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THE PRAGMATIC ROLE OF CODE-SWITCHING AND SIMULTANEOUS PRODUCTION DURING PLAY CONTEXTS OF BIMODAL BILINGUAL HEARING CHILDREN OF DEAF PARENTS

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CHILDREN OF DEAF PARENTS

by

John Robert Hanson

B.S., Illinois State University, 1999

A Thesis
Submitted in Partial Fulfillment of the Requirements for the
Masters of Arts.

Department of Linguistics
in the Graduate School
Southern Illinois University Carbondale
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THESIS APPROVAL

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Fulfillment of the Requirements

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Master of Arts

in the field of Applied Linguistics

Approved by:

Usha Lakshmanan, PhD, Chair

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Date of Approval-10/26/2012

AN ABSTRACT OF THE THESIS OF

JOHN ROBERT HANSON, for the MASTER OF ARTS degree in APPLIED LINGUISTICS, presented on October 26, 2012, at Southern Illinois University Carbondale.

TITLE: THE PRAGMATIC ROLE OF CODE-SWITCHING AND SIMULTANEOUS PRODUCTION DURING PLAY CONTEXTS OF BIMODAL BILINGUAL HEARING CHILDREN OF DEAF PARENTS

MAJOR PROFESSOR: Dr. Usha Lakshmanan

It is difficult, if not impossible to find another code-switching condition that allows for the production of "simultaneous" language use in communication like that which is found in bimodal bilingualism. In 2002, Bauer, Hall, and Kruth conducted a study that examined code-switching in a play context for a German/English bilingual child. Emmorey, Borinstein, and Thomson in 2005 investigated bimodal bilingualism in adults. However there has not been a study like these for hearing children using ASL/English who have Deaf parents. By applying Bauer, Hall, and Kruth's study as a template for research into code-switching and adapting some of the processes used by Emmorey, Borinstein, and Thomson to research simultaneous sign and spoken language production, a study of hearing bimodal bilingual children of Deaf parents becomes possible. This study uses qualitative analysis of transcribed digital video recordings of two bimodal bilingual subjects that were coded to examine three language use possibilities in two language contexts. The bimodal subjects are capable of spoken English, manual Sign Language, and simultaneous production of both. The results were applied to answer the following questions: What kinds of play activity are the subjects and their adult interlocutors involved in? How do the subjects use their two languages to constitute their involvement in play? When and why do hearing children of Deaf parents

code-switch? And when and why do they perform simultaneous production? The key findings are that bimodal bilingual children are strategic code-switchers/blenders using code selection to best communicate with their interlocutors based on the language environment and to fill lexical gaps or skill level deficiencies between codes.

DEDICATION

I would like to make a few important dedications with this study. First and foremost, I want to dedicate this study to my Mother, Christie L. Reeder, and my Father, Charles R. Hanson. I thank you so much for your patience over the many years of study and all of your love and support while I pursued my dreams. I love both of you with all my heart.

I would also like to dedicate this study to important members of my family. To my brother, Richard J. Hanson, who often views the world differently than I do, and never hesitated to share those views. To Richard's wife, Tizita Hanson, for sharing her home with me when I needed a place to rest and generally putting up with me. To my grandfather, John E. Hanson, thank you for all the shared knowledge and wisdom, love and support. I hope I live up to your legacy. To the rest of my family, extended family, and many many supportive friends I dedicate this to you and thanks for being tolerant and supportive of my efforts over the years. Thank you all for your help and advice. Without all of you, this could never have come to pass. Especially those of you who were supportive and encouraging once I chose to return to academia after such a long hiatus.

Last, but definitely not least, I would like to dedicate this study to everyone and anyone who put up with me couch-surfing all summer long while writing this thesis. If it were not for your providing me shelter and a soft couch to sleep upon, this could have never been completed. Thank you!

ACKNOWLEDGMENTS

I would like to take a moment to show appreciation for the assistance I received in the writing of this thesis. I first would like to thank my Chair, Dr. Usha Lakshmanan, for all her advice, assistance and patience. I also want to thank Dr. McPherron and Dr. Thibeault for also being on my committee and providing valuable support and feedback during the thesis process. I also value all the instruction I received from them while as their student. I would like to thank my mom again, for putting up with all the swearing when something went awry with the word processor, or the cursing while trying to get the pages formatted correctly.

FOREWORD

Recently many Deaf signers in the United States, and researchers into Sign Language, have gotten more precise in their definitions. It is now the case that someone signing in America could be using Signed Exact English (SEE), Pidgin Signed English (PSE), American Sign Language (ASL), or code-switch between them (see Appendix A for greater explanation on ASL, PSE, SEE). Because the subjects in this study are children, and their parents openly admit that they switch between all three within the home, all manually coded language observed in the data have simply been labeled Sign Language. Throughout the thesis, I have chosen to use Sign Language to represent the general overall acts of manually coded language. ASL has been retained when referencing or citing other research studies, as they have indicated the sign used as American Sign Language.

There is also some debate as to the capitalization of the word 'Deaf'. Within the Deaf community there is a rule for it to always be capitalized, and it tends to be capitalized in many publications dealing with Sign Language and the Deaf community. For this reason, the word 'Deaf' has been capitalized throughout the body of work.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Imagine a world of silence – no music, no sounds, and devoid of the human

voice. Now imagine this is your world, and into it comes a new tiny voice - a child's cry,

their first words, a voice you cannot hear. This is more commonly the case for Deaf

parents of a hearing child than many know or realize. According to Quigly and Paul

(1984) they estimate that more than 90% of children born to Deaf parents are hearing.

Despite these numbers, the corpus of research and documentation has not adequately

focused on these hearing children, but instead on the less common Deaf children of

hearing parents. This certainly has been the case, though with so many little voices

ringing in a silent world, you would think more people would open their ears to hear

them. There have been several extensive studies examining Sign Language and

English acquisition in both a bilingual and a secondary language acquisition aspect

across multiple academic disciplines and fields of study ranging from Special Education

to Psychology. Unfortunately, within this vast body of research, the majority of child

language acquisition and second language acquisition studies have primarily focused

on the Deaf child/children of either hearing parents, mixed one hearing parent / one

Deaf parent, or of both Deaf parents. Not only that, but these studies have focused on

the use of Sign Language in the Deaf community, as well as the acquisition of English

for reading, writing, pedagogy, and interaction/integration with the hearing community.

Studies into the acquisition of a hearing child's language in the reduced English input

environment of Deaf parents are far less common. Not only is this a common situation,

but according to Emmorey, Borinstein, and Thomson (2005), the majority of bilingual

studies have limited their investigations to two spoken languages. This in turn indicates that there has been little work done delving into the bimodal bilingual aspect of code-switching, and even less probing into the unique opportunity a bilingual of spoken language and manual Sign Language offers. It is difficult, if not impossible to find another code-switching condition that allows for the production of "simultaneous" language use in communication. It is this unique condition of modality that allows this to occur. This is not to say that there has not been some study on hearing children of Deaf parents.

Aspects of Previous Research

In 1992 Jeanne M. Johnson, Ruth V. Watkins, and Mabel L. Rice published an article in Applied Psycholinguistics titled "Bimodal bilingual language development in a hearing child of Deaf parents." In this study they had the opportunity to observe the case of a hearing child of Deaf parents and conducted a research study based upon the features of "bimodal, bilingual" language development, a term that they attribute to the works of Bernstien, Maxwell, & Matthews (1985); Kessler (1984); and McLaughlin (1984). Emmorey, Borinstein, and Thomson (2005), go further to define that "unimodal" bilingualism intrinsically contains an extreme production constraint because no single individual is capable of physically producing two spoken words or phrases at the same time. This indicates that for unimodal bilinguals, there is a single output channel for both languages. They proceed to indicate the contrast, defining that for bimodal bilinguals, there are two output channels: the vocal tract and the hands. While Johnson, Watkins, and Rice's study certainly is a valuable contribution into the study of the bimodal bilingual aspect of American Sign Language (ASL) and English speaking child in an

input deprived environment, their study focuses more on inter-language transfer conditions of ASL's influence on English Language grammatical development. Johnson, Watkins, and Rice (1992) saw the concurrent development of ASL and spoken English is of interest because of three major factors. The first factor they noted was that the two languages differ in linguistic features and thus inter-language transfer or interaction can be identified. Another area they attribute of interest is that ASL and English are transmitted in different modalities that use a different combination of skills than usually observed in bilingual development. This factor will be particularly important when analyzing code-switching between the spoken English and manual communication of Sign Language as there would not be phonological transfer, but aspects of morphology and syntax transfer. The third factor they identified is that ASL has only recently been recognized as a language, and previous research might not have factored this into the studies as a case of bilingualism. While these three factors are as Johnson, Watkins, and Rice claim, interesting, their study did not evaluate the simultaneous production nor the adjustment or recognition of the contextual language environment. Their research did not focus on how the child used code-switching to participate in different conversations. Of course one would hypothesize that in a Deaf environment the child would be more likely to choose the manually coded signed language modality, and vice versa in the case of a hearing environment. It would be accurate to say that predicting how that child will code-switch in a mixed/simultaneous environment will be much harder to pinpoint. Johnson, Watkins, and Rice focused more on how the two languages interacted with each other on more of a language development and error production context. Having grown up in the environment of a Deaf child of hearing parents, I have

had exposure to certain facets of Sign Language and English bilingualism as observed in my Deaf brother's language acquisition, as well as my own, and that of our parents. It is because of this exposure and experience that I share a similar interest to Johnson, Watkins, and Rice. However, through my experience, I also observe a need to examine these other areas of code-switching that have not been addressed. This leads us to another study that was conducted by Bauer, Hall, and Kruth in 2002 and published in *The International Journal of Bilingualism*. Their study observed a bilingual child of English and German, and the child's code-switching in play contexts. Bauer, Hall, and Kruth's (2002) findings revealed that the child took part in three different play activities such as shared-role, adult as leader, and child as leader, which provided her opportunities to use different language functions to realize similar kinds of play. They noticed that there were subtle differences in her language use during play in both English and German play events, which they felt suggested that through her interactions with different interlocutors in play she was learning and rehearsing different communicative skills in both languages. Their findings suggest that involvement in play activities with adult caregivers can result in the development of pragmatically differentiated bilinguals both in terms of code use and language functions (Bauer, Hall, and Kruth, 2002). It is my belief that the application of their methodology would allow us to bridge the gap in understanding how and when a hearing child of Deaf adults will code-switch. It would be expected to observe a lot of similarities in the results compared to Bauer, Hall, and Kruth's analysis. However, as presented earlier, the Sign Language and spoken English bilingual has the bimodal and simultaneous abilities which create a less predictable condition. It has been observed that the ability to use at least one other

language in addition to one's first language is a common occurrence among the majority of language users around the world. However, early research on bilingualism and bilingual development assumed the monolingual user as the norm (Grosjean 1985, 1989). This perspective assumed that bilinguals had "two separate and isolable language competencies" (Grosjean, 1989, p. 4), which are "similar to those of the two corresponding monolinguals" (ibid.). According to Nicoladis and Genesee (1996), One foreseeable consequence of such a viewpoint, is that the use of two different codes by children both within and across utterances was interpreted as a stage of carelessness, interference, or lack of ability to differentiate the two languages. As more research into bilingualism has been conducted, these views have changed. The bilingual is now being viewed as "NOT the sum of two complete or incomplete monolinguals; rather, he or she has a unique and specific linguistic configuration." (Grosjean, 1989, p. 6). Recent research has indicated that bilinguals differ from monolinguals in their use of both language codes when communicating with others. Why is this important? Because within this shift in perspective, we can observe the hearing child of Deaf adults as not being the same as a monolingual speaker of Sign Language or English. Thus the study of such a child needs to focus on examining language use from the perspective of how they use both languages and when, when communicating with others. With adults code-switching is more a choice, or indication of their language skills in both languages. Adult bilinguals appear to be in tune with the setting and environments in which to apply a given language, and when to code-switch. Within Bauer, Hall, and Kruth's (2002) study they have stated that to better understand the process by which bilinguals develop these communicative skills and abilities, that previous research must be examined to

analyze the various roles played by code-switching among children being raised with two languages. According to Nicoladis and Genesee (1995), findings from this research can be explained in two ways. The first examines the reasons for code-switching in children's cognitive needs, indicating that children are strategic code-switchers, changing from one code to another when they do not know a word in one language, or there is no direct translation equivalent. "It has been observed that children dominant in one language have been shown to switch codes when they use the weaker language" (Genesee, Nicoladis, & Paradis, 1996). According to Bauer (2000) this has extended the discussion on the cognitive functions of code-switching among children. Her own findings suggest that young bilinguals code-switch systematically based on how they approach specific literacy tasks; that is, the demands of the text, the children's encoding of the text, and the children's reading goals influence their code-switching. The last finding examines code use from an interpersonal or social lens. Bauer, Hall, and Kruth (2002) note that many studies have evaluated the links between children' code use and their interlocutors' language. They found that by examining the code used by bilingual children with their parents, that although language dominance explained the use of different codes by very young children when interacting with their parents, somewhere around the age of two, children's language use depended more on the language their parents used (Nicoladis and Genesee, 1996) Children tend to adapt their language code to that used by their parents at a greater rate than would be expected by their relative dominance in that language. Bauer, Hall, and Kruth (2002) go on to restate code choice by bilingual children suggests that children switch languages depending on what they infer is the preferred language code of the interlocutor (Meisel, 1994). Thus,

even young bilinguals display a sensitivity to the sociocultural norms and expectations of their communicative contexts (Genesee, Nicoladis, & Paradis, 1995).

Why Research Code-switching and Simultaneous Production?

The gap in previous research can be identified first by the lack of abundant research into the specific case of hearing children of Deaf parents in contrast to the more common research into the opposite condition of Deaf children with hearing parents, or just Deaf children's language development in general. Secondly, and perhaps the most critical gap, is that of the unique opportunity provided by the bimodal style of bilingualism. Very little study has been made of simultaneous production in the bimodal case of spoken English and Sign Language. Case in point, almost all traditional bilingualism studies have focused on cases of purely spoken languages in which code-switching is common, but simultaneous production is physically impossible.

As stated, there has been limited research performed on the hearing child of Deaf parents, and there are some questions/concerns that arise from them. While Johnson, Watkins, and Rice's study certainly is a valuable contribution into the study of the bimodal bilingual aspect of a Sign Language and English speaking child in an input deprived environment, their study focuses more on the effects than that of the cause. Bauer, Hall, and Kruth's study focuses more on the cause by investigating when a child chooses to code-switch, but their study is limited to a bilingual hearing child using English and German, and does not examine the bimodal and simultaneous aspects available in the Sign Language and spoken language context.

While the questions about these previous studies do not indicate a problem per se, as it relates to this study, it does however identify a need for additional research to

fill the gap realized by the void discovered by reviewing these studies. There is a need to better understand this area of simultaneous production that only occurs in this bimodal context. There also exists a need for a better understanding of bimodal bilingualism in hearing children as opposed to the more commonly researched case of bilingualism and language production of the Deaf child.

After examining the concepts presented from the mentioned research, it can be realized that Bauer, Hall, and Kruth's study can provide useful direction in helping identify when, where, and why a bilingual hearing child of Deaf adults would choose to use one code over the other, and even perhaps better explain the conditions and settings of simultaneous production that is unique to this case.

Contribution

The purpose of this research is to examine the language use of hearing children, raised bilingually in American Sign Language and English. Specifically, the study will focus on their use of code-switching and simultaneous language production. By doing so this research can fill the significant gap by adopting the Bauer, Hall, and Kruth's study focus and methodology, and adapting it to research the case of a bimodal bilingual hearing child whose languages are Sign Language and spoken English. By adjusting the scope and method, an investigation into the bimodal simultaneous sign and spoken language production can be made possible. The play context from their study will also be adopted. In addition the data transcription methods used by Emmorey, Borinstein, and Thomson's study, as well as their processes of identifying grammatical categories and semantic equivalencies of ASL-English code-blends will be applied to this study.

It is now necessary to specify the proposed research questions to be investigated in this study. In this case, two main pragmatic questions have been used to define this study. The first question asks what kinds of play activity is the hearing child and their interlocutors involved in? The second question asks how does the hearing child use the two languages to constitute involvement in play? By trying to answer these two questions, the results should also provide further information in regard to when and why do hearing children of Deaf parents code-switch, and also when and why do they perform simultaneous production.

This study is limited to hearing children of Deaf parents, between 2-5 years of age, within Illinois whose home environment contains a reduced or limited spoken English environment, and within a single family unit. Due to time based limitations, the scope of the study will be limited to a single family sample as opposed to multiple children from multiple families, or larger sample group. Also because of these limitations, a longitudinal study as was performed by Bauer, Hall, and Kruth's is not possible, so the methodology must be adapted towards a short term case study. Since this study does not allow for long term data collection, it will focus more on qualitative methods using this smaller sample size than the quantitative methods that is often associated with larger data samples.

Importance of the Study

Emmorey, Borinstein, and Thomson (2005) offer that bimodal bilingualism offers a unique perspective from which to study the temporal and linguistic constraints on code-mixing, the semantic, pragmatic, and sociolinguistic functions of bilingual communication, and the impact of bilingualism on language production in general. Also

Bishop and Hicks (2005) in their study into bilingualism of hearing adults of Deaf families state the following:

> Hearing bimodal bilinguals have been missing to some degree from the body of linguistic research on bilingualism, perhaps because of the relatively recent recognition by the linguistic community that Sign Languages are complete human languages. Bilingual studies of hearing people from Deaf families offer researchers a chance to see a simultaneous production of two distinct languages that is obviously quite different from the bilingualism of people with two spoken languages. (p. 189)

This study focuses on this interesting and unique area of bilingualism and provides further insight into the area of simultaneous production and bimodal bilingualism. This study is valuable in that it adds more to the research repository for an area of study where research has been sparse and more research is needed to better understand how bimodal bilinguals use language in real-world everyday communication.

Thesis Outline

This thesis consists of six chapters. Preceding this introduction, Chapter 2 presents key terms and definitions as they have been shaped by previous research to provide a background to the key concepts associated with this investigation. This background will also establish the principle conditions and views, as well as further examining the gap this research seeks to fill.

Chapter 3 provides the methodological approach applied to this study. This chapter identifies the context of the study, the key participants integral to the study, discusses the language contexts involved, outlines the process of data collection, and presents the process and procedures used for data analysis.

The primary findings that have been achieved though analysis of the research data shall be exhibited in Chapter 4. Here the final results of qualitative research

techniques will be rendered. In addition the outcome of content and some quantitative analysis of the transcripts and interview data will also be addressed.

Chapter 5 will encompass an account on the resulting findings and discuss how those findings have been interpreted. These will be reviewed in relationship to the proposed research questions and previous research.

The final chapter, Chapter 6, will provide a summarized recap to concisely restate key concepts and conclusions of this research. It will also address the research implications and limitations of the study as well as offer potential recommendations to address these limitations.

CHAPTER 2

BACKGROUND

This chapter outlines and defines the key terms and concepts that are required for a full understanding of the underpinnings of this research. The key terms and concepts presented here are: bilingualism, bimodal and why is it significant, code-switching defined, simultaneous production and how it's importance, play context and how to children code-switch, and the reduced input environment.

Bilingualism

The first key concept to evaluate is bilingualism. Gass & Selinker (2008) note that bilingualism is a broad term, and has many forms and configurations depending on the discipline, or even the researcher. They note that sometimes the term has been used in the looser meaning of multilingualism, and at times the very precise definition of the mythical perfect mastery of two languages. Peter Matthews (1997) in *The Concise Oxford Dictionary of Linguistics* defines 'bilingualism' as having an effectively equal control of two languages. Though he does indicate that this definition is limited and should be extended to the command of two or more languages. This command of language also does not necessarily require equal control of those languages. Thus specification on the type of bilingualism is often indicated using terms such as 'ambilingual' or 'equilingual' to represent the traditional sense of equal control, or sometimes they are referred to as 'full', 'true', 'ideal', or 'balanced' bilinguals. Francios Grosjean also presents his own definition in his book *Bilingual: Life and Reality*. He states that his take on Bilingualism is that "Bilinguals are those who use two or more Languages (or dialects) in their everyday lives." (Grosjean, 2010, p. 4). Grosjean (2010)

notes three key points to his definition of bilingual: everyday use, dialects along with languages, and two or more languages. He goes on to identify the often asked question of "why not use 'multilingual'?" and answers with the identification that the standard and long standing tradition within the linguistics field has used 'bilingualism' to indicate individuals who regularly speak two or more languages. Also Grosjean's definition takes a broader view of bilingualism in that that there is no reference to equal control or proficiency between the languages. Einar Haugen (1969), whom many view as one of the fathers of bilingual research stated:

> Is it possible to keep the patterns of two (or more) languages absolutely pure, so that a bilingual in effect becomes two monolinguals, each speaking one language perfectly but also perfectly understanding the other and able to reproduce in one the meaning of the other without at any point violating the usage of either language? On the face of it one is inclined to say no. Hypothetically it is possible just as a perfectly straight line or perfect beauty or perfect bliss are theoretically possible, but in practice it is necessary to settle for less. (p. 9)

From this statement, it highlights the need for Grosjean's more fluid definition to encompass more than just a narrow concept of balanced equal control of all languages involved. This allows for a more realistic variable proficiency allowed within the terms of being bilingual. To emphasize the shift away from fluency definitions, Weinreich (1968) and Mackey (1962), are cited as scholars in the later half of the twentieth century who agree with this view. They took a loose definition of bilingualism to be the alternate use of two or more languages. It is important for this study to understand that this non-proficiency based definition of bilingualism is to be used to identify the subjects as bilinguals. This is especially important when you consider that the subjects for this study are children whose language skills are still developing, thus a more rigid balanced bilingual label would be harder to apply especially since the study also includes a

reduced input environment for the spoken English. There will be variation in proficiency levels between the languages of the bilingual subjects. This leads into the next core topic of bimodal bilingualism, since the subjects of this study are bimodal.

Bimodal

So what does it mean to be bimodal? In the introduction chapter the 1992 Johnson, Watkins, and Rice study into bimodal bilingual language development in a hearing child of Deaf parents was reviewed. It was noted in this study, that they had the opportunity to observe the case of a hearing child of Deaf parents and conducted a research study based upon the features of "bimodal, bilingual" language development. The term 'bimodal, bilingual' they had attributed to the works of Bernstien, Maxwell, & Matthews (1985); Kessler (1984); and McLaughlin (1984). From these works they defined bimodal bilingualism as a form of bilingualism that occurs in communication that make use of two modes. The first mode being manual communication, and the second being vocal production of spoken English. Bimodal bilingualism is unique because of it is a rarity in comparison to what Emmorey, Borinstein, and Thomson (2005), define as "unimodal" bilingualism. In their presentation, unimodal bilingualism intrinsically contains an extreme production constraint because no single individual is capable of physically producing two spoken words or phrases at the same time. This indicates that for unimodal bilinguals, there is a single output channel for both languages. They proceed to indicate the contrast, defining that for bimodal bilinguals, there are two output channels: the vocal tract and the hands. In the bimodal bilingual the restraint on production does not exist as it does with the single output channel unimodal speaker. So while the standard observations of bilingualism exist, with manifestations of code-

switching, the bimodal bilingual adds an additional unconstrained opportunity to produce both languages simultaneously. Before discussing the importance of simultaneous production, first code-switching must be examined.

Code-switching

Matthews (1997) defines 'code-switching' (sometimes referred to as 'code-mixing') as switching from one language, dialect, etc. to another language, dialect, etc. In his further example and explanations he indicates some difference between code-switching and code mixing. The former usually represented by a conscious choice to switch languages to achieve a specific purpose, where as the later he views as a fluid frequent switching to and fro with no specific externally influenced reason for the language switch. More specifically he goes further to define what linguists mean by the term 'code' as any distinct variety of language. Grosjean (2010) defines 'code-switching' as an alternate use of two languages, where the speaker switches to another language for a word, phrase or whole sentence before returning to the original language. In terms of code mixing, code-switching can be viewed as sequential mixes, where one language is stopped and another begins in sequence. Gass & Selinker (2008) simply state that code-switching is a common phenomenon amongst bilinguals, and that the term itself refers to the use of more than one language during a conversation.

Now that the definition of code-switching has been addressed, we can asses why it occurs. Grosjean (2010) gives a number of reasons why a bilingual would code-switch. He cites a primary reason as that certain concepts or ideas can be better expressed by one particular language than the other. Thus a speaker may chose to switch for the purpose of ease of expression. Another reason to code-switch between

languages is to fill a linguistic gap in one of the languages. In this case perhaps a word or concept just does not exist in one language, where as it does in the other. In this case if both interlocutors understand both languages, it is much easier to use the expression that is mutually understood, than to use a lengthy explanation in the language that is missing the particular word or expression. Grosjean notes a third reason for code-switching being that of a communicative or social strategy. This could be done to indicate the interlocutor's involvement, mark group identity, exclude someone, raise the interlocutor's status, or show expertise. To give some examples, often two bilinguals may code-switch to the non-dominant language to exclude others around them and give them a sense of privacy in their conversation. Say two Japanese-English bilinguals are in an elevator in the United States, speaking in English. The elevator stops on a floor and a number of monolingual English speaking businessmen get on the elevator... the bilinguals may choose to code-switch into Japanese to exclude the other people in the elevator from their conversation. Gass & Selinker (2008) think that code-switching sometimes occurs because of the lack of a concept in one language and that concept is existing in the other language, the conveyance of humor that may be exclusive to a particular language, or perhaps even just the conventions of a particular social context. Paul Preston (1995), an English-ASL bilingual, in his interviews with other English-ASL bilinguals states that they would mostly use English, but would occasionally code-switch to ASL. He cited the reasons for this code-switching to occur when his informants felt that a sign better expressed a concept, they could not quickly think of the English word, when paraphrasing a Deaf individual, or when they became emotionally unable to speak. However, there are some who feel there is another term is

of importance when addressing the English-ASL bimodal bilingual, and that is of code-blending and simultaneous production.

Code Blending & Simultaneous Production

Emmorey, Borinstein, and Thomson (2005) noted in their findings on bimodal bilingual studies that instead of producing code-switches that are common amongst unimodal bilingual speakers, bimodal bilinguals produced what they termed code-blends. Code-blends they defined as a condition in which ASL signs are produced simultaneously with English words. In their studies they found 95% of ASL signs co-occurred with English words in this code-blending. Code-blending can then be interpreted then as simultaneous mixes, as opposed to the sequential mixing found in code-switching. Emmorey, Borinstein, and Thomson also examined the semantic equivalency of code-blends and found in their results that 94% of the ASL signs were semantically equivalent to the accompanying spoken English production. Their study not only examined the semantics of code-blending, but also the syntactic aspects as well in the form of grammatical categories. Muysken, (2000); Myers-Scotton & Jake, (2003) have found that in unimodal speech-speech bilinguals, nouns are the most easily and frequently code-switched, but verb switches occur much less frequently. Emmorey, Borinstein, and Thomson (2005) however found that in the case of bimodal bilinguals using ASL and English in their study performed the opposite with verb switching being more common and frequent than that of noun switching.

Child Code-switching

Having observed the details on bilingualism, bimodalism, and code-switching, we can turn our focus to the specific aspects of child code-switching. Bauer, Hall, and

Kruth, (2002) have noted that to better understand the processes by which bilinguals develop communicative skills and abilities, research has examined the various roles played by code-switching among children being raised with two languages. It is from this research that we find the importance of child code-switching and the value of observing this code-switching within a play context.

In the introduction a number of researchers were identified in relation to child code-switching. One such study was that of Nicoladis and Genesee (1996) in which their research examined aspects of children's code-switching. They identified the reasons for code-switching in children's cognitive needs, and determined that children are strategic code-switchers. I.e. that they determined that children change from one code to another when they do not know a word in one language, or there is no direct translation. Another reason that was identified is that children dominant in one language have been shown to switch codes when they use the weaker language (Genesee, Nicoladis, & Paradis, 1995). This is important in this study as we are observing a case where spoken English is deficient in the daily environment and the skill level between the two languages differ.

Another reason for child code-switching can be found by examining research into the links between children' code use and their interlocutors' language. This approach is more of a social analysis view of the reasons for code-switching in children's language use based on who is involved in the conversation i.e., their parents. The studies by Nicoladis and Genesee (1996) that were previously mentioned, found that language dominance explained the use of different codes by very young children when interacting with their parents. However, at about the age of two, children's language use depended

more on the language their parents used. This may be the case in unimodal

bilingualism, but in the case of hearing children of Deaf parents it is quite the opposite.

The dominant language of spoken English is deficient in the language environment, and

the language of the parents is highly influential from the start. The dominant language of

spoken English does not really start to be heavily influenced until the child gains

significant exposure it it. This is supported by studies examining code choice by

bilingual children that explain that children switch languages depending on what they

identify as the preferred language code of the interlocutor (Meisel, 1994). This is further

backed by Genesee, Nicoladis, & Paradis (1995) who claim that even young bilinguals

display a sensitivity to the sociocultural norms and expectations of their communicative

contexts.

The Play Context

With a firm understanding of children's code-switching behavior, the next area to

address is the play context where children spend a great deal of time communicating. In

research published by Bruner (1986) and Vygotsky (1978), they have identified an

intimate connection between play and language development, and have indicated that

complex grammatical and pragmatic aspects of language appear first in play sessions.

Bauer, Hall, and Kruth (2002) also noted that play does not pose any threatening

consequences to children, thus the subjects are not likely to experience frustration in

their interactions. This they claim allows the children to be more likely to take on roles

they might otherwise not be able to, and also have the opportunity to use language in

ways that real-life situations may not provide. It is believed that "these play opportunities

provide children with the freedom to indulge in explorations of language use, trying out

different voices, rehearsing different constructions, and eventually mastering a broader arena of communicative means to which they may only have indirect access." (Bauer, Hall, and Kruth, 2002, p. 57). Even Pellegrini and Galda (1993) felt that play situations were simultaneously motivating and demanding of high levels of social cognitive processing. This results in opportunities for the children to display their full range of competence. This is why a play context is important to use in this study The play setting is a productive environment for gathering information about subjects bilingual language use of both languages.

Reduced Input Language Environment

Now an explanation of what a reduced input language environment is needed to understand how it is important to this study. In the early behaviorist views, input was considered to be a vital component of language learning indicating that we must have exposure to the language in order to learn language. Later studies switched focus to an innate system of language learning where input was less necessary. The idea being that the brain is hard-wired for language learning. Thus the inference is that language learning is less about imitation, and more about creation. There is the big question, how much of language learning is nature vs. nurture? Most would believe that it is a little bit of both. Krashen proposed the Input Hypothesis to help explain how language is acquired. Language is acquired "by understanding messages, or receiving 'comprehensible input'" (Krashen,1985, p. 2). The idea of comprehensible input is that of language which is heard/read that is slightly ahead of the language learners current ability. If something is below the learners level, or too far ahead of their current level, this kind of input does not aid in language acquisition. "We move from i, our current

level to i+1, the next level along the natural order, by understanding input containing i+1" (Krashen, 1985, p. 2) This allows for an innate structure or natural language learning ability, but that there must be proper language input to activate it.

There is also the Critical Period Hypotheses(CPH) which states: "There is a limited developmental period during which it is possible to acquire a language be it L1 or L2, to normal, native-like levels. Once this window of opportunity is passed, however, the ability to learn language declines." (Birdsong, 1999, p. 1) Taken together, it becomes quite obvious that input is an important aspect of leaning a language. After all, if one is not exposed to language, how can they be expected to learn it.

There are examples of atypical language environments where input has been missing or drastically reduced particularly in studies of feral children. Feral children are identified as children that grow up in the wild with little human contact. These cases have been studied to evaluate what happens to language development if language exposure is delayed into late childhood or early adulthood. In the case of the "Wild Boy of Aveyron", a young boy was found living like a wild animal in France in 1797. He was cared for and despite all efforts to train the boy in language, he never progressed beyond the ability to name objects (Lane, 1976). Another subject known as Genie (Curtiss, 1981) was not a feral child, but was raised in isolation. She was sick as a child and diagnosed as possibly mentally retarded. She then was rejected by the parents and kept in isolation until the age of 13. If she attempted to make any vocalization she was beaten by her father. When she was found she showed no language ability, and after intense training did progress to sentences, but never progressed beyond the language ability of a 4 year old.

These are of course examples of extreme and rare cases, and this study is not focused on researching a complete absence of language input. Instead this study inquires into a reduced input environment of spoken English. Sign Language is fully available to the child through the parents and English exists even if it is at a reduced level through secondary sources. However, one cannot ignore the impact of a reduced English input has on the language learning experiences of a hearing child of Deaf parents. The language environment shifts once children enter public school, and it is for this reason that the age delimitation of pre-kindergarten was determined for use in this study. Studies of children of Deaf parents (and other bilingual children), have indicated that once the bilingual children move to an input rich spoken English environment they often quickly catch up to their English speaking monolingual peers, and start to show English dominance in their language use.

This explanation of the key concepts such as bimodal bilingualism, code-switching, simultaneous production, play context, how children code-switch, and the reduced input environment gives a firm framework from which to approach this study. These concepts are vital to understanding the pragmatic role of code-switching and simultaneous production during play contexts of bimodal bilingual hearing children of Deaf parents.

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CHAPTER 3

METHODOLOGY

As a bilingual Sign Language and English speaker familiar with the Deaf community, I decided that subject recruitment would be by word of mouth; also, through personal contact at social gatherings (e.g., Bloomington-Normal Deaf Community meetings) and religious gatherings (e.g., the local churches in which these Deaf community members attend) asking potential participants parents and to contact the researcher if they are interested in letting their child participate in the study. To achieve this goal, a cover letter was prepared (see APPENDIX B). The requirements were indicated that respondents must be Deaf parents who have a hearing child/children that are preschool (specifically pre-kindergarten) - approximately 2 to 5 years of age. This age range for the child subjects was selected due to the need for the research to occur prior to the rapid linguistic shift to spoken English that often occurs once a child enters the regular monolingual English speaking school environment. As a result, a family was selected that had two Deaf parents who had two hearing daughters (female siblings). The children were within the age criteria, and were both bimodal bilinguals in spoken English and Sign Language. The parents were given an informed consent form and allowed to ask questions about the details of the study. The informed consent form contained specifications about the expectations of the study (see APPENDIX C). After obtaining the parents consent, both female siblings were consulted as per the child oral assessment form (see APPENDIX D). This was witnessed by the parents and their signatures were obtained.

The data for this investigation was collected from digital video recordings provided by the subjects' parents, and interviews with family members guided via a language history questionnaire. The sample digital video recordings were taken from home video recordings that occurred in August 2012. The language questionnaire was first administered to the parents (see APPENDIX E). From their responses and information about other adult family members the children interacted with regularly, additional arrangements were made to administer a hearing adult family member informed consent form (see APPENDIX F) to the other applicable family members. They were then also requested to answer the same language history questionnaire that was previously administered to the parents.

The goal of the study is to capture the subjects' bilingual communication as shaped by their interactions with English and Sign Language speakers during play and other daily activities. The research presented here is based on data collected from those recordings. The primary subject (Sibling 1) was age 4;2 (All ages given in years;months), and the second subject (Sibling 2) was age 2;2 at the time the video was acquired. During this one month time window, both subjects engaged almost solely with their mother and father as adult caregivers at home. Sibling 1 was also noted as having preschool 3 days a week for 3 hours per day, for a total of 9 hrs per week. This was the only activity indicated in which they regularly participated outside of the home beyond accompanying parents on household shopping trips, and family visits.

Key Participants

The key participants in this study are Sibling 1, Sibling 2, their Mother and Father. In addition, the study also involved immediate family that had regular contact with the

primary subjects. These included Grandfather, Grandmother, Grandfather 2, and Uncle. The immediate family members are included as spoken English interlocutors to the subjects. They were interviewed with a guided language history questionnaire and also were part of the home video recordings provided by the parents.

Father: The father, in his mid-thirties, was born Deaf and started learning Sign Language as a first language with the inclusion of formal instruction via a tutor around the age of 3 years old. English was learned as a second language starting at about the age of 3 as well. The father was mainstreamed in a hearing public school. He received his B.S. and holds a job as a tool designer for a large manufacturer. He primarily uses Sign Language in the home, and written English communication at work. He uses American Sign Language(ASL) and Pidgin Signed English(PSE) (see APPENDIX A for more details about ASL, PSE, SEE). He has indicated that he is more prone to using PSE at home, and tends to only use formal ASL when in the company of other ASL speakers. His primary interaction with the children is in the evenings and weekends due to his work schedule.

Mother: The mother, in her mid-thirties, was also born Deaf. However, because she was born in Ethiopia her first language is Amharic (primarily written). She did not learn ASL until she was about 12 years old via a school for the Deaf in Ethiopia that taught using ASL. She received more ASL instruction when she moved to the United States. She completed an Associates Degree, and works now as a stay-at-home mom. In the home she primarily uses ASL to communicate. Unlike the father, she tends to use proper ASL more frequently than PSE. She is the primary daytime adult-caregiver and interacts with the children the most.

Grandfather: The grandfather, in his early-sixties, is a hearing bilingual. His first language was English, with some German and Tagalog learned as a second language in high school and military service respectively. It was not until his Deaf son was born that Sign Language was learned. While ASL instruction was received, the grandfather uses PSE and SEE (Signed Exact English – See APPENDIX A for more details) more frequently, leaning more toward the latter. His skill level at signing is advanced. With the children the grandfather primarily uses spoken English, but frequently simultaneous production occurs due to the presence, and inclusion of the parents.

Grandmother: The grandmother, in her early-sixties, is also a hearing bilingual. Her first language is English, and she learned ASL once her Deaf son was born. While ASL instruction was received, SEE is what is primarily used, with occasional PSE. Her signing skill level is medium, with more finger spelling used. With the children the grandmother primarily uses spoken English like the grandfather. However the grandmother uses a little less simultaneous production due to the lower signing skill.

Step-Grandfather: The step-grandfather, in his early-sixties, is primarily a spoken English speaker. He picked up a little Italian while stationed in Europe while in the service. He has picked up some basic Sign Language (PSE) skills over the past 22 years, but usually uses another family member to interpret, or uses written English to communicate with the parents. He uses spoken English when communicating with the children.

Uncle: The uncle, late-thirties, is the brother of the father. Due to this relationship, he learned Sign Language growing up with his brother starting around the age of two or three. Without formal ASL instruction, the uncle primarily uses PSE and SEE with the

parents. With the children the uncle uses spoken English, but frequently uses simultaneous production when the parents are also present.

Sibling1: The first hearing subject, the older daughter, was 4;2 at the time the data was obtained. Her language background starts with Sign Language in the home where spoken English was limited. According to information obtained in a language background questionnaire obtained from the parents, the majority of the spoken English input that was available in the home were from children's educational television programs, children's songs played on a CD player, and occasional visits from hearing family members. The parents noted that Sign Language made up the significant majority of language exposure up until she was about two years of age. English has improved rapidly after that point, and in the last year she started to attend preschool for three hours a day three days a week which increased her exposure to spoken English by teachers and her peers.

Sibling2: The second hearing subject, the younger daughter, was 2;2 at the time the data was obtained. Her language background starts the same as her older sister with Sign Language being the dominant language within the home. Again there are the same limited spoken English input in the form of children's educational television programs, children's songs played on a CD player, and occasional visits from hearing family members the same as the older sister. Where the older daughter started preschool, the younger also benefits by gaining some language influence in the form of spoken English by her older sister. The parents primarily provided a Sign Language language environment that makes up the majority of language exposure.

Language Context

There are three language types to focus on - a Sign Language only, a spoken English only, and a simultaneous/bilingual language use. For this study, the parents have provided a Sign Language / simultaneous language environment in which to analyze data in a Sign Language dominant context. The bilingual family members will comprise the spoken English / simultaneous language environment from which to analyze data on how the child/children adjust to a bilingual context as well as provide a child peer English only context. The data of all three language possibilities have been obtained in a play environment with two distinct language contexts.

Data Collection

A language use history/background questionnaire was administered in an interview setting with the Deaf parents and the bilingual family members, to assess the language conditions and history of the subjects. It also was used to collect additional data about the code-switching and simultaneous production activities of the subjects. The language use history questionnaire/interview also assessed information about the Deaf parents language history and use, as well as that of the bilingual family members to better understand the default language environments the subjects experience. The parents and hearing adult family members who have a semi-regular contact with the subject were included because these hearing adult family members were needed to gain access to the child's spoken English language background, as the Deaf parents may not be able to assess this area of language history.

It was decided to observe the subjects pragmatic competence while in the play context. The play context was chosen because of the previously indicated benefits such

as the connection between play and language development, play does not pose any threatening consequences to children, the subjects are not likely to experience frustration in their interactions, the children are allowed to take on different roles, and the children have the opportunity to use language in ways that real-life situations may not provide. The play context results in opportunities for the children to display their full range of competence, and is a productive environment for gathering information about subjects bilingual language use of both languages.

In the Deaf community, it is common for families to video record their child during their daily interactions in the home, such as play contexts. The data used in this study have been drawn from home digital video recordings of the children that the parents had made and are willing to share for the purposes of this study. The parents were asked to provide a total of 60 minutes of video-recordings that had been taken within the last year. The home digital video recordings that were provided by the parents were collected in August 2012. Within these videos, the children play with adult caregivers and family members within the home environment. Initially the idea was to obtain a sample of all three possible language contexts, but in the process of reviewing potential video-recordings, it was realized that a pure non-verbal Sign Language environment is realistically unobtainable from home video-recordings. The parents do not isolate their Sign Language production from their spoken English production, instead engaging in a more simultaneous production as the norm. A pure Sign only environment would need to be artificially designed, and would not provide practical results reflecting real-world language use. Instead these recordings then contained samples of their child's language interactions in a Sign Language context where Sign Language and

simultaneous production are produced and a spoken English language context where

English was established as the leading language. Each language context were equally

represented by 30 minutes of video footage. Since this study used recorded play

sessions obtained from the parents, the subjects themselves did not have any direct

interaction with the researcher.

Data Analysis

The data collected has been transcribed using the same method as

Emmorey, Borinstein, and Thomson used in their 2005 study for identifying code-

switching and code-blending as illustrated in Table 3.1

Table 3.1: Transcription Samples of Code-Blending and code-switching.

```
(1)  S1:   English:   "I [want] to [play] with [blocks]!"
           Sign:      [  WANT      PLAY       BLOCK  ]
(2)  S2:   English:   "I want a  glass of  [          ]."
           Sign:                            [MILK]
```

Example (1) provides a code-blend reference from the subject, and example (2)

indicates a code-switch to illustrate the transcription process. Words in upper case

represent English glosses for ASL signs or their nearest English equivalent. Multi-word

glosses connected by hyphens are used when more than one English word is required

to translate a single sign. Brackets in the English transcription indicate the word or

words that co-occur with the ASL sign. By using their method of transcription, the results

contains marked references to identify when ASL is signed vs when spoken English is

used. By observing semantic equivalencies, the transcription process also allows for the

indication of when simultaneous sign and spoken language production takes place. In

Example (2) the subject starts out verbally then code-switches completely to physically

sign 'milk' with no vocal production. Where as in Example (1) what is Signed is semantically equivalent to what is spoken. In ASL the subject 'I' can be omitted, and the prepositions unnecessary. What you do have is 'want', 'play', and 'blocks' being produced simultaneously both physically signed and verbally spoken. If this same sample was performed using SEE the signed result would mirror the spoken English exactly with the personal pronoun and prepositions being signed as well as spoken.

The transcribed data also is coded for four areas in a manner similar to Bauer, Hall, and Kruth's study. The first area will be the language used, indicating when ASL, English, or both were used in a simultaneous mode as has already been presented.

The second area will be who initiated the activity and set the tone for the language environment. This area will be broken down into three separate conditions. The first will be Self-Initiated, where the child/children initiate the activity. These will be noted by such utterances as 'Come Play'. The next type will be coded as Externally-Initiated, where the activity was initiated by their interlocutors. The third type will be that of Both-Initiated, for contexts where leadership in the activities are mutually shared.

The third area to be examined will be according to speech acts in the same manner as the Bauer, Hall, and Kruth's study had derived from the categories of illocutionary force from the works of Ninio, Snow, Pan, and Rollins (1994) . Each communication within these interactions will then be coded using the following categories indicated in Table 3.2, and resulting in a transcription that can be observed in the example provided in table 3.3.

Table 3.2: List of Speech Acts

AGREES:	Acknowledges and agrees to carry out act requested by Another.
CONFIRMS:	Explicitly acknowledges or confirms interlocutor's utterance.
DESCRIBES:	Describes state of affairs.
DIRECTS:	Directs or suggests an action or act to interlocutor.
INFORMS:	Makes a declarative statement about what the speaker or other participant is doing.
REQUESTS:	Asks interlocutor to do something including give approval.
REPEATS:	Repeats utterance.
RESPONDS:	Expresses approval, enthusiasm or otherwise comments to interlocutor.
REJECTS:	Rejects interlocutor's suggestion or direction.
SELF-TALKS:	Plays with sounds or speaks to oneself softly and with no nonverbal behavior that indicates that the talk is directed to another.

Table 3:3: Sample Transcription

#	ACT	WHO	L	TRANSCRIPT
1)	REQUESTS	S2:	E	"/up pile/" (=up please?)
2)	RESPONDS	GF:	E	"whatdya want"
3)	DIRECTS	S2:	E	"want get up"
4)	REPEATS	GF:	E	"you wanna get up" (laughing)
5)	REPEATS	S2:	E	"/a ul a ul/ want up"
6)	CONFIRMS	GF:	E	"oh let me up, oh let me up.. alright"
7)	REQUESTS	S1:	E	"[play with blocks]" (to F)
8)			S	[PLAY BLOCK]
9)	CONFIRMS	F:	E	"/You [want play block]/" (semi)
10)			S	[WANT PLAY BLOCK]
11)	REQUESTS	S1:	S	[YOU] [ME] (= TOGETHER)

Lastly each of these transcripts has been divided into the language context

environments based upon the language modalities of the interlocutor. Once they were

divided into Sign / Simultaneous context and English Context, the transcripts then were

analyzed by observing the previously mentioned criteria of language use based on

leadership roles and types of speech acts to evaluate in which situations the children

will code-switch between the two languages, as well as when and where simultaneous

production occurs. Table 3.4 Illustrates how all these data analysis concepts come together from the macro to the micro.

Table 3.4: Transcription/Data Analysis Overview

MACRO		Interlocutors	Activities	Each Activity Initiation		Each Speech Act		Transcript Examples	MICRO
M A C R O	T O T A L	*Interlocutors*	*Activities*	*Each Activity Initiation*		*Each Speech Act*		*Transcript Examples*	M I C R O
		English Only 30 min	Multiple	Interlocutor	English/ASL	AGREES: CONFIRMS: DESCRIBES: DIRECTS:	REQUESTS: S1:	E: "Want watch [ ]." A: TV *: code-switch	
				Subject	English/ASL				
				Cooperative	English/ASL				
	D A T A	Simultaneous 30 min	Multiple	Interlocutor	English/ASL	INFORMS: REQUESTS: REPEATS: RESPONDS: REJECTS: SELF-TALKS:	REQUESTS: S1:	E: "Want watch [TV]!" A: [TV] *: Simultaneous single word	
				Subject	English/ASL				
				Cooperative	English/ASL				
	S E T	*Interlocutors*	*Activities*	*Each Activity Initiation*		*Each Speech Act*		*Transcript Examples*	

 Each 30 min video segment has a language context based on the interlocutors, where each activity is identified by who initiated it and in which code was chosen, then each interaction within that activity is identified by speech act. Lastly the transcript identifies what was signed and what was spoken during the speech act.

CHAPTER 4

RESULTS

Prior to in depth examination of the results, a brief recap of the essential details has been provided. There have been a number of other studies researching into bilingualism, but fewer focusing on bimodal bilingualism. Johnson, Watkins, and Rice's study did evaluate the case of a bimodal bilingual ASL-English speaker and primarily focused on the effects of inter-language interference of ASL on their subjects English learning and proficiency. Their study did not focus directly upon aspects of code-switching or code-blending. However their study did spark some interest into the forming of this study into bimodal bilingualism. Bauer, Hall, and Kruth's study while not about bimodal, but unimodal bilingualism does influence the sociocultural side of this study, and why children code-switch. In addition, their choice of play context has strongly influenced this study. Their methodology was very influential in the design of this study. Their methodology was not the only thing, it is from their study that the two key pragmatic questions that define this study came from. I was curious if the results of a bimodal bilingual would be the same as their results of a unimodal bilingual. Again those two questions are: 1) What kinds of play activity is the hearing child and their interlocutors involved in? 2) How does the hearing child use the two languages to constitute involvement in play? The answers to these two questions then by extension lead to two additional questions: 3) When and why do hearing children of Deaf parents code-switch? 4) When and why do they perform simultaneous production? Additionally this last question developed from Emmorey, Borinstein, and Thomson's study into bimodal code-blending, otherwise known as simultaneous production. It is from their

results that I hope to compare the simultaneous production results of this study.

Recordings

Before reviewing the results derived from the transcripts, it is necessary to evaluate the recordings themselves. As presented in the methodology, the total time of the recordings was 60 minutes. This 60 minutes was divided into two separate 30 minute segments recorded at different times within the month of August 2012. Because of the limitations of this study, the number of activities that the subjects are engaged in is also limited by these time constraints. The result is two 30 minute segments of data that are identified by the language context that dominates the activities observed.

The first set of data is labeled as the spoken English context where English speaking adult family members interacted with the children in a play context. In this 30 minutes video-recording the subjects are at play with visiting grandparents. The video-recording took place in the living-room of the home with the camera being placed on the entertainment center. This is mentioned to identify that no one was operating the camera, and that it was in a fixed position. At times individuals did move beyond the camera's view. In the case that verbal conversation took place off-screen, those areas are identified in the transcript to indicate that there is no way to know if Sign Language was used. In most cases where an individual left the field of view, they went beyond the audio recording area as well. Because the grandparents do not Sign very often and are hearing, it creates data for this recording to be identified as the spoken English environment. Because this is occurring in the home during a family visit, the parents are present. In this segment of video there is very limited interaction with the father, but for the majority of the video the children are interacting with the grandparents. This play

context involved playing with blocks, playing trains, reading a storybook, play cooking, imaginary friends, and mock phone conversations. In Table 4.1 provides a sample transcript of conversation that took place with the grandparents, where Sibling 1 initiated a soup making activity using a wooden spoon and a bucket full of colored building blocks.

Table 4.1: Transcript Sample of the Spoken English Context: Play Cooking

#	WHO	L	TRANSCRIPT
1	S1:	E	"Hey we're making a blue soup"
2	GM:	E	"Blue soup! Oh My!"
3	GF:	E	^^ /Laughing/
4	S1:	E	(stirring blocks in big basket with the spoon) "Harder.. Harder"
5	GF:	E	"Ok"
6	S1:	E	"Blue Soup"
7	GM:	E	"We are making blue soup"
8	GF:	E	"My turn"
9	S2:	E	"Blue soup blue soup blue soup"
10	S1:	E	(to GF) "We need put yellow cheese in this blue soup to make it shine"
11	GF:	E	"Then we're going to serve it at the Taj Mahal?"
12	S1:	E	"No"
13	GF:	E	"No?"
14	S1:	E	"This yellow cheese..to make it, to make it [shine]" (adds yellow block)
15		S	[BRIGHT]
16	GF:	E	"Ok, but who we going to serve it to?"
17	S1:	E	"This yellow cheese to make blue soup can to make"
18	GF:	E	^^ "yellow cheese, and blue soup, and make it shine"
19	S1:	E	"And green and red"
20	GF:	E	"Green and red.."
21	S1:	E	"It'll taste like strawberries"
22	GF:	E	"Tastes like strawberries O-K"

The Sign Language / Simultaneous context was also 30 minutes and revolved around the subjects interaction with the parents who use Sign Language and Simultaneous production. In this home video-recording the subjects are engaged in conversation with their father at the dining room table with no hearing adults present. It needs to be noted that even for the parents, simultaneous production is the norm when interacting with the children or other hearing adults. While the phonetic quality of their production is not always to the quality of a hearing speaker, some of the vocalizations are easily identifiable. The parents understand the importance of the children receiving

vocal input, and make efforts to engage in simultaneous production. The activities

observed within this context were storytelling, talking about friends, eating breakfast,

and talking the father about the plans to go to the park later in the morning. Again the

camera was placed in a stationary location without manual operation. Sibling 2 spent

most of the time in another room, and is not greatly represented in this data set. Table

4.2 provides a sample of a storytelling activity between Sibling 1 and the Father,

initiated by Sibling 2 bringing a squirrel toy to the table.

Table 4.2: Transcript Sample of the Sign / Simultaneous Context: Storytelling

```
 #   WHO   L  |                          TRANSCRIPT
 1   S2:   E  "[mouse]"
 2         S    [MOUSE]
 3    F:   E  /[mouse] really?/
 4         S    [MOUSE]
 5   S1:   E  "no that's a [squirrel]"
 6         S                [SQUIRREL]
 7    F:   E  /oh [squirrel.. remember squirrel home]/ (points out window)
 8         S     [SQUIRREL   REMEMBER SQUIRREL HOME]
 9   S1:   E  "no no"
10    F:   E  /[tree]..[tree]/ (points out window)
11         S    [TREE]  [TREE]
12   S1:      (imitates a squirrel gathering nuts and puffs out her cheeks)
13    F:   E  /[what inside mouth what]/
14         S    [WHAT INSIDE MOUTH WHAT]
15   S1:   E  "[nuts]"
16         S    [NUT]
17    F:   E  /[nut]/
18         S    [NUT]
19   S1:   E  "[goes]" (then imitates spitting out nuts one at a time)
20         S    [go]
21    F:   E  /[yes save save save save snow squirrel]/(acts like squirrel eating nuts)
22         S    [YES SAVE SAVE SAVE SAVE SNOW SQUIRREL]
23   S1:   E  "[snow]"
24         S    [SNOW]
25    F:   E  /[remember snow see squirrel outside] in [tree]/
26         S    [REMEMBER SNOW SEE SQUIRREL OUTSIDE]    [TREE]
27   S1:   E  "[squirrel eat] the [snow]"
28         S    [SQUIRREL EAT]     [SNOW]
29    F:   E  /[maybe]/..../[cold]/ (shivers)
30         S    [MAYBE]      [COLD]
31   S1:   E  "make it [icy]" (imitates being frozen)
32         S          [ICE]
33    F:   E  /[you remember hot hot hot day squirrel lay]/ (points out window)
34         S  [ YOU REMEMBER HOT HOT HOT DAY SQUIRREL LAY]
35   S1:   E                                 ^^ "the [ice]" (makes slowing sound)
36         S                                 ^^     [ICE] (melting action)
37    F:   S  [MELT][MELT]
38   S1:   E  "[squirrel][   ]"
39         S    [SQUIRREL][RUN]
```

All of the activities in both language environments are common practical every

day activities that children would normally engage in. This is why the play context was

selected for the study. Also by not having an active participant filming with the camera, the subjects did not appear to be aware of the camera. There is one issue worth mention about the recordings that the parents provided. That issue is that the mother's presence in the video-recordings is lacking. As indicated in the language history questionnaire, she is the primary care-giver during the week days while the father is at work. It then would have been useful to have her represented in the data. The reasons are unknown as to why the first video-recordings did not include more of the mother. The second set, the conversation that takes place explains that she is still sleeping.

An analysis of the transcripts to determine the Mean Length of Utterance (MLU) was performed using word count for both subjects to evaluate their skill level in each language. The results of the word count MLU are presented in Table 4:3.

Table 4.3: Word Count MLU Results

	English MLU	Sign MLU
Sibling 1	5.7	3.8
Sibling 2	2.1	1.8

Sibling 1 has a significantly higher level of ability in spoken English in comparison to Sibling 2's English ability according to the MLU results. Sibling 1's English ability is also well above her Sign Language ability, where as Sibling 2's English and Sign Language abilities show less difference in MLU.
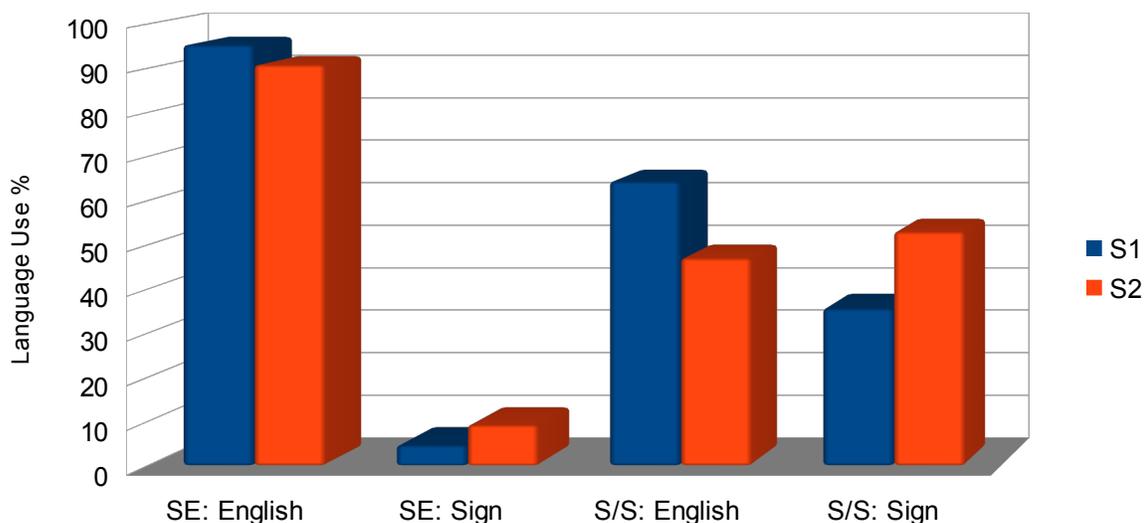
Language Use by Word Count

The first thing examined from the data transcription was an overall word count, per language for each of the subjects in each language context. This word count analyzes the total number of words used and if they were spoken English or Sign Language, and if they were signed how much was simultaneously produced. Table 4.4

& Figure 4.1 indicates the results from strictly a raw word count and Table 4.5 & Figure

4.2 examines the Sign Language and how much was simultaneously produced.

Table 4.4: Language Use by Word Count

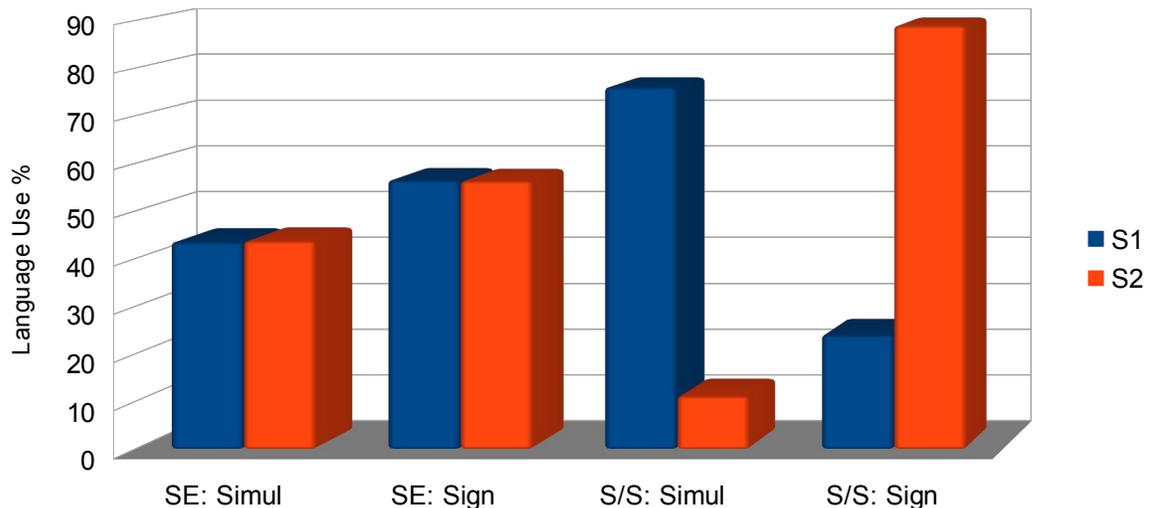| Language Context:	SPOKEN ENGLISH (SE)			SIGN / SIMULTANIOUS (S/S)	
	English	Sign		English	Sign
Sibling 1	808 (95.3%)	39 (4.6%)	Sibling 1	271 (64.4%)	150 (35.6%)
Sibling 2	158 (90.8%)	16 (9.2%)	Sibling 2	8 (47%)	9 (53%)

Figure 4.1. **Language Use By Word Count Chart**

By examining the word counts for each language context, we can clearly observe that in

the spoken English context both subjects use more spoken English than Sign, above

90% of the time for both subjects. This compared to the results for the Sign Language /

Simultaneous context where both subjects use of Sign Language increase significantly.

From this we can deduct that the subjects are adjusting to the language of their

interlocutors. However, these numbers do not realistically indicate the true circumstance

for two reasons. The first issue is that it does not account for simultaneous production,

instead just treating it the same as only Sign Language. The second is the fact that

semantically fewer signs are necessary to convey the same meaningful information as

spoken English. E.g., Signing [Store] + [Go] to mean "I am going to the store.". This means the number of simultaneous signs contribute less to the overall Sign Language count, and more to the spoken English count. Table 4.5 & Figure 4.2 gives us an examination of how much of the sign in these instances are simultaneous spoken English and sign vs signed only.

Table 4.5: How Much of the Sign is Simultaneous Production

Language Context:	SPOKEN ENGLISH (SE)			SIGN / SIMULTANIOUS (S/S)	
	Simultaneous	Sign Only		Simultaneous	Sign Only
Sibling 1	17 (43.5)	22 (56.5)	Sibling 1	114 (76%)	36 (24%)
Sibling 2	7 (43.7)	9 (56.3)	Sibling 2	1 (11.1)%	8 (88.9%)

Figure 4.2. **Sign and Simultaneous Production Chart**

From Table 4.5 & Figure 4.2, we can observe that it is fairly balanced between simultaneous production and Sign only in the cases of Sign Language use in the spoken English context for both subjects. The Sign / Simultaneous context identifies a significant difference between the subjects. Sibling 1 uses simultaneous production more frequently when Sign Language is used, where as Sibling 2 uses Sign Language only, more often than simultaneous production.

To address the second issue of semantic equivalency requiring fewer signs than are necessary to convey the same meaningful information in spoken English, instead of examining just the pure raw word counts, instead a focus on language use by instance may provide a more accurate account.

Language Use by Instance

To determine language use by instance, we first have to define what an instance is. For the purpose of this study, a single instance will be a single conversational turn. That is to say everything a subject says between an interlocutor conversational turns will be counted as a single instance. If we view the data in this manner, we end up with the results reported in the following table and illustrated in Figure 4.3.

Table 4.6: Language Use by Instance

Language Context:	SPOKEN ENGLISH (SE)			SIGN / SIMULTANIOUS (S/S)	
	Sibling 1	Sibling 2		Sibling 1	Sibling 2
English:	167 (92.3%)	70 (87.6%)	English:	26 (28.3%)	4 (40%)
Simultaneous:	8 (4.4%)	3 (3.7%)	Simultaneous:	52 (56.5%)	1 (10%)
Sign Language:	6 (3.3%)	7 (8.7%)	Sign Language:	14 (15.2%)	5 (50%)
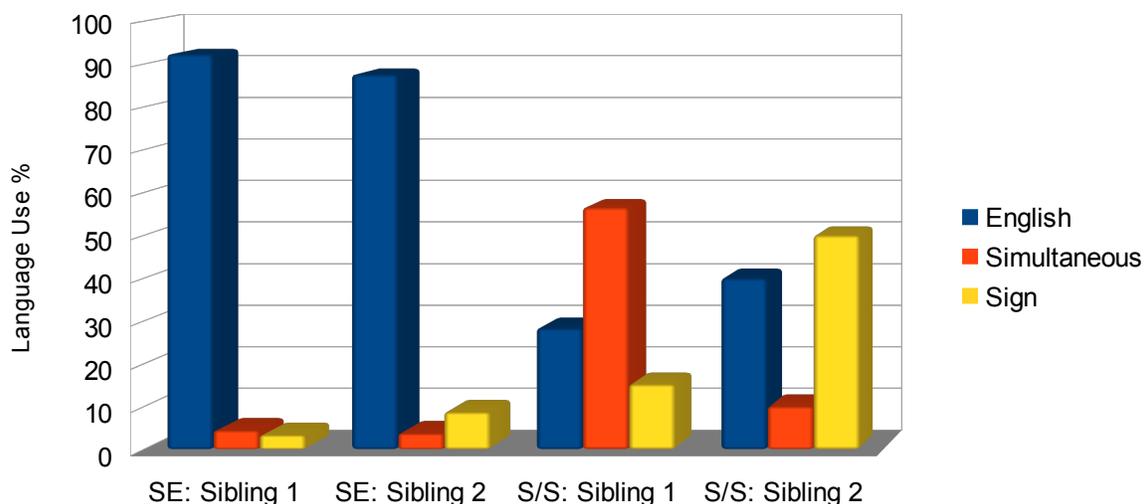
Figure 4.3. **Language Use By Instance Chart**

These results are similar to those found in the word count, but by using the instances as

a focus of measure, it allows for a more realistic account of language use by giving the instances of simultaneous production a level of language equality between spoken English and Sign Language. Even with this balancing in effect, the data still indicates a significant favoring for spoken English when the subjects were in conversations with English speaking interlocutors. In the Simultaneous and Sign Language context we observe both subjects using less English, and more Sign or Simultaneous production. The two subjects exhibited different methods of adjustment however. This difference will be addressed when discussing the results in the next chapter. One area of significant difference between using the word count and the instances, is the resulting identification of language use. By focusing on instance rather than raw word count, it more accurately shifts the results of Sibling 1 from the appearance of using more spoken English (as indicated in the word count) to using simultaneous production more in the Sign / Simultaneous context. This is the result of eliminating the issue of the word count inequality for semantically equal statements between the two languages.

By observing both word count and instance, we can clearly observe that the subjects are using language in different ways and adjusting to the overall language context presented to them by their interlocutors. This still does not fully address the research questions. To gain greater insight into when and why the subjects are code-blending and code-switching, we must look beyond the larger language context. Perhaps the speech activities they are using might provide more insight.

Language use by Speech Acts

The previous results indicate that within a language context the bimodal bilingual subjects made use of both codes within each language specific context. Since the

subjects natural language environment is that of their parents where both Sign

Language and spoken English are used, and the parents tend to do a lot of

simultaneous production, lets instead focus on the spoken English context first. The

results of both the word count and the instances indicate that the subjects used spoken

English more frequently within the spoken English context. But how about the times

when they did not? Figure 4.4 shows a breakdown of what speech acts were engaged

in when the subjects code-switched, or code-blended using Sign Language.
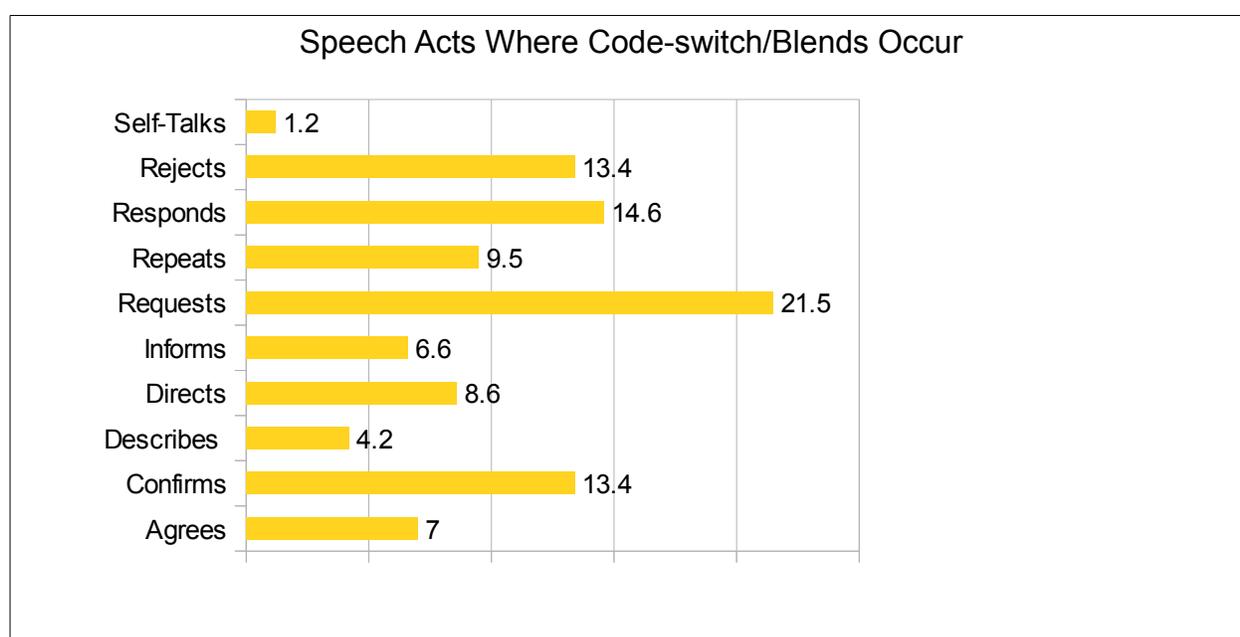
Figure 4.4. **Speech Acts Where Code-switch/Blends Occur Bar Chart**

As can be realized from the information in Figure 4.4, the most common speech act in

which the subjects code-switched/blended into Sign Language were requests. This is

not surprising given the volume and aspect of requests within a child's average

conversation. It also needs to be realized that realistically the spoken English context

still involved occasional interaction with the Deaf parent. While rare, such instances did

occur, and usually in the form of a request by the subjects as can be realized by

examining example 1 and 2 in Table 4.6. It then makes sense that rejects such as 'NO'

and Confirmations 'YES' would also be quite high. Responding to a parents question in the same code they use, also constitutes a reasonable reason for the child to code-switch or blend with Sign Language. Repeats are another area where such code-switching would be expected. Examples of repeats can be observed in the data where the grandmother was teaching new words to Sibling 2 which can be observed in example 3 of Table 4.7.

Table 4.7: Examples of Requests and Repeats

#	ACT	WHO	L	TRANSCRIPT
1	REQUESTS	S1:	E	"[play with blocks]" (to F)
			S	[PLAY BLOCK]
	RESPONDSS	F:	E	/You want play block/ (semi)
			S	[WANT PLAY BLOCK]
	REQUESTS	S1:	S	[YOU] [ME] (= Together)

#	ACT	WHO	L	TRANSCRIPT
2	REQUESTS	S1:	S	[MOM LOOK] (to M) [PLEASE BLUE GET SPOON]
	DIRECTS	S1:	S	(shakes F arm) [GET SPOON]

#	ACT	WHO	L	TRANSCRIPT
3	DESCRIBES	S2:	S	[APPLE]
	CONFIRMS	GM:	E	"[apple] ok"
			S	[APPLE]
				(S2 drops apple, picks up strawberry)
	DESCRIBES	GM:	E	"[strawberies]"
			S	[STRAWBERRY]
	REPEATS	S2:	S	[STRAWBERRY]
	CONFIRMS	GM:	E	"[strawberies]"
			S	[STRAWBERRY]

There was an interesting case where the father directed Sibling 1 to respond orally and then later in Sign as can be viewed in the sample in Table 4:8.

Table 4.8: Examples of Language Direction

#	ACT	WHO	L	TRANSCRIPT
1	INFORMS	F:	S	[TOMORROW NO PEOPLE.. OK]
2	CONFIRMS	S1:	E	"[ok]"
3			S	[OK]
4	DIRECTS	F:	S	[SPEAK OK]
5	RESPONDS	S1:	E	"ok"
6	DIRECTS	F:	S	[SIGN OK]
7	RESPONDS	S1:	E	"[ok]"
8			S	[ok]

It is interesting that Sibling 1 confirmed in both Sign and spoken English in lines 2&3.

Then when she was asked to speak in line 4,and she complied with only spoken English

in lines 5. When the father directs again in line 6 to Sign, Sibling 1 returns to a

simultaneous production as observed in line 7&8. Descriptions and Self-Talk appeared

to be the least affected. In most occurrences these speech acts did not involve as much

code-switching or blending.

There were a number of occurrences of code-switching and simultaneous

production that can be related to certain speech acts. They will be further examined in

the discussion chapter.

Semantic Equivalencies and Grammatical Categories of Code-blends

The analysis of simultaneous production (code-blending) was performed to

examine two areas. The first area focuses on whether the Sign Language and spoken

English forms are semantically equivalent. That is to say, whether the use of both

languages simultaneously convey the same semantic information. The results from the

data identified that of 139 code-blends, 136 (97.8%) of the Sign Language used by the

subjects was semantically equivalent to the spoken English used in simultaneous

production. There were only 3 instances where the code-blends were semantically non-

equivalent. These results match those found by previous studies by Emmorey,

Borinstein, and Thomson (2005) and Goldin-Meadow (2004) which also concluded that

code mismatches rarely occur.

The second area of simultaneous production analyzed is that of grammatical

categories. What are the syntactic aspects of code-blending? For this a closer

examination of the words used in simultaneous production & signed code-switches was

done to categorized the grammatical functions of the signs that occurred in each mode. As can be realized from the results represented in Figure 4:5, there is very little difference between the two modalities.
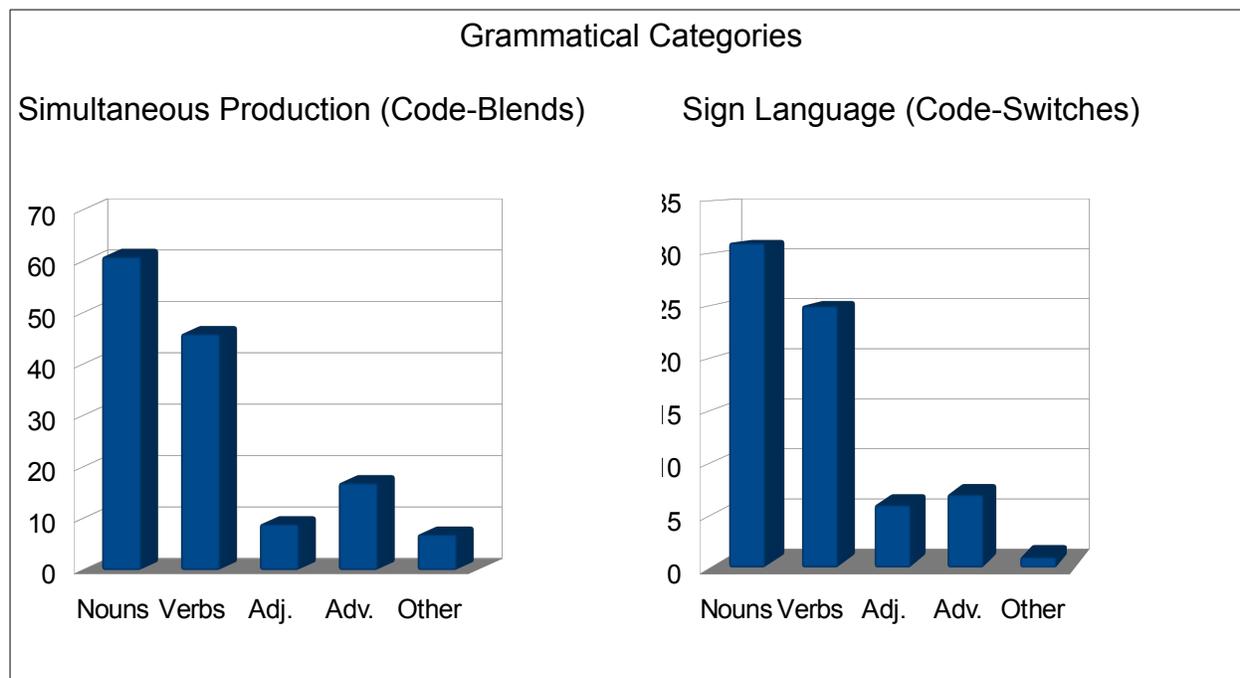

Figure 4.5. **Grammatical Categories of Signed Code-blends & Code-Switches**

What we do observe from that data is that nouns are the most common grammatical category that is code-switched or blended. This is followed closely by verbs, being the second most common grammatical category where code-switching or blending occurs. The other parts of speech are far less frequently switched/blended. These results match those of a unimodal bilingual, as opposed to the bimodal bilingual. This unexpected result evaluated in greater depth in the discussion chapter.

Initiation & Participation In Each Language Context

All the data so far has been focused on code usage, but not who took direct role in initiating the activities, or how much each individual participated in the conversations. In Figure 4.6 the results of the spoken English context analysis can be observed.
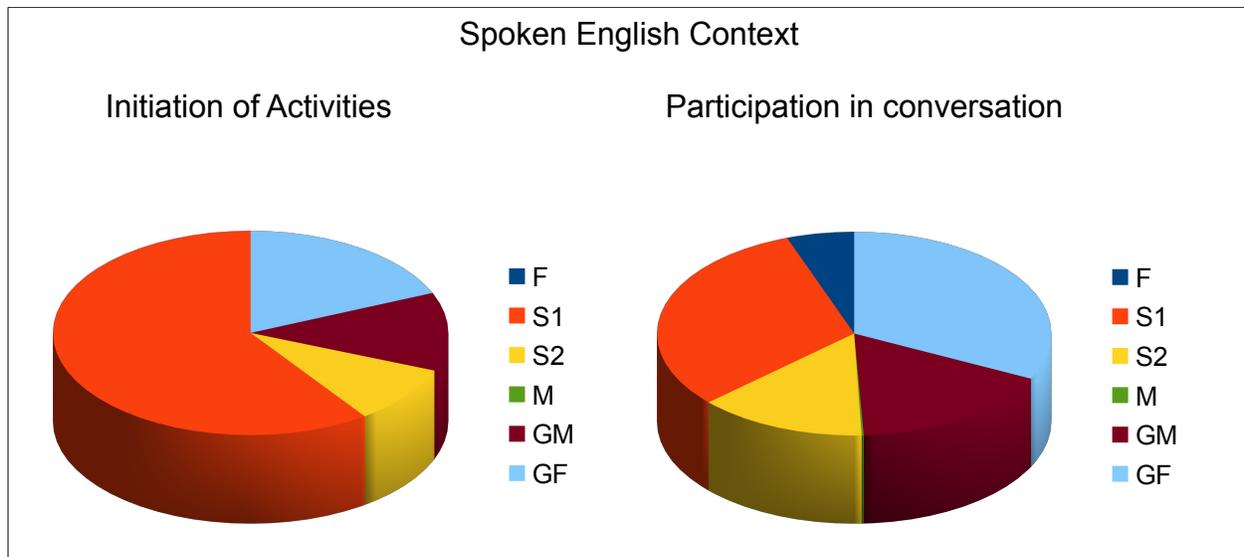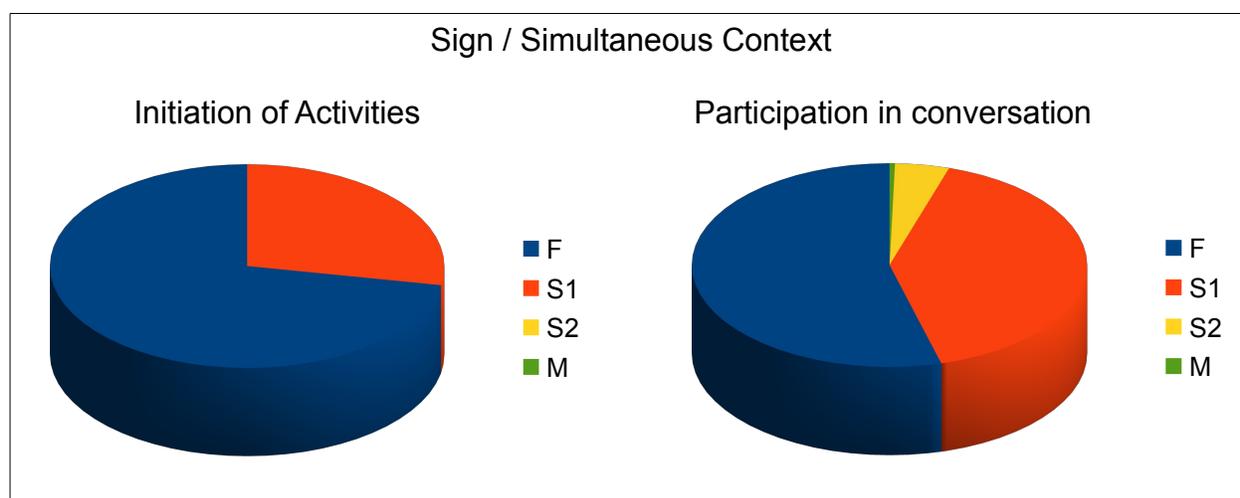
Figure 4.6. **Initiation & Participation in the Spoken English Context Pie Charts**

As can be observed from the results presented in Figure 4.6, Sibling 1 initiated 59.8% of

the activities, far more than any other participant. The next highest initiator was the

Grandfather, but this is due to his high involvement. The Grandmother did not start

participating in the activities until after 10 minutes into the 30 minute selection. Sibling 2

did initiate a few activities, but was mostly content to do what Sibling 1 and the

Grandfather were doing. All the activities in the spoken English context were initiated in

English, except 1 which was initiated as simultaneous production by Sibling 1. The

Father was present, but did not initiate any activities. Participation in the conversation

was calculated based off instance count to determine the percentage of overall

participation. Here we have the Grandfather having 187 (32.2%) of the instances,

followed closely by Sibling 1 with 181 (31.2%) of the conversation instances. The

Grandmother had 98 (16.9%) instances, Sibling 2 had 80 (13.8%) instances, and the

father had 32 (5.5%) instances. The Mother was not involved and only had one instance

in the transcribed data. Note that the reasons why Sibling1 and the Grandfather have

significantly higher total participation is that the other participants did not get involved

until later in the recording.

The results for initiation and participation in the Sign / Simultaneous context have been represented in Figure 4.7. In this context, the video-recording provided contained mostly interactions between the Father and Sibling 1. Sibling 2 was involved initially, but spent most of the time in another area of the house, only occasionally returning to participate briefly. This lack of involvement by Sibling 2 can be observed in the charts illustrated in Figure 4:7.

Figure 4.7. **Initiation & Participation in the Sign / Simultaneous Context Pie Charts**

In the Sign Language / Simultaneous context the Father dominated the initiation of activities. He initiated 72% of the time, where as Sibling 1 only initiated 28% of the time. Sibling 2 and the Mother did not initiate activities within the transcribed data. The resulting participation statistics then hold no surprise, as the father participated in 122 (54.2%) instances and Sibling 1 participated in 92 (40.8%) instances. As noted Sibling 2 was not highly involved and only participated in 10 instances of conversation. Similar to the spoken English context, the Mother was not involved and only had one instance in the transcribed data.

CHAPTER 5

DISCUSSION OF RESULTS

So what practical information do the results tell us about bimodal bilingual hearing children and the role of code-switching and simultaneous production? What kinds of play activity is the hearing child and their interlocutors involved in? How does the hearing child use the two languages to constitute involvement in play? This chapter will discuss the results and what they mean towards answering the research questions.

What Kinds of Play Activity?

The results of the video-recordings display that the children were engaged in the same everyday practical activities that any ordinary child would be involved in. By examining the play context, one can observe the subjects using their communication skills in such activities as playing with blocks, playing trains, reading a storybook, play cooking, imaginary friends, mock phone conversations, storytelling, talking about friends, eating breakfast, and talking with their father about the plans to go to the park later in the morning.

The pros of this study are that the data does give us opportunity to analyze the subjects' language use in a natural real-world environment, instead of a manufactured environment. The use of home video-recording and play context lets the subjects interact with their interlocutors in a natural unobstructed way. This would not be obtainable in a controlled environment.

The cons are that it is not a controlled environment, so certain aspects such as a Sign Language only activity are unobtainable. Also because of the limited data collection, only a small sample was obtained, containing only a single occurrence of

each individual activity. I.e., playing with blocks only occurred in the spoken English context, and not in the Sign / Simultaneous context. A longitudinal study is better suited to examine multiple occurrences of each activity, thus allowing for different language dominance to occur for each activity. A good example would be that of playing blocks. In the transcription the block activity only occurred in the spoken English context. A more desirable selection would be where the interlocutor sets the language context and at other times the subject sets the language context. Having these multiple observations would yield greater results.

Languages Use to Constitute Involvement in Play?

From the results obtained from the language use by word count and instance, the subjects of this study are aware of the social conditions and language contexts of their interlocutors. In the spoken English context, the subjects used mostly spoken English while engaged in the play activities. This can be observed in the Table 4.4 in the results chapter. When they did code-switch they did so to either adjust to a code shift by their interlocutor or for the reasons Grosjean (2010) indicated, such as to ease of expression, fill a linguistic gap, simplify understanding. In table 5.1, there is an example of one such code adjustment. In lines 1&2 the father uses simultaneous production, where as the grandfather and grandmother are interacting with the children in spoken English. In lines 11&12 Sibling 1 changes from speaking English only, into a simultaneous production when addressing the father. Sibling 1 then switches back to spoken English only when resuming conversation with the grandfather in lines 14-18. This is a good example of changing code to adjust to the interlocutor.

Table 5.1: Transcript Sample of Adjusting to an Interlocutor.

#	WHO	L	TRANSCRIPT
1	F:	E	/[want make dog?]..[want make dog?]/ (to S1)
2		S	[WANT BUILD DOG]..[WANT BUILD DOG]
3	GF:	E	"what color is that then? XXXX(S1) what colors that?"
4	S1:	E	"purple"
5	GF:	E	"purple"
6	GM:	E	"purple.. XXXX(S2)"
7	S1:	E	"build train ok."
8	GF:	E	"this one.. is that red?"
9	S1:	E	"nope thats white"
10	GF:	E	"thats white ok."
11	S1:	E	"hey we're [not making dog], we're [making train]." (to F)
12		S	[NO BUILD DOG] [BUILD TRAIN]
13	F:	E	/oh really/
14	GF:	E	"That must be pink then huh? Huh XXXX(S1).... XXXX(S1)"
15	S1:	E	"just a second"
16	GF:	E	"is this pink"
17	S1:	E	"no this is orange"
18	GF:	E	"orange?"

There were times where a particular code was chosen over another. These were
especially evident when one mode of production was obstructed. An example of this
would be when the subjects hands were full, they tended to switch to English or if their
mouths were full, they chose to Sign. Certainly a benefit of being a bimodal bilingual.
Another benefit is the ability to simultaneously produce both codes. As was indicated in
the results Table 4.6, this simultaneous production certainly was more common in
Sibling 1, than for Sibling 2. This can be attributed to the skill level each subject has with
the languages. Sibling 1 is older, in pre-school, and has more language exposure –
specifically to spoken English. Sibling 2 is just developing her language skills which
started with Sign Language. These evaluations on language ability are also represented
by the MLU results that were indicated in Table 4.3 in the results chapter. Overall Sibling
2 was not very productive, and when she did converse it was usually to express very
basic simple concepts. In her case, it makes sense that she would code-switch more

than code blend since her vocabulary and skill makes semantically equivalent simultaneous production difficult. Sibling1 performed simultaneous production quite frequently when Sign Language was used. This is in line with Emmorey, Borinstein, and Thomson's finding in their 2005 study where they found that spoken English-ASL bilinguals rarely code-switch, instead code-blending. They found that 95% of the ASL signs co-occurred with English words. Their study was on adults however, and Sibling 1 does not show that high of a level, though the results indicate that she does simultaneously produce more frequently than she code-switches.

Importance of Speech Acts

The results from evaluating the same individual speech acts that Bauer, Hall, and Kruth's study had derived from Ninio, Snow, Pan, and Rollins's (1994) categories of illocutionary force, showed that certain speech acts had higher incidence of code-switching / blending. Within the results of this study the four acts that saw the highest amount of code-switching and code blending are requests, responds, rejects, confirms. 21% of the code-switch/blends occurred as requests. The reasons for this are that most of the time the subjects request something from a Deaf parent and the child adapts to the parents preferred code. Just like anyone would do when they want something. Also when making a request, there is a desire to get a specific result. It makes sense to use which ever code most clearly expresses your desire, or the simultaneous use of both codes for clarity. Responses, Rejections, and Confirmations also have high levels of code-switching / blending. Again the use of both codes in a simultaneous production for clarity of response can be applied. Another aspect is that these four speech acts are also ones engaged in early on in language learning. Both subjects started with Sign for

communicating with their parents, so it would make sense that they would repeat what has repeatably produced the desired result.

Semantic Equivalencies of Code-blends

The results found when examining semantic equivalencies were not surprising. Emmorey, Borinstein, and Thomson's (2005) study found that 95% of the ASL signs co-occurred with English words, and that 94% of the ASL signs their subjects used were semantically equivalent and only 6% non-equivalent. Petitto, Katerlos, Levy, Gauna, Tetreault, & Ferraro (2001) found that their two spoken French- signed LSQ bimodal bilinguals produced semantic equivalencies 89% of the time. Wagner, Nusbaum, and Goldin-Meadow (2004) reported observing a 5% non-equivalency. According to the results of this study, the subjects had a 97.8% semantic equivalency of their signs to spoken English. This is a little higher than found in the referenced studies, but still fits the pattern. One thought on the reasons for there being fewer mismatches has to do with the level of vocabulary, and language skill. The majority of the statements made by the subjects were simple sentences, easily produced in either code. These other studies were focused on adults whose speech use would include much more complex sentences which would lead to more complex combinations for semantic equivalency. The one area where the results did differ from those observed in previous studies was code-switching. The subjects did engage in more code-switching. This difference is probably resulting from their use of adult subjects. Child subjects with less exposure to spoken English may choose to fill the lexical gap by code-switching when they are unable to produce a semantically equivalent code-blend.

Grammatical Categories of Code-blends

The results of the examination into the grammatical categories analysis of code-blends were unexpected. Emmorey, Borinstein, and Thomson (2005) found that verbs were the most common grammatical category in the code-blending they analyzed in their study. This they found to be opposite from the results found by Mysken (2000) and Myers-Scotton & Jake (2003) where they report that for unimodal speech-speech bilinguals, nouns are easily code-switched where as verbs are code-switched less often. The results from this study's subjects tend to follow this unimodal pattern, more than those found by Emmorey, Borinstein, and Thomson. In both simultaneous production and code-switching the subjects in this study tended to code-switch/blend nouns more frequently than verbs. The explanation Emmorey, Borinstein, and Thomson (2005) gave for their subjects code-blending verbs more often had to do with inflectional morphology does not need to be integrated in Sign Language, and signs often convey additional semantic nuances. In the case of this study's subjects, a possibility may be that because they are children with a simpler vocabulary and less understanding of grammatical rules, they do not use complex verbs. In this case the Nouns then are more commonly code-switch/blended like what was observed in unimodal bilinguals because they do not take advantage of the extra information that is conveyed in signed verbs.

Initiation & Participation In Each Language Context

The results do indicate the existence of some relationship between the initiation of activities and the amount of participation in the conversations involved in the play activities. There is also a relationship between the language used to initiate an activity, and the language used to participate in the activity. E.g., Table 5.1 has a sample from

the block building activity that Sibling 1 initiated. English was chosen to initiate the activity, and spoken English was used throughout the activity, except when addressing the father. The same was observed in activities initiated in simultaneous production. However, this is an area where more data is needed. Because there were only 30 minutes of recordings in each language context, this severely limited the number of activities that were available to be engaged in. Also the small sample size, in this case, resulted in different activities being engaged in for each language context. This means we cannot compare how the subjects choose to use language in different language contexts for the same activities. An example of this would be: What language does the subject use when playing trains with the Father in a Sign / Simultaneous context vs. the Grandfather in a spoken English Context? With more data, you could also have samples of the interlocutor initiating, and the subject initiating the same activities for comparison to evaluate the language preference by the subject for a given activity.

CHAPTER 6

SUMMARY, RECOMMENDATIONS

In summary, the aim of the study was to answer what kinds of play activity is the hearing child and their interlocutors involved in, and how does the hearing child use the two languages to constitute involvement in play? Home video-recordings were obtained from the parents that contained a total of 60 minutes footage. This footage was then transcribed and categorized into two equal language environments. 1) 30 minutes in a spoken English environment. 2) 30 minutes in a Sign / Simultaneous Environment. Then the data in each section was identified for initiation, speech act, and language. Instances of code-switching and code-blending were then identified and analyzed.

The key findings from the results are engaged in a number of different play activities with their interlocutor, and language plays an important role in these activities. Within these activities the subjects were aware of the language environment, and the language preference of their interlocutors and adapted accordingly. Even in subject initiated activities the subjects initiated in the language of the interlocutors. This was evident by the high amount of spoken English in the spoken English context, and the increase in simultaneous production and Sign Language code-switching in a Sign / simultaneous context. Code-blending is preferred over code-switching, when code-blending occurs it has a high level of semantic equivalency, and nouns and verbs are the most common grammatical categories used in code-switching/blending.

The significance of these findings for foreseeable theory and research development is that bimodal bilingual children do actively participate in language selection. This needs to be researched further, as there is very little study on bimodal

bilingualism compared to unimodal bilingualism. What research does exist, predominantly focused on unimodal bilingualism. The results of this research have found that children do handle bimodal bilingualism differently than adult bimodal bilinguals, and that more study is necessary.

My research, while providing some interesting findings, is only the tip of the iceberg. This area of research needs more than a selective case study. It needs a longitudinal study that can collect large samples of data to address many of the comparison issues faced in this study. With larger samples and more activities, more can be understood about how language dominance in activity initiation influences a bimodal bilingual child's language choices.

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APPENDICES

APPENDIX A

DISCRIPTION OF ASL, PSE, SEE

American Sign Language (ASL), in the past refereed to as "Ameslan", is one of many Sign Languages that makes use of manual methods of face, hands, and body expression to communicate non-verbally. ASL has it's own grammar and syntax different from spoken English, as well as other Sign Languages. There exists no one single universally adopted form of Sign Language. ASL is the most commonly used Sign Language adopted by the Deaf community within the United States. Other countries have their own versions of Sign Language.

According to "About ASL" by Karen Nakamura, from the Deaf Resource Library. (www.Deaflibrary.org) there are other varriations. One such variation indicated is Signing Exact English (SEE). SEE makes use of ASL words by using them with English grammar and word order. SEE also uses invented or modified signs for English inflections such as "-ing" or "-ed" and function words such as articles such as "the". SEE and other forms of signing English are generically called Manually Coded English (MCE). They are not in any way considered ASL, but are regarded as manually coded forms of English. Nakamura notes that SEE and other versions of MCE are often used to teach English grammar and syntax to native ASL speakers.

Pidgin Sign English (PSE) is commonly used by hearing people, interpreters, and Deaf people. PSE or 'Contact Sign' is often used when signing to a hearing person. PSE is a blend of English and ASL grammar and syntax using sign vocabulary. PSE can range from very English-like PSE that is closer to SEE, or to a very ASL-like PSE, which uses mostly ASL grammar and words, but may not use the finer ASL grammatical points.

APPENDIX B

COVER LETTER

My name is John R. Hanson. I am a graduate student at Southern Illinois University-Carbondale Linguistics Department. I myself am a bilingual American Sign Language and English speaker. Because of this interest, I am doing research into the bilingual use of English and American Sign Language by hearing children of Deaf parents.

I am asking your permission for your pre-kindergarden child (age 2-5) to participate in my research study due to their hearing nature growing up in a Deaf household. The purpose of my study is to look into code-switching and simultaneous production that a bilingual hearing child of Deaf parents does while at play.

Your child's voluntary participation includes your consent for John R Hanson to make observations of communications you've have had with the hearing child that will be obtained from pre-recorded digital home video that were taken during play sessions within the past year. Should you consent to provide these recordings, they should include multiple recordings that total approximately 20 min in each of the three language contexts: 1) Deaf Only Environment ,where ASL is the primary mode of conversation. 2) Hearing Only Environment, where spoken English is the primary mode of communication 3) Mixed Deaf & Hearing Environment, where both Deaf and hearing family members are mixed together using both modes of communication. This should result in a grand total of approximately 60 min worth of video footage. If additional video footage is required to fill a gap in one of the context areas, digital video recording equipment can be provided.

Additionally, I am asking the parents/guardians to answer a language history questionnaire about their child's language use. Other hearing adult family members who have semi-regular interaction with your child may also be consulted to answer the same questionnaire to get information about the observed spoken English abilities of your child.

All data obtained from the video recordings will be kept confidential within reasonable limits. Only those directly involved with this project will have access to the data. Personally identifying information will not be included in the final thesis and pseudonyms will be used to replace real names. I will take all reasonable steps to protect your child's identity. Please do not confuse confidentiality with anonymity.

The provided digitally recorded video will be transcribed/stored and kept on an encrypted external storage device maintained in a locked file cabinet that only John R. Hanson will have access to. After the completion of the paper, these recordings will be destroyed.

If you are interested in having you child participate in this study, please contact John R. Hanson, 618-305-0724, jrhanson@siu.edu.

Thank you for taking your valuable time to assist me in this research.

This project has been reviewed and approved by the SIUC Human Subjects Committee. Questions concerning your rights as a participant in this research may be addressed to the Committee Chairperson, Office of Sponsored Projects Administration, SIUC, Carbondale, IL 62901-4709. Phone (618) 453-4533. E-mail: siuhsc@siu.edu

APPENDIX C

PARENT/GUARDIAN'S INFORMED CONSENT FORM

My name is John R. Hanson. I am a graduate student at Southern Illinois University-Carbondale Linguistics Department. I am doing research into the bilingual use of English and American Sign Language.

I am asking your permission for your child to participate in my research study due to their hearing nature growing up in a Deaf household. The purpose of my study is to look into code-switching and simultaneous production that a bilingual hearing child of Deaf parents does while at play.

Your child's voluntary participation also includes your consent for John R Hanson to make observations of communications you've have had with the hearing child that will be obtained from pre-recorded digital home video that were taken during play sessions. Should you consent to provide these recordings, they should include multiple recordings that focus primarily on your child, and total approximately 20 min in each of the three language contexts: 1) Deaf Only Environment ,where ASL is the primary mode of conversation. 2) Hearing Only Environment, where spoken English is the primary mode of communication 3) Mixed Deaf & Hearing Environment, where both Deaf and hearing family members are mixed together using both modes of communication. This should result in a grand total of 60 min worth of video footage. If additional video footage is required to fill a gap in one of the context areas, digital video recording equipment can be provided.

All data obtained from the video recordings will be kept confidential within reasonable limits. Only those directly involved with this project will have access to the data. Personally identifying information will not be included in the final thesis and pseudonyms will be used to replace real names. I will take all reasonable steps to protect your child's identity. Please do not confuse confidentiality with anonymity.

Additionally, as the parent/guardian you will be asked to answer a language history questionnaire, and additional hearing adult family members may be consulted to answer the same questionnaire to get information about the observed spoken English abilities of your child.

By signing this consent form, you understand that the provided video will be transcribed/stored and kept on an encrypted external storage device maintained in a locked file cabinet. After the completion of the thesis, these recordings will be destroyed.

By signing this consent form, you indicate that you understand questions or concerns about this study are to be directed to John R. Hanson, 618-305-0724, jrhanson@siu.edu. or his advisor Dr. Usha Lakshmanan, Professor of Psychology and Linguistics, Program in Brain and Cognitive Sciences, SIUC, 618-453-3574, usha@siu.edu

Thank you for taking the time to assist me in this research.

I have read the information above and any questions I have asked have been answered to my satisfaction. I agree to allow my child (First Name:_____) to participate in this activity agree to provide the requested video recordings or record additional video if needed. I understand a copy of this form will be made available to me for the relevant information and phone numbers. I realize that I may withdraw my child without prejudice at any time.

"I agree _____ I disagree _____to provide my child's digitally recorded play sessions"

"I agree_____ I disagree _____ that John R Hanson may quote my child in his/her paper"

_____
Parent/Guardian's Signature and Date

This project has been reviewed and approved by the SIUC Human Subjects Committee. Questions concerning your rights as a participant in this research may be addressed to the Committee Chairperson, Office of Sponsored Projects Administration, SIUC, Carbondale, IL 62901-4709. Phone (618) 453-4533. E-mail: siuhsc@siu.edu

APPENDIX D

CHILD ORAL ASSENT FORM

My name is John R. Hanson. I am a student at Southern Illinois University-Carbondale Linguistics Department. I like to study how people talk. I want to know how children like you Sign and speak .So I am going to do a study to find out about this. If you like to take part and help me in my study, then I will ask your parents to give me some home video of you playing. I will look at that video and study when you Sign, and when you speak. Would this be ok to do?

Did you understand what I just said?
Do you want to take part in my study?
Please say "yes" or "No".

Parent/Guardian Witness: _____
Date:_____

APPENDIX E

HEARING ADULT FAMILY MEMBER QUESTIONNAIR/INTERVIEW INFORMED

CONSENT FORM

My name is John R. Hanson. I am a graduate student at Southern Illinois University-Carbondale Linguistics Department. I am researching bilingual use of English and American Sign Language.

The purpose of my study is to look into the role of codes-witching and simultaneous production during play contexts of bilingual hearing children of Deaf parents.

I am asking you to participate in my research study by providing some language history background about the hearing child of Deaf parents in which you have semi-regular contact.

Participation is strictly voluntary and that you may refuse to answer any question without penalty. If you choose to participate in the study, it will take approximately 30-60 minutes of your time. You will be interviewed using a set of questionnaire questions to guide the interview which will look at your language use history, and those of hearing children of Deaf parents in which you have a relationship.

Your voluntary participation also includes your consent for John R Hanson to make observations of communication you have had with the hearing children that will be obtained from digitally recorded play sessions that will be provided by the parents.

All your responses will be kept confidential within reasonable limits. Only those directly involved with this project will have access to the data. Personally identifying information will not be included in the final thesis, except for relationship to the hearing children. I will take all reasonable steps to protect your identity by using pseudonyms in place of real names.

By signing this consent form, you understand that your responses to the questions will be used, and that the recordings obtained from the parents containing the play activities, will be transcribed/stored and kept in a locked file cabinet. After the completion of the thesis, these recordings will be destroyed.

Thank you for taking the time to assist me in this research.

By signing this consent form, you indicate that you understand questions or concerns about this study are to be directed to John R. Hanson, 618-305-0724, jrhanson@siu.edu. or his advisor Dr. Usha Lakshmanan, Professor of Psychology and Linguistics, Program in Brain and Cognitive Sciences, SIUC, 618-453-3574, usha@siu.edu

I have read the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this activity and know my responses will be used in the the writing of the final thesis. I understand a copy of this form will be made available to me for the relevant information and phone numbers. I realize that I may withdraw without prejudice at any time.

"I agree _____ I disagree _____to have my responses digitally recorded."

"I agree_____ I disagree _____ that John R Hanson may quote me in his/her paper"

_____
Participant Signature and Date

This project has been reviewed and approved by the SIUC Human Subjects Committee. Questions concerning your rights as a participant in this research may be addressed to the Committee Chairperson, Office of Sponsored Projects Administration, SIUC, Carbondale, IL 62901-4709. Phone (618) 453-4533. E-mail: siuhsc@siu.edu

APPENDIX F

LANGUAGE BACKGROUND QUESTIONNAIRE

The purpose of this questionnaire is to gauge the language background of those interacting with the child, and the observations about the child's language abilities and use. The information from this questionnaire will be used in the evaluation and interpretation of the child's language use that will come from video recordings of the child's interactions in play contexts that will be provided by the parents.

Language Background Questionnaire:

Parent's/family member's Name: _____
Date of Birth:_____ Age:_____ Gender:_____
What is your level of education (high school, university degree):_____
What is your profession (e.g., student, lawyer):_____
Parents/family members relationship to child:_____

Parent's/Family Member's Language Background:

For each, rate how well you can use the following languages on the following scale:
Poor <1.....2.....3.....4.....5> Good

English:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

ASL:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

Other Language:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

Other Language:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

When did you learn English:_____ How long have you used English _____

What is your English Learning Background: *Whether you learned it by formal lessons (e.g., at school or a course), or by informal learning (e.g., at home, at work, from friends).*
_____
_____

When did you learn ASL:_____ How long have you used ASL: _____

What is your ASL Learning Background: *Whether you learned it by formal lessons (e.g., at school or a course), or by informal learning (e.g., at home, at work, from friends).*
_____
_____

Childs's Language Background:

Child's First Name: _____
Date of Birth:_____ Age:_____ Gender:_____

Child's participation in any special English instruction classes? YES___NO___

If Yes, Please
describe:_____

Child's participation in any special ASL instruction classes? YES___NO___

If Yes, Please
describe:_____

What languages are spoken in the home?

* Parent to Parent_____
* Parent to Child: _____
* Child to Parent: _____
* Child to Sibling(s):_____
* Other Family Members to Child:_____

What Language is most commonly spoken in the home by:
Mother:
Father:
Grandmother:
Grandfather:
Brother:
Sister:
Other (please indicate):

What is the frequency with which the child speaks each language on a daily basis?
ASL: ____%   English: ____%   Other (   ): ____%   Other (   ): ____%

What is your impression of the child's general level of language skills?

For each, rate how well the child can use the following languages on the following scale:
Poor <1.....2.....3.....4.....5> Good

English:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

ASL:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

Other Language:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

Other Language:
A) listening: _____ B) reading: _____ C) speaking: _____ D) writing: _____

What exposure does the child have using/hearing English language at home?

| □ none | □ television | □ radio | □ music |

□ books	□ friends	□ family	□ play w/ caregivers

Others?
_____
_____

What exposure does the child have using ASL language at home?

□ none	□ television	□ radio	□ music
□ books	□ friends	□ family	□ play w/ caregivers

Others?
_____
_____

Parent's/Family Member's Language Interaction With The Child:

How often do you interact with the child: _____

How much of the interaction is conducted in English: _____

How much of the interaction is conducted in ASL: _____

Briefly describe your previous interaction experience of using English with the child:
_____
_____
_____

Briefly describe your previous interaction experience of using ASL with the child:
_____
_____
_____

How often have you observed code-switching while interacting with the child:
_____

Briefly describe your code-switching observations:
_____
_____
_____

How often have you observed simultaneous ASL/English use while interacting with the child:
_____

Briefly describe your simultaneous ASL/English observations:
_____
_____
_____

Additional comments or observations about the child's language use:
_____
_____
_____

APPENDIX G

Transcription Key

/.?./	unintelligible utterance
/.../	comprehensible sounds that do not make a complete and/or meaningful word, or presumed utterance
[...]	English/ASL Simultaneous
(...)	comment, or description of the situation
(semi)	Semi-Intelligable speech from Deaf Parent
(non)	Non-Intelligable speech from Deaf Parent
(bab)	Non-Intelligable babbling from Child
(=...)	clarification of words that are pronounced incorrectly
(os)	Off Screen - No visual to indicate if Sign Language was used
^^	overlapping speech (two or more conversation partners talking at the same time)
..	Short Pause in speech
....	Long Pause in Speech
XXXX	Omitted for confidentiality

VITA

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Bachelor of Science, Sociology of Anthropology, May 1999

THE PRAGMATIC ROLE OF CODESWITCHING AND SIMULTANEOUS
PRODUCTION DURING PLAY CONTEXTS OF BIMODAL BILINGUAL HEARING
CHILDREN OF DEAFPARENTS

Major Professor: Usha Lakshmanan, PhD