EXAMINING THE FREQUENCY, PATTERNS, AND FUNCTIONS OF CODE-SWITCHING IN CHILD-DIRECTED SPEECH TO SPANISH-ENGLISH DUAL LANGUAGE LEARNERS

by

ALYSSA RODRIGUEZ

A THESIS

Presented to the Department of Special Education and Clinical Sciences
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of Master of Arts

June 2020

THESIS APPROVAL PAGE

Student: Alyssa Rodriguez

Title: Examining the Frequency, Patterns, and Functions of Code-Switching in Child-Directed Speech to Spanish-English Dual Language Learners

This thesis has been accepted and approved in partial fulfillment of the requirements for the Master of Arts degree in the Department of Special Education and Clinical Sciences by:

Lauren Cycyk, PhD	Chairperson
Stephanie De Anda, PhD	Member
Audrey Lucero, PhD	Member

and

Kate Mondloch	Interim Vice Provost and Dean of the Graduate School

Original approval signatures are on file with the University of Oregon Graduate School.

Degree awarded June 2020.

THESIS ABSTRACT

Alyssa Rodriguez

Master of Arts

Department of Special Education and Clinical Sciences

June 2020

Title: Examining the Frequency, Patterns, and Functions of Code-Switching in Child-Directed Speech to Spanish-English Dual Language Learners

This thesis examines the frequency, patterns, and discourse function of code-switching (CS) in Spanish-speaking, Latinx parents during interactions with preschoolers. Existing literature has demonstrated that parents CS with high variability, tend to CS between sentences rather than within sentences, and CS for purposes such as disciplining or teaching a new word. However, this research predominantly focuses on parents of infants and toddlers, oftentimes using only parent report. This study aims to describe the CS characteristics of parents from Latinx backgrounds through direct observation. Fifty parent-child dyads were video recorded during an 8-minute play-based interaction. Interactions were transcribed and coded for parental CS. A Matrix-Language Frame Model approach was used to analyze CS. Results suggest that parents indeed CS with varying frequency, tend to CS between sentences, and CS when questioning, directing, labeling, and describing. Results further suggest that parental language dominance (i.e. matrix language) is significantly associated with CS use.

CURRICULUM VITAE

NAME OF AUTHOR: Alyssa Rodriguez

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene
San Diego State University, San Diego

DEGREES AWARDED:

Master of Arts, Communication Disorders and Sciences, 2020, University of Oregon
Bachelor of Arts, Speech, Language & Hearing Sciences, 2016, San Diego State University, California

AREAS OF SPECIAL INTEREST:

Bilingual Spanish-English Speech-Language Pathology

PROFESSIONAL EXPERIENCE:

Speech-language pathology intern, De Anza Magnet Elementary School, El Centro, California, 2020

Graduate Research Assistant, Early Dual Language Development Lab, Eugene, Oregon, 2018-2020

Speech & Language Specialist, Imperial County Office of Education, El Centro, California, 2017-2018

Assistant Lab Manager/Experimenter Infant and Child Development Lab, San Diego, California, 2016-2017

GRANTS, AWARDS, AND HONORS:

Project INICIO Scholar, Communication Disorders and Sciences, 2018-2019

General University Scholarship, University of Oregon, 2019

Undergraduate Research Excellence Award, SDSU Student Research Symposium, 2017

Student International Experience Program Scholarship, San Diego State University, 2016

ACKNOWLEDGMENTS

First and foremost, I would like to express my sincere appreciation to Dr. Lauren Cycyk, for providing invaluable guidance throughout the process of writing this thesis. Dr. Cycyk's knowledge and passion for serving DLLs, her genuine care for her students, and her constant encouragement were paramount not only to the completion of this project, but to my growth as a student and clinician. It has been an honor to learn from her.

I am indebted to Dr. Stephanie De Anda for her guidance in setting up this study, and for providing feedback to the written draft. Dr. De Anda's vast knowledge and passion for research is truly inspiring, and contributed to my excitement of taking on this research. Her unwavering support has seen me through this and many other projects, both academic and personal, and I owe much of my success to her influence.

I similarly thank Dr. Audrey Lucero, who graciously accepted being a part of my committee. Dr. Lucero's feedback inspired many questions for future research that I am excited to tackle.

I am deeply grateful for Bobbie Bermudez's contribution to this project. Despite her many responsibilities as a doctoral student, Bobbie enthusiastically helped me to form the research questions and methods for this thesis. I will never forget our mutual excitement when discussing lit review findings over coffee.

I also thank the members of the Early Dual Language Development Lab for their support. A special thanks goes out to Brandon Zuel, who kindly volunteered to help with coding.

I thank the Brain Development Lab at the University of Oregon and the families who participated in their research, whose transcripts we used for this project. A sincere thanks to Dr. Eric Pakulak, for his insightful feedback during the early stages of writing.

Finally, I thank my parents for their love and encouragement, and for kindly allowing me to talk and talk (and talk some more) about code-switching and bilingualism research over meals. I thank my brothers - Steven, for his genuine curiosity of code-switching and thought-provoking questions, and David, for always making me laugh during short, 5-minute phone calls in between editing sessions. Finally, I thank my husband, Tonatiuh, for supporting me in every way imaginable through this process. This project could not have been accomplished without his big hugs, homecooked meals, and words of love and encouragement.

TABLE OF CONTENTS

LIST OF TABLES

Table Page

CHAPTER I

INTRODUCTION

Dual Language Learners (DLLs), defined as children under age 8 living with a parent who speaks a language other than or in addition to English, make up one-third of the young child population in the United States (MPI, 2017). The number of DLLs who are exposed to Spanish and English, in particular, is steadily increasing - More than seven million parents of DLLs speak Spanish as a home language (MPI, 2017). As such, it is important to understand the early language experiences that influence dual language development in Spanish-English contexts. DLLs' earliest language experiences occur within the home environment, where family members provide them with the language input and practice that is a critical component of language development (Goldstein, 2012). Of particular importance within DLLs' family units are caregivers, whose input has been shown to be a major contributor to language development in children (Zauche et al., 2016). In the households of DLLs, code-switching is a unique feature of caregiver input that may play a role in children's earliest language experiences.

Code-switching (CS), defined as the alternation or mixing of languages within discourse (Lanza, 1992), is a relatively frequent behavior of bilinguals. There are a variety of terms used in the literature when referring to code-switching (e.g., code-mixing, language mixing, translanguaging). For the purposes of this study, code-switching and language mixing are used interchangeably when describing adult and child CS. CS can occur both within and across utterances. When a language switch occurs within an utterance, it is referred to as an intra-sentential switch; when it occurs across

utterances, it is referred to as an inter-sentential switch (Genesee et al., 1996). Much research has been done to study code-switching in adults and has shown that although often misunderstood as linguistic incompetence, CS is a rule-governed form of language that is driven by various functions, including sociopragmatic and cultural motivations (Goldstein, 2012). Although the amount of code-switching in the discourse of a bilingual adult varies depending on several complex factors, CS tends to be most common in interactions with familiar conversational partners, including friends and family members (Dewaele & Wei, 2014). Therefore, it is likely that young Spanish-English DLLs are being exposed to CS from their caregivers. In fact, research has shown that children are indeed exposed to CS even when parents intentionally attempt to maintain a one-parent, one-language household (Goodz, 1989). As such, research observing this phenomenon of the early language experiences of DLLs from Spanish-English backgrounds is warranted.

While much research has been conducted to study CS in young DLLs and their families, most of it has focused on the CS patterns of the children themselves. To date, few studies have described parental CS in child-directed speech. The research available suggests that parental frequency of CS, specifically, influences child mixing patterns in their earliest years (Goodz, 1989, Lanza, 1992). Given the potential importance of parental input on child language development, specifically as it pertains to lexical and syntactic development, it is critical to understand the characteristics of child-directed CS in order to better understand how code-switching may influence the dual language development of DLLs in the preschool years. The present study aims to identify these features through direct observation of Spanish-speaking Latinx caregivers and their

preschool-aged children. Specifically, this study investigates the frequency, patterns, and discourse functions of parental CS during parent-child play.

Frequency of Code-switching

Frequency is defined as how often parents code-switch when talking with their children during parent-child interactions. Self-report measures and observations of parent-child dyads have consistently shown that caregivers CS with varying frequency when speaking to infants and toddlers, in particular. Some caregivers may not CS often (or at all), while others may CS regularly. For example, 40% of bilingual parents (English + another language, including Spanish) reported using both languages when with their toddler-aged child or at home (Byers-Heinlein, 2013). Parents who do CS might also differ in the proportion of code-switched utterances they provide to their child in a single interaction. Similarly, Bail et al. (2015) directly observed the CS of 24 Spanish-English-speaking caregivers when interacting with their toddlers during play and found that all caregivers code-switched at least once during the interaction, and as a group code-switched in approximately 16% of child-directed utterances on average; yet, the individual variability in frequency of code-switched utterances ranged from 0.4% to 45.8% of total utterances. In Mishina's (1999) longitudinal study of a Japanese-English-speaking toddler and his parents during naturalistic interactions, the child's mother was found to CS in 4% out of all utterances across time. This variability in the frequency with which caregivers CS in direct interactions with their children may be relevant to the language development of DLLs.

At present, there are conflicting results specific to how the frequency of CS influences early language development. For example, parental CS frequency may be

influencing child speech such that children replicate their parent's CS patterns in their own speech. Indeed, research has shown there is a positive correlation between the frequency of parental CS and child CS (Goodz, 1989). Similarly, Mishina (1999) found similarities between parental mixing and child mixing. However, in contrast to Goodz (1989), Mishina (1999) found that the frequency with which the parent code-switched depended on whether the child code-switched as well. Thus, it is possible that the child's productions are what drive parental CS. As children develop and receive more exposure to both their languages, their use of CS may decrease (Goldstein, 2012). As such, if parent CS is influenced by child CS, it is likely that parental CS would decrease along with their children's CS. However, if parental CS occurs independent of child CS, frequency would be less likely to change over time. In this study, we observe parental CS in parents of older children as a first step in understanding the relationship between parental and child CS in populations of older children than have previously been included in the research on parental CS.

Finally, it is possible that exposure to caregiver CS may influence language development at the processing level. Research conducted on Spanish-English speaking school-aged children (ages 5-11) and their families has found that higher CS exposure was associated with lower levels of child language ability in both languages only as related to the child's verbal working memory (Kaushanskaya et al., 2019). That is, higher CS exposure was associated with lower levels of child language ability in children with low verbal working memory. Conversely, higher CS exposure was associated with higher levels of child language ability in children with strong verbal working memory. However, parent report for this study not only asked for parent use of CS, but also required parents

to report on the CS use of other family members, which may be unreliable when used as a sole method of quantifying CS. The present study investigates frequency of CS through direct observation of parents and their preschool-aged children to complement previous studies using parent report of CS.

Patterns of CS

For this study, patterns of CS are described in two ways. First, patterns of CS refer to the type of code-switch demonstrated by the parent as either inter-sentential (i.e., between utterances) or intra-sentential switches (i.e., within utterances), as previously described. Second, CS patterns are further identified in intra-sentential CS at the word level. Specifically, single words identified as content or function words in the other language may be mixed during intra-sentential CS (Goldstein, 2012). Content words are lexical items that have specific or detailed semantic content and carry the principal meaning of a sentence, including nouns, verbs and adjectives (Corver & van Riemsdijk, 2013). Function words are words with a more non-conceptual meaning that fulfill a grammatical function, including articles, demonstratives, auxiliaries, and prepositions (Corver & van Riemsdijk, 2013).Thus, an example of intra-sentential CS where the switch occurs on a content word would be “te va a morder el shark!” In this case, “shark” is the switched word; it is also a noun, which makes it a content word switch. An example where CS occurs on a function word would be “los animals are coming.” In this case, the word “los” or “the” in English is the switched word; as it is an article, it is classified as a function word switch. Understanding the common patterns of CS to which young Spanish-English DLLs are exposed will aid in investigating the effect such patterns exert on their dual language development.

Although the research describing parental CS patterns is sparse, some findings have suggested that specific patterns of CS may be more prevalent in the language input that young DLLs receive and that these patterns are related to child language outcomes. For example, Bail et al. (2015) found that Spanish-English-speaking parents were more likely to CS inter-sententially (between utterances) than intra-sententially (within utterances) during observed interactions with their toddlers; however, the differences were not consistent enough to be suggestive of parents intentionally avoiding intra-sentential CS, which may be indicative that the two types of CS are used for different conversational purposes. Bail et al. (2015) further found a significant correlation between the type of CS and child vocabulary abilities such that Spanish-English-speaking children who were exposed to greater amounts of intra-sentential CS from their parents demonstrated larger productive conceptual vocabularies. In contrast, Byers-Heinlein's (2013) study of 181 bilingual parents found higher rates of intra-sentential parental CS (as reported by parents) predicted significantly smaller English receptive vocabularies in 1.5-year-old children and smaller English productive vocabularies in 2-year-old children. The contrasting results of these studies are likely due to the different approaches used to measure CS (i.e., direct observation versus parent report) and its influence on child language development (i.e., assessing vocabulary in both languages versus one).

It is possible parental CS patterns are influencing different aspects of dual language development differentially. Byers-Heinlein (2013) hypothesizes that exposure to intra-sentential CS, specifically, can be detrimental to dual language development as it can make it difficult for DLLs to segment language and categorize words within a speech stream. Similarly, Bail et al. (2015) hypothesizes intra-sentential CS may come with

processing costs as it requires the child to quickly switch between lexicons. Therefore, similar to overall frequency of CS, exposure to specific patterns may be detrimental to a DLLs' vocabulary acquisition in one of their two languages depending on which language they are more likely to hear specific words.

Moreover, Bail et al. found that parents tended to switch intra-sententially within a noun phrase, specifically at the noun, which is categorized as a content word. This finding echoes those of Sankoff and Poplack (1981) who found that adult CS was very likely to occur between a determiner (i.e. function word) and a noun (i.e. content word), as well as at adverbs (i.e. content words) and adverbial phrases. Yet, some parents may also switch at the level of function words. Bail et al. (2015) found that some parents code-switched from a Spanish determiner (function word) to an English noun. It may be that some children are receiving vocabulary exposure via content word switches in intra-sentential CS, while others are receiving grammar exposure via function word switches. Thus, it is possible that exposure to certain CS patterns may have differential effects on the vocabulary acquisition of DLLs in particular. As CS has been shown to occur when children are tuned in to what parents are saying (Goodz, 1989), it is important to observe the quality of linguistic input being received.

Discourse Function

Function is defined as the purpose an utterance serves within a conversation (Vigil et al., 2005). For example, the sentence "this is an apple" serves to identify, or label, an object. The sentence "put your shoes on" is an example of a directive that supports behavior. There are varied functions available to speakers within a conversation, and knowing the reasons that parents code-switch with their children is important because

children may CS for similar reasons following the examples of their parents. It is also possible that children may develop specific vocabulary and forms associated with specific functions in each language that match the language in which those functions are modeled in parental speech. In order to understand the influence of function on child language, we must first understand the underlying purpose of parental CS.

Research to date has identified a variety of functions of parental CS with young DLLs, which may vary by context and target language. A longitudinal study investigating bilingual French-English parents and their toddler-aged (14-28 mos.) children during naturalistic observations in the home found that parents code-switched to question, attract attention, request, clarify, emphasize a concept or discipline; further, parental CS occurred specifically during moments of joint-attention, when children were tuned in to what they were saying (Goodz, 1989). A study conducted by Pan (1995) analyzed the patterns of language choice and CS in book-reading and meal-time observations of 10 Mandarin Chinese speaking families with children ages 4-6 years. Parents were found to CS for the purpose of moving a conversation towards the home language (i.e. English to Chinese). Importantly, this type of switching tended to occur mostly during mealtime, which may suggest that parents CS for different reasons depending on the interactive context.

Parents may also CS to each language to achieve different functions. In Byers-Heinlein's (2013) study, for example, 52% of parents reported code-switching to the home language to teach a new word, 43% of parents reported using CS when a poor translation of the target word existed in English, and 51% reported switching to English when they were unsure of the target word in the home language. Less common reported

reasons included code-switching when the target word was hard to pronounce in the other language (22% for both English-home language CS and home language-English CS). Despite these findings, it is not currently known which discourse functions are most commonly represented in the CS of Latinx parents of preschool-aged children.

Together, a review of the literature suggests that parents might indeed use CS for specific purposes. The effects of discourse function on dual language development have been observed to analyze how parental response to CS (i.e. the extent to which a parent allows CS) influences language development. Specifically, Lanza (1992), Juan-Garau (2001) and Mishina (1999) have concluded that parental use of CS when interacting with their children serves to inform the child that CS is perfectly acceptable. However, to our knowledge, few studies have attempted to identify the social purposes behind parental CS. Cultural factors influence both adult CS and bilingual language development (Goldstein, 2012; Dewaele & Wei, 2014). As such, studies analyzing CS function in parents who come from different cultural backgrounds might be different from the functions used by Spanish-speaking Latinx caregivers. Our study aims to categorize the underlying purposes of CS in Latinx parents of preschoolers beyond the negotiation of monolingual or bilingual contexts by using a wider range of functions.

The Role of Language Proficiency in CS

Language proficiency refers to how well a speaker can use each of their languages to communicate and may be represented by the language used most often in interactions. Spanish-English speaking bilingual adults may have a range of proficiency, spanning from Spanish dominant to balanced Spanish-English dominance, to English-dominant, depending on their experience with and use of each language. Language proficiency can

play a role in how frequently a person code-switches, such that speakers who are highly proficient in both their languages demonstrate greater use of CS (Dewaele and Wei, 2014). As such, a bilingual Spanish-English speaker who demonstrates high proficiency in both English and Spanish is likely to CS more frequently than a Spanish-English speaker who demonstrates dominance in English or Spanish (however, note that frequency of CS is also related to other factors and not solely to language proficiency).

Similarly, language proficiency can influence the type of CS a speaker uses. Poplack (1980) argues that bilinguals are required to have sufficient knowledge of the grammar of each of their languages in order to CS, particularly during intra-sentential CS, as it involves maintaining the structural integrity of a single utterance containing multiple languages. In contrast, CS between sentences is not syntactically difficult as it does not require the speaker to uphold the grammatical structures of both languages in a single utterance (Sankoff & Poplack, 1981). As such, it is possible that language proficiency may play a role in the patterns of parental CS, such that speakers proficient in both languages may demonstrate more within sentence CS than those who demonstrate dominance in one of their two languages.

The interaction between child language dominance and parental CS may also be considered to support our understanding of the purposes for which parents CS. For example, a parent might CS for the purpose of matching the child's stronger language in order to get their message across and ensure child comprehension; for example, when providing directives. In contrast, it is also possible that parents may CS for the purpose of supporting home language maintenance, as found by Pan (1995), in contexts where English dominates.

CHAPTER II

LIMITATIONS OF CURRENT RESEARCH & PURPOSE OF THIS STUDY

A limited amount of observational research exists that focuses on the frequency, patterns, and function of parental CS in speech to young DLLs in general. The research that has been completed has primarily included toddler-aged children from varied language backgrounds. It is important to expand our understanding of parental CS to preschool-aged children from Spanish-speaking Latinx backgrounds using direct observation for several reasons. First, parental CS patterns might shift as children grow and are exposed to more English through the U.S. educational system. Byers-Heinlein (2013), for example, found that parents reported code-switching more often when their child was 1.5 years old as compared to when the child was 2 years old. Moreover, research has shown that parental language input provided to Spanish-English-speaking children tends to shift toward English as children move through preschool (Hammer et al., 2009). Perhaps as children age and begin using more English due to exposure to English in school settings, the CS patterns of their parents might change as well. Therefore, our study aims to characterize the features of CS in parental speech to preschool-age children specifically. In addition, while previous studies have collected language proficiency information from bilingual parents, none to the knowledge of the author have observed differences in CS depending on parental language dominance.

Second, observational studies of CS (as opposed to parent report) are needed because self-report measures may not quantify CS as accurately as direct observation. Self-report measures rely on parents' memory of their everyday interactions with their children which may not always be reliable. As such, this study directly examines the CS

patterns of parents while they are engaging in a naturalistic activity with their children. A focus on describing the CS to which Latinx Spanish-English DLLs are exposed is necessary because children from this background make up 62% of DLLs in the United States (MPI, 2017). As they represent such a large segment of the child population in the US, understanding the characteristics that influence their development is paramount.

This study addresses the above-noted limitations of prior research through direct observation of Latinx parent-child dyads of preschool-aged children. The primary goals of the current research are to answer the following questions: 1) What is the frequency with which Spanish-English-speaking dual language learners ages 3-5 are exposed to CS from their parents during parent-child free play? 2) What are the patterns of CS of Spanish-speaking parents regarding (a) the use of inter-sentential and intra-sentential switching?; and, (b) the type of words code-switched (i.e., content vs. function) when intra-sentential CS occurs?, 3) What discourse functions drive CS among Spanish-speaking parents of preschoolers?, and 4) Do the frequency, patterns and functions of CS in Spanish-English speaking parents differ as a function of the preferred language of the parent during the interaction? Review of the literature surrounding the frequency of parental CS (Goodz, 1989, Bail et al., 2015) leads us to hypothesize that all parents will expose their child to at least some CS during the interaction but that there will be variability in the frequency of occurrence of CS across parents. In accordance with the research available on CS patterns (Bail et al., 2015, Sankoff & Poplack, 1981), we expect that parents will use inter-sentential switches more than intra-sentential switches, and further, that they will CS on content words (i.e. nouns, verbs, adjectives, adverbs) more often than function words (i.e. articles, demonstratives, auxiliaries) when switching intra-

sententially. In accordance with Goodz' (1989) data regarding function in parental CS, and the known tendency for Spanish-speaking Latinx mothers to use behavioral directives when interacting with their child (Cycyk & Hammer, 2018), we hypothesize that behavioral regulation will be a top used function of CS. Finally, in accordance with the self-reported reasons behind CS described in Byers-Heinlein (2013), we also expect to see parental CS occur for the purpose of teaching a new word, perhaps by labeling or providing a translation equivalent. These findings will serve to characterize what parental CS looks like in this population at this point in child development, and is an important first step in furthering the research so that the effects of CS on bilingual language development can be considered.

CHAPTER III

METHODS

Participants

The participants were 50 caregiver-child dyads randomly-selected from two larger studies conducted in the Pacific Northwest designed to test a cognitive intervention (Neville et al., 2013). All families were from Latinx backgrounds and recruited from Head Start, indicating lower income status. All parents reported at least some Spanish spoken in the home. Children were between 3 and 5 years of age, and there were no known concerns for their development. At the time of writing, additional demographic details on the participants were not available.

Measures and Procedures

Language Samples

Free-play parent-child interactions approximately 8 minutes in length were recorded in a laboratory setting prior to implementation of the intervention. Parent-child dyads were presented with toy sets from four categories (pirate ship, food, vehicles and animals) and instructed to "play with the toys so we can see what usually happens during shared playtime" (Neville et al., 2013, p.8). At the time of writing, it is unknown whether families were instructed to use any particular language during the interaction. These interactions were video recorded.

Transcription

Transcription and coding for CS during the free-play language samples occurred separately. The recorded interactions were first transcribed using the procedures and conventions of the Systematic Analysis of Language Transcripts Software (SALT; Miller

& Iglesias, 2016) by trained bilingual Spanish-English research assistants familiar with the dialects of the parent-child dyads. A nationally-certified Speech-Language Pathologist with experience in language sampling reviewed all transcriptions. Transcripts were revised as needed. The author of this thesis then coded the revised transcripts for parental language and CS patterns. Coding for the present study involved only the written transcripts; video recordings were not referenced.

Coding for Language

Each complete and intelligible caregiver utterance of the completed transcription was coded for language (Spanish, English, mixed Spanish-English, or unassigned). Unassigned codes were used for single-word utterances containing cognates or words that could be from either language (e.g. *pizza*, *sandwich*, *no*). However, if these single-word productions occurred between two utterances of the same language, the single-word utterance was then coded as that same language (Bail et al., 2015).

Defining and Implementing MLF Model

A Matrix Language-Frame Model (MLF Model) (Myers-Scotton, 1993) approach was adapted for this study to support the identification of CS within the transcriptions. The Matrix Language-Frame Model is a well-used approach in the CS literature that posits that one of the languages involved in CS plays a dominant role, and as such is identified as the matrix, or main language of a discourse sample while the secondary language is referred to as the 'embedded language' (Myers-Scotton, 1993). The matrix language is dynamic, and can change across time or within a conversation based on social motivations (Myers-Scotton, 1993). A speaker's native, or first language, will not necessarily always be designated as the matrix language – indeed, second languages can

be matrix languages depending on factors such as the nature of the topic or the community the speaker is a part of (Myers-Scotton, 1993). Thus, a matrix language approach allows us to analyze the CS patterns of this set of caregivers despite a lack of detailed language background information.

A Matrix Language (ML) was assigned to each caregiver based on the complexity of parental speech in Spanish and English. Myers-Scotton's frequency based criterion proposes that the "the ML is the language of more morphemes in interaction types including intra-sentential CS" (Myers-Scotton, 1993, p. 68). In other words, the language for which the average number of morphemes was higher when compared to the average number of morphemes in the other language is selected as the matrix language. For this study, Matrix language assignment was a two-phase process. First, morpheme frequency was calculated for each language using the SALT software. A Standard Measures Report, which provides an overall summary of language performance by speaker, was generated for each transcript (SALT; Miller & Iglesias, 2016). Mean length of utterance (MLU) in morphemes is provided in the Standard Measures Report and indicates the ratio of the number of main body morphemes to the number of utterances and excludes all words and morphemes produced outside of the analysis set. Parental utterances in each language were analyzed separately for MLU. MLU in morphemes was then compared for each language along with MLU in words; these two variables often complimented each other such that the language with a higher MLU in morphemes also had a higher MLU in words as compared to the other language. When these MLU in morphemes and MLU in words disagreed, a manual transcript review was conducted as a second step to ensure ML assignment was correct. Although a rare occurrence, when these two variables didn't

match, manual review of the transcript demonstrated one long utterance in one language amongst a transcript dominated by the other language. In these cases, matrix language was assigned according to MLU in words. All parents were assigned either Spanish or English as their ML depending on the highest average MLU. As an example, a parent with an MLU of 2.0 in Spanish and 1.5 in English was assigned Spanish as their matrix language. Due to the absence of detailed language proficiency data, using an MLF approach and assigning a matrix language served as an indicator of parents' preferred, or most dominant language during interactions with their child. Additional coding was required to analyze parental code-switching patterns and functions as described below.

Code-Switching Patterns: Inter- and Intra-sentential CS

Once the matrix language was assigned, CS was coded at the utterance level when utterances were produced in the secondary, or embedded language. Only complete and intelligible parent utterances from the parent were coded. Inter-sentential (coded as Inter_CS) and intra-sentential (Intra_CS) CS were coded separately. For the purposes of our study, inter-sentential CS is defined as switching from one language to the other between sentences (Myers-Scotton, 1993). An example of inter-sentential CS would be "That pizza looks delicious. Dame un pedazo!" Inter-sentential CS was coded for productions, including single-word utterances (excluding those coded as unassigned), spoken in the embedded language. Switches back to the ML were not coded as CS. Intra-sentential code-switching is defined as a switch that occurs within the same sentence or sentence fragment (Myers-Scotton, 1993). An example of intra-sentential CS would be "Esos son green beans." Intra-sentential CS was coded when any single utterance mixed both languages, including two-word utterances.

Code-Switching Patterns: Content vs. Function Words

Code-switched word(s) in instances of intra-sentential CS were additionally coded as content or function words at the word-level. Content words (coded as [CONTENT]) were defined as lexical items that have specific or detailed semantic content and carry the principal meaning of a sentence, including nouns, verbs and adjectives (Corver & van Riemsdijk, 2013). Function words (coded as [FUNCTION]) were defined as words with a more non-conceptual meaning that fulfill a grammatical function, including articles, demonstratives, auxiliaries and prepositions (Corver & van Riemsdijk, 2013).

CS Discourse Function

All code-switched utterances were coded for discourse function, or the communicative purpose of the code switch. Communicative purpose was identified by examining the target utterance within the broader context of the conversation instead of solely focusing on a single sentence, sentence fragment, or code-switched word(s). Discourse functions included: asking questions, answering questions, labeling, translating between languages, regulating children's behavior, imitating, expanding, describing, social scripts (e.g. greetings, politeness), providing affection, correcting, and teaching pre-academic skills (Vigil et al, 2005). See Appendix A for a detailed definition of each discourse function. See Appendix B for a transcript excerpt demonstrating coding for language, patterns and discourse functions.

Reliability

Approximately 20% of the transcripts were re-coded for CS patterns and discourse function by the student author for intra-rater reliability. Transcripts were randomly selected and coded without consulting the initial codes. Intra-rater agreement

was calculated by dividing the total number of agreements (including agreements for inter-/intra-sentential CS and discourse function) by the total number of possible agreements. Average intra-rater agreement was calculated to be 98.8%.

Data Analysis

Code reports were generated for each transcript on SALT software to determine each participant's matrix language and collect counts for inter-sentential and intra-sentential CS as well as for content and function words. These data were entered into an electronic database and analyzed using the Statistical Package for Social Sciences (SPSS, version 26) software. The dependent variables of interest were: frequency of CS (as represented by number of parents who code-switched at least once and percentage of code-switched utterances used by each parent), inter-sentential and intra-sentential CS (as represented by the percentage of each CS type used by each parent), content and function words (as represented by total counts of each type of word that was code-switched by each parent), and discourse function (as represented by the number of utterances that represented by each discourse function used by each parent).

Before proceeding with analyses, the data for each variable (representing CS frequency, patterns, and function) were checked for normal distribution and potential outliers. Two outliers were identified, as they code-switched six times more often than the remainder of parents. To answer how frequently parents used CS during the play-based interaction, we ran a calculation of descriptives using the total number of CS combining both types (inter- and intra-sentential) and the total number of analyzable utterances as variables. A second calculation was made excluding the outliers using the same variables in order to determine the degree to which the outliers impacted the

descriptive measures. To identify whether inter- or intra-sentential CS was more common in parental CS, we ran a calculation of descriptives for each type individually, using inter- or intra-CS and their total respective counts as variables. We ran this analysis using the same variables but excluding the outliers. A paired sample t-test was used to determine if the means of CS type (i.e. inter- and intra-sentential switching) were significantly different from one another. To identify whether the frequency of inter- and intra-sentential CS were associated, we ran a Pearson correlation using inter- and intra-sentential CS total counts as variables. Then, to answer whether parents were more likely to CS on content vs. function words, we ran a calculation of descriptives using the total number of content words and total number of function words as variables. A paired samples t-test was used to determine if the means for content and function words were significantly different from one another. To answer which discourse functions primarily drive parental CS, we ran calculation of descriptives using each the total number of each discourse function as variables (e.g., number of expansions, number of descriptions, number of labeling, etc.). Finally, to answer whether CS patterns differ by language dominance, a one-way analysis of variance (ANOVA) was used to compare means for frequency, CS type and discourse function variables for English ML participants and Spanish ML participants (i.e., proxy for language proficiency).

CHAPTER IV

RESULTS

Participant Profiles

Spanish was found to be the matrix language for 88% (n = 44) of caregivers while 12% (n = 6) were assigned a matrix language of English. The average number of parental spoken utterances that could be analyzed was 114; however, this varied by parent, with the number of analyzable spoken utterances ranging from 55 to 209 (SD = 35.78) in the 8-minute observation. See Table 1 for descriptive data on average number of parental utterances by language, as well as data on average mean length of utterance (MLU) in words and morphemes in English and Spanish. The following results are reported by research question. See Table 2 for an overview of findings.

Table 1. Overview of Parental Language Use During the Observation

Variable	Mean	SD	Range
Total Complete and Intelligible Utterances (Analysis Set)	114.12	35.77	55-209
Total English Utterances	10.44	24.14	0-114
Total Spanish Utterances	99.68	38.65	25-195
Total Mixed Utterances	3.24	3.58	0-15
Total Unassigned Utterances	0.76	1.08	0-4
Spanish MLU (words)	3.01	0.47	1.8-3.88
Spanish MLU (morphemes)	3.12	0.5	1.82-4.01
English MLU (words)	1.04	1.11	.00-4.29
English MLU (morphemes)	1.15	1.23	.00-4.84

Note. MLU = mean length of utterance

(i) *What is the frequency with which Spanish-English speaking DLLs are exposed to CS from their parents*?

Ninety-two percent (n = 46) of parents code-switched at least once during the play interaction. The four parents who did not CS were assigned a matrix language of Spanish. The amount of CS varied between participants, with the frequency of code-switched utterances out of total analyzable utterances produced by the parent ranging from 0-64% (M = 10%, SD = 14%). On average, parents who did CS produced 10 code-switched utterances (M = 10.68, SD = 16.22) during the 8-minute interactions. After removing two outliers who had more than 60 instances of CS (n = 48), the number of code-switched utterances decreased slightly, with an average of 8.25 code-switched utterances (SD = 11.06). These results suggest that most Spanish-English-speaking preschoolers are hearing some CS from their parents, although the amount of exposure varies.

(ii) *What are the patterns of CS of Spanish-speaking parents regarding (a) the use of inter-sentential and intra-sentential switching; and, (b) the type of words code-switched (i.e., content vs. function) when intra-sentential CS occurs?*

Inter- vs. Intra-sentential CS

CS by type (inter- or intra-sentential) was analyzed using only the participants who did CS (n = 46). Results demonstrated that inter-sentential CS (M = 8.11, SD = 14.87) was more likely to occur than intra-sentential CS (M = 3.5, SD = 3.55). Results of a paired samples t-test confirmed a significant difference between the use of inter-sentential and intra-sentential CS ($t(45) = 2.26$, p = .029), such that inter-sentential occurred significantly more often than intra-sentential. Outcomes were similar when the outliers who code-switch much more often than other parents were factored out of the

analysis, with inter-sentential CS (M = 5.77, SD = 10.12) still more likely to occur than intra-sentential CS (M = 3.23, SD = 3.36). Interestingly, a significant and moderate positive association between types of CS was found such that more frequent inter-sentential CS corresponded with a greater the number of intra-sentential CS ($r(44) = .42$, $p = .002$). These results suggest that children from this particular background are more likely to be exposed to inter-sentential CS; further, children exposed to a greater amount of inter-sentential CS from their parents are also more likely to be exposed to intra-sentential CS.

Content vs. Function Words

Intra-sentential CS utterances were analyzed to identify which type of words parents are more likely to CS in child-directed speech. Results of a paired samples t-test confirmed a significant difference between the use of content and function words during intra-sentential CS ($t(45) = 4.88$, $p < .01$).

Caregivers who code-switched (n = 46), on average, switched a higher number of content (M = 3.65, SD = 4.06) than function words (M = 0.80, SD = 2.78) during intra-sentential CS. Averages decreased when the outliers were removed. In particular, there were significantly fewer switches at function words (M = .32, SD = .74). Overall, the children in this study were more likely to be exposed to content vocabulary words such as nouns, adjectives and verbs from the secondary language as compared to words fulfilling a grammatical function.

(iii) What discourse functions drive CS among Spanish-speaking parents of preschoolers?

Descriptive analyses were conducted to answer this question. When analyzed using all parents who code-switched (*n*= 46), questions (*M* = 3.89 total CS sentences, *SD* = 7.91) were the most frequently used function during CS, followed by behavior regulation (M = 2.37 total CS sentences, SD = 4.92), descriptions (*M* = 1.65 total CS sentences, *SD* = 2.39) and labeling (*M* = 1.15 total CS sentences, *SD* = 2.19). We then removed the six participants whose matrix language was English to find any differences based on language assignment, bringing our sample size down to 40. Descriptive analyses using this subset of participants demonstrated that questions (*M* = 1.43, *SD* = 2.22), descriptions (M = 1.02, SD = 1.46), behavior regulation and labeling remained the top functions. Because our data sample were predominantly Spanish speakers, these results suggest that when parents code-switch into English, they predominantly do so to ask for information, regulate behavior, teach a new word, or describe objects or actions.

(iv) Do the frequency, patterns and functions of CS in Spanish-English speaking parents differ as a function of the preferred language of the parent during the interaction?

A one-way analysis of variance (ANOVA) was conducted to determine whether CS characteristics (i.e. frequency, patterns, and functions) differed depending on matrix language assignment (i.e., proxy for parental language dominance). As a reminder, 6 parents were assigned a matrix language of English while the remainder were assigned a matrix language of Spanish. First, we identified differences between matrix language groups for CS frequency. Results demonstrated a significant effect of matrix language on

Table 2. Descriptive Analyses of CS Frequency, Patterns, and Discourse Function

Variable	Mean	SD	Range
Frequency of CS	10	14	0-74
Patterns of CS			
Inter-CS	8.11	14.87	0-63
Intra-CS	3.5	3.55	0-15
Content Words	3.65	4.06	0-17
Function Words	0.8	2.78	0-18
Functions of CS			
Translating	0.09	0.35	0-2
Pre-Academic	0.11	0.61	0-4
Translation Equivalent	0.15	0.52	0-3
Expansion	0.17	0.77	0-5
Answering Questions	0.2	0.58	0-3
Affection	0.2	0.62	0-3
Imitation	0.39	0.95	0-4
Correction	0.46	1.26	0-8
Social Script	0.8	1.46	0-6
Labeling	1.15	2.19	0-11
Descriptions	1.65	2.37	0-10
Behavior Regulation	2.37	4.92	0-24
Questions	3.89	7.91	0-45

Note. CS = Code-Switching, Inter-CS/Intra-CS = inter-sentential and intra-sentential CS

frequency of CS ($F(1, 48) = 117.98$, $p < .01$), such that English speakers had a much higher average of CS utterances as a group. Specifically, parents with English as the matrix language code-switched an average of 47 utterances while parents with Spanish as the matrix language code-switched at an average of 6 utterances.

Next, we identified differences between matrix language groups for CS patterns, including CS type (i.e. inter- and intra-sentential switching) and word type (i.e. content or function) within intra-sentential CS. Results demonstrated that the effect of matrix language assignment on CS type was significant ($F(1, 48) = 221.14$, $p < .01$), such that parents who were assigned English as a matrix language were more likely to use inter-sentential CS when interacting with their children when compared to parents assigned Spanish as a matrix language. Specifically, parents with an English ML demonstrated an average of 43 inter-sentential CS utterances while parents with a Spanish ML demonstrated an average of 3 inter-sentential CS utterances. When English dominant parents did CS intra-sententially, they were more likely to CS on function words than content words ($F(1,48) = 26.29$, $p < .01$). In fact, parents with an English ML demonstrated an average of 5 function word switches while parents with a Spanish ML demonstrated an average of less than 1 function word switch during intra-sentential CS. These results were similar when the outliers were removed from the analysis.

Finally, we identified differences between matrix language groups for discourse function during CS. Results demonstrated that the effect of matrix language assignment on discourse function was significant for the following functions: questioning ($F(1,48) = 96.04$, $p < .01$), regulating behavior ($F(1,48) = 82.59$, $p < .01$), describing ($F(1, 48) = 43.61$, $p < .01$), and correcting ($F(1,48) = 14.81$, $p <. 01$), such that parents assigned

English as a matrix language were more likely to use these functions during CS than were parents assigned Spanish as a matrix language. These results were similar when the outliers were removed from the analysis, with one exception. With the outliers included, labeling and expanding were also found to be more likely to be used by parents whose matrix language was English; however, when the outliers were removed, both labeling and expansions were not found to be statistically different between groups, suggesting one or both outliers were driving the outcomes. Overall, these results suggest that language dominance plays a role in CS frequency, patterns, and discourse functions.

CHAPTER V

DISCUSSION

The present study investigated the features of parental CS in Spanish-English-speaking contexts through direct observation of 50 parent-child dyads during a play-based interaction. This research aims to address the limited literature on parental CS behaviors in families of preschoolers from Latinx backgrounds by characterizing CS frequency, patterns, and functions as a foundational step to future investigations on how CS might impact dual language development in these contexts.

Frequency of Parental CS

This study investigated the frequency of CS in two ways: the number of caregivers who code-switched and the percentage of code-switched utterances to which children were exposed. Contrary to our hypothesis that all parents would CS at least once, four parents did not CS at all during the interaction with their child. This finding contradicts the previous findings of Bail et al. (2015), who analyzed CS in Spanish-English speaking parents and found they all demonstrated CS at least once, as well as the findings by Goodz (1989), who analyzed parental CS in French-English speaking parents and found similar results, even in cases where parents reported using a strict one-parent, one-language approach. Why might some parents not have code-switched at all? It should be noted that all four participants who demonstrated no CS were assigned Spanish as a matrix language. There are two possible explanations to this observation. First, parents may be purposefully prioritizing Spanish to support home language use when interacting with their preschoolers, who are likely exposed to less Spanish due to their enrollment in early education programs where they receive more English exposure. Juan-Garau and

Perez-Vidal (2001) for example, suggest that as children grow, the parent who speaks the minority language will work harder to maintain a monolingual context to push the child's development of that language forward. This may not have been observed in Bail et al. (2015) and Goodz (1989) as both their studies were conducted on toddlers, who likely had more consistent access to the home language as they were not yet enrolled in English-only educational settings like the preschoolers in this study. Although there is evidence to suggest that Spanish-English speaking parents tend to provide more English input as their children are exposed to greater amounts of English in early childhood education settings (Hammer et al., 2009), research on the child rearing beliefs of Latinx mothers has shown that some insist on Spanish being spoken in the home to avoid minority language loss, which they view as detrimental to their children's Latinx identities (Cycyk & Hammer, 2018). Second, it may also be the case that these four Spanish-speaking participants did not CS because they simply did not have the required language proficiency in English to use this language with their children.

Among parents who did CS in our study, there was a wide range of percentage of CS utterances across transcripts which confirmed our hypothesis that there would be evidence of variability in the frequency with which parents CS. On average, parents produced an average of 10 code-switched utterances during the 8-minute interactions- in other words, children were exposed to CS at least once per minute. Yet, some parents code-switched up to 64% of their child-directed utterances. These results align with the literature, which has found that caregivers of DLLs indeed CS with varying frequencies. For example, Bail et al. (2015) found parents code-switched at a range of 0.4-58.5% of utterances, as measured using an MLF approach. Again, language proficiency may play a

role in how frequently parents CS, with parents who are more balanced bilinguals demonstrating more CS while parents who are more Spanish or English dominant demonstrating less frequency of CS. It may also be the case that some parents intentionally avoid CS due to the many mixed messages regarding the appropriate language context for supporting language development in DLLs, including the widely cited but incorrect idea that code-switching will lead DLLs to be confused between their two languages. Finally, parents may be attempting to maintain a one-parent, one-language approach and thus do not CS as frequently.

Patterns of Parental CS

Consistent with our hypothesis, parents were found to produce more inter-sentential CS than intra-sentential CS. Specifically, parents used two times more inter-sentential CS than intra-sentential CS on average. These findings are consistent with Bail et al (2015), who also analyzed this feature of parental CS. It is possible that CS between sentences is simply more natural for parents than code-switching within sentences, especially given the fact that child-directed utterances are shorter in nature and don't provide much space for within-utterance CS to occur. It may also be the case that parental CS patterns were driven by the child, as in Mishina (1999). In other words, switching between utterances might be related to what the child has just said such that if the child uses the other language, so too does the parent, while switching within utterances might not be as dependent on the child and driven by other motivations. It is important to note that the CS type found to be more prevalent (i.e. inter-sentential CS) is thought to be the more supportive of child development, as research on intra-sentential switching is thought to pose more difficulty for children (Byers-Heinlein, 2013; Kaushanskaya et al.,

2019). However, an interesting finding in the present study was that parents who demonstrated more inter-sentential CS were also more likely to demonstrate more intra-sentential CS, suggesting that parents who CS more often between sentences do not seem to avoid mixing within utterances. Parental language proficiency may also play a role here, because intra-sentential CS requires switches to occur in places that would not violate the grammar of either language (Poplack, 1980). Thus, parents with more balanced proficiencies may have demonstrated more intra-sentential CS while parents who did not have sufficient language proficiency in the other language may have demonstrated less or none at all.

Similar to Bail et al.'s findings regarding the location of a switch in intra-sentential CS, parents in our dataset were found to CS more content than function words when switching intra-sententially. In fact, parents code-switched content words approximately 5 times more than they did function words on average. As the vast majority of participants were assigned Spanish as a matrix language, this means that most children in our study were hearing specific code-switched words in English. These code-switched words tended to be nouns. As a pretend food set was part of the toys offered to families for the interaction, it is no surprise that a majority of code-switched words were food or kitchen items (e.g., apple, beans, cookie, chocolate, ice cream, etc.). Animal toys were part of the selection as well, and words such as "piggy" and "sheep" were found to be code-switched. A potential explanation for this observation is that parents are using words already known to the child in one language but not the other, perhaps to help their understanding of the utterance. However, it could also be the case that the CS words were new words that the parent was teaching. Finally, parents who had vocabulary knowledge

in each language might simply have been accessing the word that came most readily to their mind; in other words, being efficient in their communication.

Less commonly, switches at function words tended to consist of pronouns (e.g., yo/I), prepositions (e.g., con/with), and articles (e.g., el/la/the). For example, short phrases such as "el chicken/the chicken," "las grapes/the grapes," and "chicken con weenie/ chicken with weenie" were observed. In these cases, parents seem to be exposing their children to grammatical concepts in Spanish that do not have parallels in English, such as the gender rule, where all nouns are either feminine or masculine. However, as function word switches in the present study were driven by the outliers, it is unknown how common this pattern is in parental CS. Function word switches being driven by outliers may also speak to the dynamic nature of the matrix language, such that these participants may have switched matrix language during the interaction.

In terms of child language development, the difference in patterns across caregivers might reflect in the CS use of their children, such that some may CS at content words while others CS at function words depending on the CS input they receive from parents. This may also impact children's grammatical and vocabulary development, such that children may demonstrate more knowledge of either grammatical or content words in one of their languages depending on which type of words parents CS.

Discourse Function of Parental CS

Finally, all discourse functions assessed in this study - including questions, answering questions, imitations, expansions, translation equivalents, translations, pre-academic skills, social scripts, affection, corrections, behavior regulation, labeling, describing, and questioning- were evident in parental CS at the group level. This finding

suggests that parents of DLLs indeed CS for a range of reasons, as supported by prior research (Goodz, 1989, Pan, 1995, Byers-Heinlein, 2013). Yet, the results of this study further suggest that Spanish-speaking parents CS for some purposes more often than others as a group.

The most frequently used functions across participants included questions, behavior regulation, descriptions, and labeling. The rest of the functions were observed less than one time on average per sample. To the knowledge of the author, no other studies have been done that quantify the frequency of discourse functions in parental CS. The current results align with Goodz (1989), who also found that parents used CS to question, attract attention or discipline the child (forms of behavior regulation), clarify (form of correction), or emphasize a concept. In addition, these findings are in alignment with previous research conducted with Latinx mothers who reported supporting their children's language development by providing information or labels, directing, and requesting language (Cycyk & Hammer, 2018). These results align with our hypothesis, as well as with the literature surrounding child-directed speech in Latinx caregivers.

Questioning was found to be the most used function of CS in child-directed speech. Frequently used questions that were observed included "que es esto?/what is this?" (variations of this question also included "como se llama este?/ what's this one called?") or "what sound does [animal] make?" These type of questions were observed to occur repeatedly throughout interactions. For example, going through the food items one by one asking "que es esto?" [what is this?]. As such, although questions may have been the highest used function, they may not have provided the child with much linguistic variation. Other questioning patterns were also observed, although less so, and included

repeating the child's previous utterance as a question or adding "okay?" at the end of an utterance, perhaps to check for understanding and/or attention. In these cases, "okay" is identified as a word that could occur in English or Spanish and was not counted as CS. That is, an utterance was not coded as CS due to the presence of "okay," but rather because it had other within utterance switches or because it was a between sentence switch.

Respect to adult authority is highly valued in Latinx culture, and raising children who are *bien educados*, meaning obedient, well-behaved and respectful, is paramount in child-rearing (Cycyk & Hammer, 2018). As such, Latinx mothers have been shown to have a tendency to use direct verbal commands when interacting with their children (Cycyk & Hammer, 2018). Therefore, we hypothesized that behavior regulation would be a highly used function across parents. Indeed, results aligned with this hypothesis, demonstrating that behavior regulation was the second most used function across parents. Parents in our study made frequent use of regulating behavior by asking the child to look ("mira!"), to sit down, or to place an object in a desired spot. Requests to look were often followed by the labeling of an object or a question. For example, "Mira! Una cookie" or "Mira! Que es esto?"). Hoff (2006) explains directives may be less useful for language learning because they often occur in moments where the child is not in joint attention with the conversational partner. It may be that parents used behavior regulation in their CS to encourage the child to attend before making a request or labeling an object.

Describing and labeling were also found to be functions most commonly used by the parents in this study. As a reminder, most of our participants demonstrated Spanish as a preferred language, and code-switched into English. Providing children with descriptive

language as well as labels in English may be an effect of the influence of English as the preferred societal language in the United States. That is, parents who are Spanish-speaking may intentionally or unintentionally be facilitating English acquisition. It is also possible that parents are simply using words already known to the child when labeling and describing.

Effect of Matrix Language on CS Patterns and Discourse Function

Matrix language assignment, as a proxy for parent language proficiency or dominance, was found to have an effect on frequency, patterns and functions of CS. Parents who demonstrated a preference for English during the interactions with their children code-switched almost 8 times more often than parents who spoke Spanish. Parents assigned English as a matrix language were also found to be more likely to CS inter-sententially (between sentences) than parents assigned Spanish as a home language. As mentioned previously, a positive correlation between inter-sentential and intra-sentential CS was found, such that parents demonstrating higher frequencies of inter-sentential CS were also more likely to demonstrate higher frequencies of intra-sentential CS. With this in mind, it can be hypothesized that the group of English dominant parents were more balanced bilinguals, and thus more comfortable switching between both languages (Dewaele & Wei, 2014) while Spanish dominant parents may not have had equal proficiency in English. This hypothesis is supported by the higher rate of CS frequency by the English ML group, as well as the results demonstrating that the English ML group demonstrated more function word switches than the Spanish ML group, which could be interpreted as a speaker ensuring the grammar of the switched language is not violated (Poplack, 1980).

Parents in the English ML group were also found to be more likely to switch into Spanish when questioning, regulating behavior, describing and correcting. Several explanations for this observation arise. First, parents may be attempting to support the heritage language despite the possible increased use of English in the home (e.g., Hammer et al., 2009). For example, as descriptive language can create opportunities for communication from the child, switching into Spanish may be a parent's attempt to move the conversation towards the home language, as was found by Pan (1995). Similarly, as raising obedient and well-behaved children is highly valued in the Latinx community (Cycyk & Hammer, 2018), it is likely that Spanish is naturally the language of discipline, making it more natural for a parent to switch into Spanish for providing directives and making requests while also maintaining home language use. A second explanation is that CS is being driven by the child- that is, if a child's previous utterance had been produced in Spanish (either completely or partially), a parent might be more likely to switch into Spanish as well, using a question to prompt more Spanish output from the child in Spanish- again, perhaps in the hopes of promoting heritage language use (Pan, 1995).

Approaches to Analyzing CS

The present study used a Matrix-Language Frame-Model approach to categorize and quantify CS during direct observation of parent-child dyads. It is possible that differences seen in the present study when compared to other studies analyzing this phenomenon are due to variations in approaches analyzing CS. For example, the two leading views of CS include insertion and alternation of the two languages being code-switched (Boztepe, 2003). The MLF model falls under the insertional perspective, such that the secondary language is embedded into utterances produced in the dominant

language. From an alternation perspective, however, both languages are equal, and as such they replace each other (this includes a complete switch into the grammar of the other language) throughout discourse (Boztepe, 2003). This CS perspective is often associated with longer stretches of CS (Boztepe, 2003). Bail et al. (2015) analyzed CS from both perspectives and found no significant differences in results. Further, Bail et al. (2015) highlights two noteworthy observations, the first being that speech to young children is often short in nature, and the second being that as children develop, they may have begun to acquire a dominant, or preferred language, and as such process parental language more similarly to an MLF structure. As our study focuses on parental CS in parents of preschoolers, an MLF approach is warranted.

It is also possible that variations in methods account for differences across studies on CS. For example, some studies have used parental report as the only measure to quantify the frequency of CS. In order to truly be able to characterize CS, direct observations of parents from specific populations must be prioritized, with self-report being used as a complementary method.

Limitations and Future Research

This study had several limitations. As participants were selected from two larger studies that were not designed to investigate parental CS, relevant background information was limited, especially as it pertains to parental ethnicity and language background (including dialect of Spanish and proficiency in Spanish and English). Parental CS may vary depending on these variables. Future research should explore CS among Latinx parents from varied backgrounds, as the frequency and patterns of CS may

change depending on a combination of language background as well as child-rearing beliefs.

Language proficiency in each language has been shown to be a factor influencing CS in adults (Dewaele & Wei, 2014). Although parents' Matrix Language assignment may be a proxy of parental language proficiency, the matrix language is not always suggestive of parents' dominant language. In fact, an MLF approach operates such that ML is determined only for the specific discourse sample that is being analyzed, as the same speaker may demonstrate a different ML depending on the conversation. However, future studies on parental CS in this population would benefit from collecting specific data on parental language proficiency in Spanish and English and examining if parental CS patterns vary by parents' language proficiency in each language and/or their ethnicity. Future research on parental CS in this population might observe a more balanced group of parents that includes Spanish-dominant, English-dominant and balanced bilinguals to analyze differences in CS frequency and pattern as a function of language proficiency.

An additional limitation is that our participants completed the play-based interaction in a laboratory setting; further, only a single interaction was recorded, which may or may not be representative of children's typical experiences at home.

Finally, we did not look at how these patterns of CS influenced child language development directly. Therefore, a logical next step would be to examine the influence of these CS patterns on child language outcomes in Spanish and English. For example, examining the influence of parental CS frequency, patterns, and function on the child's own use of CS as it pertains to the same variables.

CHAPTER VI

CLINICAL IMPLICATIONS

As Spanish-English dual language learners make up a significant percentage of the child population in the US, it is likely that speech-language pathologists and related professionals may find themselves working with these children and their families. Professionals working with Spanish-speaking Latinx families may encounter conversations in which families interpret CS as language confusion, or as something that should be discouraged in children's speech due to misinformation about CS. As such, the information obtained in the present study is a crucial first step to being able to discuss CS with Latinx families in terms of what is already known as it relates to frequency, patterns, and function. Specifically, CS can be discussed as a natural phenomenon that varies by individual family dynamics. In addition, this information may be useful to the clinicians serving children from this background as it can provide information regarding typical interactional patterns among DLLs and their parents during the preschool years that may then inform how the clinician considers the child's CS patterns and/or the amount of English and Spanish exposure the child is receiving.

APPENDIX A: DISCOURSE FUNCTION CODEBOOK

Communicative Act	**Definition**
Question	Caregiver asks the child an open-ended or close-ended question. Examples include a wh- (who, what, when, where, why) question or a yes/no question.
Answering Question	Caregiver answers any open-ended or close-ended question posed by the child.
Label	Caregiver explicitly labels an object, action, or person with or without a vocalization from the child. It can be inferred that the caregiver is trying to teach the child a label for something that interests the child in that specific moment. Can follow a carrier phrase such as "es un/a/..." or "se llama..."
Translation	Caregiver provides translation of the previous utterance spoken in the L1.
Translation Equivalent	Caregiver provides translation equivalent for a word spoken in the L1 by either the caregiver or the child.
Behavior Regulation-Restricting	Caregiver gives a direction/command to ask the child *not* to do something or to *stop* doing something.
Behavior Regulation-Supporting	Caregiver gives a direction/command telling the child to do something.
Behavior Regulation-Attention	Caregiver helps maintain the child's attention to someone/something in the environment.
Imitation	Caregiver repeats the child's verbalization exactly verbatim with no new words added (reducing words ok). Note: responding to "hola" with "hola" will not count as imitation, as it is a social greeting.
Expansion	Expansion only coded when it occurs right after a child utterance. Caregiver repeats one (or more) of the child's words and adds 1 content or function word.
Description	Caregiver provides a description of an object, event, person, mental/physical state or activity assumed to be within the child's focus. Can include describing what the child is doing, what the child just finished doing, or what the child is about to do. Comments about the environment.
Social Script	Includes greetings (hello/goodbye), politeness (e.g. please/thank you), singing, social games (e.g. peek-a-boo, tortillitas).
Affection	Caregiver uses terms of endearment or praises the child.
Correcting	Caregiver understands what is said and corrects the child for content (e.g. child mislabels an object/action/etc.) or for grammar (i.e. makes the child's sentence grammatical)
Pre-academic Skills	Caregiver exposes child to pre-academic concepts, including letters, numbers and shapes.

APPENDIX B: TRANSCRIPT SAMPLE

P Qué vas|ir a cocinar[I] [S]?
P Ten|tener [S].
C (Hmm).
P Aquí <está|estar una olla> [S].
C <Pizza> [S].
P Una pizza [S].
C (Sí) [S].
P (Hmm) Pero eso ya comimos|comer en lunch[CONTENT] papi [M][Intra_CS][DES].
P Yo no quiero|querer pizza [S].
P Mira|mirar [S].
P <Qué es|ser> [S]?
C <Una salchicha> [S].
P Qué es|ser eso [S]?
C Icecream [E].
P Y esto [S]?
C Mira|mirar [S].
P Y esto [S]?
C Un>
P What is it [E][Inter_CS][Q]?
C (Uy).
P What is it [E][Inter_CS][Q]?
C Fresa [S].
P Una fresa [S].
P Y este [S]?
C (Oh) es nana [S].
P Nana [S].
P Así nana [S]!
P Qué más hay|haber aquí [S].
C (Hmm).
P Mira|mirar papi [S].
C {Laughs}.
P Qué es|ser [S]?
C (Ay).
P Qué es|ser esto [S]?
C Una cuchara [S].
P Una cuchara [S]?
P Es|ser un tenedor, silly[CONTENT] [M][Inter_CS][COR].
C {Laughs}.
P Mira|mirar papi [S].
P Un chicken[CONTENT] [M][Intra_CS][LAB].
C Mira|mirar [S].
P Con cuidado papi [S].
P (A ver) [S].
P Dame|dar+me el chicken[CONTENT] [S][Intra_CS][BREG-S].

REFERENCES CITED

Bail, A., Morini, G., & Newman, R. (2015). Look at the gato! Code-switching in speech to toddlers. *Journal of Child Language, 42*(5), 1073-1101.

Boztepe, E. (2003). Issues in Code-Switching: Competing Theories and Models.

Byers-Heinlein, K. (2013). Parental language mixing: its measurement and the relation of mixed input to young bilingual children's vocabulary size. *Bilingualism: Language and Cognition* 16, 32-48

Corver, N., & Henk Van Riemsdijk. (2001). *Semi-lexical categories: the function of content words and the content of function words*. Boston, MA: Mouton De Gruyter Publishing.

Cycyk, L., & Hammer, C.S., (2018). Beliefs, values, and practices of Mexican immigrant families towards language and learning in toddlerhood: Setting the foundation for early childhood education. *Early Childhood Research Quarterly.*

Dewaele, J.-M., & Li, W. (2014). Intra- and inter-individual variation in self-reported code-switching patterns of adult multilinguals. *International Journal of Multilingualism*, *11*(2), 225–246.

Genesee, F., Boivin, I., & Nicoladis, E. (1996). Talking with strangers: A study of bilingual children's communicative competence. *Applied Psycholinguistics*, *17*(4), 427–442.

Goldstein, B.A. (2012). *Bilingual Language Development and Disorders in Spanish-English Speakers*, Second Edition. Baltimore, MD: Paul H. Brookes Publishing.

Goodz, N.S. (1989). Parental language mixing in bilingual families. *Infant Mental Health Journal,* 10, 25-43

Hammer, C. S., Davison, M. D., Lawrence, F. R., & Miccio, A. W. (2009). The Effect of Maternal Language on Bilingual Children's Vocabulary and Emergent Literacy Development During Head Start and Kindergarten. *Scientific Studies of Reading : The Official Journal of the Society for the Scientific Study of Reading*, *13*(2), 99–121.

Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, *26*(1), 55–88.

Juan-Garau, M., & Pérez-Vidal, C. (2001). Mixing and pragmatic parental strategies in early bilingual acquisition. *Journal of Child Language*, *28*(1), 59–86.

Kaushanskaya, M., & Crespo, K. (2019). Does Exposure to Code-Switching Influence Language Performance in Bilingual Children? *Child Development*, *90*(3), 708–718.

Lanza, E. (1992). Can bilingual two-year-olds code-switch? *Journal of Child Language*, *19*(3), 633–658.

McClure, E. (1995). *Duelling Languages: Grammatical Structure in Codeswitching*. Carol Myers-Scotton. Oxford: Clarendon Press, 1993. *Studies in Second Language Acquisition, 17*(1), 117-118.

Mishina, S. (1999). The role of parental input and discourse strategies in the early language mixing of a bilingual child. *Multilingua - Journal of Cross-Cultural and Interlanguage Communication*, *18*(4), 317–342.

Neville, H. J., Stevens, C., Pakulak, E., Bell, T. A., Fanning, J., Klein, S., Isbell, E. (2013). Family-based training program improves brain function, cognition, and behavior in lower socioeconomic status preschoolers. *Proceedings of the National Academy of Sciences of the United States of America*, 110, 12138-12143.

Pan, B. A. (1995). Code negotiation in bilingual families: "My body starts speaking English." *Journal of Multilingual and Multicultural Development*, 16, 315–327.

Park, M., O'Toole, A., Katsiaficas, C. (2017). Dual Language Learners: A National Demographic and Policy Profile. Washington, DC: Migration Policy Institute.

Poplack, S. (1980). Sometimes I'll start a sentence in Spanish Y TERMINO EN ESPANOL: toward a typology of code-switching. *Linguistics 18*, 581-618.

Miller, J., & Iglesias, A. (2016). Systematic Analysis of Language Transcripts (SALT), Research Version 2010 [Computer Software]. Madison, WI: SALT Software, LLC.

Sankoff, D. &Poplack, S. (1981). A formal grammar for code-switching. *Paper in Linguistics*, 14 (1), 3-45.

Vigil, D. C., Hodges, J., & Klee, T. (2005). Quantity and quality of parental language input to late-talking toddlers during play. *Child Language Teaching and Therapy*, 21(2), 107–122.

Zauche, L. H., Thul, T. A., Mahoney, A. E. D., & Stapel-Wax, J. L. (2016). Influence of language nutrition on children's language and cognitive development: An integrated review. *Early Childhood Research Quarterly*, *36*, 318–333.