and made every effort to ensure that speechreading was accessible.

c. Designing Through Touch

It was difficult to know with any degree of certainty when observing, if the focal participants were employing tactile perception as a modality. However, during a violin class, I asked Allie how she was perceiving the song that some of her peers were playing on their violins. Her response was that she was feeling it. She also noted that she used tactile perception when she played the violin, guitar, or drums. In another conversation with Allie, she reported that she could feel movement at night when her CIs were off, alerting her when Kelsey entered the room. Mike confirmed Allie's ability to recognize someone entering a room when her CIs were off and knowing when someone was talking. Mike further indicated that Kelsey, because she may have some residual hearing, did not use tactile perception to the degree Allie did. Nevertheless, Laurie indicated that she believed Allie and Kelsey utilized tactile perception in conjunction with other modalities, but not as a modality alone. Once again, Multiliteracies tells us that context impacts modality selections and promotes its use in different settings.

d. Designing Identities

The Multiliteracies framework lends support to the idea of these focal participants' identity moving between deaf, Deaf, and "DeaF", depending on the

modalities chosen and the situations that prompted the selection. The term “deaf”, with a lowercase “d”, signifies someone who identifies with the hearing society; “Deaf”, with the uppercase “D”, signifies someone who identifies with the signing community; and “DeaF”, with an uppercase “D” and “F”, signifies a bicultural identity as someone moving between both the hearing and Deaf cultures (McIlroy & Storbeck, 2011). Both focal participants performed “deaf”, or “hearing”, identities as they were both observed to participate fully in mainstream classes and communicate independently with teachers and peers. Moreover, the use of the terms “deaf” and “hearing” for these participants, who hear through cochlear implants, may be synonymous for them as both indicate an identification with the majority hearing society, which includes their mainstream peers. Considering a social construction of identity (Moje & Luke, 2009), while Allie and Kelsey frequently performed a hearing or deaf identity, it was unclear whether they saw themselves as different from their peers, or if they saw others viewing them as deaf, thus identifying themselves as “deaf”.

Clearly, Allie is able to rely on sign language. This was evident when she watched the interpreter when a song in an African language was performed and when she watched the ASL interpretation of a book Ms. L. read aloud to the class, both examples of a Deaf identity. Allie may have also identified as Deaf as she performed a song in sign language in front of the school community and when she told me that she was “one of the first Deaf kids to play soccer.”

During one of the interviews with Allie, she and I had a conversation about her cochlear implants in sign language. Here, even though we were discussing her means of

accessing audition, Allie was doing so in sign language, further indicating her ability to move between the identities of hearing and Deaf, perhaps evidence of a “DeaF” identity. Kelsey also indicated that she and her mother signed voice off at home, perhaps an indication of an emergent alliance with the Deaf community. In considering what this says about their identity, they could be viewing themselves as “DeaF” (McIlroy & Storbeck, 2011) and moving between both the hearing and Deaf cultures. Moreover, Kelsey identified another student who had cochlear implants as being like her, but whether as deaf, Deaf, or hearing was unclear. From a Multiliteracy perspective, this is indicative of how context and culture work together to create identities.

Additionally, when Allie indicated that she wanted people to know that her family was “Deaf”, this may suggest a strong Deaf identity as well as her desire for a vertical identity (Solomon, 2014, p. x) with her parents, one shared between the four of them, rather than just her and Kelsey. This could also be Allie’s own concept of sign language being associated with deafness and since her family signs, they own a Deaf/DeaF identity as a family.

It is important to note that Garcia and Cole’s (2014) concept of “dynamic bilingualism”, the plurilingual use of languages, is clearly evident here. Both focal participants utilized standard English and forms of sign language, to varying degrees and frequently simultaneously, throughout their day both at school and at home. Moreover, Allie and Kelsey may have identified as bilinguals or multilinguals because they used more than one language form to express similar ideas. These participants used their agency to determine when and to what degree they would use the languages and modalities available to them. Hence, they used translanguaging, employing all of their

linguistic resources (Garcia & Cole, 2014), and by doing so, affirmed their various identities.

It also should be noted that neither student had to actively request other modalities, as choices were always available. From a Multiliteracies perspective, these teachers created environments where diversity was promoted, which the New London Group (1996) saw as beneficial. Ms. L. and Mrs. V. provided classroom settings in which both students could find success through access to various modalities. Moreover, these modalities were provided to them naturally without drawing attention to them.

D. Applying a Social Semiotics Perspective

The theory of Social Semiotics tells us that communication is necessary for meaning to be made (Kress, 2013). Social Semiotics espouses that agency is needed to select modalities within communicative exchanges (Kress, 2013). Each communicative exchange comes with its own set of modality options and meanings are constructed with agentic choices (Kress, 2013). It is also of significance to note when an individual chooses not to use a modality, as well as when they use a modality, because the individual must make meaning through agentic choices (Kress & Selander, 2012). Furthermore, agentic choice promotes identity formation. This theory is vital for this study as the focal participants demonstrated how they used their agency to actively select modalities in different settings and under different environmental conditions, which influenced identity performances.

1. Identity Through Agentic Choices

During observations, it became clear how important hearing was to both focal participants. We saw Allie choosing to sit under one of the classroom speakers while

watching a video. While her seat was not necessarily the best for line-of-sight of the video, this seat did provide her with the best auditory access. Under optimal listening conditions, Allie was also able to listen to her teacher without using visual cues or sign language. Consequently, Allie demonstrated that she could be very successful with audition alone under the right circumstances. From a Social Semiotics perspective, Allie was making the agentic choice, during these observations, to focus on her auditory modality through her cochlear implants. During an interview, Ms. L. also noted Allie's desire to communicate using speech and audition with her peers. While she may have gained support from speechreading, Ms. L. believed Allie sought the ability to communicate verbally. Thus, this agentic choice, given the mainstream classroom setting, suggests that Allie was performing an identity like her peers, that of hearing.

Similarly, Kelsey, a preschool student, indicated her desire to use audition when going to music class because she wanted to use her FM system there. She further demonstrated her agency in attaching her FM receivers independently. Moreover, Kelsey liked to have her cochlear implants close to her when she napped and indicated that she wanted to be able to put them on immediately upon waking up. These agentic choices confirm Kelsey's desire to hear.

It is clear that audition was the first choice of modality that Allie and Kelsey employed and they generally used the other modalities to support their hearing. Consequently, throughout these observations, both focal participants, because of their cochlear implants, were able to identify as "hearing" within their school environment, though they never at any time specifically made that claim. A Social Semiotics framework suggests that it is by virtue of their communicating with peers and adults

through spoken language, therefore choosing to use their auditory modality, that Allie and Kelsey were performing a hearing identity.

Moreover, there were some contexts in which the focal participants did not appear to use their hearing to its greatest degree. The most significant examples occurred during instances when Allie chose not to use both CIs, or when Allie and Kelsey did not want to use their FM systems, hence limiting their auditory access. On several occasions when Allie did not want to wear both CIs, I had written in memos that her choice for which CI she kept on appeared to be related to where she sat in her classroom. If her right ear was toward the smartboard, where the teacher primarily stood, she wore the right CI, and similarly with the left. When Allie stopped utilizing her FM system, it was unclear whether this was because she did not feel she needed it or she was trying to avoid standing out in the classroom. When specifically asked during an interview, Allie just said she did not want it. However, Allie did like the soundfield system and noted that her friends liked it as well. This led me to believe that not utilizing the FM system was more about an identity conflict and wanting to fit in more with her hearing peers, perhaps wanting to identify as hearing. It could also have been an indication that she saw herself as different and was trying to rectify that. Nevertheless, using a Social Semiotic framework indicates it was Allie's agency in choosing not to use the FM, but accepting the soundfield like her peers, that promoted this hearing identity.

2. Contexts and Agency

As indicated, across contexts in which the focal participants chose modalities, audition was the modality most frequently chosen, whether in isolation or in combination, when the teacher gave directions, when the focal participants worked one-to-one with the

teachers, when they worked with peers in small groups, and when videos were shown. The only exception occurred in multiple observations of Allie listening to a story read by Ms. L. While Allie may have been listening, as well as watching me sign the story in ASL, her reactions to the funny events in the story lined-up with the sign presentation, which was slightly behind the oral presentation given by the teacher, thus indicating her primary reliance on sign language. Here, Allie used her agency to use ASL as her primary modality, though she did have access to the story auditorily. Moreover, it would be very difficult to process these two language systems, spoken English and ASL, simultaneously. Therefore, Allie may have been performing a “Deaf” identity, aligning herself with the signing community (McIlroy & Storbeck, 2011). Though sign language is available in the second grade classroom during all academic activities, Allie’s peers would most likely not have been aware when Allie was relying on this modality as the interpreter or facilitator always stands close to the teacher or smartboard when classroom communication is occurring. Because of this, Allie generally does not need to turn to look for sign support, hence, her choice of when to use sign as a modality would not have been obvious to her peers.

Allie’s agentic use of tactile perception to perceive sound, particularly music or spoken communication going on around her, is explained by Deaf Gain. Here, Allie benefits from what Napoli (2014) described as a heightened somatosensory acuity. Mike indicated this when he explained that Allie could tell he was talking outside her room even though her CIs were off. Allie, during an interview, talked about being able to feel conversations. Kelsey did not obviously use tactile cues, but since she was so young, it was difficult to know. Kelsey was clearly more reliant on auditory information than Allie,

which may have prevented tactile acuity from developing into a modality that she consciously chose.

Speechreading was another modality that Allie was more confident utilizing. She vocalized during an interview that she could lipread and her parents both indicated how successful she was at utilizing this modality, to the point that they could have conversations with her and not realize she did not have her CIs on. Deaf Gain tells us that speechreading is particularly helpful in noise and across distance (Leigh et al., 2014), so Allie may have used this modality more than was noted. While Kelsey utilized speechreading, she was not observed, and was not seen by her parents, as being as strong a speechreader as Allie. This, again, may have to do with her earlier diagnosis and greater dependence and reliance on her CIs. Thus, Social Semiotics indicates that speechreading is not a modality Kelsey chose to employ by itself. It also may be a further indication of Kelsey's identity as "hearing".

3. Socially Constructing Identity

The concept of a social construction of identity (Moje & Luke, 2009) is also important to recognize when using a Social Semiotics framework. This construction occurs both from an individual's view of oneself as well as how one perceives themselves being viewed by others. Both focal participants are in mainstream classes and they make agentic modality selections that their typically hearing peers do not need to think about. Allie was perhaps demonstrating, by not wanting her FM system, that she did not want to stand out to her peers. Nevertheless, she did not appear to hesitate to request my support in the classroom. At times, my support came in a form of sign language, a form her peers could not understand. She also explained that she wanted people to know that she and her

family were Deaf. As discussed earlier, Allie may have been indicating that, while her parents are not deaf, they are able to share a Deaf identity as individuals who sign and understand Deaf culture.

Additionally, Kelsey was becoming more comfortable with peers wearing the FM microphone when she was playing with them and she displayed pride in being able to count in three languages, one being sign language. Kelsey also identified a visitor in her classroom, who had CIs, as being deaf like herself. Whether Kelsey was identifying with this other student as “deaf”, “Deaf”, or “DeaF” is unclear. She did; however, identify as being similar, most likely indicating that they both can hear with their CIs.

Furthermore, Allie signed a song in ASL during the talent show for the entire school community to see. While Social Semiotics tells us that this agentic choice to perform in sign language allowed her to perform her Deaf identity, it could simultaneously be evidence of a bilingual identity emerging. Additionally, Allie occasionally wore clothing with words in ASL and she was proud of it, noting in ASL that the clothing was her “favorite”. In these ways, Allie was further demonstrating a Deaf identity. Moreover, Kelsey performed a multilingual identity when she was able to count in three languages and recognized that she had done so.

All of this evidence could suggest that these focal participants see themselves, and see others viewing them, as “DeaF”, able to move between both hearing and Deaf cultures. It is very important to note that at no time during this study did Allie or Kelsey indicate they identified as having a disability or that they felt others identified them that way. Moreover, while Allie and Kelsey tended to align with their hearing peers, they demonstrated their diversity. This could be seen as their differences, but generally, aside

from the use of the FM system, these differences were positive. For Kelsey, she made connections to characters in stories based on their ability to hear and she became very excited when another student with CIs visited her class. Some examples for Allie included when she described how successful she was at using tactile perception, how she was able to run the 5K race faster without her CIs on, the importance of speechreading, and being, in Allie's words, "one of the first Deaf kids to play soccer." Consequently, Allie demonstrated pride in her diversity.

4. "Multimodal User" Identity

In consideration of identity performances, I think a greater possibility is that Allie and Kelsey view themselves as "Multimodal Users". They both understand that they are deaf and that they hear, unlike their classroom peers, only when their CIs are engaged. In this way, they recognize they are diverse, yet they participate in mainstream classrooms and are both solidly on grade level. They also participate fully in sports outside of school. The only difference is how they access communication, specifically in the agentic modality choices they make. Both Allie and Kelsey have been able to indicate their modality selections at some point in the observations that were conducted, thereby indicating their awareness. A Social Semiotics perspective indicates that these conscious modality choices signal identity performances.

Agentic choices, in which the focal participants chose more than one modality and possibly changed modalities during an event, are indicative of their conscious decision to utilize modalities. Several times it was noted that Allie would be choosing to focus on the teacher's spoken language or a video presentation, perhaps utilizing print or closed captioning simultaneously, but when an unfamiliar word was used, Allie instantly

looked for clarification in sign language. Through a Social Semiotics perspective, we can see that Allie was using her agency and all of the available resources to understand. Similarly, by Kelsey not being first during swim class, soccer practice, or Field Day activities, whether that was Kelsey's choice or the teacher or coach's choice, demonstrates Kelsey's agency in choosing, or being given the opportunity to confirm through vision, what she understood the auditory directions to be.

Consequently, settings and environmental conditions played a significant role in the modalities Allie and Kelsey chose. Therefore, these focal participants' identities were formed and changed under different circumstances; they were not static. They varied depending on Allie and Kelsey's own concepts of accurately understanding communication, or their success in communication, and that was dependent on their modality selections. These examples demonstrate that Allie and Kelsey recognized they use different modalities and are further evidence that they identified as "Multimodal Users". These ways of communicating, not only reside within Allie and Kelsey, but affirm their semiotic systems.

Without a doubt, Allie knew that she needed to access communication in different ways than her typically hearing peers. She recognized that she did not hear as reliably as her peers. She was asked to wear an FM system when no one else in her class did. When she no longer wanted to use the FM system, a soundfield system was introduced to aid her auditory comprehension and she preferred this auditory support. She recognized that she could utilize sign language in her classroom, whether I was facilitating or an interpreter was interpreting. She actively chose closed captioning because it aided her comprehension. She chose seating that was better suited to seeing the teacher, the board,

or those of us providing sign language. She had preferential seating in the auditorium. She also consciously moved herself to have better line-of-sight in order to access what Ms. L. was saying. Similarly, Kelsey also demonstrated her understanding of the need to actively choose seating to give her better access to the teacher and books Mrs. V. read, watch those of us who signed, and ask peers to wear the FM microphone. In addition to an interpreter, Allie and Kelsey also had me in their classrooms for a large part of their days providing support, which further set them apart.

With all of this, neither Allie nor Kelsey ever complained. They did what they needed to do to be successful. Whether they identified as hearing, deaf, Deaf, “DeaF”, or bilingual/multilingual, the results of this study demonstrate that, through a Social Semiotic lens, these focal participants’ agentic modality selections promoted a “Multimodal User” identity, whether by itself or in combination with other identities.

E. Conclusion

It is clear from the data collected, and with consideration of Ethnography of Communication, Multiliteracies, and Social Semiotic frameworks, that the primary modality for these two focal participants was their ability to access language auditorily. While they both utilized sign language to support their hearing to different degrees, these students were primarily auditory learners. It should be reiterated that these two focal participants had different hearing histories, as Allie’s hearing loss went undetected for a period of time, which may impact their individual modality selections. Allie, while more comfortable than Kelsey with her cochlear implants off, still sought to use the auditory modality, particularly with peers in her mainstream classroom. Additionally, it was also

evident that sign language was the greatest aid to Allie's auditory abilities, but Kelsey more frequently selected speechreading and picture/video cues as her secondary support.

The question begs to be asked, has sign language negatively impacted Allie and Kelsey's ability to develop standard English language skills? There is no way to know what their receptive or expressive spoken language skills would have looked like without sign language, as it has been present for them at school and at home. However, given that both focal participants actively participate in their classrooms and communicate easily with their teachers and peers, it is clear that sign language has not prevented them from being able to effectively communicate in spoken English independently. Some studies, such as that conducted by Geers et al. (2011), indicate that children with cochlear implants, who have not used sign language, demonstrate stronger language and literacy skills than those who have used sign language. In contrast, Snoddon (2008) states, and I agree, that the use of sign language promotes stronger expressive language in both the written and spoken forms.

Would these focal participants have stronger auditory discrimination skills without sign language? Again, there is no clear answer because they have always had access to sign language. Some research indicates that children who do not have access to sign language develop stronger speech perception skills (Geers et al., 2017). However, with my experience as a teacher of the Deaf, trained in the oral philosophy, who provides auditory therapy, I would say with great confidence that these students are very skilled at listening under optimal listening conditions with their cochlear implants. Moreover, the evidence in this study demonstrates that, even with access to various modalities, both focal participants primarily use audition. Would these focal participants work harder to

utilize speechreading, print, visual perception, and tactile perception if they did not have access to sign language? Perhaps, but would their success be the same? Again, we cannot know this.

The evidence shows that these students do use many of their modalities when they are available. The key phrase here is, “when they are available”. The evidence shows that this is true for each modality. These students utilized all of their resources and were strong advocates for themselves as evidenced by their ability to utilize various modalities simultaneously. Sign language, whether ASL or PSE, has given them another tool with which to access information and it is a tool that will allow them to move between and among identities of their choosing. Laurie and Mike never wanted their children to feel limited by their deafness. Their choice to have them receive cochlear implants has given their children access to sound, and along with sign language, they have unlimited opportunities to learn and be active members of both the hearing and Deaf cultures.

Finally, this study suggests that an identity that can develop is that of “Multimodal Users”, signifying that the individual recognizes and can identify which modalities they need in given situations. They use their agency to actively choose their modalities and view themselves as able to select what will work best for them moment-by-moment and adjust as needed. Frequently, Allie and Kelsey’s identity performances were identified via the modalities selected, but whether their modality selections influenced their identity performances or their identity performances influenced their modality selections, remains unclear. While they may see themselves as Deaf, they also see themselves as part of their classrooms, interacting with peers and adults, and using supports when necessary. They may “feel music”, “read their lips”, utilize visual

perception, and use closed captioning, but they are choosing to do so. Through my data I am seeing my participants identify as “Multimodal Users”, while they balance their deafness with their status as students in mainstream classes.

Furthermore, both Allie and Kelsey may be developing bilingual identities. Allie was able to utilize ASL to gain understanding when information was not clear auditorily or, as was seen during an assembly, was presented in a spoken language other than English. She also wanted to demonstrate to her peers and school community that she could use sign language. Her performance on the stage during the talent show was representative of her desire to be seen as someone who signs. Kelsey was also showing signs that she may view herself as bilingual or multilingual as evidenced by her realization that she could count in three languages, one of those being sign language. While Kelsey did not appear to utilize sign language to the degree Allie did, it is highly probable that Kelsey will continue to develop a bilingual or multilingual identity given the access she has in school to sign language and other world languages, as well as Laurie and Mike’s commitment to provide any modalities needed at home. This freedom to choose will allow Allie and Kelsey to move between modalities, and perhaps between cultures, as they continue to make agentic modality choices that support their own unique language and learning styles. Whether Allie and Kelsey identify as deaf, Deaf, “DeaF”, hearing, bilingual/multilingual, or as “Multimodal Users”, they are recognizing their incredible abilities. Moreover, they are recognizing that they learn differently, but this difference is their diversity and promotes their agency.

This dissertation began by discussing the different philosophies of the Oralists, who promote spoken language as the primary modality (Van Cleve & Crouch, 1989), and

the Manualists, who support the use of sign language with or without spoken language (Baynton, 1996). This study clearly demonstrates that both philosophies are important for Allie and Kelsey. While their receptive and expressive spoken language skills allow them to communicate independently with their hearing peers, Allie and Kelsey do not hear like their hearing peers. By having sign language as a tool that they could employ, when available and when they chose to do so, they had greater access to all communication. These students also demonstrated how they increased their access to speechreading, print, and visual perception, again, when possible and when they chose to do so. Moreover, tactile perception, perhaps because Allie spent more time without good access to auditory information, was a modality she could employ. Given the examples of how these students chose and implemented modalities, it is clear that both the Oralists and Manualists offer strategies for accessing communication for children with cochlear implants that the two alone cannot accomplish.

At the beginning of this study, a gap in the research field was identified with regards to understanding the various modalities that children who have cochlear implants employ in order to access communication within communicative events. The modalities considered were audition, sign language, speechreading, print, visual perception, and tactile perception. This research clearly demonstrates that these two students, who have cochlear implants, used their agency to choose when and to what degree to employ their various modalities in order to access communication. It also demonstrated that their modality selections influenced, and were influenced by, their identity performances. These students used their agency to choose and change modalities as needed, performing a “Multimodal User” identity alone, or in combination with, other identity performances.

1. Next Steps

Even though this is a multi-case study, the findings are only representative of these two focal participants. Since these focal participants are siblings, they may share many of the same experiences in ways that two unrelated focal participants would not. Additionally, given that their mother is trained in Deaf education and signs fluently plays a significant role in their ability to utilize sign language and develop identities around it. As this study reported, many hearing parents do not develop fluent signing skills (Lederberg et al., 2013), so there are probably few children who would fit this description. However, this study does reveal how supportive sign language can be for these children who have cochlear implants.

Moreover, the significance of understanding the modalities that children who have cochlear implants utilize is twofold. First, some professionals who work with children with cochlear implants, following an Oralist philosophy, believe that it is detrimental to provide sign language to these children because it impedes their ability to develop strong auditory skills (Baynton, 1996; Sorkin et al., 2015; Sugar & Goldberg, 2015). This study shows that sign language, when presented as a resource, supports and complements the child's use of audition. Secondly, professionals who work with these children should share information about the benefits of sign language with parents when they are making the decisions regarding education and support services. As this study demonstrated, sign language can lead to opportunities to be part of a culture that is uniquely theirs, Deaf culture, if they choose it. It comes down to choices. Children, as these focal participants demonstrated, choose which modalities to utilize and become their own best support system. They recognize that they have options and will naturally

employ them. Therefore, I hope this study can lead to an open debate about the merits of providing another resource, sign language, as well as an understanding of all modalities that are available to children who are deaf and have cochlear implants. It is important to give parents the opportunity to choose what they believe, given all of the facts, will be most beneficial for their child.

Another aspect that was not taken up here, but could be part of a future study, is how children who are deaf and use multiple modalities, use predictability to aid their comprehension. Additionally, do these children purposefully provide speechreading opportunities to others since they rely on it? This phenomenon was noted several times in this study as Allie and Kelsey, who rely on speechreading others, waited to speak until the person they were talking to looked at them. This would be interesting to analyze in-depth because, if children are providing speechreading opportunities for those whom they communicate with, does this suggest that speechreading is more important than we may have considered?

2. Contribution to the Field

This dissertation contributes to the field of Multiliteracy studies by demonstrating the vast selection of modalities available to students who are deaf, particularly for those who have cochlear implants and sign. While listening through their cochlear implants was the primary modality choice for both focal participants, this study demonstrates the significance of sign language, speechreading, print, visual perception, and tactile perception as modalities that may support and complement auditory discrimination. This dissertation further suggests that children, when given various modalities, will choose the ones that benefit them most in different listening situations and under different

circumstances. It is my hope that this dissertation can open the door to a new understanding of the benefits of sign language, as well as all modalities available to students who are deaf.

Additionally, I hope that teachers of the Deaf will in-service mainstream classroom teachers on the benefits of classroom modifications in providing access to all modalities. Not only does this study demonstrate the importance of various modalities to support access to spoken communication, this study demonstrates the importance of providing the best possible access to auditory information, including access to appropriate personal sensory devices, reduction of noise and distractions, close proximity to the speaker, and line-of-sight. For these students with CIs to have good access to auditory information in the mainstream classroom, it is important for in-services to include strategies that promote good listening environments and access to other modalities that support and complement audition. Therefore, it is critical for in-services to include the following:

- How a cochlear implant works and basic troubleshooting techniques
- The effective use of FM and/or soundfield amplification
- Strategies to reduce noise levels and reverberation in the classroom
- How to choose seating for students with CIs:
 - for best access to the teacher both acoustically and for speechreading
 - for best access when viewing the board or video displays
 - for best access to see peers when they speak for speechreading support
 - for providing preferential seating for all school-wide events
- Look towards the class instead of speaking while writing on the board.

- Encourage all students in the class to take turns when speaking.
- Identify students by name when they are to answer to afford the child with CIs an opportunity to look at his/her peers, thus providing access to speechreading.
- Use print in all possible activities for children who are able to read proficiently or who are learning to read, including closed captioning.
- Use pictures and videos to support the academic skills being taught.

All of these modifications will support the student with cochlear implants in being a true member of the classroom. It is important to note that teachers of the Deaf should consult with educational audiologists to ensure classroom amplification is appropriate for each student and functioning properly.

My hope is that this dissertation contributes to Deaf education by demonstrating that sign language, speechreading, print, visual perception, and tactile perception support and complement auditory access for a child with cochlear implants. Moreover, this study demonstrated that sign language can support the development of strong agentic skills, as Allie and Kelsey were able to access information, that they missed or that was unfamiliar, in a quick way so as to stay on track with their peers. There were several times that both focal participants sought sign language as a means to address new vocabulary or to reiterate directions that were unclear. Therefore, sign language also supported their receptive and expressive spoken English skills.

In conclusion, each modality is important, and giving children the opportunity to become true agents in their education, and to employ what they need to learn, is key to their success. Ms. L. and Mrs. V. implemented all of these supports in their classrooms. These teachers are surely models for how to promote success in mainstream classes for

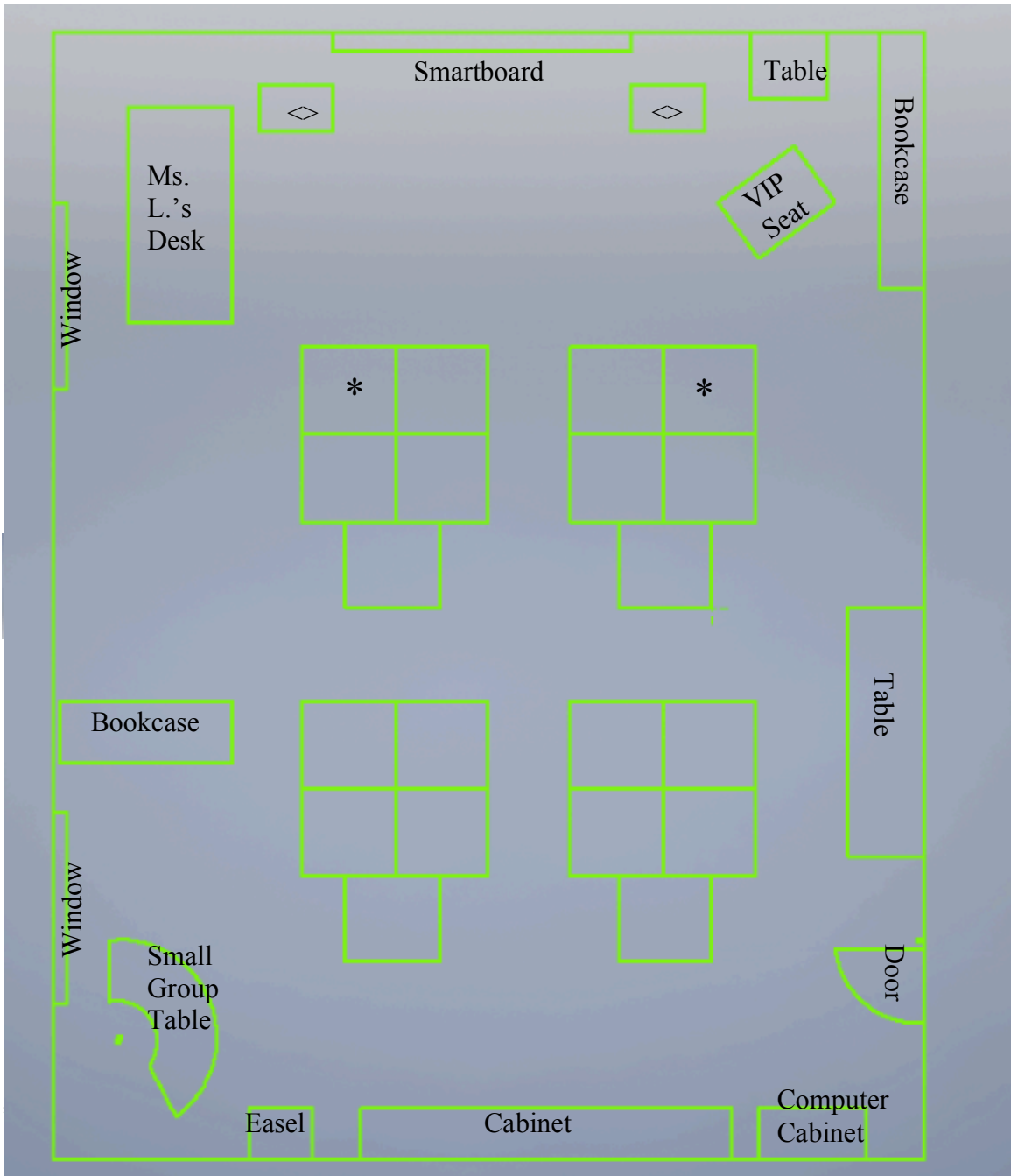
students who have cochlear implants. Finally, this study also demonstrates that students are resourceful and they truly want to be successful. By giving them the tools they need, along with strong support services, these students can achieve academically in equal ways with their mainstream peers.

3. Limitations

The primary limitation for this study was that IRB protocols did not allow for standardized testing on speech perception, speech production, receptive language, expressive language, or academic testing on my two focal participants to be presented. Furthermore, as indicated previously, this researcher did not have access to equipment designed to measure loudness levels in the environments being studied, so judgments, with regards to how loud the environments were, had to be made.

APPENDICES

APPENDIX A
SECOND-GRADE CLASSROOM PLAN

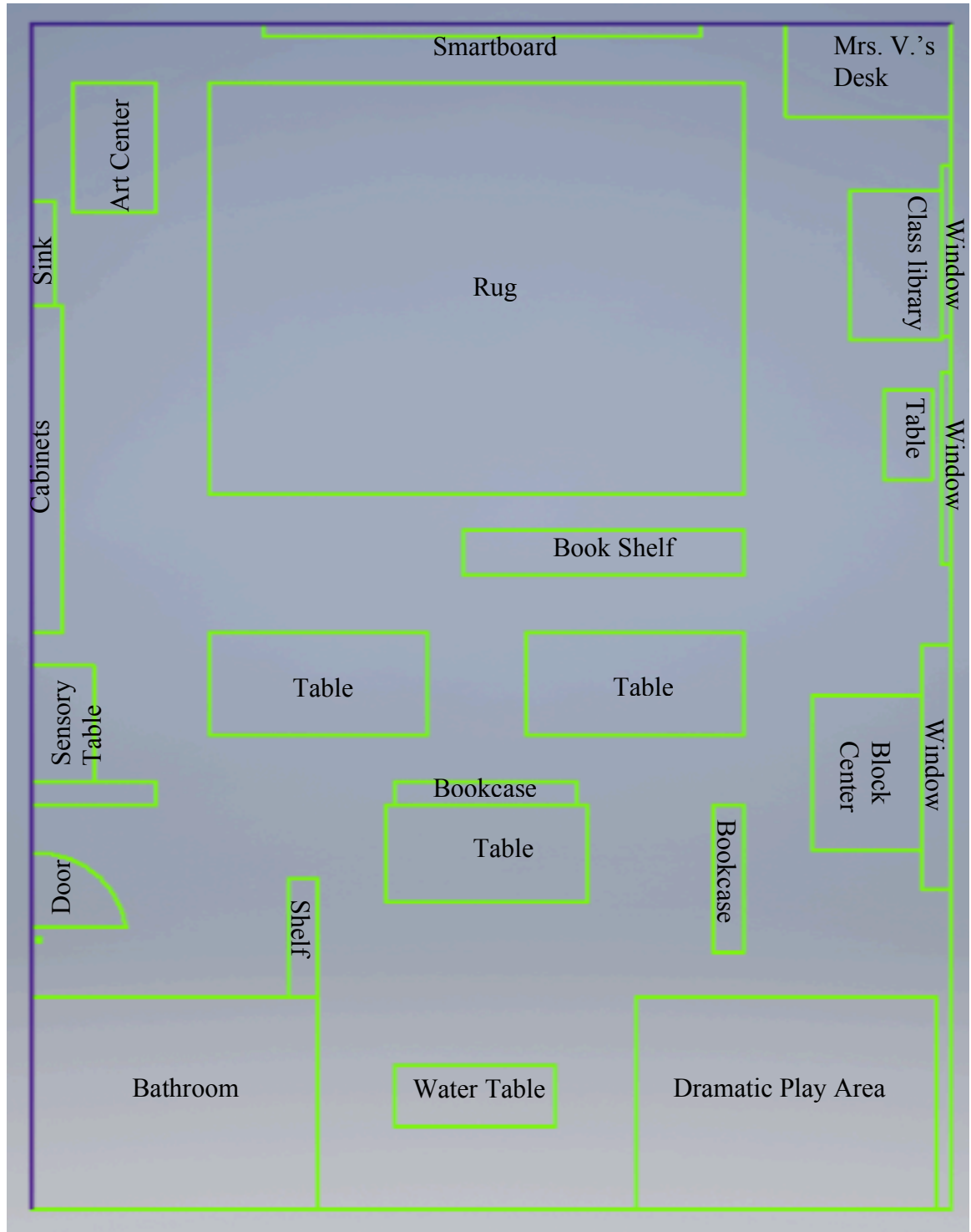


***Allie's seats**

◇Interpreter/Facilitator seats

APPENDIX B

PRESCHOOL CLASSROOM PLAN



APPENDIX C

PARENT INTERVIEW QUESTIONS

1. How much did you know about deafness or hearing loss before your child was born?
2. Is anyone in your family deaf or hard-of-hearing?
3. Did your child pass the Universal Newborn Hearing Screening?
4. When did you first suspect that your child was deaf?
5. Before your child's deafness/hearing loss was confirmed, what made you suspect that she did not hear normally? Was there anything she did to try to communicate or understand communication that you recognized then or can recognize now?
6. Did you know about cochlear implants before your child's diagnosis? What did you know?
7. Did you know sign language before your child's deafness/hearing loss was diagnosed?
8. Why did you decide to have your child learn sign language when she was getting a cochlear implant?
9. What modalities or tools does your child tend to rely on when communicating? (speech, sign language, speechreading, print, visual perception, tactile perception)
10. Under what circumstances does your child tend to change her modality choice?
11. When does your child tend to focus on speech as her primary means of understanding communication and expressing herself?
12. Does your child ever focus on sign language as her primary means of understanding communication and expressing herself? If so, under what circumstances?
13. Under what circumstances does your child tend to focus on speechreading most often? Is this in addition to other modalities?
14. Under what circumstances does your child tend to focus on print most often? Is this in addition to other modalities?
15. Under what circumstances does your child tend to focus on visual perception? Is this in addition to other modalities?
16. Have you noticed any instances when your child focuses on tactile perception to gain information?
17. How comfortable do you see your child being with each of the modalities?
18. Do you do anything in particular to prepare your child for new events (discuss new vocabulary, give background information, watch videos of similar events...)?
19. Which modality, or combination of modalities, do you use most often at home?
20. Does your child have an opportunity to interact with other deaf individuals? If so, what modality/modalities does your child use in these situations? For example, if the deaf individual only signs, does your child use only sign language or does she use speech and sign?
21. What surprises you most about your child/children?

APPENDIX D

TEACHER INTERVIEW QUESTIONS

1. How much did you know about deafness before this student was in your class?
2. Have you ever had a student who was deaf/ hard-of-hearing, or who had cochlear implants, in your class?
3. What did you do to prepare for having a student who was deaf and who had cochlear implants in your class?
4. What modalities or tools does this student utilize most often in your class? (speech, sign language, speechreading, print, visual perception, tactile perception)
5. Are there particular circumstances or settings in school in which this student primarily uses speech for receptive and expressive communication? If so, what are these circumstances/settings?
6. Are there particular circumstances or settings in school in which this student primarily uses sign language for receptive and expressive communication? If so, what are these circumstances/settings?
7. Are there particular circumstances or settings in school in which this student uses print for receptive communication? If so, what are these circumstances/settings?
8. Are there particular circumstances or settings in school in which this student uses visual perception for receptive communication? If so, what are these circumstances/settings?
9. Are there particular circumstances or settings in school in which this student uses tactile perception for receptive communication? If so, what are these circumstances/settings?
10. Are there particular circumstances or settings in school in which this student uses a combination of modalities? If so, what are these circumstances/settings and which modalities does she use?
11. Are there situations that you have seen in which this child changes the modalities she was using? When? (noise in room, lights off to watch video, one cochlear implant not working...) Which modality/modalities does she change to?
12. When this student misunderstands what was expressed, what are some things you have tried to do to help this child understand what was said?
13. Which modality (speech, sign language, print) does this child use most frequently?
14. When there is a miscommunication, does this child try using other modalities? If so, which one/ones?
15. What surprises you most about this student?

APPENDIX E

I BELIEVE I CAN FLY (abbreviated lyrics)

By R. Kelly

I believe I can fly
I believe I can touch the sky
I think about it every night and day
Spread my wings and fly away

I believe I can soar
I see me running through that open door
I believe I can fly
I believe I can fly
I believe I can fly

See I was on the verge of breaking down
Sometimes silence can seem so loud
There are miracles in life I must achieve
But first I know it starts inside of me, oh

If I can see it, then I can be it
If I just believe it, there's nothing to it
I believe I can fly
I believe I can touch the sky
I think about it every night and day
Spread my wings and fly away

I believe I can soar
I see me running through that open door
I believe I can fly
I believe I can fly
I believe I can fly
Hey, cause I believe in me, oh

If I can see it, then I do it
If I just believe it, there's nothing to it
I believe I can fly
I believe I can touch the sky
I think about it every night and day
Spread my wings and fly away

I believe I can soar
I see me running through that open door
I believe I can fly

APPENDIX F

ARTIFACT: KELSEY'S RENDITION OF NY TRAFFIC



BIBLIOGRAPHY

- Anderson, K. L., & Goldstein, H. (2004). Speech perception benefits of FM and infrared devices to children with hearing aids in a typical classroom. *Language, Speech, and Hearing Services in Schools, 35*, 169-184.
- Astin, S. (Narrator). Shannon, D. (Writer). (1998). *A bad case of stripes* [Online video]. New York: Blue Sky Press. Retrieved October 24, 2018, from <https://www.youtube.com/watch?v=cKaQXmRvpvw&vl=en>
- Auer, Jr., E. T., & Bernstein, L. E. (2007, October). Enhanced visual speech perception in individuals with early-onset hearing impairment. *Journal of Speech, Language, and Hearing Research, 50*, 1157-1165.
- Barton, D., Hamilton, M., & Ivanič, R. (Eds.). (2000). *Situated literacies: Reading and writing in context* (pp. 1-218). New York, NY: Routledge.
- Bauman, H. L., & Murray, J. J. (2014). Deaf gain: An introduction. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. xv-xlii). Minneapolis, MN: University of Minnesota Press.
- Baynton, D. C. (1996). *Forbidden signs: American culture and the campaign against sign language* (pp. 1-163). Chicago, IL: The University of Chicago Press.
- Birks, M., & Mills, J. (2015). *Grounded theory* (2nd ed., pp. 1-176). Thousand Oaks, CA: Sage Publications Inc.
- Blom, H. C., & Marschark, M. (2015). Simultaneous communication and cochlear implants in the classroom? *Deafness & Educational International, 17*(3), 123-131. doi:10.1179/1557069X14Y.0000000045
- Bloome, D., Power Carter, S., Morton Christian, B., Otto, S., & Shuart-Faris, N. (2005). *Discourse analysis and the study of classroom language and literacy events: A microethnographic perspective* (pp. 101-158). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Bloor, M., & Wood, F. (2006). *Keywords in qualitative methods* (pp. 95-98). Thousand Oaks, CA: SAGE Publications Inc.
- Blume, J. (1980). *Superfudge* (pp. 1-192). New York, NY: Puffin Books.
- Blume, S. (2010). *The artificial ear: Cochlear implants and the culture of deafness* (pp. 1-219). N.p.: Rutgers University Press.

- Burke, T. B. (2014). Armchairs and stares: On the privation of deafness. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 3-22). Minneapolis, MN: University of Minnesota Press.
- Clark, G. (2003). *Cochlear implantation: Fundamentals & applications* (pp. 1-57). New York, NY: Springer Science+Business Media, Inc.
- Charmaz, K. (2014). *Constructing grounded theory* (Second ed., pp. 1-345). Thousand Oaks, CA: Sage Publications Inc.
- Charrow, V. R., & Wilbur, R. B. (1989). The Deaf child as a linguistic minority. In S. Wilcox (Ed.), *American Deaf culture: An anthology* (pp. 103-115). Burtonsville, MD: Linstok Press.
- Cohen, L. H. (1995). *Train go sorry: Inside a Deaf world* (pp. 1-296). New York, NY: Vintage Books. (Original work published 1994)
- Cope, B., Kalantzis, M., & Smith, A. (2018). Pedagogies and literacies, disentangling the historical threads: An interview with Bill Cope and Mary Kalantzis. *Theory into Practice, 57*(1), 5-11. doi:10.1080/00405841.2017.1390332
- Cope, B., & Kalantzis, M. (2009). 'Multiliteracies': New literacies, new learning. *Pedagogies: An International Journal, 4*(3), 164-195.
- Crandell, C. C., & Smaldino, J. J. (2000, October). Classroom acoustics for children with normal hearing and with hearing impairment. *Language, Speech, and Hearing Services in Schools, 31*, 362-370.
- Cray, J. W., Allen, R. L., Stuart, A., Hudson, S., Layman, E., & Givens, G. D. (2004). An investigation of telephone use among cochlear implant recipients. *American Journal of Audiology, 13*(2), 200-212.
- Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (Third ed., pp. 1-625). Upper Saddle River, NJ: Pearson Education, Inc.
- Cowley, J. (1983). *The farm concert* (2nd ed.). N.p.: Shortland Publications.
- Davidson, K., Lillo-Martin, D., & Pichler, D. C. (2014). Spoken English language development among native signing children with cochlear implants. *The Journal of Deaf Studies and Deaf Education, 19*(2). doi:10.1093/deafed/ent045
- de Saint-Georges, I. (2013). Multilingualism, multimodality and the future of education research: Education in times of change. In I. de Saint-Georges & J. Weber (Eds.), *Multilingualism and multimodality: Current challenges for educational studies* (pp. 1-8). N.p.: Sense Publishers.

- Dettman, S. J., Dowell, R. C., Choo, D., Arnott, W., Abrahams, Y., Davis, A., & Dornan, D. (2016). Long-term communication outcomes for children receiving cochlear implants younger than 12 months: A multicenter study. *Otology & Neurotology, Inc.*, 37(2), 82-95.
- Drennan, W. R., Svirsky, M. A., Fitzgerald, M. B., & Rubinstein, J. T. (2014). Mimicking normal auditory functions with cochlear implant sound processing: Past, present, and future (Third ed.,). In S. B. Waltzman & J. Rolan, Jr. (Eds.), *Cochlear Implants* (pp. 47-60). New York, NY: Thieme.
- Duarte da Cruz, A., Alves Silvério, K. C., Aceituno Da Costa, A. R., Mortari Moret, A. L., Pereira Lauris, J. R., & Tangerino de Souza Jacob, R. (2016). Evaluating effectiveness of dynamic soundfield system in the classroom. *Noise & Health*, 18(80), 42-49.
- Dye, M. (2014). Seeing the world through Deaf eyes. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 193-210). Minneapolis, MN: University of Minnesota Press.
- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic field notes* (Second ed., pp. 1-268). Chicago, IL: The University of Chicago Press.
- Favazza, P. C., Ostrosky, M. M., Meyer, L. E., Yu, S., & Mouzourou, C. (2017). Limited representation of individuals with disabilities in early childhood classes: Alarming or status quo? *International Journal of Inclusive Education*, 21(6), 650-666.
- Garcia, O., & Cole, D. (2014). Deaf gains in the study of bilingualism and bilingual education. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 95-111). Minneapolis, MN: University of Minnesota Press.
- Garcia, O., and Wei, L. (2014). *Translanguaging: Language, bilingualism and education* (pp. 5-18). New York, NY: Palgrave Macmillan.
- Gebhard, M., & Ives, D. (2012). Multiliteracies. In J. A. Banks (Ed.), *Encyclopedia of diversity in education*. Thousand Oaks, CA: Sage Publications.
- Geers, A. E., Mitchell, C. M., Warner-Czyz, A., Wang, N., Eisenberg, L. S., & CDaCI Investigative Team. (2017). Early sign language exposure and cochlear implantation benefits. *Pediatrics*, 140(1). doi:10.1542/peds.2016-3489
- Geers, A. E., Strube, M. J., Tobey, E. A., Pisoni, D. B., & Moog, J. S. (2011). Epilogue: Factors contributing to long-term outcomes of cochlear implantation in early childhood. *Ear and Hearing*, 32(1), 84S-92S. doi:10.1097/AUD.0b013e3181ffd5b5
- Gifford, R. H. (2013). *Cochlear implant patient assessment: Evaluation of candidacy, performance, and outcomes* (pp. 34-52). San Diego, CA: Plural Publishing, Inc.

- Greckhamer, T., & Koro-Ljungberg, M. (2005). The erosion of a method: Examples from grounded theory. *International Journal of Qualitative Studies in Education*, 18(6), 729-750.
- Grosjean, F. (2001). The right of the Deaf child to grow up bilingual. *Sign Language Studies*, 1(2), 110-114.
- Grosjean, F. (2010). Bilingualism, biculturalism, and deafness. *International Journal of Bilingual Education and Bilingualism*, 13(2), 133-145.
- Grosse, S. D., Mason, C. A., Gaffney, M., Thomson, V., & White, K. R. (2018). What contribution did economic evidence make to the adoption of Universal Newborn Hearing Screening policies in the United States? *International Journal of Neonatal Screening*, 4(3). doi:<https://doi.org/10.3390/ijns4030025>
- Gumperz, J. J. (1986). Introduction. In J. J. Gumperz & D. Hymes (Eds.), *Directions in sociolinguistics: The ethnography of communication* (2nd ed., pp. 1-25). New York, NY: Basil Blackwell, Inc.
- Gumperz, J. J., & Hymes, D. (Eds.). (1972). *Directions in sociolinguistics: The ethnography of communication* (pp. v-554). New York, NY: Holt, Rinehart and Winston, Inc.
- Hauser, P. C., & Kartheiser, G. (2014). Advantages of learning a signed language. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 133-145). Minneapolis, MN: University of Minnesota Press.
- Heller, L. (2009). *Today is the birthday of the world* (pp. 1-32). New York, NY: Dutton Children's Books.
- Hott, L., & Garey, D. (Producer). Chowder, K. (Writer). (2007). *Through Deaf eyes* [Online video]. Washington, D.C.: WETA & Florentine Films/Hott Productions. Retrieved from <https://www.youtube.com/watch?v=tJeAG8tZyf4>
- Humphries, T. (2014). Our time: The legacy of the twentieth century. *Sign Language Studies*, 15(1), 57-73.
- Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Padden, C., Rathmann, C., & Smith, S. (2014). Bilingualism: A pearl to overcome certain perils of cochlear implants. *Journal of Medical Speech-Language Pathology*, 21(2), 107-125.
- Hyde, M., Punch, R., & Komesaroff, L. (2010). Coming to a decision about cochlear implantation: Parents making choices for their deaf children. *Journal of Deaf Studies and Deaf Education*, 15(2), 162-178. doi:10.1093/deafed/enq004

- Hymes, D. H. (1972). On communicative competence. In J. B. Pride & J. Holmes (Eds.), *Sociolinguistics: Selected readings* (pp. 269-293). N.p.: Harmondsworth: Penguin.
- Jewitt, C. (2014). An introduction to multimodality. In C. Hewitt (Ed.), *The Rutledge handbook of multimodal analysis* (2nd ed., pp. 15-43). New York, NY: Routledge.
- Johnstone, B., & Marcellino, W. (2010, January). Dell Hymes and the ethnography of communication. *Research Showcase @ CMU*, 1-17.
- Kamberelis, G., & Dimitriadis, G. (2005). *Qualitative inquiry: Approaches to language and literacy research* (pp. 1-162). New York, NY: Teachers College Press.
- Kaplan-Weinger, J., & Ullman, C. (2015). *Methods for the ethnography of communication: Language in use in schools and communities* (pp. 1-181). New York, NY: Routledge.
- Kelly, R. (Performer). (1996). I believe I can fly. On *Space jam soundtrack* [CD]. New York, NY: Atlanta Records.
- Knors, H., & Marschark, M. (2012). Language planning for the 21st century: Revisiting bilingual language policy for Deaf children. *Journal of Deaf Studies and Deaf Education*, 17(3), 291-305.
- Kress, G. (2013). Recognizing learning: A perspective from a social semiotic theory of multimodality. In I. de Saint-Georges & J. Weber (Eds.), *Multilingualism and multimodality: Current challenges for educational studies* (pp. 119-140). N.p.: Sense Publishers.
- Kress, G. (2000). Multimodality. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 182-202). New York, NY: Routledge.
- Kress, G., & Selander, S. (2012, October). Multimodal design, learning and cultures of recognition. *Internet and Higher Education*, 15(4), 265-268.
doi:10.1016/j.iheduc.2011.12.003
- Kretschmer, R. R., Kretschmer, L., Kuwahara, K., & Truax, R. (2010, October). A micro-ethnographic study of the communication/language development in a Japanese child with profound hearing loss before and after cochlear implantation. *Turkish Online Journal of Qualitative Inquiry*, 1(2), 1-17.
- Lakin, P. (1994). *Dad and me in the morning*. Chicago, IL: Albert Whitman & Company
- Lane, H., Pillard, R. C., & Hedberg, U. (2011). *The people of the eye: Deaf ethnicity and ancestry* (pp. 3-33). New York, NY: Oxford University Press.

- Langstaff, J. (1991). *Oh, a-hunting we will go* (pp. 1-32). New York, NY: Aladdin.
- Lederberg, A. R., Schick, B., & Spencer, P. E. (2013). Language and literacy development of deaf and hard-of-hearing children: Successes and challenges. *Developmental Psychology, 49*(1), 15-30.
- Leigh, I. W., Morere, D. A., & Pezzarossi, C. (2014). Deaf gain: Beyond Deaf culture. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 356-357). Minneapolis, MN: University of Minnesota Press.
- Ling, D. (1989). *Foundations of spoken language for hearing-impaired children* (pp. 1-396). Washington, DC: Alexander Graham Bell Association for the Deaf.
- Loeffler, S. (2014). Deaf music: Embodying language and rhythm. In H. L. Bauman & J. J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 436-456). Minneapolis, MN: University of Minnesota Press.
- Mayer, C., & Leigh, G. (2010). The changing context for sign bilingual education programs: Issues in language and the development of literacy. *International Journal of Bilingual Education and Bilingualism, 13*(2), 175-186.
- McIlroy, G., & Storbeck, C. (2011). Development of Deaf identity: An ethnographic study. *Journal of Deaf Studies and Deaf Education, 16*(4), 494-511.
- Mellon, N. K., Niparko, J. K., Rathmann, C., Mathur, G., Humphries, T., Napoli, D., & Handley, T. (2015, July 1). Should all deaf children learn sign language? *Pediatrics, 136*(1). doi:10.1542/peds.2014-1632
- Melton, J., & Higbee, R. (2013). Meeting the communication needs of children with cochlear implants. *Odyssey: New Directions in Deaf Education, 14*, 60-62.
- Mitchiner, J., Berlin Nussbaum, D., & Scott, S. (2012, June). The implications of bimodal bilingual approaches for children with cochlear implants (Research Brief No.6) [Electronic version]. *Visual Language & Visual Learning Science of Learning Center*, 1-12. doi:http://v12.gallaudet.edu/research/research-briefs/english/children-cochlear-implants/
- Moje, E.B., & Luke, A. (2009). Literacy and identity: Examining the metaphors in history and contemporary research. *International Reading Association, 44*(4), 415-437.
- Mudry, A., & Mills, M. (2013, May). The early history of the cochlear implant: A retrospective. In *The JAMA Network*. Retrieved October 10, 2016, from PubMed (doi:10.1001/jamaoto.2013.293).
- Munich, R. (2004). *Smelly socks*. Ontario, Canada: Scholastic Inc.

- Napoli, D. J. (2014). A magic touch: Deaf gain and the benefits of tactile sensation. In F. L. Bauman & J. J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 211-232). Minneapolis, MN: University of Minnesota Press.
- Napoli, D. J. (2014). *Hands & hearts: With 15 words in American Sign Language*. New York, NY: Abrams Books for Young Readers.
- New London Group, (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60-92.
- Nittrouer, S., Lowenstein, J. H., & Holloman, C. (2016). Early predictors of phonological and morphosyntactic skills in second graders with cochlear implants. *Research in Developmental Disabilities*, 55, 143-160. doi:10.1016/j.ridd.2016.03.020
- Nomeland, M. M., & Nomeland, R. E. (2012). *The Deaf community in America* (pp. 1-211). Jefferson, NC: McFarland & Company, Inc.
- Peters, S., (2005). Transforming literacy instruction: Unpacking the pedagogy of privilege. In S. Gabel (Ed.), *Disability studies in education: Readings in theory and method* (pp. 155-171). New York, NY: Peter Lang Publishing, Inc.
- Petitto, L. (2014). Three revolutions: Language, culture, and biology. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. 65-76). Minneapolis, MN: University of Minnesota Press.
- Qutoshi, S.B. (2018, June). Phenomenology: A philosophy and method of inquiry. *Journal of Education and Educational Development*, 5(1), 215-222.
- Reilly, J., & McIntire, M. L. (1980). American Sign Language and Pidgin Signed English: What's the difference? *Sign Language Studies*, 27, 151-192.
- Saville-Troike, M. (2003). *The ethnography of communication: An introduction* (third ed., pp. 1-284). Malden, MA: Blackwell Publishing.
- Senghas, R. J., & Monaghan, L. (2002). Signs of their times: Deaf communities and the culture of language. *Annual Review of Anthropology*, 31, 69-97.
- Shin, S. J. (2013). *Bilingualism in schools and society* (pp. 97-118). New York, NY: Routledge.
- Siegel, M. (1995). More than words: The generative power of transmediation for learning. *Canadian Journal of Education*, 20(4), 455-475.
- Skelton, T., & Valentine, G. (2003). 'It feels like being Deaf is normal': An exploration into the complexities of defining D/deafness and young D/deaf people's identities. *The Canadian Geographer*, 47(4), 451-466.

- Snoddon, K. (2008, June). American Sign Language and early intervention. *The Canadian Modern Language Review/La Revue canadienne des langues vivantes*, 64(4), 581-604.
- Solomon, A. (2014). Forward: Deaf loss. In H. L. Bauman & J. Murray (Eds.), *Deaf gain: Raising the stakes for human diversity* (pp. ix-xi). Minneapolis, MN: University of Minnesota Press.
- Sorkin, D. L., Buchman, C., & Zwolan, T. (2015, July 28). Ethics rounds "conclusion" not supported in the literature. *Pediatrics*. Retrieved from http://pediatrics.aappublications.org/content/136/1/170.abstract/reply#pediatrics_el_69796?utm_source=eNEWS.072115.MedEl&utm_campaign=eNews.072115&utm_medium=email
- Stokoe, W. C. (1976). The study and use of sign language. *Project Muse*, 10, 1-36. doi:<https://doi.org/10.1353/sls.1976.0005>
- Sugar, M. K., & Goldberg, D. M. (2015, July 17). Ethics rounds needs to consider evidence for listening and spoken language for deaf children. *Pediatrics*. Retrieved from http://pediatrics.aappublications.org.silk.library.umass.edu/content/136/1/170.full/reply#pediatrics_el_69868
- Van Cleve, J. V., & Crouch, B. A. (1989). *A place of their own: Creating the Deaf community in America*. Washington, DC: Gallaudet University Press.
- van Nierop, J. W., Huinck, W. J., Pennings, R. J., Admiraal, R. J., Mylanus, E. A., & Kunst, H. P. (2015). Patients with Pendred syndrome: Is cochlear implantation beneficial? *Clinical Otolaryngology*, 41, 386-394.
- Vermeulen, A., De Raeve, L., Langereis, M., & Snik, A. (2012, March). Changing realities in the classroom for hearing-impaired children with cochlear implant. *Deafness & Education International*, 14(1), 36-47. doi:10.1179/1557069X12Y.0000000004
- Walker, L. (1994). *Hand, heart, & mind: The story of the education of America's Deaf people* (First ed., pp. 3-119). New York, NY: Dial Books.
- Ware, L., (2005). Many possible futures, many different directions: Merging critical Special Education and Disability Studies. In S. Gabel (Ed.), *Disability Studies in education: Readings in theory and method* (pp. 103-124). New York, NY: Peter Lang Publishing, Inc.
- Wémeau, J., & Kopp, P. (2017). Pendred syndrome. *Best Practice & Research Clinical Endocrinology & Metabolism*, 31, 213-224.

- Whitmal, N. A., & Poissant, S. F. (2009). Effects of source-to-listener distance and masking on perception of cochlear implant processed speech in reverberant rooms. *The Journal of the Acoustical Society of America*, *126*(5), 2556-2569. doi:10.1121/1.3216912
- Wilson, B. S., & Dorman, M. F. (2008, June 22). Cochlear implants: A remarkable past and a brilliant future. In *HHS Public Access*. Retrieved September 9, 2016, from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3707130/>
- Wolfe, J., & Schafer, E. C. (2015). Programming cochlear implants. In B. Stach (Ed.), *Core clinical concepts in audiology* (Second ed., pp. 93-128). San Diego, CA: Plural Publishing, Inc.
- Woodward, J. (1989). How you gonna get to heaven if you can't talk with Jesus: The educational establishment vs. the Deaf community. In S. Wilcox (Ed.), *American Deaf culture: An anthology* (pp. 163-172). Burtonsville, MD: Linstok Press.
- Zanin, J., & Rance, G. (2016). Functional hearing in the classroom: Assistive listening devices for students with hearing impairment in a mainstream school. *International Journal of Audiology*, *55*, 723-729. doi:10.1080/14992027.2016.1225991