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LEXICAL INSERTION IN SECOND LANGUAGE LEARNERS AND  
SPANISH HERITAGE SPEAKERS: THE ROLE OF  
VOCABULARY THRESHOLD

By

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Dr. Liliana Sánchez

and approved by

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## ABSTRACT OF THE DISSERTATION

Lexical insertion in second language learners and

Spanish heritage speakers:

The role of vocabulary threshold

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The phenomenon of lexical access along with the different lexical selection mechanisms called upon for bilingual speech production have been investigated within the fields of bilingualism, second language acquisition (SLA), and language contact among different types of bilinguals (Costa and Santesteban, 2004; De Bot, 1992; Green, 1986, 1998; Levelt, 1989, 2001; Myers-Scotton and Jake, 1995; Poulisse and Bongaerts, 1994; Roelofs, 1998; among others). However, a gap exists in relation to how two languages compete in the bilingual mind of a select group of bilinguals considered to have reached a certain threshold of vocabulary knowledge and how the competition for language selection evidences lexical retrieval and timing costs.

This dissertation focuses on the lexical insertion of English lexical items in oral narratives of second language (L2) learners of Spanish and Spanish heritage speakers who have reached a certain threshold of vocabulary knowledge; the main objective lies in the assessment of lexical retrieval and timing costs involved in the completion of a picture naming task. This study shows that both groups insert more English lexical items when trying to access low frequency words in Spanish, regardless of having reached a certain threshold of vocabulary knowledge. The study employs a quantitative approach to analyze the data. Fifty participants (16 Intermediate learners, 11 Advanced learners and 23 Spanish heritage speakers) took part in the study, which employed several protocols: a vocabulary test, two story retelling tasks, and a picture naming task.

The results show that L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency vocabulary regardless of having prior knowledge of the vocabulary. This suggests that once bilingual speakers have reached a certain threshold of vocabulary knowledge, their lexical insertion practices are similar. A one-way between subjects ANOVA reveals no significant difference for the lexical insertion of a noun,  $F(2, 47) = .525, p = .595$ . The study also indicates the insertion of English nouns as the most frequent type of lexical insertion. Furthermore, in terms of timing the study finds that lexical retrieval is more costly for L2 learners in comparison to the Spanish heritage speakers.

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## **DEDICATION**

To my mother,

Elsa Montoya

And in loving memory of my maternal grandparents

Lucila Pinilla de Moreno and José Moreno

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## Chapter 1

### Introduction

#### 1.1 General Introduction

The linguistic phenomenon of code-switching (CS) has been investigated by numerous researchers in the fields of second language acquisition (SLA) and bilingualism (Belazi, Rubin, and Toribio, 1994; Bullock and Toribio, 2009; Lipski, 1978; MacSwan, 1997, 1999, 2000; Myers-Scotton, 1993, 2002; Myers-Scotton and Jake, 1995, 2001; Pfaff, 1979, 1997; Poplack, 1980; Toribio, 2001a, 2001b, 2004, 2008; Zentella, 1981, 1997; among others) with regard to how bilinguals are able to switch languages flawlessly and do so without any consequences in the delivery of this exclusive type of oral discourse. As a result, code-switching is a key component in understanding the overall linguistic ability of bilinguals, specifically second language learners and Spanish heritage speakers. Overall, code-switching has been noted to provide better insight into the linguistic knowledge of the bilingual (Lipski, 1978; Myers-Scotton and Jake, 2001). However, it has not yet been examined in relation to lexical insertion and vocabulary threshold.<sup>1</sup>

To date, there have been numerous studies put forth with regard to how bilinguals insert lexical items in bilingual speech based on the concepts of lexical access and retrieval (Caramazza, 1997; Costa, 2005; Costa, La Heij and Navarrete, 2006; Costa and Santesteban, 2004; Dell, 1986; Ecke, 2004, Finkbeiner, Gollan and Caramazza, 2006; Levelt, 2001; Montrul and Foote, 2012; Roelofs, 1992). However, these studies have not addressed the occurrence of lexical insertion produced by a select group of bilinguals

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<sup>1</sup> The threshold was determined by the Multilingual Naming Test (MINT) (Gollan et al., 2012) and it was determined at 66% of the test.

considered to have reached a threshold of vocabulary knowledge. The lexical insertion of English items has been evidenced in the speech production of various types of bilinguals that range from early and late bilinguals to Spanish heritage speakers. Given that second language learners are still in the process of acquiring their second language, the lexical insertions may be a way for them to overcome the vocabulary not yet acquired. On the other hand, it is commonly assumed heritage speakers engage in code-switching to compensate for an unknown lexical item. While this may be the case for L2 learners, Zentella (1981, 1997) proposes that switching in heritage speakers is not due to “crutching.” Therefore, in order to further advance this view of switching languages effortlessly without an actual need to the dissertation puts forth the idea that despite having reached a certain vocabulary threshold, lexical insertion still occurs in second language learners and Spanish heritage speakers.

Although researchers have focused on vocabulary threshold (Schwieter and Sunderman, 2008), it has not been addressed specifically with regard to lexical insertion as shown in intrasentential code-switching contexts. The notion of vocabulary threshold as employed in the dissertation study and defined in section 1.3 of the current chapter, implies having achieved a certain level of vocabulary knowledge representative of the bilingual’s language capacity and fundamental in accounting for lexical insertions in bilingual speech production. As a general assumption, it may be concluded that having reached a significant vocabulary threshold generates a pattern that may explain why lexical insertion occurs. Lexical insertion, as evidenced by a language switch, may be attributed to the notion of lexical retrieval. In other words, second language learners of Spanish and Spanish heritage speakers may in fact have access to a lexical item in their

first language (L1) as well as in their second language (L2), yet each of these bilinguals may access the target item differently. While there may be different interpretations with regard to the notion of access, the present study employed this term as interchangeable with recognition. In other words, the study focused primarily on the relationship between lexical insertion and vocabulary recognition. Whether a specific process such as inhibition (Green, 1986, 1998) or a particular selection mechanism (Costa, Santesteban and Ivanova, 2006; Schwieter and Sunderman, 2008) is involved leads us to assume that lexical access or vocabulary recognition works differently in L2 learners and Spanish heritage speakers. Therefore, the dissertation focuses on the role of vocabulary threshold as a determining factor in a subtype of intrasentential code-switching that involves the insertion of English lexical items. That is, the study focused on the production of lexical items inserted as it occurs in natural spontaneous speech.

## **1.2 The Phenomenon of Intrasentential Code-Switching**

The phenomenon of code-switching has been referred to and defined by many researchers, each with their own definition of the concept. Pfaff (1979) uses the term *mixing* to refer to both code-switching and borrowing, while Romaine (1995) distinguishes borrowing from code-switching. For other researchers, the term code-mixing has been used to refer to intrasentential cases, while code-switching has also been applied to intersentential cases (Bhatia and Ritchie, 1996). The terms intrasentential and intersentential are used to analyze code-switching based on where in the speech the switch occurs. The term *intra-sentential* code-switching refers to code-switching that takes place within the same sentence, while *inter-sentential* code-switching refers to code-switching from one sentence to the next (Cantone, 2007). Example (1) demonstrates



intrasentential code-switching and example (2) illustrates intersentential code-switching. (Throughout this study, the words in italics represent lexical items inserted and therefore a switch in language is evidenced).

(1) Intra-sentential

El gato *prefiere milk*.

“The cat prefers milk.”

(2) Inter-sentential

Vamos a jugar. *Let's go outside*.

“We are going to play. Let's go outside.”

The first example (1) exemplifies intrasentential code-switching given that the switch, which involves the insertion of a noun, occurs within the same sentence. On the other hand, the switching of languages between two sentences is observed in example (2), where each sentence remains entirely in one language.

Although code-switching is a broad topic and can be studied from many different perspectives,<sup>2</sup> the dissertation will focus on the intrasentential code-switching of different lexical items in L2 Spanish learners and Spanish heritage speakers. Lexical switches that involve either a noun or a verb within a single sentence, illustrated in (3) and (4) respectively, are examples of some of the types of lexical insertions analyzed and presented in this study. All English lexical insertions analyzed and coded for in this study were considered instances of intrasentential code-switching.

(3) El gato tiene *toys*.

“The cat has toys.”

(4) La chica *plays* con el gato.

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<sup>2</sup> Consult Gardner-Chloros (2009) for overview of code-switching from various perspectives.

“The girl plays with the cat.”

Example (3) demonstrates a lexical insertion of an English noun at the end of a sentence that is completely in Spanish. While the insertion of a lexical item is possible at the end of a sentence, a lexical insertion can also be found in the middle of a sentence as seen in example (4). In this Spanish sentence, the lexical insertion of an English verb has been placed immediately after the noun. In both (3) and (4) the main language is Spanish with the insertion of a lexical item in English. Spanish-English intrasentential code-switching, as exemplified in the previous two examples, can also exist as English-Spanish intrasentential code-switching. This type of code-switching consists of a Spanish lexical item inserted into a sentence with English as the main language, as in examples (5) and (6).

(5) The students read many *libros*.

“The students read many books.”

(6) The books *están* in the library.

“The books are in the library.”

Example (5) presents a sentence completely in English with the exception of a Spanish lexical noun inserted at the end of the sentence. In (6) the main language is English with the exception of the verb, which is inserted in Spanish directly after the noun. Once again, the type of intrasentential code-switching produced by an individual can vary in terms of the languages selected for the switches, as well as which language is considered to be the primary or main language of the discourse.

### 1.3 Terminology

In order to understand the objective of the dissertation with regard to the language switching abilities in bilinguals, it is necessary to provide the working definitions of the terminology employed. Of particular interest are the terms *code-switching*, *lexical insertion*, *lexical access*, *lexical retrieval*, *vocabulary threshold*, *second language learner*, *second language*, *Spanish heritage speaker*, and *native language*.

While many different approaches have been put forth in order to explain the fundamentals of code-switching, according to Bullock and Toribio (2009) the concept of code-switching is quite complex and can be difficult to describe given that “its linguistic manifestation may extend from the insertions of single words to the alternation of languages for larger segments of discourse” (p. 2). A full understanding of this phenomenon is not possible without describing and analyzing the speakers who take part in this type of language switching. Again, there is no simple explanation in defining the characteristics of a typical bilingual who code-switches since code-switching “is produced by bilinguals of differing degrees of proficiency who reside in various types of language contact settings, and as a consequence their CS patterns may not be uniform (Bullock and Toribio, 2009, p. 2). This dissertation will adopt the definition by Myers-Scotton and Jake (1995) who define *code-switching* as “the use of two or more languages in the same discourse” (p. 982). Given the dissertation focused on a subtype of intrasentential code-switching, their definition was adopted as it includes cases of lexical insertion.

The fields of second language acquisition and bilingualism have explored various aspects involved in the speech production of bilinguals with regard to lexical access and

retrieval. Recall that the dissertation examined a very specific type of code-switching that focused on lexical insertion. Therefore, the definitions of specific terms are imperative in the overall understanding of the current study in addition to presenting the most relevant studies and their findings in Chapter 2. With regard to *lexical insertion*, the dissertation will draw on the definition by Muysken (2000) who defines the process as “**insertion** of material (lexical items or entire constituents) from one language into a structure from the other language” (p. 3). The dissertation focused on the lexical insertion of nouns, verbs, adjectives and prepositions. Other lexical insertions investigated included discourse markers, conjunctions and lexical phrases.

The term *lexical access*, which again will be considered interchangeable with vocabulary recognition, will be defined as the availability of a lexical item in the bilingual’s mental lexicon. It is worth noting that this definition may be interpreted differently according to the lexical access theories that have been put forth in previous studies (Costa and Santesteban, 2004; Levelt 2001; among others). Given that bilinguals are considered to possess a lexicon comprised of lexical items from their first language or from two first languages in the case of simultaneous bilinguals, or from their first language and their second language as seen in sequential bilinguals, the decision of which language to employ continues to captivate the interest of linguistic researchers. Thus, the term *lexical retrieval* will be referred to as the ability to easily access a lexical item and considered to be stored in the mental lexicon of the bilingual speaker. This term has also been defined in multiple ways as evidenced by several lexical retrieval theories (Dell, 1986; Roelofs, 1992; among others). Although Dell (1986) and Roelofs (1992) posit a

spreading-activation theory for retrieval, the definition employed for the current study focused exclusively on the bilingual's ability to retrieve lexical items.

Prior to their participation in the dissertation, all the participants were given a vocabulary test and were selected based on the successful completion of this test. The vocabulary test served as critical criteria in order to establish vocabulary knowledge and consisted of high and low frequency vocabulary words. As was previously defined, the term *vocabulary threshold* in this dissertation refers to having achieved a certain level of vocabulary knowledge representative of the bilingual's language capacity and is fundamental in accounting for lexical insertions in bilingual speech production.

#### **1.4 Participants and Languages**

A previous study carried out by Montoya (2011), which set the foundation for further investigation on lexical insertion and the dissertation, included both second language learners and Spanish heritage speakers. Second language learners in general tend to be described as individuals that learned a foreign language at school. Although this may be the case for most L2 learners, it is not specific enough in defining the age at which the individual learned or acquired the second language. Therefore, a *second language learner* in this study is defined as an individual that learned or acquired a second language after the age of three. This definition is the most appropriate and the one employed in the study by Montoya (2011) and the dissertation, given that all the participants filled out a language background questionnaire that required they provide some basic linguistic information. Each participant was asked to specify which language(s) he or she considers his or her *second language(s)*, which refers to the one(s) that he or she spoke and in which he or she was addressed after three years old.

A *Spanish heritage speaker*, as defined for the dissertation, refers to a student who is raised in a Spanish-speaking home and who is considered bilingual given he or she understands and speaks Spanish even if he or she has not been schooled in Spanish and therefore has not received formal instruction in Spanish. The definition employed for the dissertation is a modified version of the definition put forth by Valdés (2000, 2005), as seen in Chapter 3. While there are variations of the definition in the literature (Rothman, 2007; Valdés, 2000, 2005), this modified definition was the most accurate and representative of the Spanish heritage speakers who took part in the dissertation. In addition to fulfilling the description of this definition, all the Spanish heritage speakers indicated on the language background questionnaire that they do in fact consider themselves a heritage language learner of Spanish. While there is a great deal of fluctuation that exists in identifying Spanish heritage speakers as a homogeneous group, there tends to be some confusion with regard to which language is their native language. Thus, the definition for *native language(s)* was provided to all of the participants and was referred to as the language(s) in which you were spoken to and that you spoke from birth until you were three years old. In reading this definition, each participant was also reminded that he or she may not be a dominant speaker of that language but it is / they are his or her native languages(s).

### **1.5 Montoya (2011)**

Before proceeding with the present study, it is essential to begin with a brief introduction to the study by Montoya (2011), which formed the foundation of the dissertation. Specifically, this study focused on the intrasentential code-switching of different lexical items in second language learners of Spanish and Spanish heritage

speakers in order to understand the relationship between the development of their Spanish lexicon and the acquisition of the functional feature specifications in Spanish. It also aimed at providing further evidence to elucidate the extent to which code-switching obeys grammatical constraints. The investigation of the particular junctures where the switching occurs contributes to current research on code-switching, specifically in L2 learners in order to confirm whether their code-switches are rule-governed or not, given that they receive no formal instruction in this type of construct (Toribio, 2001b). Not only does code-switching seem to demonstrate the bilingual's language abilities, but it also illustrates their awareness of what is considered to be an acceptable and unacceptable switch (Toribio, 2001b). Therefore, although it may seem as though the bilingual speaker is simply switching languages at the cost of expressing their point in an illicit manner, the bilingual speaker is actually able to achieve two things: a switch from one language to another while communicating his or her intent in an acceptable manner. This phenomenon can best be summed up by Meisel (1994) who states that:

Code-switching is the ability to select the language according to the interlocutor, the situational context, the topic of conversation, and so forth, and to change languages within an interactional sequence in accordance with sociolinguistic rules and without violating specific grammatical constraints. (p. 414)

Therefore, Montoya (2011) addressed intrasentential code-switching in adult L2 learners and Spanish heritage speakers in order to confirm whether differences in accessing lexical items generated differences in the code-switching produced and whether these switches were found at the same junctures among both groups. Given that the L2 learners are still in the process of acquiring the language as adults, the development of

their Spanish lexicon is critical in addressing their code-switching practices. In addition, the switch junctures were investigated in order to confirm their acquisition of the functional feature specifications in Spanish. With regard to the Spanish heritage speakers, considered to be proficient and competent in both languages, CS may be a direct result of their language contact with English and in turn argue against difficulties in storing and accessing lexical items.

### **1.5.1 Montoya (2011) Research Questions**

The main research questions guiding Montoya (2011) were:

1. Do differences in accessing lexical items generate differences in code-switching practices between L2 learners and Spanish heritage speakers?
2. Do L2 Spanish learners and Spanish heritage speakers switch at the same junctures, obeying the same grammatical constraints?

The hypotheses to be tested were:

1. Differences in accessing lexical items will generate differences in code-switching practices. This would be evidenced by different patterns of switching (cases of lexical insertion) given differences in lexical knowledge among groups.
2. L2 learners and Spanish heritage speakers will switch at the same junctures.

### **1.5.2 Main Findings for Montoya (2011)**

The findings of Montoya (2011) revealed that differences in accessing lexical items did not generate differences in CS practices between adult L2 learners and Spanish heritage speakers. In general, the Spanish heritage speakers showed no difference in comparison to the L2 learners with regard to the lexical insertion of nouns and tags. In addition, Montoya (2011) confirmed that L2 learners and Spanish heritage speakers



switch at the same junctures, thus showing support in favor of the Functional Head Constraint (Belazi et al., 1994) as will be discussed in the following chapter. Although the analyses did not reveal significant differences between the groups (due to the small number of participants in the Intermediate and Advanced groups) the results of the switch junctures provided evidence against the Government Constraint (Di Sciullo, Muysken and Singh, 1986). Although these two hypotheses have been employed to explain the syntactic constraints of code-switching, further research is needed to distinguish between the role of lexical categories and functional categories in relation to lexical insertion. It is worth emphasizing that although the group of L2 Spanish learners was still in the process of acquiring the language as adults, they did in fact acquire all the relevant functional feature specifications in Spanish and this allowed them to not violate syntactic constraints and respect the restrictions previously cited in Belazi, Rubin and Toribio (1994).

### **1.6 Motivation for the Dissertation**

Although the study put forth by Montoya (2011) offered further insight for intrasentential code-switching among L2 learners and Spanish heritage speakers, a critical question remained with regard to lexical insertion. That is, would lexical insertion be attributed to the bilingual not knowing the lexical item or would the insertion of the English lexical item be due to the fact that it is a high frequency item. There was, however, a specific motive for the dissertation in being able to distinguish between participants not having a lexical item stored and having difficulties accessing or recognizing it. As put forth by De Bot (1992), “cross-linguistic influences can be indicative of a lack of knowledge” (p. 19), yet it is hard to distinguish when it is actually a case of lacking knowledge of a specific referent or simply a case of having difficulty

accessing it. Thus, although the study put forth by Montoya (2011) incorporated a picture naming task that tested the participants' knowledge of the relevant Spanish vocabulary after narrating a story, the dissertation employed two different picture naming tasks that included high and low frequency vocabulary and a vocabulary test. Given that previous research has accounted for a specific threshold of vocabulary (Schwieter and Sunderman, 2008), it has not been specifically investigated with regard to lexical insertion in code-switching contexts. The relationship between having reached a certain vocabulary threshold as measured on a test and lexical insertion is essential in order to understand why and how bilinguals insert lexical items, regardless of their availability of immediate access to vocabulary. In order to identify the comparisons between groups with regard to lexical insertion, a critical target of vocabulary knowledge had to be met by each participant. That is, every participant who took part in the dissertation had to meet the strict criteria of passing a vocabulary test. As one will recall, the goal was to compare the lexical insertions produced during speech production in bilinguals with similar levels of lexical knowledge. Hence, the successful completion of the vocabulary test was essential as to proceed with the study.

### **1.7 Dissertation Research Questions**

The dissertation will seek to answer the following research questions:

1. What differences emerge among the L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts?
2. Having reached a threshold of vocabulary knowledge, what lexical insertions tend to be most frequent across groups?

3. Do L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge tend to insert more English lexical items when trying to access low frequency words?

This study will explore the following hypotheses:

1. Lexical insertion in intrasentential code-switching will not reveal differences in the lexical retrieval process of both groups.
2. A similar distribution of lexical insertions will exist across categories (noun, verb, adjective, preposition), given that both groups attained a threshold of vocabulary knowledge.
3. Despite having reached a threshold of vocabulary knowledge, L2 learners and Spanish heritage speakers will tend to insert more English lexical items when trying to access low frequency words.

### **1.8 Dissertation Overview**

As stated in the previous section, the dissertation seeks to explore specific questions with respect to how lexical access and retrieval operate in a distinct group of bilinguals. Chapter 2 will present the different approaches and constraints that have been proposed in order to explain how Spanish-English code-switching works. In addition, different methodologies used to investigate code-switching will be addressed. The chapter continues with a presentation of the most relevant studies that have addressed the mechanisms involved in bilingual speech production. Recall that the study carried out by Montoya (2011), described in Chapter 3, serves as the foundation of the dissertation and focuses on the intrasentential code-switching of different lexical items in second language learners of Spanish and Spanish heritage speakers. The methodology employed

in the dissertation will be presented in Chapter 4. Following the methods, the results are put forth in Chapter 5. After the presentation of the results, Chapter 6 follows with the discussion. Finally, the dissertation culminates with the conclusion in Chapter 7.

## **Chapter 2**

### **Literature Review**

#### **2.1 Introduction**

The goal of this chapter is to provide background on the relevance and motive behind the dissertation study. In doing so, the chapter addresses previous studies that have been conducted with regard to lexical access and retrieval, while providing the foundation for the research questions. However, before presenting the relevant sections that target specific aspects of the dissertation, the chapter begins with an overview of the different levels involved in code-switching. Given that the aim of the dissertation was to investigate a specific type of code-switching that involved lexical insertion, the chapter presents a review of the relevant studies that have investigated lexical access. Recall that one of the main goals of the dissertation was to examine what differences emerge among the L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts. Having addressed the notion of lexical access, this section is followed by a presentation of the different control models that have been put forth to explain how bilingual speech production works. In addition, this chapter focuses on previous studies that have been conducted with particular emphasis on lexical retrieval. This section is relevant with regard to how lexical retrieval works in a select group of bilinguals as explored in the dissertation. That is, the dissertation investigated what lexical insertions tend to be most frequent in L2 learners and Spanish heritage speakers. The subsequent section provides a view of specific studies that have addressed the costs involved in switching languages. Of particular interest for the current study are the models and mechanisms employed by this exclusive group of bilinguals. Following this section, the notion of vocabulary threshold is presented. As already noted, the

dissertation focused on the role of vocabulary threshold as a determining factor in intrasentential code-switching involving the insertion of English lexical items.

Specifically, this section serves as a stepping stone in order to later address whether L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge tend to insert more English lexical items when trying to access low frequency words. The chapter continues with a review of the literature that involves the different approaches and constraints that have been put forth in order to explain how Spanish-English code-switching works. Finally, the last section concludes with a presentation of various research methodologies that have been employed in the study of code-switching.

## **2.2 Overview of Levels Involved in Code-Switching**

Although the dissertation focused on a subtype of intrasentential code-switching involving the insertion of English lexical items in Spanish oral narratives, code-switching in general can be studied from different perspectives and levels. It has been a topic of interest included in different linguistic fields such as bilingualism (Grosjean, 1982; Myers-Scotton, 2006), sociolinguistics (Wardhaugh, 2006), language contact (Appel and Muysken, 1987), Spanish in the U.S. (Otheguy, 1993), and psycholinguistics (Kroll, Dussias, Bogulski and Valdés Kroff, 2012) among others.

With regard to the languages involved, code-switching can encompass different languages. For example, Nishimura (1997) investigated code-switching with Japanese and English, while Paradis, Nicoladis and Genesee (2000) studied the code-mixing by French-English bilingual children.<sup>1</sup> Thus, the phenomenon of code-switching can be found to exist across a variety of languages and has been documented with various age

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<sup>1</sup> Consult Wei (2002) for Chinese-English intrasentential code-switching data.

groups as well.

More specifically, code-switching can also be analyzed at different levels. In other words, lexical insertion of a single word would be the most basic form of code-switching. Although Muysken (2000, 2008, 2013) employs the term code-mixing to refer to the insertion of elements from one language into the other, the general term of code-switching was used in the dissertation to refer to the lexical insertions produced. With regard to lexical insertion<sup>2</sup>, recall that Muysken (2000) defines the process as “**insertion** of material (lexical items or entire constituents) from one language into a structure from the other language (p.3). For example, as investigated in the dissertation this type of code-switching consisted of a single English lexical item inserted into a sentence where Spanish was the main language. This type of code-switching would also be labeled intrasentential code-switching. As one will recall from Chapter 1, intrasentential code-switching involves a language switch within the same sentence (Cantone, 2007).

Phrase level insertion is another level of code-switching that involves more than just a single lexical item. This type of code-switching was also evidenced in the dissertation, specifically among the Intermediate group of L2 learners. Given that the insertion of each lexical phrase occurred within the sentence, it was once again considered an instance of intrasentential code-switching.

Code-switching can also be analyzed at the level of a complete sentence, which is defined as intersentential code-switching. As exemplified in the previous chapter, it consists of switching languages between two sentences where each sentence remains entirely in one language (Cantone, 2007). As opposed to intrasentential code-switching,

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<sup>2</sup> The term “lexical insertion” is used as equivalent to the term “nonce borrowing” used by Poplack, Sankoff and Miller (1988) and Poplack (2012).

this specific type of code-switching may not necessarily have a specific language designated as the primary or base language. Having identified the different levels of code-switching that exist, the review of the literature will be presented in a similar manner. That is, the chapter will continue with a look at the various proposals that have been put forth with regard to lexical insertion from a production perspective and continue with the grammatical constraints on code-switching.

### **2.3 Lexical Access**

The phenomenon of lexical access along with the different lexical selection mechanisms called upon for bilingual speech production have been investigated within the fields of bilingualism, second language acquisition, and language contact among different types of bilinguals (Costa and Santesteban, 2004; De Bot, 1992; Green, 1986, 1998; La Heij, 2005; Levelt, 1989, 2001; Myers-Scotton and Jake, 1995; Poulisse and Bongaerts, 1994; Roelofs, 1998; among others). Therefore, this section will provide an overview of the different approaches proposed in analyzing lexical access in order to understand the relationship between lexical insertion and vocabulary recognition.

The notion of lexical insertion as investigated for the dissertation was based on the English lexical items inserted within Spanish oral narratives. In addressing the research questions, lexical insertion of English items was the primary focus. Although most lexical insertions tend to be nouns, as evidenced by the results in Chapter 5, adjectives and prepositions are also considered lexical categories and should therefore in principle be subject to insertion. The incorporation of these other lexical categories would show support in favor of the Minimalist Approach (MacSwan, 1999) based on the Minimalist Program (Chomsky, 1995). In addition to analyzing the types of lexical



insertions produced, another goal of the dissertation was to test for vocabulary recognition of nouns and verbs. Of particular interest are single noun insertions as previously investigated by Poplack (2012), Poplack, Sankoff and Miller, (1988), and Zentella, (1981, 1997).

As expected, the proficiency level of a bilingual plays a critical role in the amount of code-switching produced, especially for L2 learners who are still in the process of acquiring the language as adults. In their study, Poullisse and Bongaerts (1994) investigated the switches produced by Dutch learners of English as a foreign language at three different levels of proficiency. The findings indicate that the use of unintentional L1 lexical items during L2 production is based on the proficiency level of the speaker (Poullisse and Bongaerts, 1994).<sup>3</sup> In addition, bilingual lexical access is explained by means of “spreading activation” (p. 53) in which there is one storage component for items from various languages (Poullisse and Bongaerts, 1994). In terms of the lexical access process for bilinguals, Poullisse and Bongaerts (1994) propose that the unintentional switches in languages occur due to the lexical items being stored together and chosen based on spreading activation. Poullisse and Bongaerts go on to say that the activation of the lexical items that are used frequently is going to outweigh the activation of other lexical items, particularly L2 lexical items. Although the speaker may have acquired similar levels of proficiency in both languages, the lexical items that are most likely to be used in a given utterance are going to be those with greater activation levels. Therefore, the proposal put forth by Poullisse and Bongaerts (1994) is extremely relevant for heritage speakers who are able to switch between languages, not due to difficulties in

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<sup>3</sup> Consult Poullisse (1999) for discussion on errors in first and second language speech production.

lexical retrieval, but instead due to having established a preference for specific lexical items in different contexts. Thus, the dissertation will provide evidence from intrasentential code-switching of the differences in the lexical retrieval process that can be interpreted based on the frequency of activation of certain lexical items. Given that L2 learners are still in the process of acquiring the second language, the relevant items in the L2 may be less activated due to less usage as opposed to heritage speakers who may switch often although the frequent activation may be consistent with a specific context.

The activation and suppression of languages in bilinguals has been investigated using several methods. Hermans, Bongaerts, De Bot and Schreuder (1998), for example, found that native speakers of Dutch are not able to suppress the activation of their first language in the production of English as a foreign language when asked to name pictures. In order to test the interference from Dutch (their first language) in the production of English, the participants were presented with pictures on a computer screen and then asked to name the pictures while ignoring an interfering stimulus (Hermans et al., 1998). In the first experiment, the interfering stimulus was presented in English either visually or auditorily in order to cause the participant interference in the production stage, given that the stimulus was either phonologically, semantically or not at all similar to the target name of the picture (Hermans et al., 1998). The second experiment was identical to the first except that the interfering stimulus was presented in Dutch instead of English (Hermans et al., 1998). The findings of the two picture-word interference experiments are similar to the results of previous research found in Green (1986) and De Bot and Schreuder (1993), which note that in foreign language speech production the activation of the first language, considered to be the dominant language, cannot be entirely suppressed

(Hermans et al., 1998). More recently, Kroll, Bogulski and McClain (2012) hypothesized that both languages are constantly activated and influence each other, “requiring the bilingual to effectively juggle the potential competition that arises when different alternatives become available in each language” (p. 13). Therefore, although the activation of the first language is considered to interfere in the naming of words in a foreign language (Hermans et al., 1998), the investigation of interference displayed by heritage speakers in naming words in either the L1 or L2 may help to better define the characteristics of a heritage speaker and thus present a clearer distinction between L2 learners and Spanish heritage speakers.

### **2.3.1 Control Models for Bilingual Speech Production**

In order to understand the code-switching practices of these bilinguals, it is necessary to address the process that occurs within the mind of the individual when involved in bilingual discourse. The complexities involved are far greater than a simple selection of either the L1 or L2. In order for the output to exclusively occur as the L2, the bilingual needs to select the L2 while at the same time restraining the L1 from occurring as output (Green, 1986). Therefore, the process of activation and suppression is essential and in essence the underlying foundation for the phenomenon of intrasentential code-switching.

According to Green’s (1986) inhibitory control model for managing two language systems, in monolingual speech or monolingual language mode (Grosjean, 1998), a language is selected while the other language is inhibited and therefore is not expressed. In explaining this model, Green (1986) notes the existence of a “specifier” (p. 216), which controls the system and allows a bilingual to switch from one language to the other

by selecting one of the languages. The selection of the language is based on the levels of activation and suppression, thus allowing the output of L1 to occur as a result of increasing the activation of L1 lexical items while simultaneously suppressing lexical items from the L2 (Green, 1986). Moreover, Green (1986) states that “the output from L2 could be suppressed within the system itself (internal suppression) or by the L1 system externally suppressing the activity of L2 (external suppression)” (p. 217). In other words, the lexical insertion evidenced by the participants in the dissertation may be expressed in terms of higher activation of the L1 and therefore, there is more internal competition among L1 lexical items as opposed to L2 items.

Although the Revised Hierarchical Model (RHM)<sup>4</sup> put forth by Kroll and Stewart (1994) has been critiqued and addressed in the literature (Brysbaert and Duyck, 2010), there may be partial support for this model with regard to the asymmetry between the L1 and L2. Given Kroll and Stewart (1994) state that the model was proposed with the intent to account for word production, this model could be adapted to the current study with regard to the production task. Furthermore, the inhibitory control model also explains how the retrieval of L2 word sounds is inhibited by internal suppression, while the activation of L2 words is suppressed at the assembly stage by external suppression (Green, 1986). In other words, internal suppression refers to an inhibition that is internal to the L2 while external suppression refers to an inhibition of the L2 generated by the L1. With regard to lexical insertion in the current study, there would be external competition across the L1 and L2.

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<sup>4</sup> Consult Kroll, Van Hell, Tokowicz and Green (2010) for a review of the Revised Hierarchical Model (RHM).

Therefore, some code-switching practices of bilinguals may be explained by a combination of differences in the levels of suppression as well as differences in the overall acquisition of the L2 lexicon. The distinction between a lexical item produced intentionally with high levels of activation in the L1, versus one produced spontaneously in the L2 in a bilingual with relatively equal dominance in both languages may be due to several factors such as preference or a greater familiarity with the lexical item in one of the languages. In some cases, the representation of a specific referent may not exist in the L1 and as a result the L2 must be employed. As expressed by Green (1986), the use of the L2 may prevail in cases in which the “L2 may possess a single word or idiom which expresses an idea that demands a novel phrase in L1” (p. 217).

Another model that has been employed to explain language processing in bilinguals is Levelt’s (1989) model for speech that consists of various components. The first component that forms part of this model is the “Conceptualizer” (p. 9), in which the speaker has an intention of a thought and selects the relevant information to be expressed, all the while paying attention to what was previously said (Levelt, 1989). The second component is the “Formulator” (p. 10), which converts the previous conceived message into a linguistic construction where grammatical and phonological rules are applied (Levelt, 1989). Finally the “Articulator” (p. 12) receives the speech from the Formulator and converts it into spoken speech (Levelt, 1989). Levelt goes on to add that “language-specific” (p. 104) conditions are met at the initial formation of a message. While Levelt’s (1989) model is accurate in analyzing the speech of a monolingual speaker, it does not necessarily portray how each of these processing components function in cases of intrasentential code-switching in bilingual speech. Assuming the speech of the bilingual

is produced following this same model and its components, the question arises as to whether the bilingual possesses two separate lexical networks each with its own components for speech production. This scenario would assume that at the onset at which the information is imagined, the bilingual has already made the decision as to which lexical network to address although may decide to switch networks along the way. Therefore, in a code-switched utterance one lexical network is selected and every time an insertion takes place there is a switch to another lexical network. Although both languages are activated in CS, both networks are not necessarily activated from the beginning. This would entail that both representations of the model are present and function in the same manner allowing for the switch to occur seamlessly, regardless of the language selected. Therefore, the articulation of the lexical item is going to depend on which language network the bilingual last selected.

Further advancing Levelt's (1989) model, De Bot (1992) presents a bilingual production model that accounts for code-switched utterances. This model, changed slightly from the original one, considers the first component to function according to either language in addition to assuming the existence of two formulators (De Bot, 1992). Also, De Bot notes that there is one lexicon that incorporates different lexical items from various languages. However, the notion that there is only one lexicon is troublesome in that it does not address the preferences behind a lexical item being produced in one language as opposed to the other. Instead, it could be proposed that by having two distinct lexical networks working simultaneously, the selection occurs based on the language features (Belazi et al., 1994) of the lexical item. Based on this classification, each lexical item will be grouped accordingly. Therefore, once the bilingual has selected

a lexical item with its corresponding features he or she may be more inclined to remain in that language given the association that may arise with other lexical items. Second language learners may have a limited lexicon in their second language and be more inclined to stay in the L1 and therefore have fewer possibilities of associating an L2 lexical item with other words. That is, the L2 learner may not have many associations among words in the L2 when speaking and therefore, reverts back to the L1. Besides specifying the function of these components in a bilingual mode, several requirements are put forth in order for this model to be applicable to the speech of both “balanced and non-balanced” bilinguals (De Bot, 1992, p. 6). Although this model addresses bilingual production, it does not make the link between why bilinguals of different proficiencies engage in intrasentential code-switching and how the lexical retrieval process differs between different types of bilinguals.

De Bot and Schreuder (1993) also implement Levelt’s (1989) theoretical framework in describing how the lexical process works in bilingual language production. In doing so, they explain the relationship between the semantic form and a lemma and describe the process of language assignment in relation to the activation of a lexical item in combination with the semantic features (De Bot and Schreuder, 1993). For example, if the bilingual conveys a message utilizing a specific L1 lexical item it is assumed that this item carries with it the appropriate semantic and functional features relevant to the lexical item. On the other hand, the incorporation of an L2 lexical item may display differences in the semantic and functional features due to the functional feature specifications not having been acquired in the L2. Hence, the problem that arises with L2 learners is the mismatch that occurs in the acquisition of the semantic aspects and functional features of

a lexical item, especially in bilingual language production. The authors do however note that the notion of activation “is *not* an all or none mechanism and words from the non-intended language may always slip in” (De Bot and Schreuder, 1993, p. 212). In contrast to Levelt’s (1989) claim that the Conceptualizer is “language-specific” (p. 104), this does not seem to be the case for De Bot and Schreuder. While many models have been proposed to explain language processing, what remains unclear is what lexical insertion in code-switching reveals about differences in how L2 learners and Spanish heritage speakers retrieve lexical items.

Myers-Scotton and Jake (1995) in their language production model propose that code-switching seems to depend on the association between the “conceptual, functional, and positional levels” (p. 981). Based on their model, Myers-Scotton and Jake (1995) state that the first level deals with the notion of choosing to express an utterance in a monolingual or bilingual mode as well as making the decision to use intrasentential code-switching. In addition, this is the level at which the Matrix Language is assigned as well as the semantic and pragmatic aspects relevant to the intent of the message (Myers-Scotton and Jake, 1995). The second level involves following a morphosyntactic process with the final level including the realization of the lexical items. Although this model is relevant to both monolingual and bilingual discourse (Myers-Scotton and Jake, 1995), it does not explain how the Matrix Language may fluctuate depending on both the proficiency of the bilingual as well as the preferences involved in choosing one language over the other for a specific lexical item given a certain context. This matter needs to be addressed in order to understand how the process is executed by a heritage speaker, who



can be assumed to have the option of using either language as the main language in discourse.

Schwietzer and Sunderman's (2008) Selection by Proficiency Model (SbP) offers the additional component of "lexical robustness" in order to explain how bilingual speech production works. As stated by Schwietzer and Sunderman (2008), "lexical robustness is a specific measure of L2 proficiency" (p. 216). Although this specific model takes into account the lexical robustness in the bilingual's L2, it still incorporates the mechanisms involved with inhibitory control and language-specific selection as mentioned in previous control models for bilingual speech production (Schwietzer and Sunderman, 2008). Specifically, this model provides two explanations with regard to how bilinguals name pictures in their L2. Overall, the main assumption of the SbP by Schwietzer and Sunderman (2008) is that less proficient bilinguals tend to rely on inhibitory control, whereas highly proficient bilinguals employ a language-specific selection mechanism (Schwietzer and Sunderman, 2008). Therefore, the specific type of mechanism called upon in bilingual speech production is going to depend primarily on the bilingual's lexical robustness (Schwietzer and Sunderman, 2008).

With regard to the L2 lexicon size of the bilinguals recall that the dissertation included a vocabulary test that the participants had to successfully pass in order to reach a threshold of vocabulary knowledge. Specifically, the vocabulary test allowed for a more accurate investigation of what lexical insertions tend to be most frequent across groups having reached a certain vocabulary threshold. In addition, having focused on the role of vocabulary threshold as a key factor in the current study provided further insight for whether this select group of bilinguals tended to insert more English lexical items when

trying to access low frequency words. Although the current study accounted for vocabulary threshold as a critical component in analyzing the code-switching practices of L2 learners and Spanish heritage speakers, more research is needed with regard to how lexical insertion takes place in a production task such as in narrating a story in order to test the levels of activation of lexical items inserted. Hence, in order to do so it is vital to know whether a specific lexical item is available in the bilingual mind.

## **2.4 Lexical Retrieval**

In spite of the obvious advantage of being able to communicate in more than one language, adult bilinguals may also be considered to be at a disadvantage in being bilingual given the conflict of selecting between two languages. This idea is based on the notion that the bilingual speaker has two languages competing in oral production and therefore, the lexical retrieval process is going to be more demanding for a bilingual than for a monolingual speaker. Specifically, executive control has been investigated within the fields of psycholinguistics in comparing monolinguals with bilinguals on lexical retrieval tasks.<sup>5</sup> In the study conducted by Bialystok, Craik and Luk (2008b), lexical access in both monolinguals and bilinguals was compared based on differences in vocabulary size and executive control. The findings indicate that vocabulary size needs to be assessed and acknowledged in bilinguals in comparing their lexical retrieval abilities to those of monolinguals (Bialystok et al., 2008b). Dividing the bilinguals according to the vocabulary scores earned on a standardized test allows the comparison with monolinguals to be more accurate (Bialystok et al., 2008b) and thus, avoids the common assumption that monolinguals possess a larger vocabulary size. In addition, the results

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<sup>5</sup> Consult Bialystok, Craik and Luk (2008a) for relevant discussion on the effects of bilingualism on cognitive processing in younger and older bilinguals.

show that bilinguals are able to outperform monolinguals on lexical retrieval tasks that are considered to be more demanding in executive control functions (Bialystok et al., 2008b). Their study incorporated picture naming tasks and verbal fluency tasks in order to compare both groups. Given the vocabulary size of an individual can influence the findings, the dissertation will investigate the lexical retrieval abilities of L2 learners and Spanish heritage speakers based on comparable vocabulary scores among both groups.

Previous research on the different aspects of bilingualism has been summed up by Bialystok (2009) to include the advantages, the disadvantages and everything in between regarding the overall linguistic abilities of bilingual speakers. In terms of the disadvantages, recall that bilinguals have constant activation of both languages and consequently one of the languages must be suppressed in order for the other language to be produced in oral discourse (Green, 1998). Hence, the constant activation and suppression of languages may in turn cause difficulties in the lexical retrieval process. While research does show evidence of disadvantages for bilinguals, the advantages in general tend to show far more benefits for bilinguals in overall linguistic performance. Finally, Bialystok (2009) puts forward the notion of code-switching with specific emphasis on the “joint activation and conflict for selection” (p. 8) that occurs in bilinguals. This is especially interesting in cases where both lexical items are available, yet the lexical item is produced in either the L1 or the L2 whether intentionally or not. Based on this notion, the question remains as to why bilinguals choose to switch languages in oral discourse in addition to how the lexical retrieval process differs between L2 learners and Spanish heritage speakers.

### 2.4.1 Language Switching Costs

The inhibitory control (IC) model proposed by Green (1998) suggests that there are costs involved in production when switching between languages. Based on the inhibitory control model, a word production task that involves numeral naming requires the “inhibition of active lemmas with non-target tags” (p. 74) in order to select the appropriate output (Green, 1998). As expressed by Green, each word in an individual language is linked to its own lemma and tag, which are activated in the production of a word. Green adds that both languages are considered to be activated in bilinguals; therefore in order for the production of either language to occur, one of the two languages must be suppressed in order for the other to be produced as the utterance.<sup>6</sup> The suppression of one of the languages will result in asymmetrical switching (Green, 1998). In addition, the proficiency of the bilingual needs to be accounted for, given that this model predicts that there will be a longer switch cost involved when switching into the more suppressed language, which would be the dominant language or L1 for unbalanced bilinguals (Green, 1998). Given that the L1 is most frequently activated by L2 learners it tends to be the one that is most difficult to suppress. Therefore, once the L2 learner is able to suppress it, the switch back to the L1 tends to be more costly. Although this model explains the control process in lexical production in bilingual individuals, further investigation is needed in order to understand the overall lexical retrieval process of a heritage speaker considered to have similar oral proficiencies in both languages in comparison to an L2 learner.

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<sup>6</sup> Consult Finkbeiner, Almeida, Janssen and Caramazza (2006) for discussion on lexical selection without language suppression.

### **2.4.2 Vocabulary Threshold**

With respect to lexical retrieval, the vocabulary threshold of the bilingual plays a critical role. As was previously mentioned in Chapter 1, lexical retrieval relies on the bilingual's ability to access a lexical item that is stored in their mental lexicon. Therefore, having acquired a certain level of vocabulary knowledge is imperative in order to allow for lexical retrieval to take place. This type of criteria has also been shown to be required as proposed by Schwieter and Sunderman (2008). In their study, Schwieter and Sunderman (2008) indicate that "lexical robustness" determines whether the bilingual utilizes a language-specific selection mechanism instead of inhibitory control as posited by Green (1986, 1998). Thus, the findings by Schwieter and Sunderman (2008) are interesting with regard to establishing what type of mechanism is engaged during bilingual speech production. More importantly, their results provided justification for a vocabulary threshold to be attained in the current study in order to explain the lexical insertion produced by a distinct group of bilinguals engaged in a production task. As presented in Chapter 4, the threshold required that each participant name 20 out of 30 pictures in both English and Spanish on a vocabulary test. While the minimum number of words established for the threshold may seem arbitrary, it allowed for the investigation of lexical retrieval abilities of all participants to be based on comparable vocabulary scores. In addition, this target number aided in the recruiting efforts and as a result allowed for a very selective group of bilinguals to be studied. While recognizing that viable models for bilingual speech production have been proposed in the literature (De Bot; 1992; De Bot and Schreuder, 1993; Green, 1986, 1998; Kroll and Stewart, 1994; Levelt; 1989; Myers-Scotton and Jake, 1995; Schwieter and Sunderman, 2008), the notion of establishing a

threshold may serve as the missing link to allow us to better identify how lexical insertion works in cases of intrasentential code-switching.

## **2.5 Grammatical Constraints on Code-Switching**

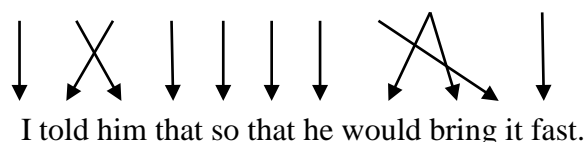
Code-switching has been investigated within the fields of SLA, bilingualism and language contact (Grosjean, 1982; MacSwan, 1999; Myers-Scotton, 1993, 2002, 2006; Otheguy, 1993; Otheguy, García and Fernández, 1989; Poplack, 1980; Zentella, 1997; among others), specifically among L2 learners (Toribio, 2001b) and Spanish heritage speakers (Toribio, 2004). Intrasentential code-switching in particular, has been examined in terms of understanding how bilinguals are able to alternate between languages within the same sentence all while producing grammatically acceptable utterances (Toribio, 2001b).

In order to understand the linguistic phenomenon of code-switching, many approaches have been put forth to explain how these bilinguals are able to alternate between languages with such ease. Given that code-switching is constrained by structural principles (Toribio, 2008), it has been analyzed and explained according to surface constraints (Poplack, 1980), syntactic constraints (Belazi, Rubin and Toribio, 1994; Di Sciullo, Muysken and Singh, 1986) and the Minimalist Approach (MacSwan, 1999, 2000). Each approach corresponds to different stages of syntactic research and therefore has provided further insight into understanding the constraints involved when code-switching ensues. That is, the approach put forth by Di Sciullo et al. (1986) corresponds to the Government and Binding approach to syntax, while Belazi et al. (1994) focused on the functional theories of syntactic theory. On the other hand, MacSwan's (1999, 2000) views are based on the Minimalist Program (Chomsky, 1995). Therefore, this section will

provide an overview of the different approaches proposed in analyzing code-switching from a grammatical perspective, with a specific look at the views set forth by Poplack (1980), Di Sciullo, Muysken and Singh (1986), Belazi, Rubin and Toribio (1994) and MacSwan (1999, 2000). In addition, the Matrix Language Frame model proposed by Myers-Scotton (1993) will be discussed.

The majority of researchers that have investigated code-switching consider the work by Poplack (1980), to be one of the fundamental studies within the field. This particular study set the stage for future studies on code-switching by presenting two constraints pertaining to the syntactic structure of the sentence. The two constraints included the Equivalence Constraint and the Free Morpheme Constraint. In this paper I will focus only on the Equivalence Constraint as the precursor of other constraints that have been proposed since this work. The Equivalence Constraint allows switching to occur at particular points where the two languages are similar in their syntactic structure (Poplack, 1980). This is illustrated in (1).

(1) (Yo) le dije eso pa' que (él) la trajera ligero. (Poplack, 1980, p. 586)



“I told him that so that he would bring it fast.”

As seen in (1) and presented in Poplack (1980), the straight arrows indicate where the two languages coincide without any violation of syntactic structure. The crossing arrows indicate lack of structural parallelism. Therefore, most lexical switches involving a single noun or verb within a sentence will follow this constraint. This constraint can be applied to the lexical insertions produced by both the L2 learners and the Spanish heritage

speakers in this study, which primarily include single lexical items. Given that code-switching can involve more than a simple switch of a lexical item, this constraint does not account for more complex grammatical constructions and therefore, falls short of a full explanation in analyzing most code-switched utterances. While the constraints proposed by Poplack (1980) explain a certain type of code-switching, they do not provide a full explanation for all possible types of switches. For example, switching within a single word is not possible as seen in (2) where both lexicons remain separate (Toribio, 2001b).

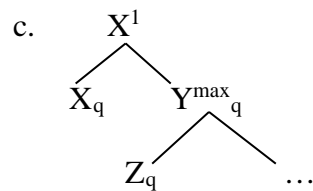
(2) \*I am *readiendo*. / \*(Yo) *estoy leying*. (Toribio, 2001b, p. 207)

“I am reading.”

The approach taken by Di Sciullo, Muysken and Singh (1986) provides an alternative explanation to the constraints that have previously been proposed to explain the restrictions on code-switching. The Government Constraint states that the lexical head and the corresponding complements must be in the same language (Di Sciullo et al., 1986). Therefore, the lexical head is going to c-command or govern other lexical elements as seen in (3) (Di Sciullo et al., 1986).

(3) Government Constraint (Di Sciullo et al., 1986, p. 6-7)

- a. If  $L_q$  carrier has index  $q$ , then  $Y^{\max}_q$ .
- b. In a maximal projection  $Y^{\max}$ , the  $L_q$  carrier is the lexical element which asymmetrically c-commands the other lexical elements or terminal nodes dominated by  $Y^{\max}$ .





Nevertheless, this approach does not explain certain types of switches found in Spanish-English code-switching that allow the lexical head to differ in language from its complement, as in (4) (Toribio, 2001b).

(4) a. *Los niños pidieron* pillows and blankets. (Toribio, 2001b, p. 208)

“The children requested pillows and blankets.”

b. The sleepy travelers boarded *el vuelo de las 5:00*. (Toribio, 2001b, p. 208)

“The sleepy travelers boarded the 5 o’clock flight.”

Example (4a) demonstrates a permissible switch between the lexical head verb and its complement as does example (4b). Although the Government Constraint states that the verb must be in the same language as the complement (Di Sciullo, Muysken and Singh, 1986), these two examples prove otherwise.

Another constraint that has been put forth in the code-switching literature is the Functional Head Constraint, which assumes that the functional head along with its complement must match based on the checking of the language feature, namely the feature that indexes the item as belonging to the lexicon of either language (Belazi, Rubin and Toribio, 1994). This constraint is stated in (5).

(5) The Functional Head Constraint (Belazi, Rubin and Toribio, 1994, p. 228)

The language feature of the complement f-selected by a functional head, like all other relevant features, must match the corresponding feature of that functional head.

According to Belazi et al. (1994), if the features of both languages do not match, code-switching will not occur. Therefore, the process of feature checking allows for certain

switches to occur in code-switching, whereas other types of switches will not be permitted as seen in (6).

(6) a. \**Los diecisiete* children from the valley were absent from school. (Toribio, 2001b, p. 209)

b. \*The seventeen *niños del valle faltaron a la escuela*. (Toribio, 2001b, p. 209)

“The seventeen children from the valley were absent from school.”

Both examples (6a and 6b) are not permissible switches, given that the Functional Head Constraint does not allow a switch between a functional head quantifier and its noun phrase complement (Toribio, 2001b). This constraint is referred to consistently in the literature and seems to provide a thorough explanation in the understanding of code-switching.

Based on the Minimalist Program (Chomsky, 1995), MacSwan’s (1999) Minimalist Approach states that code-switching can be explained based solely on the specific lexical items that are switched in the sentence. This approach explains that the computational system remains constant across languages and therefore the switching of languages is not relevant (MacSwan, 1999, 2000). Instead, the features of the lexical items need to be checked and match up in order for a switch to occur, regardless of the language (MacSwan, 1999, 2000). This approach is presented in (7), assuming a Minimalist Approach (MacSwan, 1999, p. 146; 2000, p. 43; 2005, p. 5).

(7) The Minimalist Approach according to Chomsky’s (1995) Minimalist Program (MacSwan, 1999, p. 146; 2000, p. 43; 2005, p. 5)

Nothing constrains code-switching apart from the requirements of the mixed grammars.

Therefore, this approach considers all instances of code-switching acceptable, including long sequences of intrasentential cases, as long as the features coincide (MacSwan, 1999, 2000). While some of the previous approaches have been expanded upon and improved, they are still critiqued on the basis of not being inclusive of all types of code-switching. Thus, the notion of Minimalism according to MacSwan (2009), “provides a framework that permits us to abandon the quest for constraints on CS, and engage in the linguistic analysis of mixed-language utterances in very much the same way we engage in the analysis of monolingual language” (p. 334). In particular, this study will show support in favor of the Minimalist Approach (MacSwan, 1999) given the high number of switches found between a Spanish determiner and the lexical insertion of an English noun.

While some approaches to code-switching have focused primarily on the surface structures being equivalent in both the L1 and the L2 (Poplack, 1980), others have explained code-switching from a syntactic point of view (Belazi, Rubin and Toribio, 1994; Di Sciullo, Muysken and Singh, 1986). In reference to intrasentential code-switching, the Matrix Language Frame model proposed by Myers-Scotton (1993) implies that there are more instances of morphemes present in the Matrix Language as opposed to the other language. This model focuses on the asymmetry of both languages (Myers-Scotton, 2006). Therefore, the Matrix Language is going to be the one that provides the morphosyntactic frame, while the other language is referred to as the Embedded Language (Myers-Scotton, 2006). The Embedded Language tends to consist of content morphemes that are placed within the frame of the Matrix Language (Myers-Scotton, 1995). Although it may be assumed that the Matrix Language is the first language of the speaker, given that it provides the morphosyntactic structure of the sentence, the second

language may actually be the Matrix Language (Myers-Scotton, 1993). The distinction between the Matrix Language and the Embedded Language, illustrated in (8), reveals the Matrix Language as Spanish and the Embedded Language as English, although English is the native language of the participant.

(8) P028 Intermediate: es una película sobre un *snowman*...um que vive en un *snow globe* y quiere um...hacer un *party*...con otros um...characters...um...y...um... intenta escapar su *snow globe* muchos tiempos y...no puede hacerlo y...um...um eventualmente um...se cae en un *fish bowl* y...um...fin.

“it is a movie about a snowman...um that lives in a snow globe and wants um...to have a party...with others um...characters...um...and...um... attempts to escape his snow globe many times and...cannot do it and...um...um... eventually um...he falls into a fish bowl and...um...end.”

This change in the Matrix Language may be due to a specific context or a certain interlocutor that may require that the speaker change from the L1 to the L2 in discourse, according to whether the interlocutor is monolingual or bilingual. As seen in (8), the present study was carried out in Spanish, in which case Spanish could be designated the Matrix Language with English selected as the Embedded Language. Although the Matrix Language Frame model has contributed greatly to the analysis of code-switching, it has also been critiqued (MacSwan, 2005) in favor of the Minimalist Approach (MacSwan, 1999, 2000).

## 2.6 Research Methodologies

In the quest to analyze the code-switching of bilinguals, many studies have used various approaches some of which include reading, recounting and writing tasks (Toribio,

2001a) as well as the evaluation of a written corpus (Callahan, 2004). Many of these methodologies have been successful in the elicitation of code-switching, given that the specific approach used can play a significant role in the type of data collected.

One of the approaches that has been employed to investigate code-switching is the use of reading, recounting and writing tasks (Toribio, 2001a). In her methodology, Toribio incorporated three different tasks to investigate the code-switching of ten Spanish-English bilinguals. In her reading task, Toribio had the participants read aloud segments of two fairy tales with one incorporating permissible switches and the other illicit switches. The participants were then asked by the investigator to reflect on both fairy tales and answer questions regarding the “readability, comprehension, enjoyability, and grammatical form” (p. 408). In the second task, a recounting task, Toribio had the participants retell the ending of one of the two fairy tales incorporating both languages. The final task, a writing task, had the participants retell a popular children’s story in writing. Although Toribio included three distinct testing conditions, all three tasks elicited code-switching and thus prove the need to incorporate several different methodologies in order to confirm that the results are a true reflection of the linguistic phenomenon being studied and not due to the method of testing.

Code-switching has also been investigated in the form of written texts, which can provide additional insight into how Spanish-English code-switching functions with a comparison between the switches that occur in oral speech as opposed to the language switches that occur in writing (Callahan, 2004). In analyzing the code-switching of thirty texts, consisting of novels and short stories, Callahan provides a syntactic account of the similarities found in the oral and written forms following the Matrix Language Frame

model of Myers-Scotton (1993). Although the present study was carried out with the intention of having the participants speak in Spanish, the Matrix Language Frame model (Myers-Scotton, 1993) was not adopted for this study due to the change in the Matrix Language, thus exemplified by a language switch.

The methodology chosen for the study carried out by Montoya (2011) and the dissertation had several advantages in that it did use a story retelling task similar to the recounting task used by Toribio (2001a), although it required the participants to tell the sequence of events from a YouTube clip seen on a computer screen. The short story retelling task was considered to be based on spontaneous speech of a story they had never seen before. Indeed, Toribio (2001a) was able to collect spontaneous speech, although one of the two fairy tale fragments that was used in the recounting task (*Blancanieves y los Siete Enanitos* / Snow White and the Seven Dwarfs) is quite familiar and may have hindered the actual code-switching produced. Therefore, the familiarity of the fairy tale may have limited the amount of switching, since the participants may be used to telling the story primarily in one of the two languages.

## **Chapter 3**

### **Montoya (2011)**

#### **3.1 Introduction**

The research questions and hypotheses for the dissertation are formulated based on the results of a previous study. Therefore, this chapter will provide a brief summary of the study and its findings. The principal objective of Montoya (2011) was to investigate the intrasentential code-switching of different lexical items in second language learners and Spanish heritage speakers in order to understand the relationship between the development of their Spanish lexicon and the acquisition of the functional feature specifications in Spanish. In other words, the study set the foundation for further investigation on how lexical insertion works with a specific look at the differences in the storage and access of lexical items. Using a story retelling task and a picture naming task, data were collected from a group of Intermediate second language learners, an Advanced group of second language learners and a group of Spanish heritage speakers. The investigation revealed that differences in accessing lexical items did not generate differences in code-switching practices between adult second language learners and Spanish heritage speakers. That is, the Spanish heritage speakers showed no difference in comparison to the second language learners with regard to the insertion of nouns and tags. In addition, this study confirmed that second language learners and Spanish heritage speakers switch at the same junctures.

#### **3.2 Research Questions and Hypotheses**

The study examined intrasentential code-switching of different lexical items in adult L2 Spanish learners and Spanish heritage speakers in order to understand the

relationship between the development of their Spanish lexicon and the acquisition of the functional feature specifications in Spanish. The study by Montoya (2011) was guided by Toribio's (2001b) study and focused on the comparison of Spanish heritage speakers and second language learners. It assumed the principles proposed by Di Sciullo et al. (1986), Belazi et al. (1994) and Toribio (2001b). According to these principles, the L2 learners should produce well-formed switches that are rule-governed (Toribio, 2001b) and do not violate the Functional Head Constraint (Belazi et al., 1994). Although the Functional Head Constraint (Belazi et al., 1994) and the Minimalist Approach (MacSwan, 1999) have been previously investigated, the Functional Head Constraint was tested in the study since it seems that not enough work has been conducted under the assumption that lexical categories need to be distinguished from functional categories. Thus, Montoya (2011) assumed a minimalist analysis following MacSwan's (1999) Minimalist Approach. As previously mentioned in Chapter 1, the research questions posed in the study were as follows: Do differences in accessing lexical items generate differences in code-switching practices between L2 learners and Spanish heritage speakers? Do L2 Spanish learners and Spanish heritage speakers switch at the same junctures, obeying the same grammatical constraints? This chapter continues with the presentation of the research methodology utilized in the study.

### **3.3 Methodology**

#### **3.3.1 Participants**

A total of thirty one participants participated in the study (Montoya, 2011). The results presented are based on thirty participants, which included twenty females and ten males. The data for this study were gathered from two participant groups: (1) a group of



Spanish L2 learners and (2) a group of Spanish heritage speakers. Both groups included 15 participants, consisting of undergraduate college students enrolled in different Spanish classes at a research university in the United States. Based on responses to the background questionnaire and their score on the proficiency test, all the participants were grouped accordingly. Therefore, the group of Spanish L2 learners was divided further into two groups: an Intermediate level group and an Advanced level group. The participants who scored below 70% on the Spanish proficiency test were classified as the Intermediate group and those that scored above 70% were classified as the Advanced group. The group of L2 Spanish learners was selected based on the fact that they are still in the process of acquiring the language as adults, while the Spanish heritage speaker group was selected as an ideal comparison given their language contact with English and their advanced proficiency and competence as bilinguals.<sup>1</sup> Although a heritage speaker can be defined in multiple ways, the study employed the definition by Valdés (2000) who defines a heritage speaker as “a student who is raised in a home where a non-English language is spoken, who speaks or merely understands the heritage language, and who is to some degree bilingual in English and the heritage language” (p. 1). This definition, currently used in the “foreign language teaching profession” (Valdés, 2005, p. 412), was considered to be the most accurate and representative of the Spanish heritage group in the study. In general, the majority of the Spanish heritage speakers fit the definition of Valdés (2000), used to identify the Heritage group. In order to be classified as a Spanish heritage speaker, the participants had to consider themselves to be heritage language learners of Spanish along with having scored above a 76% on the Spanish proficiency

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<sup>1</sup> Consult Lynch (2008) for an analysis of the similarities in Spanish heritage speakers and second language learners.

test. In addition, they had to indicate on the background questionnaire that they have spoken Spanish from 3-12 years of age. Table 3.1 represents the composition of the participant groups.

Table 3.1 Participant groups

| <u>Group</u>                     | <u>Age</u> | <u>Sex</u>          | <u>N</u> |
|----------------------------------|------------|---------------------|----------|
| Intermediate L2 Spanish learners | 18-22      | 5 females, 3 males  | 8        |
| Advanced L2 Spanish learners     | 19-22      | 5 females, 2 males  | 7        |
| Spanish heritage speakers        | 18-22      | 10 females, 5 males | 15       |

In order to be considered a participant in the study, the length of residence in the United States was considered a factor in addition to having been exposed to Spanish. For those few participants who were born and raised outside the fifty states, the age at which they first came to the United States was provided in the background questionnaire in order to identify the number of years lived in the United States, thus indicating years of English contact. Therefore, the following table describes the four participants born and raised outside the United States, their place of birth, their age of arrival to the U.S., their gender and their total number of years of contact with English. These participants included two Intermediate L2 Spanish learners and two Spanish heritage speakers. The distribution of these participants is presented in Table 3.2. See Appendix A for the Spanish language questionnaire.

Table 3.2 Participants born outside U.S., birth place, arrival age, sex and years of English contact

|                          | Intermediate<br>(n=2) | Heritage<br>(n=2) |
|--------------------------|-----------------------|-------------------|
| Birth place              | Philippines; India    | Ecuador; Peru     |
| Age of arrival and sex   | 3.5 F; 10 M           | 5 M; 11 F         |
| Years of English contact | 17.5; 10              | 15; 10            |

In the Intermediate group, three participants were born in New Jersey and three were born in New York. One of the participants born in New Jersey indicated Spanish and Italian to be her second languages with English considered her first language, while another participant born in New York indicated only Spanish to be her second language with English as her first language. As seen in Table 3.2, one participant was born in the Philippines and came to the United States at age three and a half and has had English contact for 17.5 years. This participant indicated that she was exposed to Tagalog and English from birth to three years of age. She spoke both of these languages in addition to Ilocano up until the age of three. From three years of age until she was twelve, she was exposed to Tagalog and English, but indicated she only spoke some Tagalog and mostly English from three to twelve years old. She considered her first language (the one that she spoke and in which she was addressed from birth to three years of age) to be Tagalog and English to be her second language (the one that she spoke and in which she was addressed after three years old). Another participant in this group, as seen in Table 3.2, was born in India and came to the United States at age ten and has had ten years of English contact. This participant was exposed to Malayalam from birth to age three and

also spoke it up until the age of three. From three to twelve years of age, he was exposed to Malayalam, English and Hindi, although only spoke Malayalam and English until the age of twelve. He considered English to be his first language and Malayalam his second language.

The Advanced group consisted of three participants born in New Jersey and another three born in New York. The final participant in this group was born in New Hampshire. All seven participants in this group indicated English to be their first language. In addition, six out of the seven participants considered Spanish to be their second language. The final participant did not indicate a second language.

Finally, the Spanish heritage group included nine participants who were born in New Jersey and two participants born in New York. One participant was born in Massachusetts and another one was born in California. As seen in Table 3.2, one of the Spanish heritage speakers was born in Ecuador and came to the United States at age five, having a total of 15 years of English contact. The last participant in this group was born in Peru and was eleven years old when she first came to the United States with a total of ten years of English contact. In this group nine participants indicated Spanish as their first language. Three participants considered both Spanish and English as their first language and the remaining three participants stated English as their first language.

### **3.3.2 Spanish Language Questionnaire**

Both the study put forth by Montoya (2011) and the dissertation incorporated a background questionnaire in order to have the relevant demographic and linguistic information with regard to each participant. Therefore, prior to the two tasks being administered all of the participants completed a background questionnaire, written in

English, in order to elicit information about their background as a student and as a learner of Spanish. One section of the questionnaire asked the participants to state their major and minor course of study. Of particular interest were the participants who indicated Spanish as a major or minor. The Intermediate group included one Spanish major, six Spanish minors and one participant that listed “other”. The Advanced group consisted of three Spanish majors, three Spanish minors and one participant that claimed “other”. With regard to the Heritage group, there were three Spanish majors, six Spanish minors and six participants that stated “other”.

In addition, this questionnaire provided detailed linguistic information regarding their age of language exposure along with several sections which asked the participant to rate their language skills (speaking, reading, listening, writing and cultural knowledge) in Spanish on a scale from 1 (not proficient) – 5 (native-like proficiency). Overall, the Heritage group displayed the highest self-rating for speaking skills with an average of 3.77 and ranged from 3-5. With respect to reading skills, the Advanced group revealed the highest self-rating with an average of 3.57 and ranged from 3-4. The highest self-rating for listening skills was produced by the Heritage group with an average of 4.47 and ranged from 3-5. In contrast, the Intermediate group revealed the highest self-rating in writing skills with an average of 3.75 and ranged from 3-4. With regard to cultural knowledge, the highest self-rating was found in the Heritage group with an average of 3.93 and ranged from 2-5.

### **3.3.3 DELE Spanish Language Test**

In addition to the background questionnaire, the study by Montoya (2011) as well as the dissertation incorporated a language proficiency test, which was administered to

each participant. Thus, the participants' level of Spanish was determined by a modified version of the DELE (Diploma de Español como Lengua Extranjera) Spanish language test. This proficiency test consisted of a multiple choice test followed by a modified cloze test. The multiple choice test consisted of 30 questions and the modified cloze test consisted of 20 missing words in which the participants were asked to fill in the missing word based on the passage, selecting from three choices. The maximum score on this test was a 50. The average and range for the DELE for all three participant groups were as follows: Intermediate group averaged 60.25% and ranged from 52% - 68%; Advanced group averaged 82% and ranged from 70% - 94%; and Heritage group averaged 87.33% and ranged from 68% - 100%. See Appendix B for the DELE Spanish language test.

As previously stated, the L2 learners were divided into two groups based on the results of the DELE Spanish proficiency test. The participants who scored below 70% were classified as the Intermediate level group and those that scored above 70% were classified as the Advanced level group. All of the participants in the Spanish heritage speaker group were expected to score 70% or higher in order to be considered for this study. All of the Heritage speakers scored 76% or higher, with the exception of one participant who scored 68%. Regardless, this one participant remained in the study, given that he scored 83% on the picture naming task.<sup>2</sup>

### **3.4 Experimental Tasks**

#### **3.4.1 Story Retelling Task**

The background questionnaire along with the DELE Spanish proficiency test, were given to all the participants individually. Each participant was asked to meet in a

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<sup>2</sup> It is difficult to consider the Spanish heritage speakers as a homogeneous group, given the fluctuation that exists among them. Although identified as a Spanish heritage speaker by the bilingual interviewer, this study did not account for whether the language was acquired at home or at school.

small room that was selected as the testing area. The participant was asked to sit in front of a computer screen in order to perform the first task. All of the participants were given two tasks. Recall that the main objective of the study was to investigate the lexical insertions produced by second language learners and Spanish heritage speakers. Therefore, each participant completed two experimental tasks. The first task, a story retelling task, required the participant to watch a three minute YouTube clip<sup>3</sup> on a computer screen three times in order to understand and recall the storyline as much as possible. Although the YouTube clip did not incorporate any written language, the song “Somebody to Love” played repeatedly in English as a background song. This song played at a normal volume for all the participants, except for one participant who asked if the music could be turned off. The music playing in the background was done in order to set the participants in a bilingual language mode (Grosjean, 1997, 1998, 2001) by having them listen to the song in English and then having to retell the story in Spanish. In order to trigger code-switching among the participants, the activation of the bilingual language mode was crucial in prompting the production of both languages. Placing the participants in a state of having to carry out a task in Spanish, considered for most to be their second language, may actually place the participant under stress (Dornic, 1978) and thus, cause the switch to their dominant language. Although the goal was to have the participants code-switch, the actual tasks were not meant to cause any stress. The bilingual interviewer attempted to provide the most relaxed and comfortable environment possible in order to reduce any anxiety or stress by conversing in Spanish with each participant briefly before the start of each task. This same bilingual interviewer was present during

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<sup>3</sup> See the following YouTube clip for the entire video:  
<http://www.youtube.com/watch?v=FsNDGAgD5z4>

the three viewings to make sure the participant watched the video clip three times. After watching the short YouTube clip the participant then retold the story to the same bilingual interviewer.<sup>4</sup> All of the instructions were given in Spanish. The story was recorded and analyzed. This task provided evidence of the English lexical items inserted and junctures at which switches occur.

### **3.4.2 Picture Naming Task**

In order to test for knowledge of the relevant vocabulary that pertained to the video clip and isolate the specific English lexical insertions produced during the story retelling task, both the study by Montoya (2011) and the dissertation incorporated a picture naming task. The second task included in the study by Montoya (2011), given immediately after the recording of the story, was a picture naming task that tested the participants' knowledge of the relevant Spanish vocabulary after narrating the story. For this task the participant was given a worksheet with pictures that referred to specific images from the YouTube clip along with their corresponding Spanish word. The pictures were presented on the left and right sides of the page with the Spanish words presented in random order down the center of the page. The participant was asked to match the picture with its corresponding Spanish word by drawing a line. This task included a total of thirteen target items along with five pictures and their corresponding words as distractors.<sup>5</sup> See Appendix C for the picture naming task.

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<sup>4</sup> All of the participants were greeted and spoken to only in Spanish. Although the participants were not explicitly instructed to retell the story in Spanish, they were given all the directions in Spanish. Therefore, at the time of the recording the participants assumed they were to retell the story in Spanish, thus allowing code-switching to occur if necessary.

<sup>5</sup> This study did not account for variations in names of referent according to the dialects of the Spanish heritage speakers.



Successful completion of the picture naming task indicated that the participant knew the relevant Spanish lexical items and thus, suggests that if an English item was inserted in a Spanish narrative the speaker had an alternative reason for inserting these items. The average and range for the picture naming task were as follows: Intermediate group averaged 76% and ranged from 50% - 100%; Advanced group averaged 90.14% and ranged from 77% - 100%; and Heritage group averaged 97.26% and ranged from 83% - 100%.

### **3.5 Data Analysis**

Since one of the goals of the study by Montoya (2011) was to investigate whether differences in storing and accessing lexical items generate differences in code-switching practices, the data were analyzed according to the insertion of English lexical items. Thus, if the lexical item had not been stored or was simply difficult to access the speaker may have engaged in lexical insertion of these items. On the other hand, the speaker who demonstrated the ability to access a lexical item in an independent task may have engaged in lexical insertion for other reasons. The insertion of these items may have been due to greater familiarity with the lexical item in English. The lexical items coded for included the lexical insertion of nouns, verbs, adjectives and prepositions. Also coded for were cases that included lexical insertions of adverbs, determiners, tags and lexical phrases. The insertion of these lexical items, specifically the lexical insertion of a noun, would confirm difficulty in accessing lexical items.<sup>6</sup> Therefore, the different patterns of switching involving cases of lexical insertion may be indicative of the differences in lexical knowledge among the groups.

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<sup>6</sup> As a limitation of this study, it is worth mentioning that several participants may not have known the name of the referent and code-switched, not due to not knowing the word but rather having never been exposed to the term.

The other goal of the study by Montoya (2011) was to examine the junctures of a switch in L2 Spanish learners and Spanish heritage speakers, in order to see if they obeyed the grammatical constraints put forth by Belazi et al. (1994), MacSwan (1999, 2000) and Toribio (2001b). The data were coded based on the juncture where the switch occurred, which was classified accordingly. The present study analyzed the code-switching between lexical heads and their complements as well as code-switching between other types of constituents, similar to those investigated by Toribio (2001b). The first analysis was carried out based on the CS between different lexical heads and their complements, which included a lexical head noun and its complement, a lexical head verb and its complement, a lexical head adjective and its complement and a lexical head preposition and its complement, in order to see if these switches violated any of the syntactic constraints previously mentioned. The other sites that were analyzed were cases that involved CS between different types of constituents. These included switching between a subject and verb in INFL followed by a predicate adjective, switching between a subject and verb in INFL followed by a predicate nominal, switching of a restrictive relative clause, switching of an adverbial clause, switching of a dislocated phrase and switching between a clitic and a verb phrase. These sites were chosen in order to confirm the Functional Head Constraint (Belazi et al., 1994).

### **3.6 Major Findings**

#### **3.6.1 Results**

With regard to the English lexical insertions produced in the study, the insertion of a noun was the lexical insertion favored most among the three participant groups over all other types of lexical insertions. The Spanish heritage group produced the most

instances of a lexical insertion of a noun, followed by the Advanced group, and then the Intermediate group. The Spanish heritage group inserted a total of 84 nouns, while the Advanced group inserted 54 nouns. The Intermediate group had a total of 52 lexical noun insertions. The Independent-Samples T-Test revealed no significant difference for the lexical insertion of a noun between the Intermediate group and the Heritage group ( $p = .557$ ) or between the Advanced group and the Heritage group ( $p = .275$ ). In addition, no significant difference was found between the Intermediate group and the Advanced group ( $p = .572$ ). With respect to verbs, the Intermediate group had two lexical insertions of a verb and the Advanced group also produced a total of two lexical insertions of a verb. The Heritage group did not produce any instances of this type of lexical insertion. The analyses indicated a significant difference ( $p = .045$ ) for the insertion of a verb between the Intermediate group and the Heritage group as well as between the Advanced group and the Heritage group ( $p = .030$ ). No significant difference was found between the Intermediate group and the Advanced group ( $p = .887$ ). On the other hand, the Heritage group was the only participant group to produce lexical insertions of an adjective. The Heritage group inserted a total of three adjectives. With regard to the insertion of a preposition, the Advanced group was the only participant group to demonstrate this type of lexical insertion. The Advanced group produced one preposition as a lexical insertion.

The following examples provide different types of lexical insertions as evidenced in the study. The data in (1) demonstrates a lexical insertion of a compound noun, (2) exemplifies a lexical insertion of verb, (3) illustrates a lexical insertion of an adjective and (4) presents a lexical insertion of a preposition.

(1) P007 Intermediate: ...compra un *snow globe*...

“...buys a snow globe...”

(2) P022 Intermediate: ...*falls um* en el agua...

“...falls um in the water...”

(3) P019 Heritage: ...y todas dicen *sunny um*...

“...and all say sunny um...”

(4) P013 Advanced: ...él trata de...*to*...

“...he tries to...to...”

In order to identify whether the participants with lower scores on the picture naming task were more inclined to insert an English lexical item, specifically a noun, it was worth comparing their scores on the picture naming task with the number of lexical insertions of a noun. Therefore, the participants from each group who did not earn a perfect score of 100% were identified. Of particular interest, two Intermediates that scored above 70% still had a high number of lexical insertions of a noun. Furthermore, an Advanced L2 learner that scored 77% on the picture naming task had no instances of a lexical insertion of a noun as opposed to three other Advanced L2 learners who scored above 83% and had high rates of lexical insertion of a noun. Although three Spanish heritage speakers earned high scores on the picture naming task, two of them produced several lexical insertions of a noun. It is worth noting that even though twelve Spanish heritage speakers earned 100% on the picture naming task, they still had a tendency to insert an English lexical noun. Also, there was only one Spanish heritage speaker that did not produce any lexical insertion of an English noun.

In general, despite the fact that the Advanced group and the Heritage group scored high on the picture naming task, therefore proving they had the vocabulary, they still had

a tendency to insert a lexical noun. Recall that the Advanced group scored 90.14% and the Heritage group scored 97.26% on the picture naming task. With regard to the Intermediate group, it could be expected that they would have inserted these items, given that they only scored an average of 76% on the picture naming task. The Heritage speakers showed no difference in comparison to the L2 learners with regard to the insertion of nouns. Thus, differences in accessing lexical items did not generate differences in CS practices between the L2 learners and the Spanish heritage speakers and therefore the first hypothesis was not confirmed.

The study put forth by Montoya (2011) as well as the dissertation also investigated other categories of lexical insertion. Within the study, the insertion of an adverb was only produced by the Advanced group. The Advanced group produced one lexical insertion of an adverb. There was no production of a lexical insertion of a determiner by any of the three groups. The insertion of a tag was produced by all three participant groups.<sup>7</sup> Montoya (2011) adopted the definition by Bullock and Toribio (2009), who define tag-switching as “the insertion of a formulaic expression from language B into an utterance in language A, primarily for pragmatic effect” (p. 4). In this study, some of the tags produced in the story retelling task included *ok*, *so* and *I guess*. The Heritage group had the most instances of this type of lexical insertion, followed by the Intermediate group, and then the Advanced group. The Heritage group produced a total of 16 tags and the Intermediate group produced three tags. There were only two tags inserted by the Advanced group. The Independent-Samples T-Test showed no significant difference between the Intermediate group and the Heritage group ( $p = .206$ ) or between the Advanced group and the Heritage group ( $p = .153$ ). In addition, no significant

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<sup>7</sup> Consult Toribio (2001b) for a brief description of tag-switches.

difference was found between the Intermediate group and the Advanced group ( $p = .856$ ). Although all three groups inserted lexical phrases, the statistical analysis did not reflect any significant differences across all three participant groups. The Heritage group inserted four lexical phrases and the Intermediate group inserted three lexical phrases. There was only one lexical phrase inserted by the Advanced group.

The following examples show other types of lexical insertions. Example (5) demonstrates a lexical insertion of an adverb, (6) exemplifies a lexical insertion of a determiner, (7) illustrates a lexical insertion of a tag and (8) presents a lexical insertion of a lexical phrase.

(5) P004 Advanced: ...ir...*outside*...

“...to go...outside...”

(6) *the* libro (MacSwan, 1997, p. 293-294)

“the book”

(7) P005 Heritage: ...*so* él salió...

“...so he left...”

(8) P009 Intermediate: ...*what are they called* armas *um*...

“...what are they called weapons um...”

The insertion of an English noun preceded by a Spanish determiner was found throughout the recordings. Following MacSwan’s (1999, 2000) minimalist analysis, CS between a Spanish determiner marked for gender and an English noun (unmarked for gender) should not be possible. Although there were no cases of a lexical insertion of an English determiner with a Spanish noun as illustrated in (6), the high number of switches found between a Spanish determiner and the lexical insertion of an English noun in the present

study may be considered examples of the mixing of “simple grammars” (MacSwan, 1997, p. 294).<sup>8</sup> The following example (9) demonstrates a common switch found in the study between a Spanish masculine determiner and an English noun and (10) exemplifies a switch between a Spanish feminine determiner and an English noun. Although (10) may be considered a repetition, it was coded as two instances of a lexical insertion of a noun since the feminine determiner *la* separated the nouns from being consecutive.

(9) P024 Intermediate: ...pero el *snowman* um...

“...but the snowman um...”

(10) P015 Advanced: ...estar con *mermaid* la *mermaid*.<sup>9</sup>

“...to be with mermaid the mermaid.”

The use of tags was the second most favored type of lexical insertion by all three groups in the study by Montoya (2011). Specifically, the Heritage group had the most instances of lexical insertion of tags, yet it would be expected that the L2 learners may have inserted more tags given their partial acquisition of the L2 lexicon. Recall that the Heritage group inserted a total of 16 tags. On the other hand, tags may have been used by the Spanish heritage group with a pragmatic function (Bullock and Toribio, 2009; Toribio, 2001b) serving as “sentence fillers” (Toribio, 2001b, p. 205). The most common tag produced by all three groups was the lexical insertion of *ok*.<sup>10</sup>

Lexical phrases, as seen in the study, are defined as short phrases or lexical chunks that clarify a statement or simply indicate that the participant is not sure if the

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<sup>8</sup> More specifically, MacSwan (1997) states that the combination of both Spanish and English allows the bilingual to produce more sentences than if both languages were used separately.

<sup>9</sup> There were a few instances in which the participants used repair strategies. The repair consisted of an insertion of a Spanish determiner immediately after the insertion of an English lexical noun with no determiner.

<sup>10</sup> It is worth pointing out that the few instances of the tag *ok* were phonologically produced in English.

lexical insertion of a noun is correct and thus leads into it with a lexical phrase as seen in (8). Most of the lexical phrases used were analyzed as having the intent of moving the story forward without remaining “stuck” or seeming tentative about selecting an incorrect lexical item. In total, the Intermediate group produced three instances of lexical phrases and the Advanced group produced only one lexical phrase. Finally, the Heritage group produced a total of four lexical phrases. All of the lexical phrases produced, except one by an Intermediate L2 learner, were preceded by a brief pause.

The code-switching between lexical heads and their complements were also investigated by Montoya (2011). The lexical heads observed were noun, verb, adjective and preposition. Recall that the second goal of the study was to examine the junctures of a switch and therefore the data analysis included switches between lexical heads and their complements as seen in Di Sciullo et al. (1986) as well as the switches relevant to the Functional Head Constraint, as put forth by Belazi et al. (1994). Although all three groups did in fact code-switch between a lexical head noun and its complement, the Independent-Samples T-Test showed no significant difference between the Intermediate group and the Heritage group ( $p = .939$ ) or between the Advanced group and the Heritage group ( $p = .398$ ) for the switch between a lexical head noun and its complement. Also, there was no significant difference between the Intermediate group and the Advanced group ( $p = .470$ ). The Advanced group produced fewer switches between a lexical head noun and its complement as opposed to the Intermediate group and the Heritage group. The Advanced group produced one switch between a lexical head noun and its complement and the Intermediate group produced three of these switches. On the other hand, the Heritage group switched between a lexical head noun and its complement six



times. With regard to switching between a lexical head verb and its complement, the Advanced group switched once. The Heritage group had a total of five instances that involved a switch between a lexical head verb and its complement and the Intermediate group had two instances of this type of switch. Again, the Independent-Samples T-test revealed no significant difference between the Intermediate group and the Heritage group ( $p = .742$ ) or between the Advanced group and the Heritage group ( $p = .463$ ). The same statistical analysis revealed no significant difference between the Intermediate group and the Advanced group ( $p = .635$ ). The Heritage group was the only group to produce a single switch between a lexical head adjective and its complement as well as between a lexical head preposition and its complement.

The data in (11)-(14) show code-switching between lexical heads and their complements. Specifically, (11) demonstrates a switch between a lexical head noun and its complement, (12) exemplifies a switch between a lexical head verb and its complement, (13) illustrates a switch between a lexical head adjective and its complement and (14) presents a switch between a lexical head preposition and its complement.

(11) P009 Intermediate: ...y en el *bowl* de pez hay una...

“...and in the fish bowl there is a...”

(12) P014 Intermediate: ...entonces está tratando de romper *um...the glass...*

“...then trying to break um...the glass...”

(13) P005 Heritage: ...al principio del cuento vemos diferente...

*character* personajes...

“...at the beginning of the story we see different...”

character figures...”

(14) P005 Heritage: ...en *a crystal ball*...

“...in a crystal ball...”

All of these examples provide evidence against the Government Constraint (Di Sciullo et al., 1986) since the lexical head differs in language from its complement. On the other hand, these examples provide support in favor of the Functional Head Constraint given that the language features of both the lexical head and its complement match (Belazi et al., 1994). Also, given the high number of noun lexical insertions across participant groups as opposed to the few lexical insertions of verbs lends support for the dissertation in addressing lexical categories. Thus, it is worth noting the fact that lexical categories that are less marked for functional features such as nouns tend to be inserted more frequently than verbs that are heavily marked for functional features and therefore tend to be inserted less frequently.

There was also evidence of code-switching between different types of constituents. Specifically, the switching of restrictive relative clauses and the switching between a clitic and a verb phrase were also investigated. Overall, the Heritage group produced the most switching of restrictive relative clauses in comparison to the Intermediate group and the Advanced group. The Heritage group had a total of 12 instances that involved switching of restrictive relative clauses and the Intermediate group had three. On the other hand, the Advanced group only had one instance that involved switching of a restrictive relative clause. The Independent-Samples T-Test revealed no significant difference for the switching of relative clauses between the Intermediate group and the Heritage group ( $p = .310$ ) or between the Advanced group

and the Heritage group ( $p = .116$ ). Similarly, no significant difference was found between the Intermediate group and the Advanced group ( $p = .470$ ). The switching between a clitic and a verb phrase was only produced once by the Heritage group.

Other types of switches analyzed and coded for included switches between a subject and verb in INFL, switching of adverbial clauses and switching of a dislocated phrase, all of which respect the restrictions of the Functional Head Constraint (Belazi et al., 1994) as previously investigated by Toribio (2001b).

The following cases, based on Toribio's (2001b) examples, show code-switching between different types of constituents. Example (15) demonstrates a switch between a subject and verb in INFL followed by a predicate adjective, (16) exemplifies a switch between a subject and verb in INFL followed by a predicate nominal, (17) illustrates switching of a restrictive relative clause, (18) presents switching between a verb and its complement and an adverbial clause, (19) shows switching of a dislocated phrase and (20) demonstrates switching between a clitic and a verb phrase.

(15) Esa mujer *is very attractive*.

“That woman is very attractive.”

(16) El hombre *is also a snow globe figurine*.

“The man is also a snow globe figurine.”

(17) la salida de emergencia *that the snowman saw*

“the emergency exit that the snowman saw”

(18) Usó un martillo *after the first attempt*.

“Used a hammer after the first attempt.”

(19) Las dificultades, *he doesn't like them*.

“Difficulties, he doesn’t like them.”

(20) P005 Heritage: ...y entonces se...*became happy*...

“...and then...became happy...”

Lastly, it is worth mentioning other instances of code-switching not accounted for in the previous tables by certain participants: (21) exemplifies coordination of adjectives, (22) illustrates switching between a subject and predicate in one language followed by a prepositional phrase in the other language, (23) presents an insertion of a conjunction after the insertion of a noun, (24) shows switching between the subject and verb phrase with a direct object, (25) demonstrates repetition, (26) exemplifies a repair or correction of the determiner and noun, and (27) illustrates switching with a verb and direct object.

(21) P009 Intermediate: ...cómo se dice *glass or small*...

“...how do you say glass or small...”

(22) P014 Intermediate: ...*he lands*...um en un um...en la agua de un *fish tank*...

“...he lands...um in a um...in the water of a fish tank...”

(23) P018 Heritage: ...del *ledge or* del de la mesa y...

“...from the ledge or from the table and...”

(24) P022 Intermediate: ...él ...*pushed um the snow globe um*...

“...he...pushed um the snow globe um...”

(25) P027 Advanced: ...no no en un *igloo um snow globe snow globe*...

“...no not in an igloo um snow globe snow globe...”

(26) P027 Advanced: ...el hombre...*the snowman um*...

“...the man...the snowman um...”

(27) P031 Advanced: ...el *snow globe* se...*engulfed him*...

“...the snow globe...engulfed him...”

As observed, example (21) presents the coordination of two adjectives that was immediately preceded by the participant asking for a translation of these adjectives. Example (22) demonstrates a case of stating the subject and its predicate in English followed by a brief pause and then switching to add the prepositional phrase in Spanish. Exemplified in (23) is the inclusion of a conjunction immediately following the insertion of an English noun. Example (24) illustrates switching between a Spanish subject and an English verb phrase with a direct object. The tag *um* used by this participant seemed to be used as a brief pause mechanism before continuing to add the direct object in English. As seen in (25), the repetition of the English noun may have been a place holder or filler given the short pause that followed. The use of repetition was used by several participants in order to avoid complete silence or simply to proceed into a follow-up comment. Example (26) is similar to the repetition strategy, although in this case the participant may not have been sure if the Spanish determiner and its noun were the proper lexical items to use and therefore, following a pause offers a repair strategy by correcting both and using an English determiner and noun. Finally, example (27) presents a switch with the verb and the direct object that may have been considered easier for the participant, given that the switch occurred with the English verb and therefore, may have facilitated the inclusion of the direct object to remain in the same language.

### **3.7 Discussion**

The goal of the study by Montoya (2011) was to investigate intrasentential code-switching of different lexical items in adult L2 learners and Spanish heritage speakers in order to address whether differences in accessing lexical items generate differences in CS

practices among both groups. In addition, the study looked to answer whether L2 learners and Spanish heritage speakers switch at the same junctures. In order to confirm the hypotheses, the results will be summarized according to the findings of the different types of code-switching found in the three participant groups.

In order to address the first research question, the lexical insertions of nouns, verbs, adjectives and prepositions were investigated. The results of these lexical insertions, produced in the spoken narrative after watching the YouTube clip, are shown in Figure 3.1.

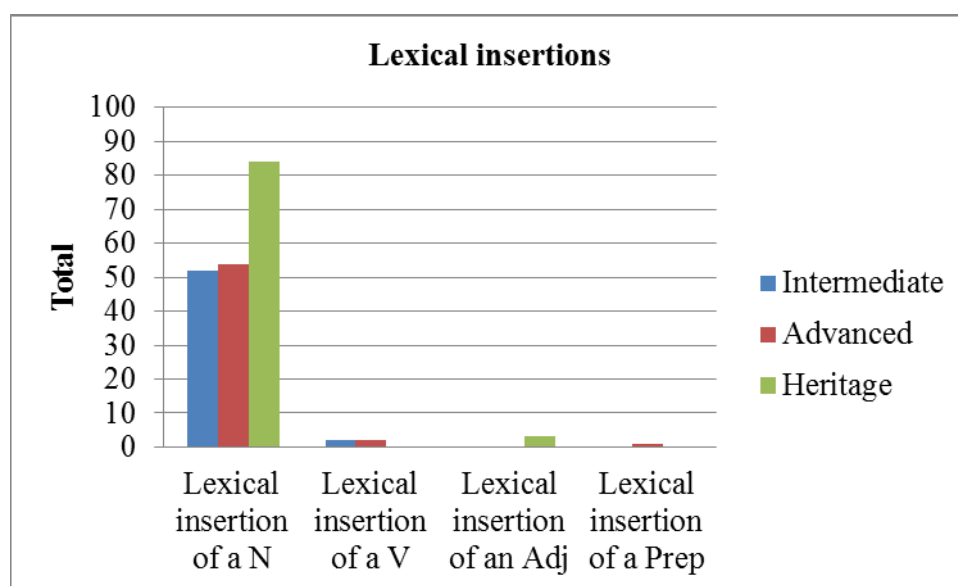


Figure 3.1 Bar graph of lexical insertions

As shown in Figure 3.1, the lexical insertion of a noun was notably the most favored by all three participant groups. The Heritage group had the greatest number of lexical insertions of a noun, although both the Intermediate group and the Advanced group also produced high numbers. Still, no significant difference was found for this type of lexical insertion. While the study found that the lexical insertion of a noun was favored most by all three participant groups, the lexical insertion of nouns was further

investigated in the dissertation with a select group of bilinguals. That is, the dissertation set out to investigate the insertion of lexical items in second language learners and Spanish heritage speakers that have reached a threshold of vocabulary knowledge. As reported in previous research (Toribio, 2001b), the lexical insertion of nouns are a frequent occurrence. These findings do not necessarily correlate with the absence of knowledge of the referent, especially for the Advanced and Heritage groups given their high scores on the picture naming task. Furthermore, the fact that there was higher insertion of nouns than of other categories argues against difficulties in vocabulary storage or access since these difficulties should apply across categories. Therefore, the switching may be indicative of greater familiarity with the lexical noun in English.

With regard to the lexical insertion of a verb, the Intermediate group produced results similar to the Advanced group. Given that the Heritage group did not produce any lexical insertions of a verb, there was a significant difference between the Intermediate and Heritage groups as well as between the Advanced group and the Heritage group. The insertion of an adjective was only found in the Heritage group with the other two groups not producing any instances of this type of lexical insertion. Lastly, the Advanced group was the only group to produce a lexical insertion of a preposition.

In addition to investigating the lexical insertions of nouns, verbs, adjectives and prepositions, other types of lexical insertions were also considered in the analysis. The lexical insertions of adverbs, determiners, tags and lexical phrases are presented in Figure 3.2.

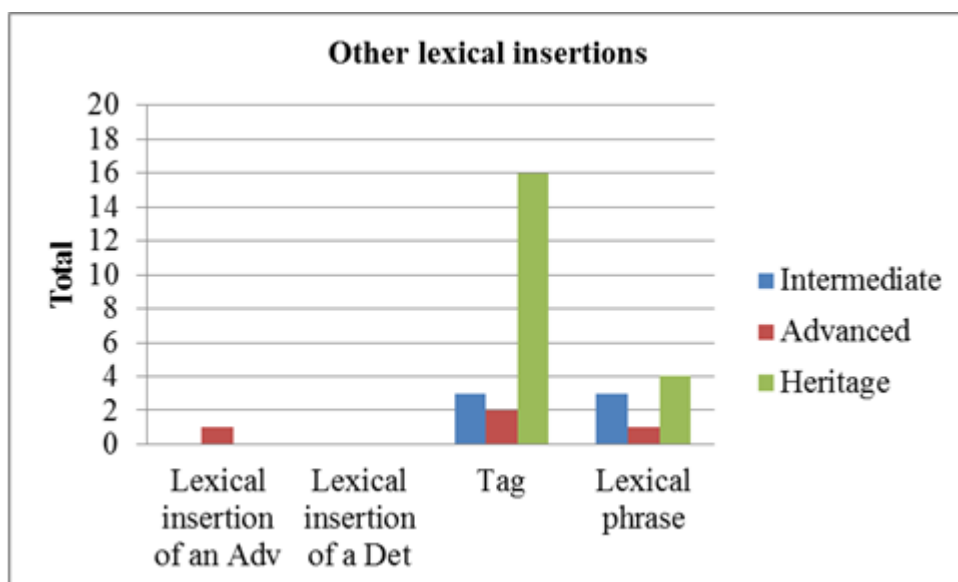


Figure 3.2 Bar graph of other lexical insertions

As displayed in Figure 3.2, the lexical insertion of an adverb was only produced by the Advanced group with none of the groups producing any lexical insertion of a determiner. In contrast, the Heritage group revealed the most instances of tag insertions in comparison to the Intermediate and Advanced groups. Most of these tags served pragmatic purposes as suggested in Toribio (2001b) and Bullock and Toribio (2009), given that they were used primarily as “sentence fillers” (Toribio, 2001b, p. 205). With regard to the lexical insertion of lexical phrases, the highest percentages were found in the Heritage group followed by the Intermediate group. Although the statistical analysis did not reflect any significant differences across all three participant groups for the insertion of lexical phrases, the results of the Heritage group are noteworthy. Since most of the lexical phrases involved a statement implying a need for a translation or simply a general statement such as “...*I don’t know how you say it...*,” it would be expected that both the Intermediate group and the Advanced group would have produced far more lexical phrases than those reported. It is important to observe that the results were based



on a small number of tokens for each category as well as an uneven number of participants across groups. Overall, the findings are telling in recognizing that despite having the vocabulary, the Heritage speakers show no difference in comparison to the L2 learners with regard to the insertion of nouns and tags. Therefore, differences in accessing lexical items do not generate differences in CS practices between the L2 learners and the Spanish heritage speakers.

The second research question in this study looked to address whether L2 learners and Spanish heritage speakers switch at the same junctures while obeying the same grammatical constraints. Figure 3.3 graphically presents the code-switching between lexical heads and their complements.

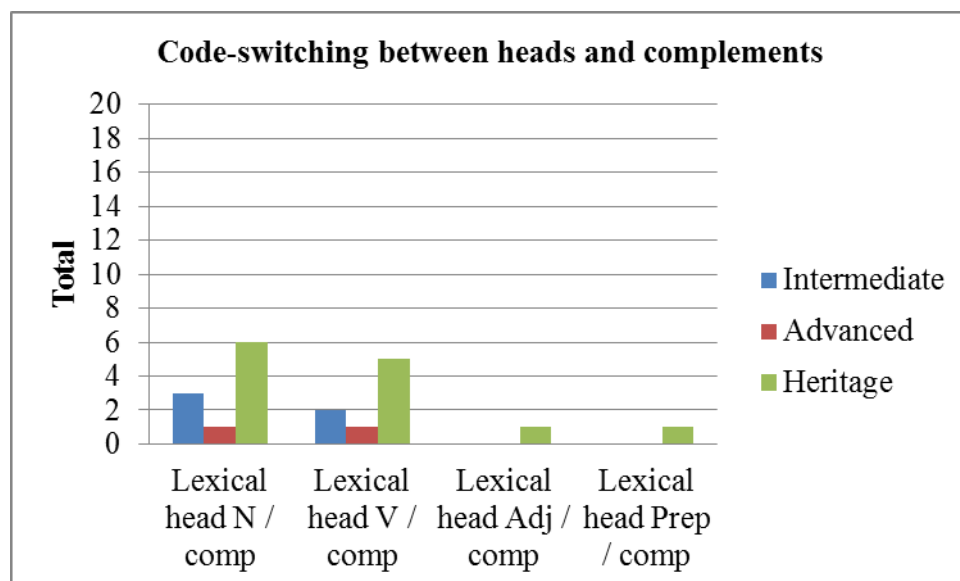


Figure 3.3 Bar graph of switches between heads and complements

As shown in Figure 3.3, the code-switching between a lexical head noun and its complement was produced by all three groups. The Intermediate group displayed similar results to the Heritage group although no statistical difference was found. The Advanced group produced the least amount of CS of this type. The CS between a lexical head verb

and its complement was found to occur most in the Heritage group. The switching between a lexical head adjective and its complement as well as between a lexical head preposition and its complement was only evident in the Heritage group. These data provide evidence against the Government Constraint (Di Sciullo et al., 1986) in allowing the lexical head to differ in language from its complement (Toribio, 2001b). In addition, these results demonstrate that the switches respect the restrictions previously cited in Belazi et al. (1994).

Finally Figure 3.4 presents CS between different types of constituents in order to investigate other switch junctures.

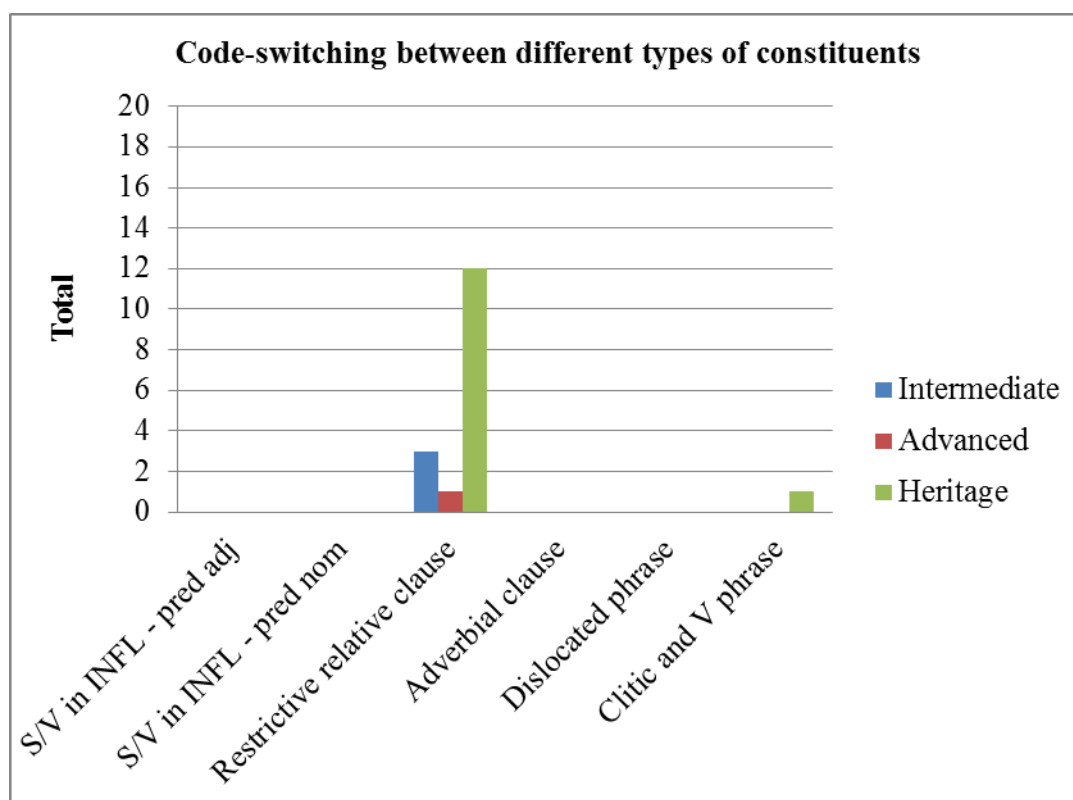


Figure 3.4 Bar graph of switches between different types of constituents

Although code-switching between many different types of constituents was expected, the switching of restrictive relative clauses and the switching between a clitic and a verb

phrase were the only ones with a total above zero as seen in Figure 3.4. All participant groups demonstrated switching between a restrictive relative clause with the Spanish heritage group producing the most. Although future research is needed to investigate why the Spanish heritage group tends to favor this type of lexical insertion, the results may suggest that this type of construction is less likely to occur in L2 learners, given that they are still in the process of acquiring the L2 lexicon and thus may acquire this type of construction later. Thus, these findings corroborate the Functional Head Constraint (Belazi et al., 1994) and therefore confirm the second hypothesis, which states that L2 learners and Spanish heritage speakers will switch at the same junctures. All three groups tend to primarily switch between a lexical head noun and its complement as well as between a lexical head verb and its complement.

### **3.8 Conclusion**

The study revealed that differences in accessing lexical items did not generate differences in CS practices between adult L2 learners and Spanish heritage speakers. In general, the Spanish heritage speakers showed no difference in comparison to the L2 learners with regard to the lexical insertion of nouns and tags. In addition, the study confirmed that L2 learners and Spanish heritage speakers switch at the same junctures, thus showing support in favor of the Functional Head Constraint (Belazi et al., 1994). Although the analyses did not reveal significant differences between the groups (due to the small number of participants in the Intermediate and Advanced groups), the results of the switch junctures provided evidence against the Government Constraint (Di Sciullo et al., 1986). This will become relevant to the understanding of the dissertation because as previously stated lexical categories need to be distinguished from functional categories. It

is worth emphasizing that although the group of L2 Spanish learners is still in the process of acquiring the language as adults, they have in fact acquired all the relevant functional feature specifications in Spanish and this allowed them to not violate syntactic constraints and respect the restrictions previously cited in Belazi, Rubin and Toribio (1994).

### **3.9 Limitations**

Although the study offered further insight for intrasentential code-switching among L2 learners and Spanish heritage speakers, it is not without its limitations. The comparison of the three groups, each with a different number of participants made it difficult to compare and analyze the results accordingly. A specific limitation found in this study is the lack of a clear dichotomy between second language learners and heritage speakers, given the overlap in some scores on the Spanish proficiency test. Another limitation worth mentioning is the difficulties in distinguishing between participants not having a lexical item stored and having difficulties accessing it. As stated by De Bot (1992), “cross-linguistic influences can be indicative of a lack of knowledge” (p. 19), yet it is hard to distinguish when it is actually a case of lacking knowledge of a specific referent or simply a case of having difficulty accessing it. In addition, dialectal differences needed to be accounted for, especially among the Spanish heritage speakers. That is, some speakers might know a lexical item but it is not part of their repertoire of frequently used words.

### **3.10 Motivation for Present Study**

Within the fields of SLA and bilingualism, studies have documented the phenomenon of code-switching in children (Genesee, Boivin and Nicoladis, 1996; Greene, Peña and Bedore, 2013; Lanza, 1992, 1997; Liceras, Fernández, Perales, Pérez-

Tattam and Spradlin, 2008; Liceras, Spradlin and Fernández, 2005), as well as in L2 learners (Toribio, 2001b) and Spanish heritage speakers (Toribio, 2004). In addition to the different types of bilinguals that have been observed in their code-switching practices, many approaches and methodologies have been put forth in order to explore this linguistic ability. Especially among bilinguals considered to be highly proficient in both languages, the notion of code-switching is particularly interesting and worth investigating further with specific emphasis on the “joint activation and conflict for selection” that occurs as stated by Bialystok (2009, p. 8). Doing so may explain how the bilingual mind works in cases where both lexical items are available, yet the item is produced in either the L1 or L2.<sup>11</sup> In particular, future research needs to explore the role of vocabulary threshold. That is, further studies are needed in order to address how two languages compete in the mind of a select group of bilinguals considered to have reached a threshold of vocabulary knowledge. Although vocabulary threshold has been employed in L2 research in areas such as development of reading comprehension (Laufer and Ravenhorst-Kalovski, 2010) as well as in L1 acquisition (Bion, Borovksy and Fernald, 2012), not enough attention has been paid to vocabulary threshold in code-switching. Therefore, the dissertation focused on the role of vocabulary threshold as a determining factor in a subtype of intrasentential code-switching.

### **3.10.1 Reformulation of Research Questions and Hypotheses for Present Study**

The findings of the study by Montoya (2011) were the motivation for the dissertation to focus on vocabulary threshold in intrasentential code-switching involving the insertion of English lexical items in oral narratives of L2 learners and Spanish heritage speakers. Of particular interest was the notion of vocabulary threshold and how

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<sup>11</sup> Consult De Bot and Schreuder (1993) for relevant discussion on access to the bilingual lexicon.

lexical insertion in intrasentential code-switching may differ in bilinguals considered to have prior knowledge of the vocabulary. While some research has been conducted with bilingual children (Greene, Peña and Bedore, 2013), more studies are needed with second language learners and adult heritage speakers. Therefore, the dissertation put forth three research questions that were generated from the study carried out by Montoya (2011). Given that all the participants were considered to have reached a threshold of vocabulary knowledge, the first question posed in the dissertation was as follows: What differences emerge among the L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts? While the study by Montoya (2011) investigated the code-switching of different lexical items, the study did not consider vocabulary threshold as a determining factor. Therefore, the second research question in the dissertation was stated as follows: Having reached a threshold of vocabulary knowledge, what lexical insertions tend to be most frequent across groups? Although lexical access was investigated by Montoya (2011), the dissertation provided further insight into how bilinguals access different lexical items including low frequency vocabulary. Thus, the third research question in the dissertation was expressed as follows: Do L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge tend to insert more English lexical items when trying to access low frequency words?

With respect to lexical insertion, the dissertation explored several hypotheses. First, it was hypothesized that lexical insertion in intrasentential code-switching would not reveal differences in the lexical retrieval process of both groups. In other words, differences in lexical insertion would not be expected, given that both groups achieved a

threshold of vocabulary knowledge. The second hypothesis also addressed the notion of vocabulary threshold. Thus, it was hypothesized that a similar distribution of lexical insertions would exist across categories (noun, verb, adjective, preposition), given that both groups attained a threshold of vocabulary knowledge. Finally, the third hypothesis focused on lexical access. While the study by Montoya (2011) included a single picture naming task, the dissertation included two picture naming tasks in order to investigate lexical retrieval when trying to access low frequency vocabulary. Therefore, the third hypothesis stated that despite having achieved a threshold of vocabulary knowledge, L2 learners and Spanish heritage speakers would tend to insert more English lexical items when trying to access low frequency words.

In sum, this chapter has presented the findings of Montoya (2011) and set the foundation and motivation for the dissertation. Specifically, the chapter has presented the research questions and hypotheses with regard to intrasentential code-switching. The chapter has also described the methodology and tasks employed as well as discussed how the data were coded. In addition, the results have been presented followed by the discussion of the major findings. The chapter continues with a brief conclusion and also mentions the limitations encountered in the study by Montoya (2011). Following this, the motivation for the dissertation is presented. The final section states the reformulation of the research questions and hypotheses for the present study. With this in mind, the following chapter presents the methodology of the dissertation.

## Chapter 4

### Methodology

#### 4.1 Introduction

While the approaches mentioned in Chapter 2 have explained Spanish-English code-switching in terms of the overall grammatical structure of the phrase, a gap exists in relation to how two languages compete in the mind of a select group of bilinguals considered to have reached a threshold of vocabulary knowledge; the study focuses on vocabulary as the main criteria or determining factor in a subtype of intrasentential code-switching involving the insertion of English lexical items in oral narratives of L2 learners and Spanish heritage speakers with all participants considered to have reached a threshold of vocabulary knowledge. It is commonly assumed heritage speakers engage in code-switching to compensate for an unknown lexical item. While this may be the case for L2 learners, Zentella (1981, 1997) proposes that switching in heritage speakers is not due to “crutching.” Further advancing this view of switching languages effortlessly without an actual need to, this experimental study puts forth the idea that despite having reached a certain vocabulary threshold, lexical insertion still occurs in both groups. That is, L2 learners and Spanish heritage speakers that have availability of immediate access to vocabulary still tend to insert English lexical items in code-switching contexts, perhaps due to a preference and frequency to access certain lexical items in one language as opposed to the other. Although lexical access along with the different lexical selection mechanisms called upon for bilingual speech production have been investigated (Costa and Santesteban, 2004; De Bot, 1992; Green, 1986, 1998; Levelt, 1989, 2001; Myers-Scotton and Jake, 1995; Poulishse and Bongaerts, 1994; Roelofs, 1998; among others),



they are yet to be examined in a single study with lexical threshold as the critical factor and therefore the present study will address both of these processes that take place simultaneously in the mind of the bilingual. Therefore, the present study focuses on two critical aspects present in intrasentential code-switching: (1) insertion of lexical items from one language into a constituent whose lexical items are mostly in another language and (2) assessment of lexical access and retrieval with respect to low frequency vocabulary. The first aspect specifically looks to explain the mechanism that allows L2 learners and Spanish heritage speakers to engage in intrasentential code-switching under the assumption that code-switching is restricted by the same principles that constrain natural languages (MacSwan, 1999, 2000, 2005). In addition, this approach focuses on the differences in the lexical retrieval process between L2 learners and Spanish heritage speakers in intrasentential code-switching (De Bot, 1992). The second critical aspect focuses on whether L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words. Therefore, the study seeks to explore what differences emerge among L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts and whether these differences are related to difficulties in accessing vocabulary in Spanish. The other primary focus will be to investigate whether both groups tend to insert more English lexical items when trying to access low frequency words. In particular, the present study will provide a contribution to the current research in linguistic code-switching in addressing both lexical insertion and retrieval in two specific types of bilinguals specifically selected based on having prior knowledge of the vocabulary in order to have a better understanding of the factors behind choosing to alternate languages.

## 4.2 Research Questions and Hypotheses

The present study will seek to answer the following research questions:

1. What differences emerge among the L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts?
2. Having reached a threshold of vocabulary knowledge, what lexical insertions tend to be most frequent across groups?
3. Do L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge tend to insert more English lexical items when trying to access low frequency words?

This study will explore the following hypotheses:

1. Lexical insertion in intrasentential code-switching will not reveal differences in the lexical retrieval process of both groups.
2. A similar distribution of lexical insertions will exist across categories (noun, verb, adjective, preposition), given that both groups attained a threshold of vocabulary knowledge.
3. Despite having reached a threshold of vocabulary knowledge, L2 learners and Spanish heritage speakers will tend to insert more English lexical items when trying to access low frequency words.

It is hypothesized that lexical insertion in code-switching will not reveal differences in the lexical retrieval process of both L2 learners and Spanish heritage speakers, given that both groups achieved a certain level of vocabulary knowledge. Therefore, a similar distribution of lexical insertions will exist across categories (noun, verb, adjective, preposition). The lexical insertion of L2 learners will be a result of their partial

acquisition of the L2 lexicon, while the Spanish heritage speakers will insert lexical items due to a preference for certain lexical items in different contexts. In order to determine whether the lexical insertion is due to partial acquisition of the L2 lexicon or difficulties in accessing lexical items, two picture naming tasks were used. In addition, both groups will tend to insert more English lexical items when trying to access low frequency words. See Appendix F for the combined picture naming task.

#### **4.2.1 Issue of Lexical Insertion in Intrasentential Code-Switching**

In order to address the first research question it is necessary to investigate how lexical insertion found in the code-switching practices of L2 learners and Spanish heritage speakers may be an indicator of how the lexical retrieval process differs between both groups. Although both groups may choose to insert an English lexical item into a sentence for which Spanish is the main language, the reasons behind doing so may vary among different types of bilinguals. The lexical insertion produced by an L2 learner may occur due to a complete absence of the Spanish lexical item, in which case a language switch occurs as a compensation strategy (De Bot, 1992). On the other hand, the Spanish heritage speaker may produce a language switch in English, given that the lexical item is considered to be more frequently accessed in this language although the referent is also available in Spanish (Green, 1986). In order to confirm whether the language switch occurred based on the bilingual not having access to the lexical item, as in the case of L2 learners, or simply choosing to use either language, as may be the case for Spanish heritage speakers, the present study incorporated a picture naming task in order to confirm knowledge of the referent. In addition to the picture naming task, a vocabulary

test<sup>1</sup> (Gollan et al., 2012) was given to all the participants prior to their participation in the study. Every participant that took part in this study had to meet the criteria of naming 20 out of 30 pictures on the vocabulary test.<sup>2</sup> The careful selection of participants would thus allow the groups to be seen as equivalent from the start based on a certain level of vocabulary knowledge, given that vocabulary size needs to be assessed and acknowledged in bilinguals in comparing their lexical retrieval abilities to those of monolinguals (Bialystok et al., 2008b). Although monolinguals did not participate in this study, the notion of having both types of bilinguals score similarly on the vocabulary test would test the common assumption that the lexical insertions occurred due to a limited vocabulary size (Bialystok et al., 2008b) or difficulties in lexical access (Costa and Santesteban, 2004; Dell, 1986; among others). See Appendix D for the vocabulary test.

#### **4.3 Protocols Employed to Classify Participants**

The classification of the participants was based on three different instruments: (1) a modified version of the DELE Spanish language test, (2) a vocabulary test and (3) a language background questionnaire. The following sections (4.3.1, 4.3.2 and 4.3.3) discuss the application of each instrument and how it was used to group the participants accordingly.

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<sup>1</sup> I am grateful to Professor Tamar H. Gollan for granting me access to incorporate the Multilingual Naming Test (MINT) developed by her and her colleagues. Participation in this study was determined by a modified version of this test, using the first 30 pictures.

<sup>2</sup> At the beginning of the study the goal was to have every participant name 30 out of 30 pictures in order to assume that all the participants had a relatively equal vocabulary size. Although the number of target items named had to be adjusted several times in order to improve recruiting efforts, the final number of target items that needed to be named allowed for all the participants to be considered to have similar levels of lexical knowledge as to proceed with the study.

### 4.3.1 DELE Spanish Language Test

All the participants' level of Spanish was determined by a modified version of the DELE (Diploma de Español como Lengua Extranjera) Spanish language test. In addition, the results of this language test allowed for the classification of three distinct groups of participants. Given the variability that exists among L2 learners, cut-off points were set in order to have two well-defined groups of L2 learners. Therefore, the cut-off point set forth for the Intermediate group was 80%, while the participants in the Advanced group had to score above 80%. This proficiency test consisted of a multiple choice test followed by a modified cloze test. The multiple choice test consisted of 30 questions and the modified cloze test consisted of 20 missing words in which the participant was asked to fill in the missing word based on the passage, selecting from three choices. The maximum score on this test was a 50. The average and range for the DELE are reported in Table 4.1. See Appendix B for the DELE Spanish language test.

Table 4.1 Results of the DELE proficiency test (%)

|         | Intermediate | Advanced | Heritage |
|---------|--------------|----------|----------|
|         | (n = 16)     | (n = 11) | (n = 23) |
| Average | 70.62        | 90.36    | 90.34    |
| Range   | 60-78        | 82-98    | 82-100   |

As previously stated, the L2 learners were divided into two groups based on the results of the DELE Spanish proficiency test. The participants who scored below 80% were classified as the Intermediate level group and those that scored above 80% were classified as the Advanced level group. All of the participants in the Spanish heritage group were expected to score 80% or higher in order to be considered for this study. It is

also worth mentioning that no overlap existed between the second language learners and the Spanish heritage speakers. Recall that a limitation found in the study carried out by Montoya (2011) was the overlap in the DELE proficiency test between the second language learners and the Spanish heritage speakers. Therefore, this specific limitation was addressed in the dissertation.

#### **4.3.2 Vocabulary Test**

The initial participation in this study was based on having each participant come in and complete the vocabulary test. Successful completion of this test granted the participant the opportunity to continue with the study. Upon agreeing to continue, the bilingual interviewer arranged a time for the participant to arrive and complete the study. The vocabulary test was employed in order to investigate the lexical retrieval abilities of both L2 learners and Spanish heritage speakers based on comparable vocabulary scores between both groups. The vocabulary test was given to all the participants individually. Each participant was asked to meet in a small room selected as the testing area. In order to be considered for this study, every participant was expected to name 30 pictures in both English and Spanish using the Multilingual Naming Test (MINT) (Gollan et al., 2012). Although the MINT has a total of 68 pictures, the participants were only presented the first 30 items. The black and white line drawings were presented to each participant in the same order, with an increase in difficulty with the progression of each picture (Gollan et al., 2012). In other words, the first few pictures could be interpreted as consisting of high frequency words, with the latter pictures consisting of low frequency words. The task of having the participants name all 30 pictures limited the number of participants eligible for consideration in the study. Therefore, while the goal was to have every

participant included in the study name all 30 pictures the decision was made early on to allow participants to miss no more than 10 items out of 30. A total of 123 participants took the vocabulary test. Of these, only 90 participants passed the criteria of naming 20 out of 30 pictures and 33 participants did not meet this goal. Therefore, the recruiting process was very selective based on the vocabulary test. Several of the participants that successfully passed the vocabulary test had to be eliminated from the study due to multiple factors such as extremely poor performance on the DELE Spanish language test, which primarily included the L2 learners. Although several heritage speakers were able to meet the criteria set out for the vocabulary test a few had to be eliminated, given that they earned much lower scores than expected. It is worth noting that the criteria of both the MINT vocabulary test and the DELE Spanish language test were considered in order to account for the overall language capacity of the bilingual. In other words, lexical insertion involves both knowledge of vocabulary as well as knowledge of the language. With regard to the MINT vocabulary test, the Intermediate group had to name at least 20 of the 30 pictures presented, therefore the minimum score possible was 66%. The Advanced group consisted of those participants that scored a minimum of 76%. Although Table 4.2 reveals some overlap in the scores for the two groups of L2 learners, the classification of each participant was based exclusively on the scores of the DELE proficiency test as previously seen in Table 4.1. The vocabulary test was presented to each participant on a computer screen with each picture presented separately in a PowerPoint presentation. Table 4.2 presents the average and range for the vocabulary test. See Appendix D for the vocabulary test.

Table 4.2 Results of the vocabulary test (%)

|         | Intermediate | Advanced | Heritage |
|---------|--------------|----------|----------|
|         | (n = 16)     | (n = 11) | (n = 23) |
| Average | 71.25        | 86.72    | 94.78    |
| Range   | 66-86        | 76-100   | 80-100   |

As shown in Table 4.2, the Intermediate group had an average of 71.25% on the vocabulary test. The scores ranged from 66% to 86%.

The Advanced group on the other hand had an average of 86.72%. The minimum score within this group was 76% with a perfect score (100%) being the maximum score. Recall that although there was no overlap between the Intermediate group and the Advanced group in the DELE proficiency test, the MINT vocabulary test showed some overlap across these participant groups. The overlap indicates greater ease in knowledge of vocabulary as opposed to the knowledge of language in general by the L2 learners. Of particular relevance for the dissertation will be the lexical access abilities of these bilinguals when trying to access low frequency vocabulary.

Finally, the Spanish heritage group scored the highest average with 94.78%. Although many of the Heritage speakers earned a perfect score (100%) on the vocabulary test, the minimum score as seen in Table 4.2 was 80%.

#### 4.3.3 Language Background Questionnaire

After the completion of the DELE Spanish proficiency test, the participants completed a background questionnaire, written in English, in order to elicit information about their background as a student and as a learner of Spanish. One section of the questionnaire asked the participants to state their major and minor course of study. Of



particular interest were the participants who indicated Spanish as a major or minor. See Appendix E for the language background questionnaire.

In the Intermediate group, four participants listed Spanish as their major. An additional six Intermediates stated their minor to be Spanish. The remaining six participants claimed other areas of study.

With respect to the Advanced group, six participants replied that they were Spanish majors. Only one participant declared Spanish as a minor and the remaining four participants focused on other subject matters.

Within the Heritage group, eight participants listed themselves as Spanish majors. The Spanish minors consisted of twelve Heritage speakers. The remaining three participants in this group expressed other fields of study.

In addition, this questionnaire provided detailed linguistic information regarding their age of language exposure along with several sections that asked the participants to rate their language skills (speaking, reading, listening, writing and cultural knowledge) in Spanish on a scale from 1 (not proficient) – 5 (native-like proficiency). The average and range for the Spanish language skills of all three groups are seen in Table 4.3.

Table 4.3 Results of self-ratings<sup>3</sup> of Spanish language skills

|                    |         | Intermediate | Advanced | Heritage |
|--------------------|---------|--------------|----------|----------|
|                    |         | (n = 16)     | (n = 11) | (n = 23) |
| Speaking           | Average | 2.75         | 3.09     | 4.04     |
|                    | Range   | 2-4          | 2-4      | 3-5      |
| Reading            | Average | 3.37         | 3.90     | 3.82     |
|                    | Range   | 2-5          | 3-4      | 3-5      |
| Listening          | Average | 3.06         | 3.63     | 4.69     |
|                    | Range   | 2-5          | 2-4      | 4-5      |
| Writing            | Average | 3.50         | 3.63     | 3.52     |
|                    | Range   | 2-5          | 3-4      | 3-5      |
| Cultural knowledge | Average | 3.12         | 3.18     | 3.91     |
|                    | Range   | 2-4          | 2-4      | 2-5      |

With regard to the average as revealed in Table 4.3, the Intermediate group tends to self-rate lower in comparison to the Advanced and Heritage groups in all five language skills. Although relevant information can be gathered from self-reports, they are not to be used exclusively as the primary source for selection criteria. Thus, the dissertation used this linguistic information in order to present additional information on the participants' familiarity with their language skills in Spanish. It is worth taking into account this type of information with the results provided by the DELE Spanish proficiency test. The assessment of both is more reliable and depicts a more comprehensive representation of

<sup>3</sup> Consult Gollan, Weissberger, Runnqvist, Montoya, and Cera (2012) for an overview of self-ratings of bilingual language proficiency.

each participant group, in addition to the preliminary selective criteria for participation in the study based on the initial vocabulary test.

On the other hand, the Advanced group rated themselves higher in reading and writing skills in comparison to the Heritage group, which may reflect their prior experience and development of linguistic competence in an instructional setting as opposed to a naturalistic setting, as may be the case for the Spanish heritage speakers. All of the Spanish heritage speakers including the five that were born outside of the fifty states were educated primarily in English, thus perhaps their lower self-ratings for these two language skills.

With regard to the Heritage group, their highest average was reflected in their listening skills while the category of writing seemed to pose the most difficulty out of the five language skills. As previously mentioned, the difference in context and exposure to Spanish for a heritage speaker needs to be accounted for, given that their continuous input and interaction in Spanish attributable to their environment growing up may be more influential for certain language skills as opposed to others. In addition, as bilinguals schooled in English and not in Spanish they did not have constant activation of Spanish and therefore, it is expected that they did not activate some lexical items in Spanish as frequently.

In order to know a bit more about the participants' exposure to and involvement with the Spanish language and culture, one section of the language background questionnaire asked the participants to rate four statements on a scale from 1 (never) – 5 (always). The average and range for the four descriptions of all three participant groups are presented in Table 4.4.

Table 4.4 Results of interest in Spanish language and culture

|                                             |         | Intermediate | Advanced | Heritage |
|---------------------------------------------|---------|--------------|----------|----------|
|                                             |         | (n = 16)     | (n = 11) | (n = 23) |
| 1. I watch TV, movies                       | Average | 2.81         | 3.27     | 3.69     |
| or videos in Spanish                        | Range   | 2-5          | 2-4      | 2-5      |
| 2. I watch news and / or read               | Average | 2.43         | 2.36     | 3.39     |
| newspapers in Spanish                       | Range   | 1-4          | 1-4      | 2-5      |
| 3. I listen to music in Spanish             | Average | 3.62         | 3.81     | 4.30     |
|                                             | Range   | 2-5          | 2-5      | 3-5      |
| 4. I seek out and participate               | Average | 2.62         | 3.27     | 3.34     |
| in events and activities                    | Range   | 1-4          | 1-5      | 2-5      |
| <u>related to Spanish-speaking cultures</u> |         |              |          |          |

As seen in Table 4.4, the Intermediate group had the lowest overall average in three of the four descriptions (statements 1, 3 and 4) in comparison to the Advanced group and the Heritage group. The average for the Intermediates with regard to watching the news and / or reading newspapers in Spanish was slightly higher than the Advanced group, which may be reflective of their interest and motivation as L2 learners of the target language.

Although the Advanced group rated listening to music in Spanish with the highest average out of the four descriptions, they indicated less exposure to and involvement with watching the news and / or reading newspapers in Spanish.

The Heritage group had the highest average for all four descriptions, which would be expected, given that they do not necessarily have to seek out this type of exposure or

involvement with the Spanish language as opposed to the Intermediate and Advanced groups.

Another section of the questionnaire provided information on whether they were raised hearing and speaking both Spanish and English, which may be associated with those participants that inserted English lexical items in code-switching contexts. The results to these questions are seen in Table 4.5.

Table 4.5 Results of early exposure to both Spanish and English

|                             |     | Intermediate | Advanced | Heritage |
|-----------------------------|-----|--------------|----------|----------|
|                             |     | (n = 16)     | (n = 11) | (n = 23) |
| 1. Were you raised hearing  | Yes | 0            | 0        | 20       |
| both Spanish and English?   | No  | 16           | 11       | 3        |
| 2. Were you raised speaking | Yes | 0            | 0        | 19       |
| both Spanish and English?   | No  | 16           | 11       | 4        |

As seen in Table 4.5, all of the Intermediate and Advanced L2 learners stated they were not raised hearing or speaking both Spanish and English.

Finally, having been raised to hear both languages was true for 20 of the Spanish heritage speakers with three stating that this was not the case. Although all three of these participants were born in the United States, their parents were all born in Spanish-speaking countries. Two of these three participants stated that both their mother and their father speak Spanish only, whereas the last participant claimed both parents speak Spanish and English combined. Therefore, this last participant was definitely raised hearing both, while the previous two participants may have only been raised primarily hearing Spanish. With regard to being raised to speak both Spanish and English, 19 out of

the 23 Spanish heritage speakers confirmed this statement to be true. Three of the four remaining participants stated this was not the case. These participants were the same three that claimed to not have been raised hearing both languages. An additional participant stated she was not raised speaking both languages. This Spanish heritage speaker was born in the United States as was her father. Her mother was born in Colombia. Therefore, she stated that her mother speaks both Spanish and English combined, while her father only speaks English.

Following the questions pertaining to early exposure to hearing and speaking both Spanish and English, the questionnaire also included questions with regard to the language used most on a daily basis as well as the participants' tendencies to switch from one language to the next if they are not sure how to say something. Some questions also tapped into whether they found themselves at a loss for words in either language, thus providing partial evidence as to the reason for lexical insertions and therefore, triggering the switch in language. The results based on these specific cases are seen in Table 4.6.

Table 4.6 Results for daily language switching (S = Spanish, E = English)

|                                    |         | Intermediate | Advanced | Heritage |
|------------------------------------|---------|--------------|----------|----------|
|                                    |         | (n = 16)     | (n = 11) | (n = 23) |
| 1. Which language do you           | Spanish | 0            | 0        | 1        |
| feel helps you the most in         | English | 16           | 11       | 22       |
| your daily routine?                |         |              |          |          |
| 2. Do you find yourself switching  | Yes     | 1            | 4        | 18       |
| between S and E while speaking     | No      | 15           | 7        | 5        |
| in your daily conversations?       |         |              |          |          |
| 3. If you are speaking in S and    | Yes     | 10           | 5        | 20       |
| are not sure how to say something, | No      | 6            | 6        | 3        |
| do you continue your S sentence    |         |              |          |          |
| by switching over to E?            |         |              |          |          |
| 4. If you are speaking in E and    | Yes     | 1            | 1        | 11       |
| are not sure how to say something, | No      | 15           | 10       | 12       |
| do you continue your E sentence    |         |              |          |          |
| by switching over to S?            |         |              |          |          |
| 5. Do you find yourself at a       | Yes     | 16           | 9        | 20       |
| loss for words in S?               | No      | 0            | 2        | 3        |
| 6. Do you find yourself at a       | Yes     | 1            | 0        | 10       |
| loss for words in E?               | No      | 15           | 11       | 13       |

As displayed in Table 4.6, with the exception of one Spanish heritage speaker, all of the participants noted English as the more useful of the two languages in their daily

routines. This particular heritage speaker was born in the United States with both parents having been born in Bolivia. She states that both of her parents speak both Spanish and English combined. She also states in follow-up questions that she speaks mostly English at home and Spanish at school. She is also a Spanish and Psychology major and therefore, may tend to use Spanish in her daily school functions.

The answers pertaining to the question regarding switching between Spanish and English while speaking in their daily conversations were particularly significant for this study, especially for the first research question. While the switching between languages was not as relevant for the Intermediate and Advanced groups, the majority of the Heritage speakers indicated this to be true for themselves. While 18 of these Heritage speakers may claim to switch between Spanish and English in their daily conversations, the reason for the switch is what remains to be explained. The second research question looks to address this issue with a focus on what lexical insertions tend to be most frequent across groups, with the incorporation of the combined picture naming task, in order to know whether the lexical insertions produced were due to difficulties in accessing vocabulary in Spanish.

The responses to question 3 in Table 4.6 reveal that the majority of the participants in both the Intermediate and Heritage groups tend to switch over to English if they are speaking in Spanish and are not sure how to say something. Once again, the Heritage group is of specific interest, given that they have the competence and proficiency as Spanish heritage speakers and regardless, choose to continue their Spanish sentence by switching over to English.



The following question addressed the opposite scenario in which the participant is speaking in English and switches over to Spanish when he or she is not sure how to say something. In this scenario, only one Intermediate and one Advanced L2 learner answered yes, while the Heritage group seemed relatively divided with 11 responding yes and 12 replying no.

The insertion of a lexical item from one language into another as opposed to entire constituents (Muysken, 2000) tended to be the case in this study as will become evident in the following chapter. The lexical insertion of single items may be indicative of the results of question 5 in Table 4.6. As shown, all 16 Intermediates stated that they do find themselves at a loss for words in Spanish which is common, given that they are still in the process of acquiring the L2. The majority of the Advanced L2 learners also assumed this to be true, while 20 out of the 23 Spanish heritage speakers also responded with a yes. While the Heritage group as a whole was considered to have reached a certain level of language proficiency based on having successfully passed the vocabulary test as well as having scored relatively high on the DELE Spanish language test, their loss for words in Spanish may be influenced by their frequent activation of English.

The final question in Table 4.6 asked whether the participant found him or herself at a loss for words in English. The responses for the Intermediate and Advanced group were expected, while the Heritage group had 10 participants state yes and 13 respond no. All 23 participants considered themselves a heritage language learner of Spanish as self-reported in the background questionnaire and thus, the division in their responses may be

due to a preference for certain lexical items in different contexts as opposed to an actual loss for words or difficulty in retrieval.<sup>4</sup>

In order to have some knowledge of the participants' code-switching tendencies, one section of the language background questionnaire asked them if they were familiar with the term "code-switching" and if so, how they would define it. This question was followed by asking them if they use this linguistic behavior and in what contexts (home, school, work, with friends, other). The results to these questions are seen in Table 4.7.

Table 4.7 Results for code-switching tendencies

|                                 |              | Intermediate<br>(n = 16) | Advanced<br>(n = 11) | Heritage<br>(n = 23) |
|---------------------------------|--------------|--------------------------|----------------------|----------------------|
| 1. Are you familiar with the    | Yes          | 7                        | 4                    | 13                   |
| term "code-switching" and if    | No           | 9                        | 7                    | 10                   |
| so, how would you define it?    |              |                          |                      |                      |
| 2. If you answered yes to       | Yes          | 6                        | 3                    | 13                   |
| question #1, do you consider    | No           | 1                        | 1                    | 0                    |
| yourself to use this linguistic |              |                          |                      |                      |
| behavior?                       |              |                          |                      |                      |
| 3. If you answered yes to       | Home         | 2                        | 0                    | 13                   |
| question #2, in what contexts   | School       | 5                        | 2                    | 7                    |
| do you use this linguistic      | Work         | 2                        | 2                    | 5                    |
| behavior?                       | With friends | 2                        | 2                    | 9                    |

<sup>4</sup> Consult Gollan and Acenas (2004) for discussion on tip-of-the-tongue states (TOTs) in bilinguals.

As shown in Table 4.7, seven of the Intermediates were aware of the term “code-switching” and six of these participants considered themselves to use this linguistic behavior. The context for which this behavior was most prevalent was in the school environment.

Among the Advanced L2 learners, four participants were familiar with the term, although only three of them stated to exercise this style of speech. The contexts in which they tended to code-switch were in school, at work and with friends.

Code-switching was identified by 13 of the 23 Heritage speakers and all 13 participants claimed to use this linguistic behavior. Interestingly enough, they all tend to primarily code-switch at home and with friends. A more detailed analysis of their code-switching tendencies based on their home environment reveals that six of the thirteen Spanish heritage speakers listed both parents to speak both Spanish and English combined. An additional four participants stated that their mother speaks only Spanish and their father speaks both Spanish and English combined. Two of the remaining three Heritage speakers that tend to code-switch at home responded that both parents only speak Spanish. The final participant in this group identified that her mother speaks both Spanish and English combined, whereas her father only speaks Spanish.

While many bilinguals may have a general tendency to switch languages in their oral production, the question arises as to whether their code-switching practices were acquired through external influences (society, media, etc.) or learned by being exposed to the code-switching practices modeled by their mother and father. These results would provide evidence as to the extent to which both languages are used on a daily basis in a

mixed manner by each parent. Therefore, the results for the switching of languages for the parents of the participants are revealed in Table 4.8.

Table 4.8 Language use for parents (S = Spanish, E = English, S/E = both S and E combined)

|                      |        | Intermediate | Advanced         | Heritage |
|----------------------|--------|--------------|------------------|----------|
|                      |        | (n = 16)     | (n = 11)         | (n = 23) |
| 1. My mother speaks: | S only | 0            | 0                | 11       |
|                      | E only | 16           | 10               | 0        |
|                      | S/E    | 0            | 0 * <sup>5</sup> | 12       |
| 2. My father speaks: | S only | 0            | 0                | 7        |
|                      | E only | 16           | 10               | 2        |
|                      | S/E    | 0            | 0 * <sup>6</sup> | 14       |

As shown in Table 4.8, all of the Intermediate L2 learners claim both parents to speak only English.

The Advanced group also stated that both parents tend to speak English only with the exception of one participant. This participant stated that both her mother and father speak both English and Chinese. These results indicate that if lexical insertions are evident for these participants, they were not due to their being exposed to this type of linguistic behavior based on the language use of their parents.

The results for the Spanish heritage group are not uncommon, given that they were exposed to their native language from an early age and continue to communicate in

<sup>5</sup> One Advanced L2 learner listed her mother to speak English and Chinese and therefore, this question did not apply.

<sup>6</sup> This is the same Advanced L2 learner as mentioned in footnote 3; listed her father to speak English and Chinese.

Spanish, which for some may be the only tie they still have to their native cultural background. As seen in Table 4.8, 11 of the mothers were listed to only speak Spanish with the remaining 12 to speak Spanish and English combined. With respect to the fathers for this participant group, seven were identified to speak only Spanish and two only in English. The remaining 14 fathers were considered to speak both Spanish and English combined.

The final section in the language background questionnaire asked each participant to state which language is spoken the most in certain domains (home, school, work, etc.). Table 4.9 presents these results.

Table 4.9 Language use (S = Spanish, E = English, S/E = both Spanish and English combined)

|                                |     | Intermediate<br>(n = 16) | Advanced<br>(n = 11) | Heritage<br>(n = 23) |
|--------------------------------|-----|--------------------------|----------------------|----------------------|
| 1. Which language do you       | S   | 0                        | 0                    | 8                    |
| speak the most at home?        | E   | 16                       | 11                   | 5                    |
|                                | S/E | 0                        | 0                    | 10                   |
| 2. Which language do you       | S   | 0                        | 1                    | 2                    |
| speak the most at school?      | E   | 12                       | 9                    | 19                   |
|                                | S/E | 4                        | 1                    | 2                    |
| 3. Which language do you       | S   | 0                        | 0                    | 2 * <sup>7</sup>     |
| speak the most at work?        | E   | 12                       | 8                    | 16                   |
|                                | S/E | 4                        | 3                    | 4                    |
| 4. Which language do you speak | S   | 0                        | 0                    | 0                    |
| the most in social situations? | E   | 16                       | 9                    | 18                   |
|                                | S/E | 0                        | 2                    | 5                    |

There are several observations that can be made with respect to the results for language use in specific contexts. As shown in Table 4.9, the Intermediates tend to rely primarily on English for all four contexts (home, school, work, social situations). It is interesting to note that four Intermediates stated they use both Spanish and English combined at school. Three of these four participants also replied that they use both

<sup>7</sup> This question did not apply to one Heritage speaker and therefore, was not answered.

languages in a combined manner at work. There was also an additional participant that claimed to speak both languages combined at work.

The Advanced group also shows a tendency to use English in every situation. There were a few participants in this group that claimed to use both Spanish and English in a combined fashion at school, at work and in social situations.

The responses to this last part of the language background questionnaire were especially informative for the Heritage group, given that their code-switching tendencies in specific contexts may provide some insight into their overall lexical retrieval abilities. Although English is the language used most at school, at work and in social situations, 10 Heritage speakers tend to use both Spanish and English combined at home. Of the remaining 13 participants in this group, eight Heritage speakers claim to speak Spanish at home and five listed English.

#### **4.4 Participants**

A total of 50 participants took part in the study. The participants included both simultaneous and sequential bilinguals. Recall that although 90 participants passed the criteria of naming 20 out of 30 pictures, several of the participants had to be eliminated from the study due to multiple factors such as extremely poor performance on the DELE Spanish language test, which primarily included the L2 learners. While several Spanish heritage speakers met the criteria for the vocabulary test a few had to be eliminated, given that they earned much lower scores than expected. The data for this study were gathered from two participant groups: (1) a group of Spanish L2 learners and (2) a group of Spanish heritage speakers. A heritage speaker, as defined for this study, refers to a student who is raised in a Spanish-speaking home and who is considered bilingual given

he or she understands and speaks Spanish even if he or she has not been schooled in Spanish and therefore has not received formal instruction in Spanish. Both groups consisted of college students enrolled in different Spanish classes at a research university in the United States. Based on their score on the DELE Spanish proficiency test and responses to the background questionnaire, all the participants were grouped accordingly. Therefore, the group of Spanish L2 learners was divided further into two groups: an Intermediate group of Spanish L2 learners and an Advanced group of Spanish L2 learners. The participants who scored below 80% on the Spanish proficiency test were classified as the Intermediate group and those that scored above 80% were classified as the Advanced group. The group of L2 Spanish learners was selected based on the fact that they are still in the process of acquiring the language as adults, while the Spanish heritage group was selected as a group of bilinguals who had acquired Spanish in childhood as well as English. They were considered an ideal comparison group for the study given their advanced proficiency and competence as bilinguals. In order to be classified as a Heritage speaker, the participants had to self-report on the language background questionnaire to be a heritage language learner of Spanish. In addition, they had to indicate on the background questionnaire that they have spoken Spanish from 3-12 years of age. Table 4.10 represents the composition of the participant groups.

Table 4.10 Participant groups

| <u>Group</u>                     | <u>Age</u> | <u>Sex</u>          | <u>N</u> |
|----------------------------------|------------|---------------------|----------|
| Intermediate L2 Spanish learners | 18-21      | 13 Females, 3 Males | 16       |
| Advanced L2 Spanish learners     | 18-29      | 7 Females, 4 Males  | 11       |
| Spanish heritage speakers        | 18-29      | 20 Females, 3 Males | 23       |



All of the participants provided information in the background questionnaire regarding their native language as well as the language(s) they were exposed to from three to twelve years of age. Recall that the term native language(s) was defined as the language(s) in which they were spoken to and that they spoke from birth until three years old. Beginning with the Intermediate L2 learners, eleven considered their native language to be English. One participant indicated her native language to be Tamil and two participants indicated it to be Bengali. Another participant listed Urdu as her native language, while the last participant mentioned Tagalog as her native language.

Ten of the Advanced L2 learners indicated English as their native language. The final participant in this group stated Chinese as her native language.

With regard to the 23 Spanish heritage speakers, all of them indicated Spanish as their native language.

In order to be considered a participant in this study, the length of residence in the United States was considered a factor, in addition to having been exposed to Spanish. For those few participants who were born and raised outside the fifty states, the age at which they first came to the United States was specified in the background questionnaire with the purpose of identifying the number of years lived in the United States, thus indicating years of English contact. Therefore, the following table describes the seven participants born and raised outside the mainland United States, their place of birth, their age of arrival to the U.S., their gender and their total number of years of contact with English. These participants included two Intermediate L2 Spanish learners and five Spanish heritage speakers. The distribution of these participants is presented in Table 4.11.

Table 4.11 Participants born outside U.S., birth place, arrival age, sex and years of English contact

|                          | Intermediate    | Heritage                                   |
|--------------------------|-----------------|--------------------------------------------|
|                          | (n = 2)         | (n = 5)                                    |
| Birth place              | India; Pakistan | Peru; Chile; Ecuador; Puerto Rico;<br>Peru |
| Age of arrival and sex   | 2 F; 1 F        | 3.2 F; 1 F; 3 M; 0.1 M; 2.6 F              |
| Years of English contact | 17; 20          | 25.10; 20; 17; 21.11; 17.6                 |

In the Intermediate group, ten participants were born in New Jersey and one participant was born in New York. Another participant was born in Alabama and one participant was born in California. The final participant in the Intermediate group was born in Pennsylvania. As seen in Table 4.11, one participant in the Intermediate group was born in India and came to the United States at the age of two and has had contact with English for 17 years. She was exposed to Tamil from birth until she was three years old and spoke Tamil and English until the age of three. She spoke Tamil and English from three to twelve years old. Therefore, she considered her first language (the one that she spoke and in which she was addressed from birth to three years old) to be Tamil and her second language (the one that she spoke and in which she was addressed after three years old) to be English. Finally, one participant was born in Pakistan and came to the United States at age one and has had English contact for 20 years. This participant indicated that she was exposed to Urdu and English from birth to three years of age. She spoke Urdu up until the age of three. From three to twelve years old she spoke Urdu and

English. She considered her first language to be Urdu and English to be her second language.

The Advanced group consisted of three participants born in New York and another three born in New Jersey. Two participants were born in Pennsylvania and one was born in Massachusetts. Of the remaining two Advanced L2 learners, one was born in Michigan and the other one was born in Maryland.

Finally, the Spanish heritage group included nine participants who were born in New York and six participants born in New Jersey. Of the remaining participants born in the United States, one was born in Massachusetts and another one was born in California. The last participant was born in Connecticut. As seen in Table 4.11, the first heritage speaker listed was born in Peru. She came to the United States when she was three years and two months old and has had a total of 25 years and 10 months of English contact. This same participant stated that she was exposed to Spanish from birth to three years of age in addition to speaking this language up until the age of three. From the age of three to twelve years old, she spoke both Spanish and English. The participant born in Chile arrived to the United States at the age of one and has had contact with English for 20 years. She stated that she was exposed to Spanish and English from birth until she was three years old, although only spoke Spanish during that time. She also spoke both of these languages from three to twelve years of age. With regard to the participant born in Ecuador, he arrived to the United States at the age of three and has had 17 years of English contact. He was exposed to Spanish from birth until he was three years old. During this time he only spoke Spanish. He spoke both English and Spanish from three to twelve years old. Another participant in the Heritage group was born in Puerto Rico and

was one month old upon arrival to the United States. He has had a total of 21 years and 11 months of English contact and was exposed to Spanish, English and Portuguese from birth until he was three years old. In addition, he claimed to have spoken all three of these languages up until the age of three. From three to twelve years old this participant spoke Spanish, English and Portuguese. The other participant that was born in Peru came to the United States at the age of two years and six months old with a total of 17 years and 6 months of English contact. She had been exposed to Spanish from birth to three years of age and only spoke this language up until she was three. From three to twelve years old, she spoke English and Spanish. All 23 Spanish heritage speakers, including those born outside of the United States, indicated Spanish as their first language and English as their second language.

Although the study initially intended to have three groups, as the data collection progressed the decision was made to separate each group further. Therefore, each group was separated according to whether the participant produced a language switch during the story retelling tasks or not. More specifically, each participant was categorized as either code-switching or non code-switching in their respective group. That is, the participants that inserted lexical items in English were classified as code-switchers and the participants that did not evidence any English lexical insertions were categorized as non code-switchers. As will be presented in the next chapter, the Intermediate group had 10 participants classified as code-switchers and six participants as non code-switchers. The Advanced group included five participants that code-switched and six participants that did not code-switch. Finally, the Heritage group consisted of 12 code-switching participants and 11 non code-switching participants. This categorization was employed,

given that the focus of the study was to investigate lexical access and retrieval in the code-switching practices of two types of bilinguals with prior knowledge of the vocabulary. Based on code-switching being a phenomenon used by many bilinguals in daily speech, it is a linguistic ability that cannot be anticipated in any given context. Instead, it occurs naturally and spontaneously in the speech of many bilinguals and therefore, code-switching in this study could not necessarily be expected to occur in the utterances of every participant.

#### **4.5 Experimental Tasks Employed in the Study**

The experimental tasks included the following: (1) two story retelling tasks and (2) a combined picture naming task.<sup>8</sup> The first part of the study involved the story retelling tasks. After instructing the participant to watch the first YouTube clip three times the participant was then asked to retell the story, which was recorded. Following this first video clip, the participant was given the first picture naming task relevant to the video that he or she had just watched. This picture naming task was timed and therefore, the participant was asked to indicate when he or she had finished the task in order to get an accurate time. See Appendix F for the combined picture naming task.

Following the completion of the first picture naming task, the participant was then asked to watch the second YouTube clip. After the third viewing of this video, the participant proceeded to retell the story, which was again recorded. Immediately following the recording, the participant was once again given the second picture naming

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<sup>8</sup> Although the acceptability judgment task was employed as the third experimental task, it did not prove to be a reliable task due to the variability in the responses and therefore, is not mentioned in the study. The acceptability judgment task was included in case there were no instances of lexical insertion present in the oral narratives, in order to tap into the linguistic knowledge of both second language learners and Spanish heritage speakers and determine what each participant considered to be an acceptable language switch.

task pertaining to the second video clip. As previously done with the first side of the picture naming task, this side was also timed in order to test the differences in lexical retrieval.

Upon completing the second picture naming task, the participant was then given the DELE Spanish language test. This test included both a multiple choice test followed by a modified cloze test.

The final stage of the data collection phase of the study involved the completion of the language background questionnaire, which was given last in order to not have any of the participants suspect or question what the study entailed. Due to the background questionnaire requiring some time to complete, the participants were told to take their time, given that this was the last task they were asked to fulfill.

Once all of the tasks had been completed, the participants were asked to sign their name and their professor's name, since some of them were told that they would receive extra credit for taking part in this study. They were also each compensated \$10.00 for completing the entire study.

#### **4.5.1 Description of Experimental Tasks**

Each participant that successfully passed the vocabulary test was given an appointment to meet with the bilingual interviewer on a set date and time in order to complete the actual study. The entire study included three experimental tasks<sup>9</sup>, followed by the DELE Spanish proficiency test and the language background questionnaire. The majority of the participants finished the study within an hour, although for some the time ranged from 45 minutes to an hour and fifteen minutes. Participation in this study was

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<sup>9</sup> As previously mentioned in footnote 6, the third experimental task is not reported on in this study.

entirely voluntary and given the amount of time necessary to complete the study, those that completed the entire study were given \$10.00 to compensate them for their time. Each participant was given three experimental tasks in order to address the three research questions regarding lexical access and retrieval. The three tasks included were two story retelling tasks and a combined picture naming task. The following two sections (4.5.2 and 4.5.3) describe each task in relation to the research questions.

#### **4.5.2 Story Retelling Tasks**

As mentioned previously in section 4.2, the first research question looked to answer whether differences would emerge among the L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts. In order to answer this question based on the English lexical insertions produced by both groups, all of the participants were given two tasks. Upon arrival to complete the study, all of the participants were greeted and spoken to only in Spanish. The first task, a story retelling task, required the participant to watch a two and a half minute YouTube clip<sup>10</sup> on a computer screen three times in order to understand and recall the storyline as much as possible. The video clip was selected due to the vocabulary consisting of high frequency words. Specifically, the video clip depicts Mr. Bean giving himself a haircut while encountering a few problems along the way. After watching the video clip the participant then retold the story to the bilingual interviewer (Spanish/English), who was the principal investigator and the same interviewer present during the vocabulary test. This same bilingual interviewer was present during the three viewings to make sure the participant watched the video clip three times. Although the participants were not

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<sup>10</sup> See the following YouTube clip for the entire video:  
<http://www.youtube.com/watch?v=-3hSKI36590>

explicitly instructed to retell the story in Spanish, they were given all of the instructions in Spanish. Therefore, at the time of the recording<sup>11</sup> the participants assumed they were to retell the story in Spanish, thus allowing code-switching to occur if necessary. This task was meant to provide evidence of insertion of English lexical items and or code-switching across constituents and junctures at which switches occurred.

The second task was similar to the first task in that it involved another story retelling task. Once again, the participant was asked to watch a different two minute YouTube clip<sup>12</sup> on a computer screen three times. As opposed to the first video clip, this second video clip was chosen due to the vocabulary consisting of low frequency words. This particular video clip shows Mr. Bean taking his goldfish to the beach for the day. The main problem encountered in the storyline is that they both get caught by a fisherman. After watching this second video clip, the participant then retold the story to the same bilingual interviewer. All of the instructions were given in Spanish. The story was recorded and analyzed using the same Digital Voice Recorder previously mentioned. This second task also intended to provide evidence of English lexical items inserted and junctures at which switches occurred. Besides the clip being different from the first one, this second YouTube clip was given to all the participants with the purpose of eliciting more English lexical items due to the vocabulary consisting of low frequency words.

#### **4.5.3 Picture Naming Task**

The second research question looked to answer what lexical insertions would tend to be most frequent across groups, despite having reached a threshold of vocabulary

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<sup>11</sup> An Olympus WS-500 M Digital Voice Recorder was used to record the retelling of the story by each participant.

<sup>12</sup> See the following YouTube clip for the entire video:  
<http://www.youtube.com/watch?v=rcwJoxQNqZo>



knowledge. Therefore, in order to test the vocabulary knowledge of the participant, a combined picture naming task was given immediately after the recording of both stories. The participant was asked to complete this picture naming task, which tested the participants' knowledge of the relevant Spanish vocabulary after narrating each story. This task was briefly explained to the participant before he or she was handed the worksheet, given that the task was timed.<sup>13</sup> For this task the participant was given a worksheet with pictures that referred to specific images from each YouTube clip along with their corresponding Spanish word. The first side of the worksheet included specific images from the first YouTube clip. This task included a total of sixteen target items along with eight pictures and their corresponding words as distractors. The target items included eight nouns and eight verbs. The distractors consisted of four nouns and four verbs. The participant was asked to match the picture with its corresponding Spanish word by writing the letter of the picture next to the word and was asked to indicate when he or she was finished in order for the interviewer to stop the stopwatch. See Appendix F for the combined picture naming task.

The third research question looked to answer whether L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge tend to insert more English lexical items when trying to access low frequency words. Thus, the second picture naming task that corresponded to the second YouTube clip was employed in order to address the third research question. Recall that the purpose of the second video clip was to elicit more English lexical items due to the vocabulary consisting of low frequency words in comparison to the first video clip. The second picture naming task

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<sup>13</sup> A New Balance Trainer Stopwatch was used to calculate the time, which included the minutes, seconds and hundredths of seconds.

included the same amount of target items and distractors, with an equal number of nouns and verbs as the first picture naming task.

#### **4.5.4 Lexical Retrieval and Timing Costs with Regard to Picture Naming Task**

The lexical insertions produced by both L2 learners and Spanish heritage speakers provide an insight into the difficulties in lexical access, while at the same time shedding light on the lexical retrieval process (Dell, 1986; Poulisse and Bongaerts, 1994; Roelofs, 1992). This notion is relevant in that lexical retrieval, as defined previously in Chapter 1, may affect the code-switching practices of L2 learners and Spanish heritage speakers and evidence lexical retrieval and timing costs involved in the completion of the picture naming task. The study also investigated whether lexical retrieval would be more costly for all groups in terms of timing, especially with respect to low frequency vocabulary. Therefore, the method that was employed to determine retrieval costs was to time each of the picture naming tasks per individual. Since the second story retelling task was given to all the participants with the purpose of eliciting more English lexical items due to increased difficulty in vocabulary, the timing of this task was expected to exceed that of the first picture naming task, regardless of having prior knowledge of the vocabulary. Thus, a correlation may exist between those participants who inserted English lexical items and also took longer to complete the second picture naming task.

#### **4.6 Data Coding**

Since one of the goals of this study was to investigate what differences emerge among L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts, the data were coded according to the insertion of English lexical items produced during the recordings of both story retelling tasks.

Thus, if the lexical item had not been stored or was simply difficult to access, the speaker engaged in lexical insertion of these items. On the other hand, the speaker who demonstrated the ability to access or recognize a lexical item in an independent task, such as the picture naming task, may engage in lexical insertion for other reasons. The insertion of these items may be due to greater familiarity with the lexical items in English. The lexical items coded for in the present study included the lexical insertion of nouns, verbs, adjectives and prepositions. The lexical insertion of an English noun is presented in (1).

(1) P044 Intermediate: ...*um* luego hay un *shark* que *um*...

“...um then there is a shark that um...”

Also coded for were cases that included lexical insertion of discourse markers, conjunctions, and lexical phrases. The insertion of these lexical items, specifically the lexical insertion of nouns or verbs, would confirm difficulty in accessing lexical items. Therefore, despite differences in prior lexical knowledge, the different patterns of switching involving cases of lexical insertion may be indicative of the differences in lexical knowledge among the groups.

In summary, this chapter has presented the research questions and hypotheses in relation to the issues of lexical insertion in intrasentential code-switching and lexical retrieval with regard to timing costs. The chapter has also described the protocols used to classify the participants. Besides the instruments used to classify the participants, the experimental tasks employed to answer the research questions were also described in addition to stating how the data were coded. The following chapter presents the results based on statistical analysis and compares the results for all three participant groups.

## **Chapter 5**

### **Results**

#### **5.1 Introduction**

As mentioned in Chapter 4, the present study seeks to answer questions with regard to the differences in lexical insertion and vocabulary recognition in L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge. The first section of this chapter presents the results that address the first two research questions and hypotheses in regard to lexical insertion. With regard to the first research question, an analysis involving the insertion of English lexical items in code-switching contexts based on oral narratives reveals no differences in the lexical retrieval process of both groups. Therefore, the first hypothesis according to which lexical insertion in intrasentential code-switching does not reveal differences in the lexical retrieval process of both groups is confirmed.

This same section then turns to investigate the second research question, which specifically targets the types of lexical insertions produced. Given that these participants reached a threshold of vocabulary knowledge, it is significant that the findings do not reveal a similar distribution of lexical insertions across categories (noun, verb, adjective, preposition). In other words, regardless of having achieved a certain level of vocabulary knowledge, the L2 learners insert certain lexical categories in a similar manner to those of the Spanish heritage speakers. Therefore, the second hypothesis is not confirmed, given that a similar distribution of lexical insertions does not exist across categories although both groups attained a threshold of vocabulary knowledge. Specifically, the insertions are not considered to occur in random positions with regard to the syntactic structure.

The chapter continues with a focus on lexical access in order to address the third research question. These data indicate that L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words, which confirms the third hypothesis. Specifically, the methodology employed for this investigation brings to light the notion that both groups tend to insert more English lexical items when trying to access low frequency words. These data also reveal that lexical retrieval is more costly for L2 learners in comparison to Spanish heritage speakers in terms of timing, especially with respect to low frequency vocabulary.

Finally, the last section focuses on the responses to the reflective survey obtained from the participants that address the concept and practice of code-switching. This section provides greater insight into the code-switching tendencies of those participants that do in fact tend to insert English lexical items as opposed to those participants that refrain from any lexical insertion. Recall that the participants that insert English lexical items are classified as code-switching, whereas the participants that do not insert any English lexical items are classified as non code-switching.

## **5.2 Lexical Insertion in Story Retelling Tasks**

In terms of the first research question, which addresses the differences with respect to lexical insertion of English items in code-switching contexts, it is hypothesized that lexical insertion in intrasentential code-switching does not reveal differences in the lexical retrieval process of both groups. This hypothesis is empirically based, given that both groups achieved a certain level of vocabulary knowledge. Thus, these data indicate that having reached a threshold of vocabulary knowledge both groups prove to have the availability of immediate access to vocabulary. The implications of this hypothesis could

also serve to corroborate MacSwan's (1999) Minimalist Approach, based on Chomsky's (1995) Minimalist Program, that states that code-switching can be explained based solely on the specific lexical items that are switched in the sentence. As previously mentioned in Chapter 2, this approach reveals that the computational system remains constant across languages and so the switching of languages is not relevant (MacSwan, 1999, 2000). In order to address the first research question, the data for this study were coded according to the insertion of English lexical items produced during the recording of both story retelling tasks in order to investigate the differences among the L2 learners and Spanish heritage speakers. The following figures will present the total number of lexical insertions for all three participant groups. The figures as presented refer to the results according to lexical insertions in video A and video B. Recall that all the participants were asked to watch and retell two different YouTube clips as described in the previous chapter in section 4.5.2. Therefore, video A refers to the first story retelling task and video B refers to the second story retelling task.

The first results presented in Figure 5.1 refer to the raw scores regarding the lexical insertions across groups. Next, a one-way analysis of variance (ANOVA) was performed in order to compare the means among the three participant groups assuming a significance  $p < .05$ , followed by a Bonferroni post hoc test in order to determine the significant differences. Finally, a Paired-Samples T-Test was carried out to compare the means of two variables: the analysis was completed for each lexical insertion separately in relation to the insertion of a noun for each group.

The forthcoming figure represents the distribution of lexical items that were inserted according to each participant group. As previously mentioned, the participants

were asked to retell two different stories based on the respective video. The results for the lexical insertions for video A are observed in Figure 5.1.

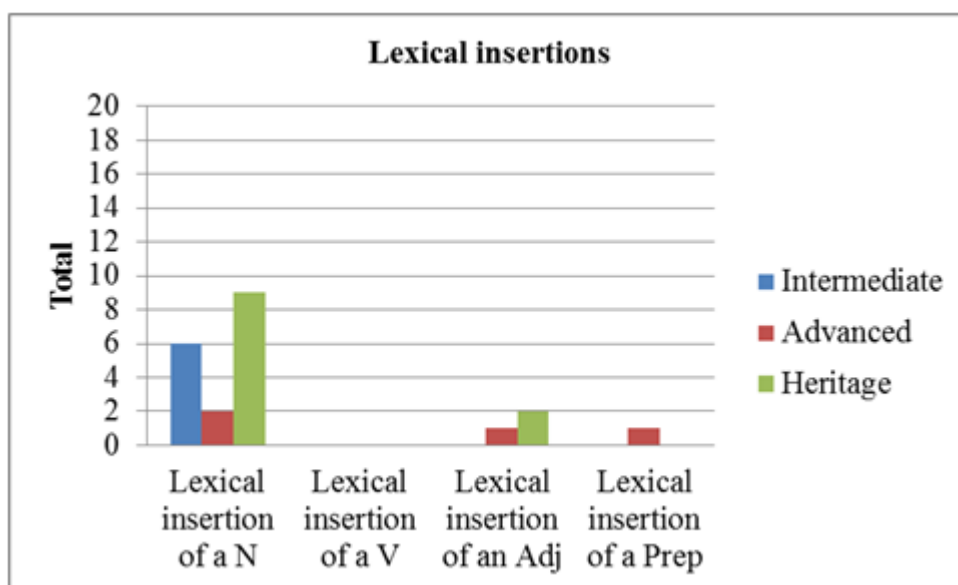


Figure 5.1 Bar graph of lexical insertions for video A

Overall the total number of lexical insertions was very low. However, it is worth pointing out that these low numbers are indicative of lexical insertions produced by participants that have reached a threshold of vocabulary knowledge based on the MINT vocabulary test. As presented in Figure 5.1, the lexical insertion of a noun was present among all three participant groups based on the recorded narration of the first story. Therefore, the study investigated whether there were differences among the L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge with respect to lexical insertion of English items in code-switching contexts. The results reveal the Spanish heritage group had the most instances of a lexical insertion of a noun, followed by the Intermediate group, and then the Advanced group. The Heritage group produced a total of nine nouns as lexical insertions in the retelling of the first video. The Intermediate group produced six noun insertions and the Advanced group only produced

two noun insertions. There were no lexical insertions of a verb among any of the three groups. This outcome corroborates previous research that suggests that the differences between the grammatical categories of nouns and verbs influences the interaction of languages (Marian and Kaushanskaya, 2007), since the insertion of a verb requires a change in syntactic structure. The lexical insertion of an adjective was only found between the Heritage group and the Advanced group. The Heritage group produced two lexical insertions of an adjective, while the Advanced group only produced one adjective as a lexical insertion. With respect to the insertion of a preposition, the Advanced group was the only participant group to exhibit this type of lexical insertion with one single insertion. As expected, the results of the lexical insertions for video A do not reveal differences in the lexical retrieval process of both groups, thus confirming the first hypothesis. That is, L2 learners and Spanish heritage speakers reveal similar lexical insertion tendencies in code-switching contexts with regard to the insertion of English lexical items.

With respect to the lexical insertion of a noun, the one-way ANOVA and Bonferroni post hoc tests indicate no significant difference between the Intermediate group and Advanced group or between the Advanced group and Heritage group. These results are perhaps due to the low number of lexical insertions. In addition, the analyses did not reveal any significant contrasts for the lexical insertion of a verb, an adjective or a preposition, which again corroborates the first hypothesis. The Paired-Samples T-Test found a significant result ( $p = .029$ ) for the Intermediate group between a noun and a verb. This same analysis also showed a significant difference ( $p = .029$ ) for the Intermediate group between a noun and an adjective as well as between a noun and a



preposition ( $p = .029$ ). There were no significant contrasts reflected among the Advanced group according to the Paired-Samples T-Test. Lastly, this analysis indicated a significant result ( $p = .036$ ) for the Heritage group between a noun and a verb. In other words, since there were no lexical insertions of a verb produced by the Heritage group, the Paired-Samples T-Test indicated a significant result in the comparison of nouns to verbs. There was also a significant difference found ( $p = .031$ ) in this group between a noun and an adjective in addition to a significant contrast ( $p = .036$ ) between a noun and a preposition.

Figure 5.1 also addresses the second research question, which seeks to investigate what lexical insertions tend to be most frequent across groups that have reached a threshold of vocabulary knowledge. While the number of lexical insertions is low across groups, the results reveal the insertion of English nouns as the most frequent type of lexical insertion and therefore confirm previous studies that have attested to nouns as the grammatical category borrowed most frequently by bilinguals (Toribio, 2001b) in comparison to verbs (Angermeyer, 2002; Joshi, 1985; Myers-Scotton, 1993). Therefore, the second hypothesis that states that a similar distribution of lexical insertions will exist across categories (noun, verb, adjective, preposition) is not confirmed.

The following examples provide different types of lexical insertions. The data in (1) demonstrates a lexical insertion of a noun, (2) exemplifies a lexical insertion of an adjective and (3) illustrates a lexical insertion of a preposition.

(1) P041 Intermediate: ...*scissors* *um*...

“...scissors *um*...”

(2) P030 Advanced: ...*um* *está* vestido con un *gray* vestido y...

“...*um* is dressed with a gray dress and...”

(3) P011 Advanced: ...*um on* en los cuatro cuatros libros y...

“...um on on the four four(s) books and...”

In Figure 5.2, the total number of lexical insertions for the following categories is shown for video A: adverb, determiner, discourse marker, conjunction, lexical phrase and full sentence. Although a full sentence was not expected to be analyzed and coded for in this study, the decision was made to include this specific type of insertion alongside the other types of lexical insertions in order to present all cases of language switching that were produced for both videos.

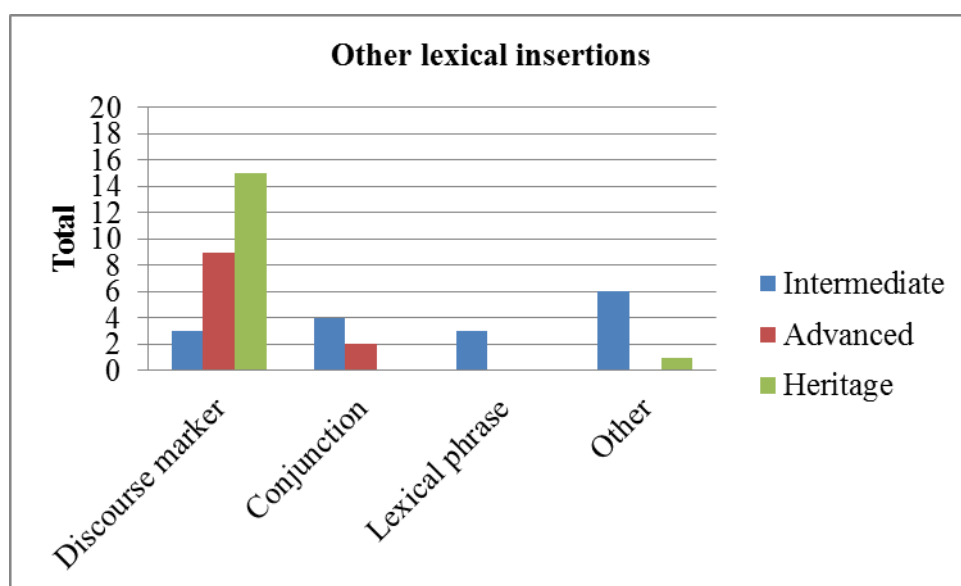


Figure 5.2 Bar graph of other lexical insertions for video A

Figure 5.2 represents other types of lexical insertions. Although there were no lexical insertions of an adverb or a determiner among any of the three participant groups these categories were nonetheless investigated, given that Montoya (2011) examined these two categories. With regard to the insertion of discourse markers as presented in Figure 5.2, the Heritage group had the most instances of this type of lexical insertion, followed by the Advanced group, and then the Intermediate group. The Heritage group

produced a total of 15 discourse markers. With regard to the L2 learners, the Advanced group produced nine discourse markers and the Intermediate group produced three discourse markers. The most frequent type of discourse markers produced by the Heritage group included *so* and *what else*. The main discourse marker produced by the Advanced group was *so*, while the Intermediate group employed *I guess*, *yeah* and *wait*. Overall, the insertion of discourse markers was evidenced by all three participant groups. The insertion of a conjunction was only found among the Intermediate group and the Advanced group. The Intermediate group produced four conjunctions and the Advanced group produced two conjunctions. The Intermediate group was the only participant group to produce a lexical insertion of a lexical phrase with a total of three. In addition, given that there were instances of full sentences produced during the narration of video A, this type of insertion was also accounted for and represented as the last category in Figure 5.2. In regard to the insertion of a full sentence, the Intermediate group had the most instances, followed by the Heritage group. There were six full sentences inserted by the Intermediate group and one full sentence inserted by the Heritage group.

With regard to the lexical insertion of a lexical phrase, the one-way ANOVA and Bonferroni post hoc tests showed a significant result ( $p = .033$ ) between the Intermediate group and the Heritage group. That is, the Intermediate group had a tendency to incorporate lexical phrases during the narration of video A. No significant results were found for the lexical insertion of discourse markers, conjunctions or full sentences. In relation to the different lexical categories, the Paired-Samples T-Test reflected a significant difference ( $p = .029$ ) for the Intermediate group between a noun and an adverb and also between a noun and a determiner ( $p = .029$ ). No significant contrasts were

indicated for the Advanced group. With regard to the Heritage group, a significant result ( $p = .036$ ) was revealed between a noun and an adverb along with a significant difference ( $p = .036$ ) between a noun and a determiner in a pattern similar to that of the Intermediate group. The other significant contrasts found in the Heritage group were between a noun and a conjunction ( $p = .036$ ), as well as between a noun and a lexical phrase ( $p = .036$ ). It is worth noting that in all of these cases, the insertion of a noun tends to be the most frequent type of lexical insertion by all three participant groups.

The following examples show other types of lexical insertions such as discourse markers, conjunctions, lexical phrases and full sentences. For instance, example (4) presents a lexical insertion of a discourse marker, (5) demonstrates a lexical insertion of a conjunction, (6) exemplifies a lexical insertion of a lexical phrase and (7) illustrates the lexical insertion of a full sentence.

(4) P055 Heritage: ...y *um...what else...*

“...and um...what else...”

(5) P008 Advanced: ...tijeras y él se corta *or* cortó el sábana...

“...scissors and he cut himself or cut the sheet...”

(6) P042 Intermediate: ...y *yeah that's it...*

“...and yeah that's it...”

(7) P044 Intermediate: ...*I can't remember the word um...*

“...I can't remember the word um...”

In addition to the previous types of lexical insertions presented, other types of lexical insertions were coded and analyzed. While Montoya (2011) coded and analyzed data based on the juncture where the switch occurred such as CS between different

lexical heads and their complements as investigated by Toribio (2001b), these types of switching between junctures did not emerge in this study, perhaps due to the vocabulary threshold achieved by all the participants. Montoya (2011) analyzed CS between a Spanish lexical head noun and its English complement in addition to switching between other Spanish lexical heads and their complements. However, the current study found instances of the reverse type. That is, these instances included cases of CS between an English lexical head noun and its Spanish complement as was the case for video B as shown in Figure 5.6. Other examples worth noting included repairs from English to Spanish as well as other unexpected occurrences as illustrated in examples (8) and (9) that follow. Recall that a repair is a correction of a lexical item from one language to the other. The distribution of these types of lexical insertions is shown in Figure 5.3.

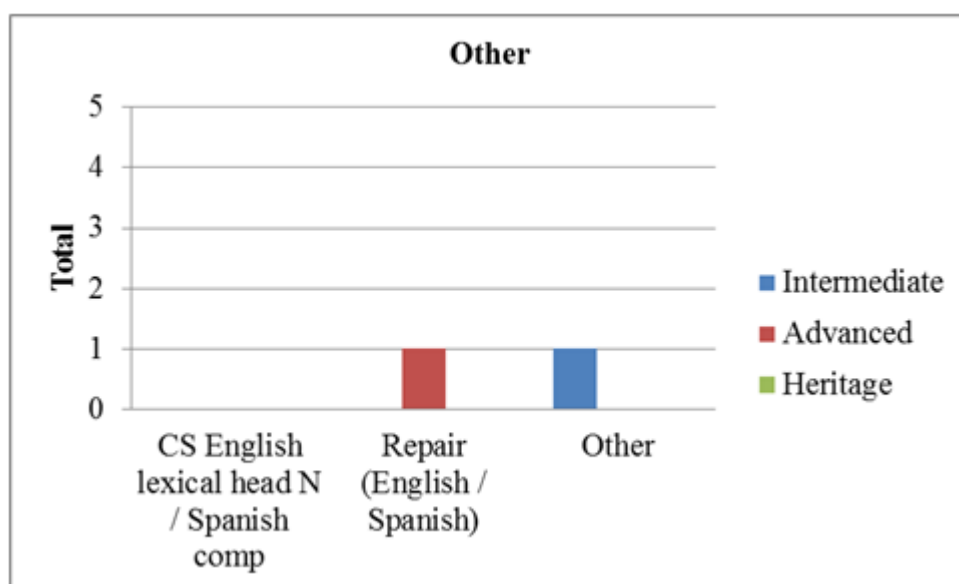


Figure 5.3 Bar graph of other types of lexical insertions for video A

Finally, Figure 5.3 summarizes other types of switching. As shown in Figure 5.3, in video A narratives there were no instances of CS between an English lexical head noun and its Spanish complement, although there was a repair produced by an Advanced L2

learner and an example of linguistic awareness as evidenced by an Intermediate L2 learner. Specifically, the Intermediate L2 learner revealed an interesting occurrence that shows metalinguistic awareness. Metalinguistic awareness, as seen in the present study, is defined as a conscious awareness of the use of language that leads the participant to self-correct in order to provide a grammatically correct statement. The following example (8) presents a repair from English to Spanish as previously cited in example (3) and (9) demonstrates an example of metalinguistic awareness along with a repair.

(8) P011 Advanced: ...*um on* en los cuatro cuatros libros y...

“...um on on the four four(s) books and...”

(9) P042 Intermediate: ...*abren* los libros *or* *abre* los libros...

“...open the books or opens the books...”

In addition to the lexical insertions found in video A, the lexical insertions produced for video B were also coded and analyzed for the three participant groups. These results were also accounted for in addressing the first research question and hypothesis. As one will recall, the second story retelling task, as mentioned in section 4.5.2 in the previous chapter, was employed in order to elicit more English lexical items due to the vocabulary consisting of low frequency words. The results for the lexical insertions for video B are presented in Figure 5.4.

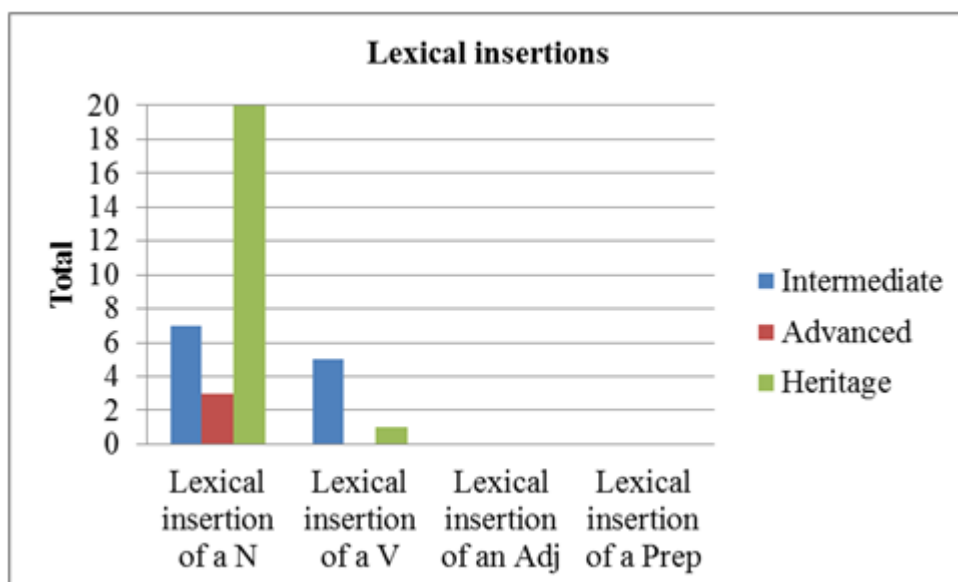


Figure 5.4 Bar graph of lexical insertions for video B

As shown in Figure 5.4, all three groups produced lexical insertions of nouns during the narration of the second story. Once again, the Heritage group had the most instances of lexical insertion of nouns, followed by the Intermediate group, and then the Advanced group. The Heritage group produced 20 lexical insertions of nouns. The Intermediate group produced seven nouns as lexical insertions and the Advanced group produced three lexical noun insertions. Although no lexical insertions of verbs were produced during the narration of the first video, there were instances of this type of insertion found among the Intermediate group and the Heritage group in video B, perhaps due to the low frequency of these lexical items. The Intermediate group produced five verbs as lexical insertions and the Heritage group produced one verb as a lexical insertion. With regard to the lexical insertion of an adjective or a preposition, the second video did not elicit any of these types of lexical insertions among the three groups. The results of the lexical insertions for video B do not reveal differences in the lexical retrieval process of L2 learners and Spanish heritage speakers, which again corroborates

the first hypothesis.

With respect to the lexical insertion of a noun, the one-way ANOVA and Bonferroni post hoc tests show no significant results between the Intermediate group and the Advanced group or between the Advanced group and the Heritage group. These analyses did not reflect any significant differences for the lexical insertion of a verb, an adjective or a preposition among groups and therefore the first hypothesis is confirmed. The Paired-Samples T-Test did not indicate any significant contrasts for the Intermediate group or the Advanced group for the lexical insertion of a noun in relation to the insertion of a verb, an adjective or a preposition. Finally, no significant results were revealed for the Heritage group for the previous mentioned analyses.

Furthermore, the data shown in Figure 5.4 allow us to address the second research question, which looks to examine what lexical insertions tend to be most frequent across groups that have reached a threshold of vocabulary knowledge. In Figure 5.4, as seen in Figure 5.1, the number of lexical insertions is low across groups and the results reveal the insertion of English nouns as the most frequent type of lexical insertion. Although the results do show some insertions of verbs in video B, these results can be interpreted in support of the idea that the insertion of verbs requires a change of syntactic structure and this is not the case with the insertion of nouns as has been previously documented (Marian and Kaushanskaya, 2007). Thus, the second hypothesis is not confirmed, given that a similar distribution of lexical insertions does not exist across categories (noun, verb, adjective, preposition).

The following examples are illustrative of the different types of lexical insertions



produced during the narration of video B. Example (10) exemplifies a lexical insertion of a noun and (11) demonstrates a lexical insertion of a verb.

(10) P036 Heritage: ...*string um*...

“...string um...”

(11) P044 Intermediate: ...*um* luego el pescador *hung*...

“...um then the fisherman hung...”

The total number of other lexical insertions for video B, as was previously seen for video A, is observed in Figure 5.5.

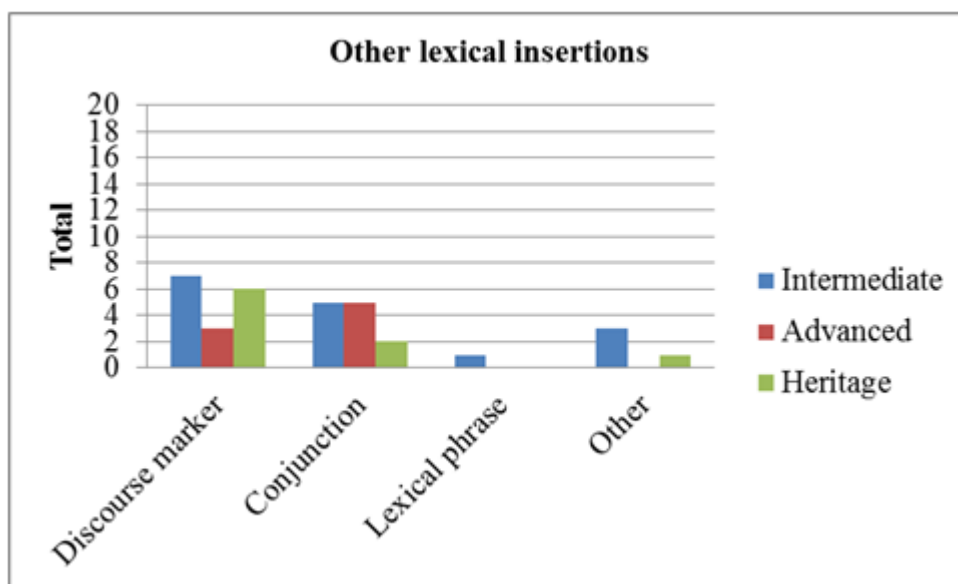


Figure 5.5 Bar graph of other lexical insertions for video B

Figure 5.5 shows other types of lexical insertions that were produced for video B. Once again, there were no instances of lexical insertion of an adverb or a determiner among any of the participant groups. As shown in Figure 5.5, the narration of the second story produced lexical insertions of discourse markers across all three groups. The Intermediate group produced the most instances of a lexical insertion of a discourse marker, followed by the Heritage group and then the Advanced group. As seen in Figure

5.5, the Intermediate group produced seven discourse markers and the Heritage group produced six discourse markers. The Advanced group inserted three discourse markers as lexical insertions. The discourse markers produced by the Intermediate group included *not*, *yeah*, *no* and *oh*, all of which were not produced during the narrative of video A. The main discourse markers produced by the Heritage group were *so*, *whatever*, *not*, and *I guess*. The only discourse marker produced by the Spanish heritage speakers that was also produced in video A was *so*. Finally, *so* was the only discourse marker employed by the Advanced group that was also the only discourse marker evidenced by this group for video A. Recall that the discourse markers produced in the study by Montoya (2011) for the story retelling task included *ok*, *so* and *I guess*.<sup>1</sup> All three groups produced the insertion of a conjunction during the narration of the second story. The Intermediate group produced the same amount of conjunctions as the Advanced group, followed by the Heritage group. That is, the Intermediate group inserted five lexical conjunctions and the Advanced group also inserted five conjunctions. The Heritage group produced two conjunctions as lexical insertions. The Intermediate group was the only group to insert one lexical phrase during the narration of the second story. With regard to the lexical insertion of a full sentence, the Intermediate group had the most followed by the Heritage group. Thus, the Intermediate group produced three full sentences and the Heritage group produced one full sentence during the retelling of video B.

A one-way ANOVA and Bonferroni post hoc tests found no significant differences for the lexical insertion of discourse markers, conjunctions, lexical phrases or full sentences among groups. The Paired-Samples T-Test did not reflect any significant

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<sup>1</sup> As noted in Chapter 3, the few instances of the discourse marker *ok* or tag as it was referred to by Montoya (2011) were phonologically produced in English.

results for the Intermediate group or the Advanced group for the lexical insertion of a noun relative to the insertion of a discourse marker, a conjunction, a lexical phrase or a full sentence. Similarly, the Paired-Samples T-Test indicated no significant differences for the Heritage group with regard to each of the previously mentioned lexical insertions in relation to the insertion of a noun.

The following examples show other types of lexical insertions produced for video B. Example (12) demonstrates a lexical insertion of a discourse marker, (13) exemplifies a lexical insertion of a conjunction, (14) illustrates a lexical insertion of a lexical phrase and (15) presents a lexical insertion of a full sentence.

(12) P040 Intermediate: ...brazos y pies *yeah*...

“...arms and feet yeah...”

(13) P008 Advanced: ...viene y *or* no un pescador *um*...

“...comes and or not a fisherman um...”

(14) P044 Intermediate: ...*um* pescado pequeño *um it pulled the* el hombre en el mar y...

“...um small fish um it pulled the the man in the sea and...”

(15) P046 Heritage: ...*I forgot how to say boat*...

“...I forgot how to say boat...”

As was previously done for video A, the coding and analysis of other types of lexical insertions were accounted for with regard to video B. The specific types of lexical insertions are shown in Figure 5.6.

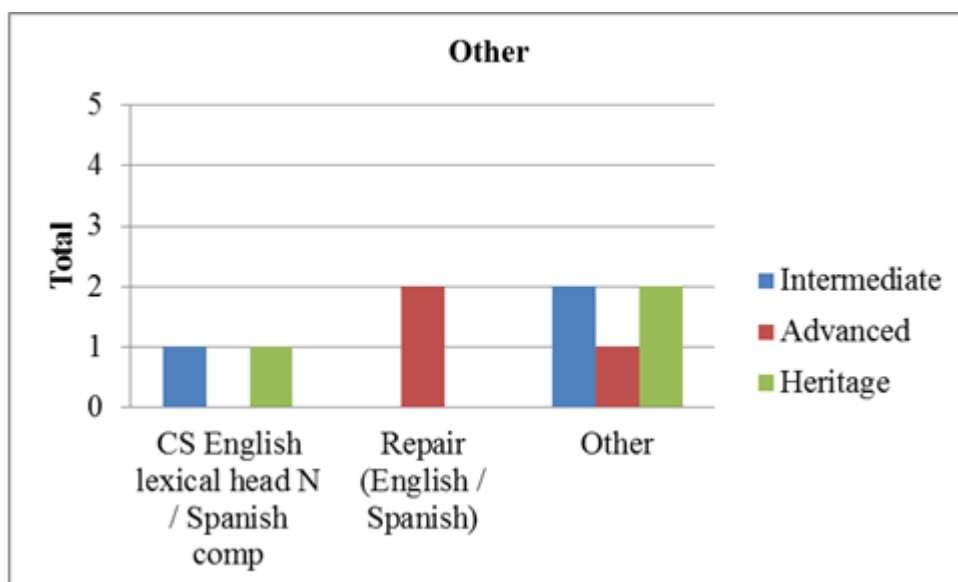


Figure 5.6 Bar graph of other types of lexical insertions for video B

Figure 5.6 summarizes other types of switching produced by all three groups for the second story retelling task. As seen in Figure 5.6, the Intermediate group and Heritage group both evidenced cases of CS between an English lexical head noun and its Spanish complement. Both of these groups had one lexical insertion of this type. Once again, the Advanced group was the only participant group to demonstrate a lexical insertion with regard to a repair from English to Spanish. The Advanced group produced two repairs from English to Spanish. In addition to these two types of lexical insertions, all three groups produced other types of lexical insertions that were unexpected. The following example (16) demonstrates CS between an English lexical head noun and its Spanish complement, (17) illustrates a repair from English to Spanish and (18) presents an insertion of a compound noun.

(16) P042 Intermediate: ...*um boat*...del pescador...

“...um boat...of the fisherman...”

(17) P008 Advanced: ...*fisherman* pescador...

“...fisherman fisherman...”

(18) P036 Heritage: ...*hook thing* y um...

“...hook thing and um...”

It is worthy to note that example (17) differs from the type of repair evidenced in the findings of Montoya (2011), given that this type of repair occurs from English to Spanish as opposed to from Spanish to English. In addition, this same Advanced participant went on to produce another repair with a different noun from English to Spanish later on in narrative B. Finally, example (18) presents a compound noun produced after a slight pause in order to refer to this specific object, which for this Spanish heritage speaker may have been easier at the moment to access in English instead of Spanish, given that the participant correctly identified *el gancho* (hook) on picture naming task B.

### 5.3 Lexical Insertion and Vocabulary Test

As seen in Table 4.2 in the previous chapter, the Advanced group and the Heritage group scored high on the preliminary vocabulary test, while the Intermediate group scored a bit lower. Recall that the Advanced group scored 86.72% and the Heritage group scored 94.78%. The Intermediate group scored 71.25%. Regardless, all three groups were considered to have reached a threshold of vocabulary knowledge in order to proceed with the study. In analyzing the lexical insertions, all three groups tend to be similar with respect to lexical insertion of English items in code-switching contexts. Thus, lexical insertion in intrasentential code-switching does not reveal differences in the lexical retrieval process of L2 learners and Spanish heritage speakers and therefore the first hypothesis is confirmed. In other words, both groups tend to insert English lexical

items in a similar pattern and hence reveal similarities in their lexical retrieval practices.

In order to explore the lexical insertion practices of L2 learners and Spanish heritage speakers further as stated by the second research question, the present study also seeks to determine the lexical insertions that tend to be most frequent across groups. In analyzing the results, English nouns were found to be the most favored type of lexical insertion by all three groups. In addition to nouns being documented to be the grammatical category borrowed most frequently (Angermeyer, 2002; Joshi, 1985; Myers-Scotton, 1993; Toribio, 2001b; among others), nouns also tend to be easier to access in contrast to verbs (De Bleser and Kauschke, 2003). Specifically, the Heritage group had the most instances of lexical insertion of a noun in both videos combined, followed by the Intermediate group, and then the Advanced group. The Heritage group had a total of 29 lexical noun insertions, while the Intermediate group had a total of 13 lexical insertions of this type. The Advanced group had a total of five insertions in combining the lexical insertions of nouns in video A and video B. Of particular interest, most of the lexical insertions were produced by the Heritage speakers as opposed to the L2 learners.

Similar to the findings obtained by Montoya (2011) as seen in Chapter 3, the use of discourse markers was the second most favored type of lexical insertion. Yet again, the Heritage group produced the most lexical insertions of discourse markers in both videos combined, followed by the Advanced group, and then the Intermediate group. Recall that the Heritage group produced 21 lexical insertions of a discourse marker and the Advanced group produced 12 discourse marker insertions. With regard to the lexical insertion of discourse markers in both videos combined, the Intermediate group produced a total of 10. Once again, it is the Heritage speakers that inserted most of the discourse

markers, whereas the L2 learners inserted less discourse markers overall. While it was hypothesized that having reached a threshold of vocabulary knowledge a similar distribution of lexical insertions would be produced across categories (noun, verb, adjective and preposition), this was not the case. As one will recall, besides the lexical insertion of nouns and discourse markers the other remaining categories did not evidence a similar distribution of lexical insertions across groups. Therefore, the second hypothesis is not confirmed.

#### **5.4 Lexical Insertion Frequency of Nouns, Verbs and Discourse Markers**

While many different categories were coded for as seen in section 5.2, the production of certain categories is noteworthy of further investigation. As previously stated, the insertion of English nouns was the most frequent type of lexical insertion produced in the context of intrasentential code-switching. Therefore, the following section will focus primarily on the frequency of insertion with regard to nouns, verbs and discourse markers. The results will include the total number of tokens for the relevant category, in addition to how many of these tokens were considered types. It should be noted that the tokens and types in each respective group include both English and Spanish items together. The categorization of type was included in order to avoid counting the same lexical item twice. That is, the token/type ratio was obtained in order to investigate whether there was more or less variability in the selection of types in all three participant groups. Recall that overall there was a low number of English lexical insertions produced. Due to the low number of English lexical insertions, the token/type ratio will be explained with regard to the Spanish nouns and the Spanish verbs that were utilized during the narration of each story. In other words, in terms of coding there were far more

nouns and verbs produced in Spanish than in English. Therefore, in order to show how varied the lexicon was for each group, all of these lexical items had to be accounted for regardless of the language employed. For example, the first time the noun *pelo* (hair) was produced during the first narrative, the word was considered to be coded as one token and one type for the noun category. The second time this same noun *pelo* (hair) was repeated, it was again coded as a token but not as a type to avoid counting it as a different type of noun. In terms of verbs, the infinitive verb *cortar* (to cut) was coded for as one token and one type for the verb category the first time it was produced. If the participant then proceeded to use the verb in the 3<sup>rd</sup> person singular form *corta* (cuts), it was again coded as an additional token but not as a type, given that it is a different form of the original verb. Therefore, the English lexical insertions out of the types were reported, since the total number of tokens would include repetitions and different forms (in terms of verbs), which would not be accurate in terms of identifying the variability in the use of lexical items. Thus, the percentage of the total number of types as lexical insertions is also indicated. After indicating the number and percentage of lexical insertions, the token/type ratio is provided in order to recognize the level of lexical variability among each group. This information is relevant in order to show how frequent/infrequent the lexical insertions are according to each category. As an example, the results will address what percentage of the total number of nouns produced by a certain group are noun insertions. The results for all three participant groups will be presented separately for each story retelling task.

The forthcoming table represents the total number of lexical insertions, as well as the token/type ratio for all three participant groups with regard to the lexical insertion of



nouns, verbs and discourse markers. The results for the lexical insertions (LI) and token/type (TO/TY) ratio for insertions in video A are observed in Table 5.1.

Table 5.1 Lexical insertions (LI) and token/type (TO/TY) ratio for insertions in video A

|                   | Intermediate<br>(n = 16) |                   | Advanced<br>(n = 11) |                   | Heritage<br>(n = 23) |                    |
|-------------------|--------------------------|-------------------|----------------------|-------------------|----------------------|--------------------|
|                   | LI                       | TO/TY             | LI                   | TO/TY             | LI                   | TO/TY              |
|                   | (%)                      | (ratio)           | (%)                  | (ratio)           | (%)                  | (ratio)            |
| Nouns             | 6<br>(3.61%)             | 349/166<br>(2.10) | 2<br>(1.26%)         | 301/158<br>(1.90) | 6<br>(1.63%)         | 720/368<br>(1.95)  |
| Verbs             | 0<br>(0%)                | 428/199<br>(2.15) | 0<br>(0%)            | 388/186<br>(2.08) | 0<br>(0%)            | 1070/491<br>(2.17) |
| Discourse markers | 3<br>(100%)              | 3/3<br>(1)        | 2<br>(66.66%)        | 9/3<br>(3)        | 7<br>(100%)          | 15/7<br>(2.14)     |

As shown in Table 5.1, the highest number of tokens produced was in the verb category as indicated by the Heritage group. The Heritage group produced a total of 1070 verb tokens. This same group also had the highest token/type ratio, which indicates more repetitions of verbs. The token/type ratio for the Heritage group was 1070/491. With respect to nouns, the Advanced group and the Heritage group had lower ratios than the Intermediate group. The Advanced group had a ratio of 301/158 and the Heritage group had a ratio of 720/368. On the other hand, the Intermediate group had a ratio of 349/166. Therefore, the higher ratio as evidenced by the Intermediate group indicates there were more repetitions of nouns in intrasentential code-switching contexts. The lower ratios in the Advanced group and the Heritage group indicate more variability in the use of nouns,

which implies they encompass a richer vocabulary.

The same type of coding was conducted for the second story retelling task for each individual group. The results for the lexical insertions (LI) and token/type (TO/TY) ratio for insertions in video B are presented in Table 5.2.

Table 5.2 Lexical insertions (LI) and token/type (TO/TY) ratio for insertions in video B

|             | Intermediate |         | Advanced |         | Heritage |         |
|-------------|--------------|---------|----------|---------|----------|---------|
|             | (n = 16)     |         | (n = 11) |         | (n = 23) |         |
|             | LI           | TO/TY   | LI       | TO/TY   | LI       | TO/TY   |
|             | (%)          | (ratio) | (%)      | (ratio) | (%)      | (ratio) |
| Nouns       | 5            | 517/186 | 3        | 361/155 | 10       | 988/430 |
|             | (2.68%)      | (2.77)  | (1.93%)  | (2.32)  | (2.32%)  | (2.29)  |
| Verbs       | 5            | 395/204 | 0        | 294/162 | 1        | 920/517 |
|             | (2.45%)      | (1.93)  | (0%)     | (1.81)  | (0.19%)  | (1.77)  |
| Discourse 4 |              | 9/5     | 1        | 3/1     | 5        | 6/5     |
| markers     | (80%)        | (1.8)   | (100%)   | (3)     | (100%)   | (1.2)   |

Finally, Table 5.2 reveals the highest number of tokens produced was in the noun category as evidenced by the Heritage group with a total of 988 noun tokens. The Intermediate group had the highest token/type ratio, which implies that for this group nouns were the most repeated lexical item. The token/type ratio for noun insertions for the Intermediate group was 517/186. In contrast, the Advanced group and the Heritage group had lower ratios indicating once more their greater variability in the use of nouns. The token/type ratio for noun insertions for the Advanced group was 361/155 and the Heritage group had a ratio of 988/430. With regard to the lexical insertion of verbs in

contexts of intrasentential code-switching a similar pattern was found, given that the Advanced group and the Heritage group had lower ratios than the Intermediate group. As seen in Table 5.2, the Advanced group had a token/type ratio of 294/162 and the Heritage group had a token/type ratio of 920/517. The lexical insertion of verbs for the Intermediate group revealed a token/type ratio of 395/204. Thus, the Intermediate group produced more repetitions of verbs while the Advanced group and the Heritage group produced different types of verbs, which reveals they have a more varied lexicon.

### **5.5 Lexical Access with Regard to Picture Naming Task**

Having focused on the lexical insertion of English nouns, verbs, and discourse markers as discussed in section 5.4, the third research question addressed lexical access, with a specific emphasis on whether L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words. As mentioned in Chapter 4, it is hypothesized that both groups will tend to insert more English lexical items when trying to access low frequency words. As explained in section 4.5.3 of the previous chapter, the combined picture naming task involved a worksheet with two different sides, each pertaining to one of the two YouTube clips. The high frequency words, which pertained to the first video, consisted of basic nouns and verbs in Spanish. The eight target nouns included *el cabello* (hair), *el libro* (book), *el espejo* (mirror), *la silla* (chair), *el estante* (bookshelf), *el lavamanos* (sink), *las tijeras* (scissors), and *la almohada* (pillow). The eight target verbs consisted of *equilibrar* (to balance), *caminar* (to walk), *bajar* (to go down), *sentarse* (to sit down), *mirarse* (to look at oneself), *saltar* (to jump), *abrir* (to open), and *cortar* (to cut).

In order to address this third research question, the following section will present

the means of the picture naming task for all three participant groups. The following figure provides the average percentage of each group. The results for picture naming task A are shown in Figure 5.7.

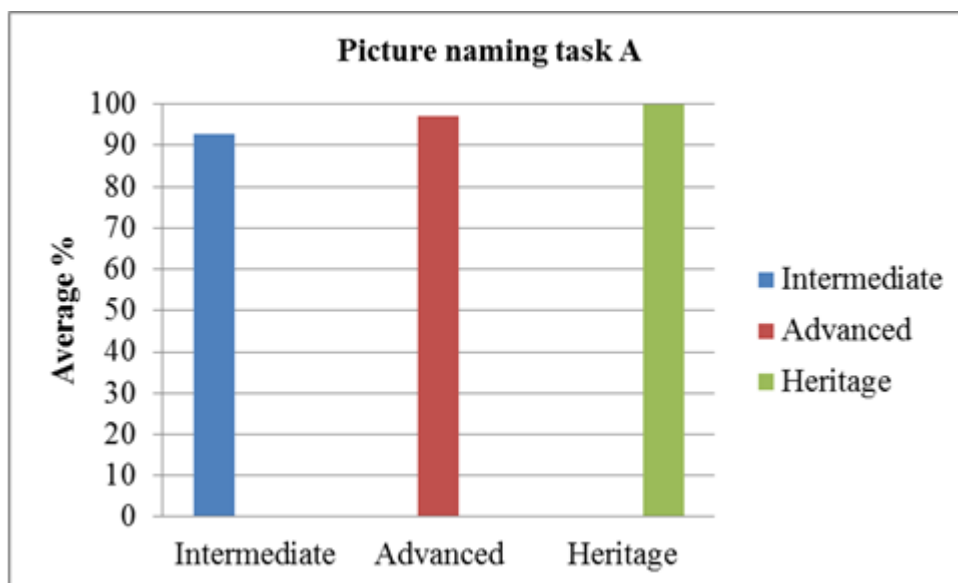


Figure 5.7 Bar graph of picture naming task A

As presented in Figure 5.7, all three groups scored above 90% on the first picture naming task, which tested the participants' knowledge of the Spanish vocabulary after having narrated the first story. The Heritage group had a perfect score of 100%, followed by the Advanced group with an average of 97.18% and then the Intermediate group with an average of 92.81%.

The second part of the picture naming task found on the opposite side of the worksheet consisted of low frequency words pertaining to the second video. The low frequency words, which related to the second video, consisted of nouns and verbs in Spanish considered to be lexical items that may not be frequently employed and therefore are difficult to access or recognize. The eight target nouns included *el tiburón* (shark), *el cangrejo* (crab), *el gancho* (hook), *la playa* (beach), *la pecera* (fish bowl), *el pescado*

(fish), *la cuerda* (rope, string), and *el pescador* (fisherman). The eight target verbs consisted of *tomar* (to drink), *arrastrar* (to drag), *perseguir* (to chase), *nadar* (to swim), *colgar* (to hang), *relajarse* (to relax), *oler* (to smell), and *manejar* (to drive).

The results for the second picture naming task, which correspond to the second narrated story, are illustrated in Figure 5.8.

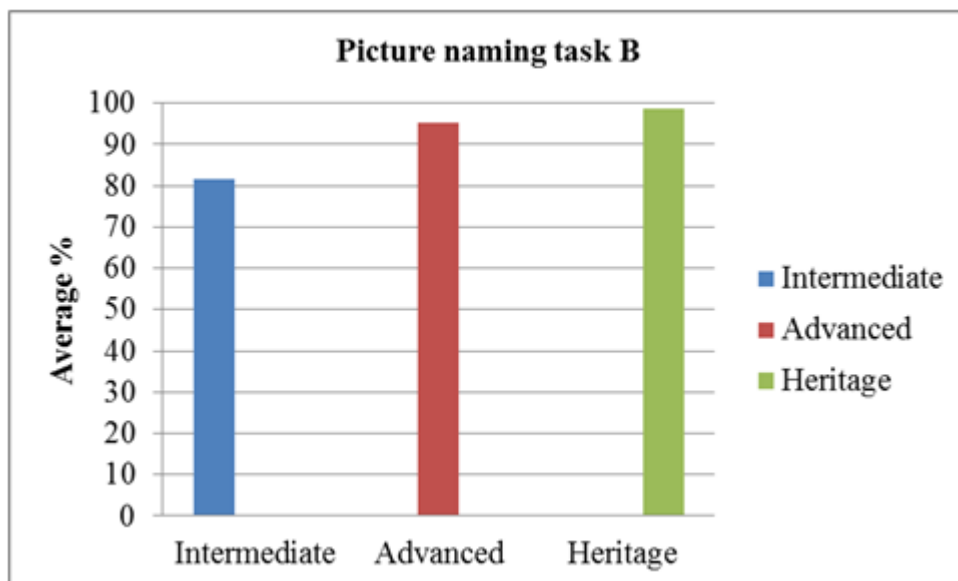


Figure 5.8 Bar graph of picture naming task B

As observed in Figure 5.8, the overall average percentage was lower across all three groups. For this second picture naming task the Heritage group had an average of 98.82%. The Advanced group followed with 95.27% and the Intermediate group had an average of 81.56%. That is, all three groups revealed a lower average for the second picture naming task that consisted of low frequency words.

Given that the third research question looks to address if L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words, the lexical insertions of specific items from the first picture naming task were identified and are presented in Figure 5.9. The figure illustrates the results in terms

of whether or not the English lexical item inserted was correctly identified on the first picture naming task and also indicates other lexical items inserted in English although not tested for on the first picture naming task (PNT).

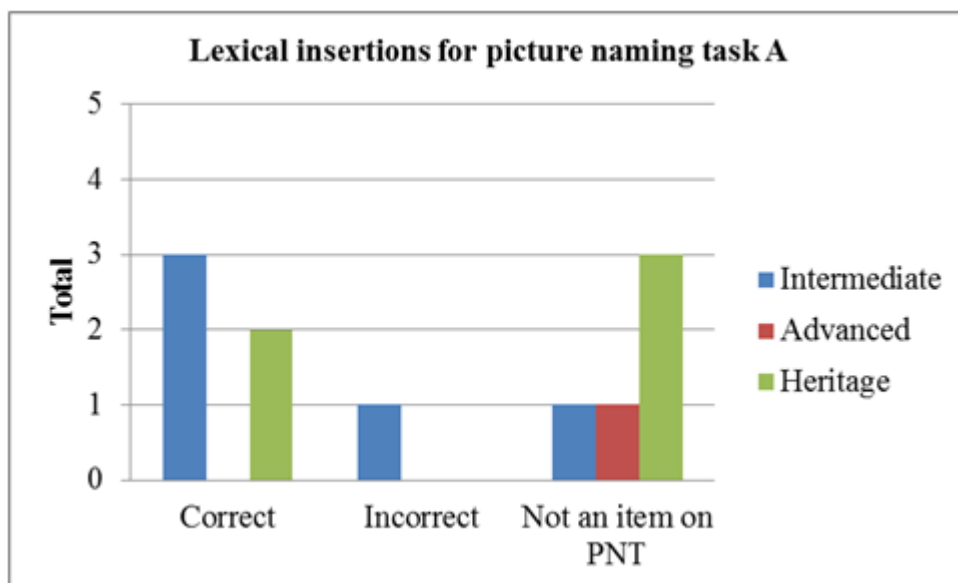


Figure 5.9 Bar graph of lexical insertions for picture naming task A

As shown in Figure 5.9, all three groups inserted English lexical items during the first narrative. With regard to the lexical items inserted that were correctly identified on the first picture naming task, the Intermediate group had three total instances of correctly identified items while the Heritage group had two correctly identified items. On the other hand, the Intermediate group was the only group to incorrectly identify an item on the first picture naming task, which was produced in English during the recording of the first spoken narrative. In addition to the lexical items inserted and identified as either correct or incorrect, all three groups had instances of lexical insertion of English items that were not tested for on the picture naming task. That is, some of the lexical insertions that the participants inserted during the retelling of the story were not necessarily items presented on the picture naming task. The data in (19) exemplifies a lexical insertion of a correctly

identified English noun, (20) illustrates a repeated lexical insertion of an English noun that was incorrectly identified on the first picture naming task and (21) presents an English lexical insertion of an item not tested for on the picture naming task.

(19) P005 Heritage: ...una *pillow*...

“...a pillow...”

(20) P020 Intermediate: ...alta y después él va y trae un *pillow pillow* y...

“...high and then he goes and brings a pillow pillow and...”

(21) P029 Advanced: ...*holes*...

“...holes...”

In order to identify whether the second spoken narrative would produce more instances of lexical insertions in English due to low frequency words, a second analysis was performed for the second picture naming task based on the same categories as mentioned in regard to Figure 5.9. The results for the lexical insertions for the second picture naming task are observed in Figure 5.10.

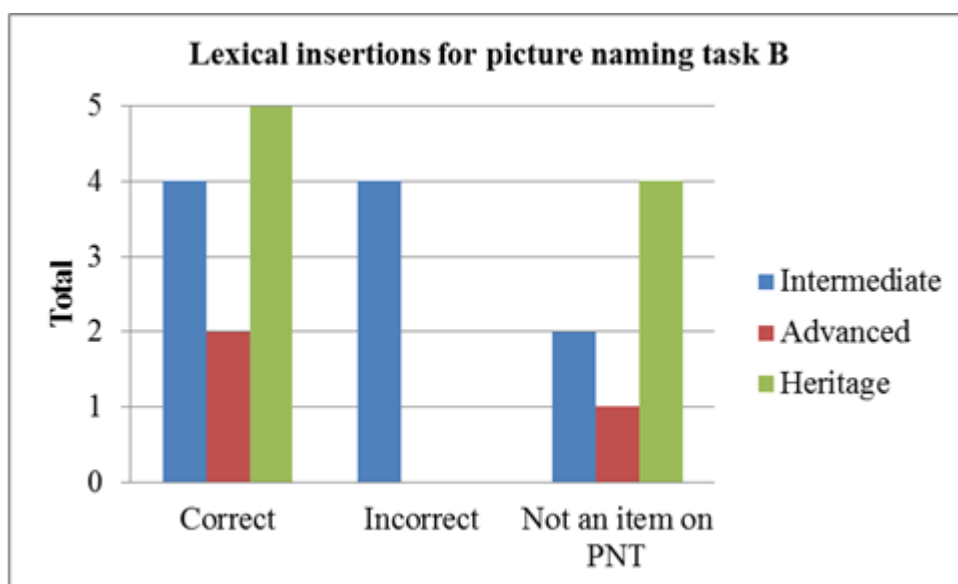


Figure 5.10 Bar graph of lexical insertions for picture naming task B

There are several observations that can be made with regard to the lexical insertions for the second picture naming task. As shown in Figure 5.10, all three groups inserted more English lexical items during the second spoken narrative in comparison to the first narrative. In other words, all three groups had a tendency to code-switch, or insert English lexical items during the narration of the second story, which again required the participants to access low frequency vocabulary. The Heritage group had five instances of lexical insertion that were identified correctly on the picture naming task, followed by the Intermediate group with four lexical insertions and the Advanced group with two lexical insertions in English. Once again, the Intermediate group was the only group to insert English lexical items during the second spoken narrative, although not able to correctly identify the item on the second picture naming task. There was also evidence of lexical insertions of English items not tested for on the second picture naming task by all three groups. The following examples show the types of lexical insertions produced during the second narrative. Example (22) is illustrative of an insertion of an English noun identified correctly on the second picture naming task, (23) exemplifies the insertion of a verb that was incorrectly identified on the picture naming task and (24) illustrates the insertion of an English noun not tested for on the second picture naming task.

(22) P008 Advanced: ...*fisherman* pescador...

“...fisherman fisherman...”

(23) P044 Intermediate: ...*um* luego el pescador *hung*...

“...um then the fisherman hung...”



(24) P046 Heritage: ...lo saca en su *boat* y *um*...

“...it came out in his boat and um...”

Although the number of insertions is low, there was a tendency for all three groups to insert more English lexical items during the narration of the second video as opposed to the first video. The second video clip was given with the purpose of eliciting more English lexical items due to the vocabulary consisting of low frequency words and both groups did in fact insert a few more English lexical items when trying to access low frequency words. These results, although based on a limited number, may partially lend some support in stating that L2 learners and Spanish heritage speakers will tend to insert more English lexical items when trying to access low frequency words and thus provide some support to the third hypothesis.

### **5.6 Lexical Retrieval and Timing Costs with Regard to Picture Naming Task**

Besides investigating lexical access in terms of whether L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words, the time it took each participant to complete each picture naming task was calculated in order to address a follow-up question that arose from the third research question. This follow-up question looks to address if lexical retrieval is more costly for all groups in terms of timing, due to the low frequency vocabulary. It is hypothesized that lexical retrieval will be more costly for L2 learners in comparison to Spanish heritage speakers in terms of timing, due to low frequency items. That is, the L2 learners are in the process of acquiring their second language and perhaps require more time in the completion of both picture naming tasks. The following figures offer the average time it took all three groups to complete the specific picture naming task, which includes the

minutes, seconds, and hundredths of seconds. The results in terms of the average amount of time it took to complete the first picture naming task are shown in Figure 5.11.

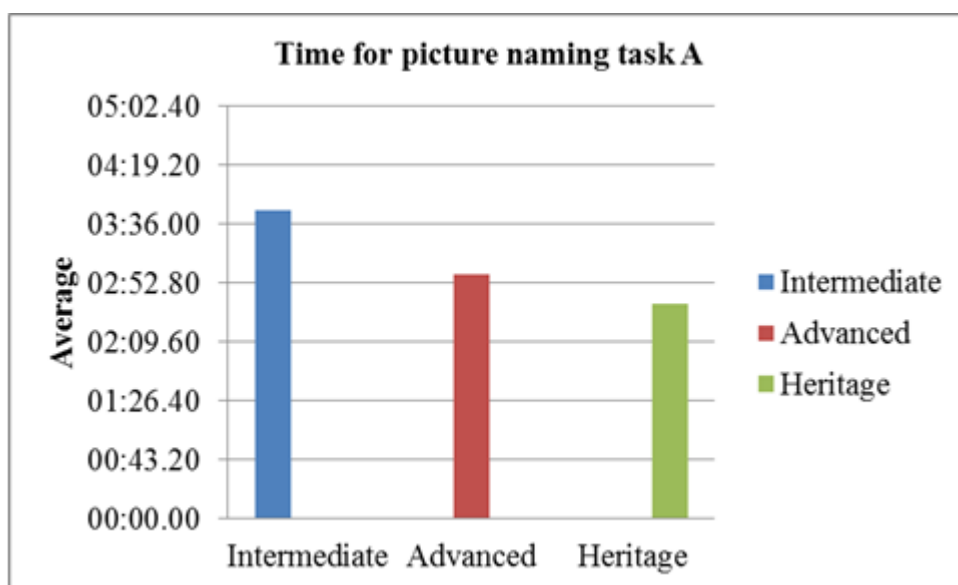


Figure 5.11 Bar graph of time for picture naming task A

As displayed in Figure 5.11, all three participant groups took at least two and a half minutes to complete the first picture naming task. The Heritage group completed the task with an average time of 02:37.24, followed by the Advanced group with an average time of 02:59.34. The Intermediate group required the longest amount of time to complete the first picture naming task with an average time of 03:46.09. Within the Intermediate group, the minimum time needed to complete the first picture naming task was 02:28.13 and the maximum time needed was 9:00.82. With regard to the Advanced group, the minimum time required was 02:02.41 and the maximum time was 04:23.16. Lastly, the Heritage group took the least amount of time with a minimum time of 01:49.75 to complete the first picture naming task and the maximum time needed was 03:40.96.

The second picture naming task was given to all the participants with the purpose

of having them demonstrate their lexical retrieval abilities with regard to the vocabulary consisting of low frequency words. The results based on the average time it took to complete the second picture naming task are shown in Figure 5.12.

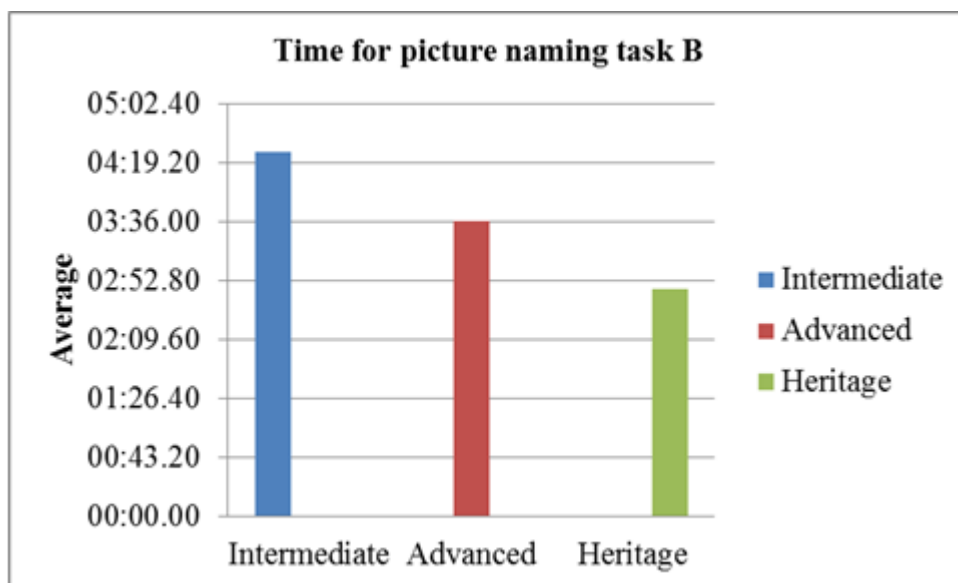


Figure 5.12 Bar graph of time for picture naming task B

As seen in Figure 5.12, all three groups did in fact take a bit longer to complete the second picture naming task. Recall that the items on this picture naming task consisted of low frequency vocabulary. The Heritage group took the least amount of time to complete the task with an average time of 02:46.87. The Advanced group required an average time of 03:36.71 to complete the second picture naming task, followed by the Intermediate group with an average time of 04:27.64. The minimum time it took the Intermediate group to complete the second picture naming task was 02:57.03 and the maximum time needed was 06:20.28. The Advanced group required a minimum time of 02:45.84 and a maximum time of 04:35.47. Finally, the Heritage group took the least amount of time with a minimum time of 01:38.72 to complete the second picture naming task and a maximum time of 04:14.69.

The average time it took to complete each picture naming task was combined in order to have an overall general idea of the costs involved in lexical retrieval. The results of the time for the combined picture naming task are illustrated in Figure 5.13.

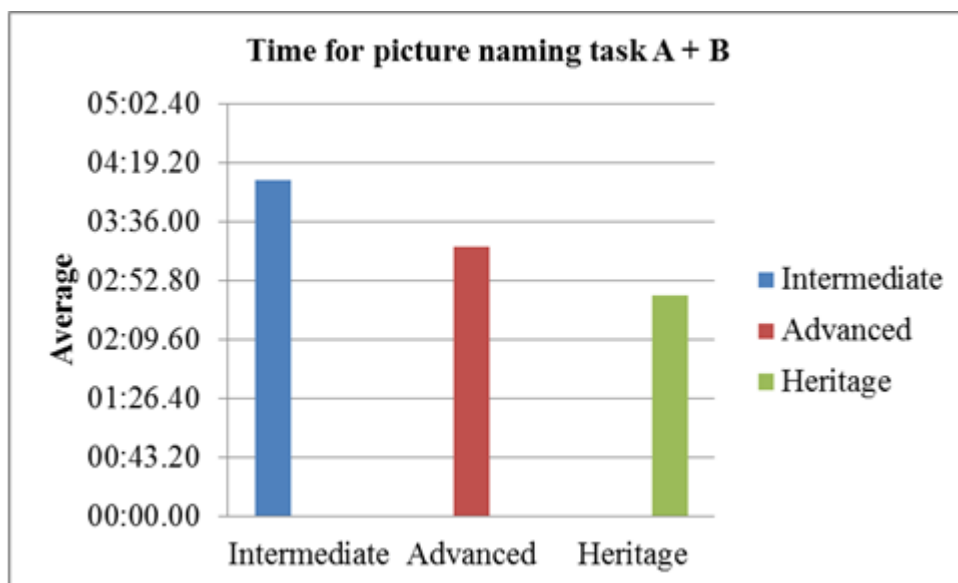


Figure 5.13 Bar graph of time for combined picture naming task (A + B)

As shown in Figure 5.13, the average time needed to complete both picture naming tasks by the Heritage group was 02:42.06. The Advanced group ended up with an average time of 03:18.02 with both picture naming tasks combined. The Intermediate group, with an average time of 04:06.86, needed the most time in order to complete both picture naming tasks.

A two-way repeated measures ANOVA with a 2 (picture naming task) x 3 (group) factorial design showed a significant main effect for picture naming task,  $F(1, 47) = 9.658, p = .003$  and a significant main effect for group,  $F(2, 47) = 17.614, p = .000$ .<sup>2</sup> However the interaction of picture naming task x group was not significant,  $F(2, 47) = 1.393, p = .258$ .

<sup>2</sup> I am grateful to Professor Nuria Sagarra for her assistance with the statistical analysis of the data.

A one-way ANOVA and Bonferroni post hoc tests were carried out as part of the multiple contrast comparisons. The comparisons between groups for picture naming task A revealed a significant difference between the Intermediate group and the Heritage group ( $p = .003$ ). The statistical significance was not as good for other correlations. That is, there were no significant results between the Intermediate group and the Advanced group ( $p = .171$ ) or between the Advanced group and the Heritage group ( $p = .980$ ).

With regard to the one-way ANOVA and Bonferroni post hoc tests for picture naming task B, the multiple contrast comparisons between groups revealed a significant difference between the Intermediate group and the Advanced group ( $p = .023$ ) as well as between the Intermediate group and the Heritage group ( $p = .000$ ). There was also a significant difference between the Advanced group and the Heritage group ( $p = .017$ ). Overall, the results for picture naming task B revealed significant differences across groups. Recall that the incorporation of the second video was employed in order to elicit more English lexical items due to the vocabulary consisting of low frequency words. These low frequency words were utilized as the vocabulary for picture naming task B and thus, presented difficulty in lexical retrieval.

A Paired-Samples T-Test was also performed as part of the multiple contrast comparisons. The analysis within each group was performed in order to investigate any significant difference between picture naming task A and picture naming task B. The results reveal a significant difference between both picture naming tasks for the Advanced group ( $p = .037$ ). The Paired-Samples T-Test did not reflect any significant results for the Intermediate group ( $p = .097$ ) or for the Heritage group ( $p = .259$ ).

In general, although all three groups did in fact require more time in the

completion of the second picture naming task, the retrieval costs of the L2 learners were greater compared to the Heritage group. Thus, lexical retrieval is more costly for L2 learners in comparison to Spanish heritage speakers in terms of timing due to low frequency vocabulary and as a result the hypothesis is confirmed.

### **5.7 Code-Switchers and Non Code-Switchers**

The goal of this study was to analyze lexical insertion in intrasentential code-switching in order to comprehend how lexical access and retrieval operate when two languages compete for selection. Specifically, the bilingual lexicon of two particular types of bilinguals exclusively chosen based on having reached a threshold of vocabulary knowledge was of particular interest. Therefore, the production of English lexical insertions in both oral narratives was investigated although some participants did not have any instances of lexical insertions. In order to tap into the mindset of those that did in fact insert lexical items by means of intrasentential code-switching, the responses to the reflective survey part of the language background questionnaire are critical in understanding how certain external factors may contribute to code-switching. Also, the answers provided by the participants that did not code-switch any lexical items are also telling. That is, several participants did not produce any English lexical insertions during the retelling of both narratives and as a result were classified as non code-switchers. Therefore, further inquiry of the external factors that may contribute to intrasentential code-switching is warranted.

The forthcoming figure represents the distribution of lexical items that were code-switched according to the respective participants. Recall that the first research question addresses whether there are differences between L2 learners and Spanish heritage

speakers with respect to lexical insertion of English items in code-switching contexts. The participants that inserted English lexical items were classified as code-switchers and the participants that did not insert any lexical items in English were categorized as non code-switchers. The results of both the code-switching participants and non code-switching participants for each group are shown in Figure 5.14.

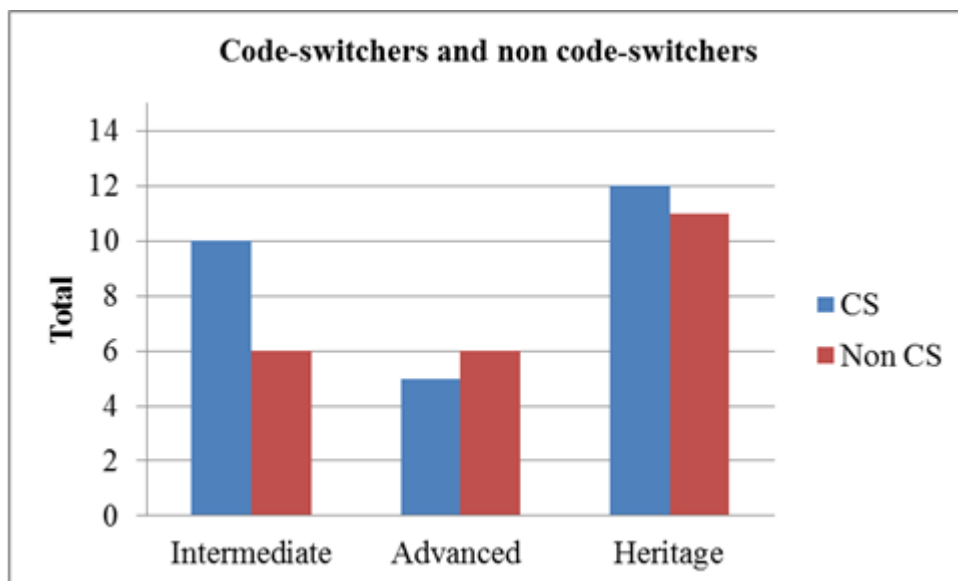


Figure 5.14 Bar graph of code-switching and non code-switching participants

As shown in Figure 5.14, there was almost an even distribution among all three participant groups with regard to those that did in fact code-switch, based on the insertion of an English lexical item, as opposed to those that did not code-switch any lexical item. Within the Intermediate group, 10 participants were classified as code-switchers. The remaining six participants did not produce any lexical insertions during the story retelling tasks. The Advanced group consisted of five participants that code-switched and six participants that did not produce any lexical insertion and therefore did not code-switch. Finally, the Heritage group had 12 participants switch languages with the remaining 11 that did not produce any type of lexical insertion.

The external factors that will be explored are based on specific questions asked in the language background questionnaire as discussed in section 4.3.3 of the previous chapter. Given that the language background questionnaire was administered last to all of the participants in order to avoid any speculation of what the study entailed, the answers to certain questions provide insight into the code-switching tendencies of those participants that produced lexical insertions.

### **5.8 Reflective Survey**

The last page of the language background questionnaire provided information on the concept and practice of linguistic code-switching, similar in nature to the Introspective Survey put forth by Toribio (2001b), and will be referred to as the reflective survey. Several aspects of code-switching were addressed and sample responses to certain questions appear in the following section. With regard to lexical insertion, question #29 on the reflective survey part of the language background questionnaire is presented here as example (25).

(25) Do you find yourself switching between Spanish and English while speaking in your daily conversations?

This question was created to provide some insight as to whether there is a connection between lexical insertion and some level of metalinguistic awareness of switching between Spanish and English while speaking in daily conversations. The majority of the participants in the Intermediate group that did in fact code-switch during the story retelling tasks claimed *no* as their answer with only one participant stating *yes*. Among the Advanced group, only two of the five that code-switched responded *yes* to switching between Spanish and English while speaking in their daily conversations.



Finally, as expected the Heritage group had a total of eight participants answer *yes* to this question out of the twelve that were classified as code-switching.

Further investigation of the participants' code-switching tendencies led to the question of whether an association between switching between Spanish and English in daily conversations and both parents speaking both Spanish and English combined would justify the switching of languages among the code-switching participants. The results of this inquiry were based on two separate questions that were asked as part of the reflective survey of the language background questionnaire. The first question asked the participants to circle one of three possible answers with regard to what language their mother speaks. The following example (26) is presented as question #37 on the reflective survey.

(26) My mother speaks:

Spanish only      English only      both Spanish and English combined

This specific question asked the participants to circle one of three possible answers in regard to what language their mother speaks: Spanish only, English only, or both Spanish and English combined. Question #38 on the reflective survey presented as example (27) was asked in the same manner along with the same three options, except this time it pertained to the language spoken by their father.

(27) My father speaks:

Spanish only      English only      both Spanish and English combined

The previous two questions were directed primarily towards the Spanish heritage group. Therefore, any participant in either the Intermediate group or the Advanced group that would claim both parents to speak Spanish and English combined would not have

been properly classified in their respective group. That is, only the participants in the Spanish heritage group would be expected to respond that either their mother or their father speaks both Spanish and English combined. As expected, no L2 learner responded *yes* to either of these questions. Recall from section 4.4 of the previous chapter that a heritage speaker, as defined for this study, refers to a student who is raised in a Spanish-speaking home and who is considered bilingual given he or she understands and speaks Spanish even if he or she has not been schooled in Spanish and therefore has not received formal instruction in Spanish.

Of the eight heritage speakers that claimed to switch between Spanish and English while speaking in daily conversations, four of them declared that both parents speak both Spanish and English combined. Of the remaining participants, one stated that her mother speaks only Spanish and her father speaks only English. Two heritage speakers reported that their mother speaks only Spanish and their father speaks both Spanish and English combined. The final speaker in the heritage group indicated that both parents speak only Spanish.

Noteworthy of further investigation were the responses to question #34 presented as example (28) regarding whether the participants are familiar with the term “code-switching” and if so, how they would define it. The following responses correspond to the four heritage speakers that claimed to switch between Spanish and English in daily conversations and stated that both parents speak Spanish and English combined.

(28) Are you familiar with the term “code-switching” and if so, how would you define it?

a. P002 Heritage: Yes; “Switching from Spanish to English or vice versa while

speaking.”

b. P004 Heritage: Yes; “Switching to another language when unsure of something in the original language.”

c. P007 Heritage: No.

d. P014 Heritage: Yes; “Switching words in a phrase between two languages.”

These four heritage speakers were of particular interest in order to confirm whether the participant is familiar with this linguistic practice. Question #35 was a follow-up question and is presented here as example (29).

(29) If you answered yes to question #34, do you consider yourself to use this linguistic behavior?

a. P002 Heritage: Yes.

b. P004 Heritage: Yes.

c. P007 Heritage: No.

d. P014 Heritage: Yes.

Following their responses to whether they consider themselves to use this linguistic behavior, the responses of these same four heritage speakers were accounted for in regard to the following question. This particular question asked the participants to identify in what contexts they use this linguistic behavior, with four options available: home, school, work, with friends.<sup>3</sup> Question #36 served as a follow-up question and is presented as example (30).

(30) If you answered yes to question #35, in what contexts do you consider yourself to use this linguistic behavior?

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<sup>3</sup> Consult Sánchez (1983) for examples of code-switching within the home.

(circle all that apply)    home    school    work    with friends    other \_\_\_\_\_

a. P002 Heritage: home, school, work, and with friends

b. P004 Heritage: home, school, work, and with friends

c. P007 Heritage: N/A

d. P014 Heritage: home, school, and with friends

As seen in the responses provided by the four Spanish heritage speakers, most of them claimed to code-switch in several contexts. While these responses provide additional information with regard to the code-switching tendencies of a few Spanish heritage speakers, further studies are needed to determine possible correlations that may exist. That is, perhaps Spanish heritage speakers such as these may tend to insert English lexical items more frequently than the other Spanish heritage speakers.

### **5.9 Lexical Insertion with Regard to Picture Naming Task for Code-Switchers**

It is commonly assumed that heritage speakers engage in code-switching to compensate for an unknown lexical item. While this may be the case for the L2 learners, Zentella (1981, 1997) proposes that switching in heritage speakers is not due to “crutching.” This study reveals that regardless of having reached a threshold of vocabulary knowledge, lexical insertion will still be evident between both groups. Although the study by Montoya (2011) also incorporated a picture naming task, the main difference in methodology was that the current study controlled for vocabulary threshold as a criteria to take part in the study. Recall that the findings of Montoya (2011) reveal that despite having the vocabulary, the heritage speakers show no difference in comparison to the L2 learners with regard to the insertion of nouns and tags. Therefore, lack of vocabulary does not generate differences in the CS practices between the L2

learners and the Spanish heritage speakers. Thus, the methodology employed in the study by Montoya (2011) evolved and led to the incorporation of the vocabulary test in the present study in order to consider all the participants to have a certain level of vocabulary knowledge. As previously mentioned, the idea of having both types of bilinguals with an established vocabulary threshold would test the common notion that lexical insertion occurs due to a limited vocabulary size (Bialystok et al., 2008b) or difficulties in lexical access (Costa and Santesteban, 2004; Dell, 1986; among others).

Within the Intermediate group, the lexical insertions produced for video A included primarily nouns. Many of the English nouns inserted were identified correctly on the picture naming task, whereas some of these nouns were inserted as a result of not having the specific lexical item as part of their repertoire, given that it was incorrectly identified on the picture naming task. Example (31) presents the insertion of an English noun that was identified correctly on the picture naming task, (32) demonstrates the lexical insertion of a repeated English noun that lacked the correct identification on the picture naming task and (33) exemplifies an English lexical insertion not tested for on the picture naming task.

(31) P041 Intermediate: ...*scissors um*...

“...scissors um...”

(32) P020 Intermediate: ...alta y después él va y trae un *pillow pillow* y...

“...high and then he goes and brings a pillow pillow and...”

(33) P051 Intermediate: ...*um un smock*...

“...um a smock...”

The lexical insertion of discourse markers was favored most for video A as

evidenced by the Advanced group. Therefore, the possibility of drawing a connection between the insertion of lexical nouns and verbs along with the correct identification of these items was not feasible. Regardless, the following example (34) illustrates an English lexical insertion of a noun repeated with a pause in between that was not tested for on the picture naming task.

(34) P029 Advanced: ...*holes*...*holes*...

“...holes...holes...”

Although the Heritage group inserted several nouns and discourse markers, the lexical insertions were identified correctly on the picture naming task. Other cases of lexical insertion were items not tested for on the picture naming task. Example (35) presents a lexical insertion of an English noun that was identified correctly on the picture naming task and (36) demonstrates a lexical insertion of an item not tested for on the picture naming task.

(35) P005 Heritage: ...y cuando él sienta encima del *pillow* no puede ver ver su cara entonces *um*...

“...and when he sits on top of the pillow (he) cannot see see his face then um...”

(36) P046 Heritage: ...*blanket*...

“...blanket...”

The participants within the Intermediate group that code-switched during the story retelling task pertaining to video B primarily inserted nouns and verbs with several discourse markers. While the lexical insertions for video B are low, recall that a greater number of insertions were expected for this video due to the vocabulary consisting of low

frequency words. The following example (37) exemplifies the insertion of a correctly identified verb on the picture naming task, (38) illustrates the insertion of a verb not properly identified on the picture naming task and (39) presents the insertion of a verb not tested for on the picture naming task.

(37) P044 Intermediate: ...*chase*...

“...chase...”

(38) P022 Intermediate: ...*pulled* el señor con su pescado en el mar y *um*...

“...pulled the man with his fish in the sea and um...”

(39) P044 Intermediate: ...*caught*...

“...caught...”

With regard to the lexical insertions that pertained to the picture naming task, the Advanced group had a tendency to insert mostly discourse markers and nouns. The few instances of nouns produced for video B were identified correctly on the picture naming task. The remaining insertions were nouns that were not included on the picture naming task. Example (40) demonstrates an example of a correctly identified noun insertion and (41) exemplifies the insertion of a noun not incorporated on the picture naming task.

(40) P029 Advanced: ...*um string* no sé cómo se dice...

“...um string don’t know how you say...”

(41) P008 Advanced: ...*um boat* bote *or* su nave y...

“...um boat boat or his ship and...”

Finally, the code-switchers in the Heritage group inserted nouns that were in fact tested for on the picture naming task. There was also a lexical insertion of a verb, although it was not an item on the picture naming task. The following example (42)

illustrates an insertion of a correctly identified English noun and (43) presents a lexical insertion of a verb not included on the picture naming task.

(42) P036 Heritage: ...*string* um...

“...string um...”

(43) P005 Heritage: ...*blows* en su...

“...blows in his...”

The observations made with regard to lexical insertion suggest that for those participants that do code-switch, regardless of having prior knowledge of the vocabulary, the decision to do so is based more on a greater familiarity with certain items in English as opposed to Spanish. This is certainly the case for the Advanced and Heritage participants that inserted lexical items that were correctly identified on the picture naming task. On the other hand, the Intermediate participants that produced lexical insertions that were incorporated on the picture naming task did so due to not being able to access the lexical item as evidenced by the errors on the picture naming task. Most of the items that were not correctly identified on the picture naming task pertained to video B.

### **5.10 Strategies Employed by Non Code-Switchers**

Each transcript of the non code-switchers in each group was read through thoroughly by the bilingual interviewer/principal investigator in order to examine other strategies used by L2 learners when facing difficulties in lexical access and retrieval of Spanish items in speech production.<sup>4</sup> Recall that the term non code-switchers refers to the participants that did not produce any English lexical insertions during the retelling of both narratives. The strategies include circumlocution, substitution and description. The

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<sup>4</sup> Consult Silva-Corvalán (1994) for strategies used by bilinguals in language-contact situations.



main strategy employed by many of the L2 learners was circumlocution. As previously explained, the participants in the current study are an exclusive group of bilinguals that are considered to have reached a certain level of vocabulary knowledge in contrast to the participants in the study carried out by Montoya (2011). Therefore, these non code-switchers can be considered to have acquired sufficient knowledge of the vocabulary that allows them to be successful in remaining in one language throughout both story retelling tasks. Thus, they have enough vocabulary to rely on circumlocution in order to not insert any English lexical items in their oral narratives. Example (44) demonstrates an instance of difficulty in lexical access for the target item *la capa* (cape) during the narration for video A and (45) exemplifies circumlocution in order to avoid lexical insertion for the target item *el tiburón* (shark) for video B. It is worth noting that this same participant correctly identified the word *el tiburón* (shark) on the picture naming task for video B.

(44) P058 Intermediate: ...cosa que no recuerdo la palabra y...para resolver esa problema él cortó...la...digo camisa...

“...thing that I don’t remember the word and...to resolve that problem he cut...the...say shirt...”

(45) P058 Intermediate: ...había un pez muy grande con dientes grandes...

“...there was a very big fish with big teeth....”

The Advanced group also employed circumlocution as a strategy in order to avoid lexical insertion of an English item. Although they may tend to pause at times as they try to access a specific lexical item in their bilingual lexicon, the majority of the time they decide on substitution of the target item for a similar word. The following example (46) illustrates substitution for the target item *la capa* (cape) for video A and (47) presents

circumlocution in order to avoid stating the target item *el pescador* (fisherman) for video B. This participant also correctly identified the word *el pescador* (fisherman) on the picture naming task.

(46) P015 Advanced: ...*um* una material *um*...

“...um a material um...”

(47) P015 Advanced: ...por el fin *um* un hombre que trabaja en un barco...

“...by the end *um* a man who works on a boat...”

Another participant in the Advanced group simply used the strategy of description for the target item, which prevents the participant from avoiding the lexical insertion of the English item or avoidance of the target item completely. For example, instead of switching over to English for the insertion of the target item *la capa* (cape), one participant simply described the target item for video A as demonstrated in example (48) and then goes on to describe the target item *el tiburón* (shark) for video B as exemplified in excerpt (49). However, this participant did not correctly identify *el tiburón* (shark) on the picture naming task for video B.

(48) P047 Advanced: ...*um* la la cosa que tiene sobre su cuerpo y...

“...um the the thing that (he) has over his body and...”

(49) P047 Advanced: ...un animal se ve o...

“...an animal sees or...”

These observations provide further insight into the code-switching and non code-switching practices of a select group of bilinguals. At the same time, the results can be interpreted in favor of certain models of bilingual language production (De Bot, 1992; Green, 1986, 1998; Levelt, 1989; Myers-Scotton and Jake, 1995) as discussed in the

second chapter, such as the Inhibitory Control model (Green, 1998), in addition to addressing the notion of bilingual lexical access (Poulishse and Bongaerts, 1994). Specifically, the results of the present study shed light on how the inhibitory control process in conjunction with lexical insertion is executed in a select group of bilinguals by revealing that L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words, regardless of having prior knowledge of the vocabulary.

In sum, this chapter has presented the results with regard to lexical insertion in both story retelling tasks as well as the vocabulary test. The chapter has also presented the lexical insertion frequency of nouns, verbs and discourse markers. Furthermore, the notion of lexical access with regard to the picture naming task has also been investigated in addition to lexical retrieval and timing costs. The chapter continued with an analysis of the participants with regard to whether they code-switched English lexical items or did not have any instances of lexical insertion. In order to understand the code-switching tendencies of those that inserted English lexical items, the chapter included a section that addressed several responses to the reflective survey found in the language background questionnaire. This section was then followed by a look at lexical insertion with regard to the picture naming task for those participants that did in fact code-switch. The chapter concluded with an explanation of the different strategies (circumlocution, substitution and description) employed by those that refrained from lexical insertion. The next chapter discusses the results in greater depth in relation to the concepts of lexical access and retrieval for this select group of bilinguals.

## **Chapter 6**

### **Discussion**

#### **6.1 Introduction**

The goal of the study was to investigate the lexical access and retrieval abilities of a select group of L2 learners of Spanish and Spanish heritage speakers that have acquired a threshold of vocabulary knowledge. Thus, the following were the three research questions posed in this study: What differences emerge among the L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts? Having reached a threshold of vocabulary knowledge, what lexical insertions tend to be most frequent across groups? Do L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words? With these questions in mind, this chapter explains how the results add to our general understanding of the intrasentential code-switching tendencies of this select group of bilingual speakers.

#### **6.2 A Comparison of Lexical Insertion in L2 Learners and Spanish Heritage Speakers**

In order to address the first research question, recall that the data were coded according to the insertion of English lexical items produced during the recording of both story retelling tasks in order to investigate the differences among both groups. Although the overall number of lexical insertions was low across groups, it was hypothesized that lexical insertion in intrasentential code-switching would not reveal differences in the lexical retrieval process of both groups. Once again, it is worth noting that the low number of lexical insertions may be attributed to the participants having passed the strict criteria put forth with the MINT vocabulary test prior to their participation. More

importantly, for the first time frequency of lexical insertions is related to vocabulary threshold as measured on a test. Therefore, based on the analysis of the results, the first hypothesis was confirmed.

Recall that the goal of the second research question was to investigate the lexical insertions that tend to be produced most frequently. With regard to lexical insertions for video A, the lexical insertion of a noun was favored most by all three participant groups. The Spanish heritage group had the greatest number of lexical insertions of a noun, although the Intermediate group and the Advanced group also produced a few noun lexical insertions. Therefore, these results further corroborate previous research that states nouns to be the grammatical category borrowed most (Marian and Kaushanskaya, 2007; Toribio, 2001b). In contrast, the first story retelling task did not produce any lexical insertions of a verb among any of the three groups. The lexical insertion of an adjective was only found in the Heritage group and the Advanced group. Finally, the Advanced group was the only group to produce a lexical insertion of a preposition. Overall, most of the English lexical items that were inserted in video A were nouns, with the majority produced by the Spanish heritage group. With regard to the token/type ratio for the insertion of nouns, the Intermediate group evidenced the most repetitions of this type of lexical insertion in intrasentential code-switching contexts. Recall that the Advanced group and the Heritage group had lower ratios, which can be attributed to their richer vocabulary.

The insertion of discourse markers, conjunctions, lexical phrases and other types of lexical insertions in video A were also examined. With regard to the insertion of discourse markers, the Spanish heritage group produced the most, followed by the

Advanced group and then the Intermediate group. Although all three groups did in fact produce discourse markers, it was expected that the L2 learners would insert the most. In other words, given that the L2 learners are not as advanced as the Heritage group, they may have a tendency to hesitate or experience some difficulty in accessing certain lexical items, which may cause them inadvertently to insert discourse markers. The few insertions of conjunctions produced were evidenced by the Intermediate group and the Advanced group. Again, the Spanish heritage group may not have had any instances of this type of lexical insertion, since they may be more familiar with and have more experience in using this category of lexical items, as opposed to the L2 learners. As expected, the insertion of a lexical phrase was only produced by the Intermediate group. Thus, this observation may be explained by the fact that the Advanced group and the Heritage group may have a more extensive repertoire of vocabulary that allows them to only insert single lexical items instead of relying on the insertion of lexical phrases. However, given the fact that all three participant groups proved to have the availability of immediate access to vocabulary, this interpretation needs to be taken with caution. Recall that the insertion of full sentences was also accounted for, given that the Intermediate group and the Heritage group produced this type of code-switching. With respect to full sentences inserted by the Intermediate group and the Heritage group, this type of code-switching may be a result of accessing a lexical item in English and simply remaining in that language as explained by the notion of “spreading activation” put forth by Poulisse and Bongaerts (1994) and also addressed by Dell (1986) as a theory in sentence production. That is, the unintentional switching of languages occurs based on lexical

items being stored together and selected as a means of spreading activation that takes place (Poulisse and Bongaerts, 1994).

The results of the lexical insertions produced for video B reveal that the insertion of nouns tends to be most favored by all three participant groups. Although there was a low number of lexical insertions produced, given that the participants had reached a certain level of vocabulary knowledge, they were higher than in video A. Once again, the Spanish heritage group had the greatest number of lexical insertions of a noun, followed by the Intermediate group and then the Advanced group. While there were no lexical insertions of verbs produced during the retelling of video A, the Intermediate group and the Spanish heritage group did evidence this type of lexical insertion. Although there were lexical insertions of nouns and verbs produced for video B, this was not the case for lexical insertion of adjectives and prepositions. Again, the Intermediate group had the highest token/type ratio for the insertion of nouns. That is, the lexical insertion of nouns tended to be repeated, whereas the Advanced group and Heritage group displayed a greater variability of nouns.

Additional types of lexical insertions investigated for video B included lexical insertion of discourse markers, conjunctions, lexical phrases and other types of insertions. With regard to the lexical insertion of discourse markers, the Intermediate group produced the most, followed by the Spanish heritage group and then the Advanced group. As previously mentioned for video A, it was expected that the Intermediate group would insert more discourse markers in comparison to the other two groups. That is, the low frequency vocabulary may have triggered them to resort to discourse markers as a coping strategy as they continued to retell the story. However, further research on the use of

discourse markers in conjunction with low frequency vocabulary is needed with this select group of bilinguals. The lexical insertion of conjunctions was evidenced by all three groups, with the Intermediate group and the Advanced group producing the same amount. Although the Spanish heritage group did not insert any English conjunctions for video A, they did however produce some for the second video. Similar findings for both videos were revealed with regard to the insertion of lexical phrases. Once again, this type of insertion was only present in the Intermediate group, which may be the result of not being able to express their thoughts completely. Another finding of interest was the lexical insertion of a full sentence. The Intermediate group had the most instances of this type of lexical insertion, followed by the Spanish heritage group.

In sum, nouns and discourse markers were favored most by all three participant groups. Recall that based on the second research question, it was hypothesized that having attained a threshold of vocabulary knowledge a similar distribution of lexical insertions would exist across categories (noun, verb, adjective, preposition). Given that this type of distribution was not found, the second hypothesis was not confirmed. From the data it seems to be the case, as noted previously in Chapter 5, that nouns tend to be inserted more than any other lexical category since there is less disturbance of syntactic structure in comparison to the insertion of verbs (Marian and Kaushanskaya, 2007). Here again, the data is consistent with the findings of Montoya (2011) in that the participants could not code-switch at certain junctures, which confirms the approaches put forth by Belazi et al. (1994) and MacSwan (1999).



### **6.3 A Comparison of Lexical Access in L2 Learners and Spanish Heritage Speakers**

In order to investigate the lexical access abilities in L2 learners and Spanish heritage speakers, a picture naming task was employed following the retelling of each story. Of specific interest was whether there would be some difficulty encountered in accessing or recognizing low frequency words as opposed to high frequency words. Recall that the first picture naming task consisted of high frequency vocabulary that was attributed to the first video clip, while the second picture naming task consisted of low frequency vocabulary that corresponded to the second video clip. Therefore, the third research question of the present study addressed whether L2 learners and Spanish heritage speakers who have reached a threshold of vocabulary knowledge tend to insert more English lexical items when trying to access low frequency words. It was hypothesized that despite having reached a threshold of vocabulary knowledge, L2 learners and Spanish heritage speakers would tend to insert more English lexical items when trying to access low frequency words. Although based on a limited number of lexical insertions, the third hypothesis was partially confirmed.

The bilingual lexical access abilities of both the L2 learners and the Spanish heritage speakers have also been explored and interpreted from either a language-specific or a language-nonspecific point of view as contrasted by Costa (2005). The findings of the current study seem to lend support in favor of the language-nonspecific type of processing for both the L2 learners and the Spanish heritage group. That is, both groups did in fact tend to insert more English lexical items when trying to access low frequency words and the process by which the lexical items were accessed was based on levels of activation (Costa, 2005). For example, a possible interpretation in support of this view

could be that the L2 learners produced lexical insertions due to having difficulty in accessing the lexical item that was considered to be a low frequency item. According to the language non-specific selection hypothesis, lexical selection occurs based on the highest level of activation, regardless of the language (Costa, 2005). That is, access to the target lexical item as evidenced by the L2 learners can be explained as language-nonspecific, given that the lexical insertion produced in English was due to a higher level of activation. Once again, it is worth noting that the L2 learners in the current study were considered to have reached a threshold of vocabulary knowledge and therefore, were not considered to be at a disadvantage in terms of vocabulary size (Bialystok et al., 2008b).

With regard to the Spanish heritage group, the lexical insertions produced when trying to access low frequency items could also be interpreted in favor of the language-nonspecific type of processing as reviewed by Costa (2005). Whereas the L2 learners may have inserted English lexical items due to not being able to access the target item, this was not the case for the Spanish heritage speakers. In other words, their ability to access a low frequency word was not dependent on the presence of the lexical item in their bilingual lexicon. Recall that the successful completion of both picture naming tasks by the Spanish heritage group indicated that the participant knew the relevant Spanish lexical items and thus, suggests an alternative reason for inserting these items. In this case, the activation of the English lexical item could not be inhibited and therefore, the lexical item was inserted as evidenced by a switch in languages.

How readily accessible the lexical item is, could also be supported in favor of the explanation put forth by Heredia and Altarriba (2001). They suggest that after a certain level is reached in a second language by the bilingual, based on fluency and frequency of

use, the second language is considered to shift position with the first language. That is, the bilingual's second language is considered to be accessed with greater ease than their first language (Heredia and Altarriba, 2001). While this interpretation may explain the lexical insertion of English items produced by the Spanish heritage speakers in the current study, it falls short in considering the vocabulary threshold of the bilingual, which is of critical importance. Recall that the lexical insertions produced in the study by Montoya (2011) may in fact have been a result of not having reached a threshold of vocabulary knowledge and therefore, having to switch languages. In the current study, the vocabulary threshold was accounted for and therefore, suggests an alternative motive for lexical insertions to arise. Another shortcoming of this interpretation is that it generalizes accessibility to the L2 without specifying which lexical categories (noun, verb, adjective, preposition) are involved. Finally, this interpretation would need to be adapted accordingly to account for lexical insertion in code-switching contexts for the select group of L2 learners and Spanish heritage speakers as investigated in this study.

### **6.3.1 Similarities in Lexical Access**

In the case of picture naming task A, all three groups scored above 90%. As stated in Chapter 5, the Spanish heritage group scored 100%, followed by the Advanced group with an average of 97.18%, and the Intermediate group scored an average of 92.81% on the first picture naming task. Recall that this picture naming task tested the participant's knowledge of the Spanish vocabulary after having narrated the first story. Given that picture naming task A consisted of high frequency words that included basic nouns and verbs, the scores obtained by all three participant groups are reflective of the similar tendencies in lexical access of high frequency items. That is, all three groups were able to

successfully identify these lexical items and thus reveal similar tendencies in the process of lexical access.

The results for picture naming task B are noteworthy in that all three groups had a lower overall average percentage. Recall that the Spanish heritage group had an average of 98.82%, followed by the Advanced group with 95.27%, and the Intermediate group with an average of 81.56%. Therefore, similarities in the access of low frequency vocabulary seem to reveal difficulties across all three groups despite having reached a threshold of vocabulary knowledge. The results can be interpreted with a specific focus on the acquisition of different lexical items with regard to how frequently these words tend to be activated in the mind of a bilingual as has been documented in the fields of bilingualism and psycholinguistics (Gollan and Kroll, 2001). In other words, these results could provide support in favor of the notion that both languages tend to be activated, regardless if the task requires processing in one specific language (Gollan and Kroll, 2001). Therefore, although the scores for all groups were relatively high for both picture naming tasks, the lower scores on the second picture naming task could be due to these vocabulary items being activated less frequently. In addition, both languages could be considered to be activated, given that there were more English lexical insertions produced during the second narrative as evidenced by the lexical items that were code-switched. The code-switching of these lexical items would entail that both languages were activated and thus, both lexicons may have continued to be activated during the completion of the picture naming task.

#### **6.4 Differences in Lexical Retrieval and Timing Costs**

As predicted, lexical retrieval was more costly for L2 learners in comparison to Spanish heritage speakers in terms of timing, due to low frequency words. Recall that a picture naming task was employed following the retelling of each story. Therefore, the main objective was the assessment of lexical retrieval and timing costs involved in the completion of each picture naming task. The first picture naming task corresponded to the first video and consisted of high frequency vocabulary comprised of nouns and verbs. All three groups took at least two and a half minutes to complete the picture naming task. The Spanish heritage group took the least amount of time, followed by the Advanced group, and then the Intermediate group.

On the other hand, the second picture naming task was given to all the participants in order to have them reveal their lexical retrieval abilities with regard to low frequency vocabulary. Recall that more time was required by all three groups in the completion of the second picture naming task. In terms of timing, the results reveal that regardless of having prior knowledge of the vocabulary, lexical retrieval was more costly for L2 learners in comparison to the Spanish heritage speakers. The timing cost evidenced in the second picture naming task can be interpreted in terms of difficulty in retrieval of low frequency words.

These results, although based on two separate picture naming tasks that did not involve language switching in speech production, could lend partial support in favor of the inhibition or suppression of the L1 as proposed by Meuter and Allport (1999). Given that the majority of the participants in the Intermediate group and the Advanced group were considered to speak English as their L1, they were therefore expected to inhibit this

language during the completion of both picture naming tasks. On the contrary, Spanish as the L1 of the Spanish heritage group would not be suppressed and could perhaps be an advantage to the extent that the picture naming task is presented in only their L1.

Although Meuter and Allport (1999) base their findings on the costs involved in bilingual speech production, the picture naming task of the current study focused on the costs involved in the retrieval of high and low frequency items in Spanish. Although not necessarily intended for the purpose of comprehension per se, the results of the picture naming task could be interpreted in terms of language comprehension as opposed to language production. That is, recall that the participants were asked to narrate a story in order to investigate lexical insertion as it happens in a narrative mode. In this case, the retelling of each story was considered to be a production task, whereas the picture naming task could be thought of as a comprehension task.

However, the results of the present study point to difficulty in lexical retrieval based solely on the principle of how frequently activated the vocabulary items are in the bilingual's lexicon. The notion that the more dominant language, L1, requires more inhibition as opposed to the weaker L2 as reported by Meuter and Allport (1999) may perhaps serve as an explanation with regard to the participants that did in fact insert English lexical items during the retelling of both stories. Recall that the participants that inserted English lexical items were categorized as code-switchers and the participants that did not insert any lexical items in English were classified as non code-switchers. Although the Spanish heritage group claimed Spanish to be their first language, it may not be their most dominant language and therefore, may not require more inhibition. However, further research is needed to distinguish between Spanish heritage speakers

that code-switch and are dominant in their L1, as opposed to those that code-switch and are more dominant in their L2, in this case English.

Another interpretation that could explain the differences in lexical retrieval in L2 learners and Spanish heritage speakers is the Weaker Links hypothesis (Gollan, Montoya, Fennema-Notestine and Morris, 2005). This hypothesis claims that bilinguals use both of their languages less frequently, in terms of word production, in comparison to monolinguals and therefore, the overall use of each language is less compared to monolinguals (Gollan et al., 2005). In other words, the reduced frequency of each language produces difficulty in lexical retrieval (Gollan et al., 2005). Although monolinguals did not participate in the current study, the L2 learners may serve as a comparison in relation to the Spanish heritage group. In terms of experiencing difficulties in lexical retrieval, support for this claim can be evidenced by the lexical insertions produced by the Spanish heritage speakers. Recall that the current study refers to a heritage speaker as a student who is raised in a Spanish-speaking home and who is considered bilingual given he or she understands and speaks Spanish even if he or she has not been schooled in Spanish and therefore has not received formal instruction in Spanish. Thus, these heritage speakers are more likely to use both languages less frequently and could in fact have experienced lexical retrieval difficulties, which in turn led to the insertion of English lexical items during the retelling of both stories. While the L2 learners can be considered bilingual in comparison to monolinguals in their language abilities, the difficulties in lexical retrieval for them would not be attributed to speaking each language less often in terms of frequency (Gollan et al., 2005). That is, although they may use Spanish in the L2 classroom, both languages may not be accessed to the

same extent as would be expected with the Spanish heritage speakers who may tend to use both languages on a daily basis.

### **6.5 Differences in Language Switching**

The present study provided evidence of timing costs involved in the lexical retrieval of low frequency vocabulary. Although the results of the current study cannot necessarily be compared directly to other lexical retrieval studies, due to the specific methods and sequence of tasks involved, they can provide further insight into the differences in language switching in a select group of bilinguals. Recall that the participants in this study reached a threshold of vocabulary knowledge and therefore, the switching in languages as evidenced by the code-switching participants is worthy of further interpretation. With regard to switching performance, the results of the current study can be compared to the study put forth by Costa and Santesteban (2004). In their study they investigated the language switching abilities of highly proficient bilinguals and L2 learners and put forth the notion that different lexical selection mechanisms exist between both groups (Costa and Santesteban, 2004). That is, L2 learners rely on inhibitory control and highly proficient bilinguals depend on a language-specific selection mechanism (Costa and Santesteban, 2004). In this case, the language switching produced by the Spanish heritage group in the present study was not due to a lack of knowledge of the lexical item and therefore, these results lend support in favor of this specific selection mechanism. In other words, the Spanish heritage group possesses the ability to switch languages with the intent to insert or select certain lexical items in English without a need for inhibition. The cost involved in the task of switching languages as evidenced by the L2 learners, specifically the Intermediate group in the



current study, may in fact be attributed to less experience with this type of task, as proposed by Costa and Santesteban (2004).

## **6.6 Bilingual Speech Production**

The code-switching tendencies as evidenced by the lexical insertions produced by the L2 learners and the Spanish heritage speakers can also be explained in terms of having to overcome the influence of one language on the other. Previous studies have reported that bilinguals tend to experience interference of one language when naming pictures in their other language (Costa, Miozzo, and Caramazza, 1999; Hermans, Bongaerts, De Bot and Schreuder, 1998). Although the current study did not employ the same methodology in terms of having the participants name the pictures per se, both story retelling tasks as well as the picture naming task can be considered to have produced an obstacle to a certain extent. Recall that although the participants were not explicitly instructed to retell both stories in Spanish, they were given all the instructions in Spanish. Therefore, the participants presumed they were to retell both stories in Spanish with the possibility of code-switching to occur. For example, the notion of interference serves as a possible explanation with regard to the story retelling task. That is, the L2 learners may have experienced interference or cross-linguistic influence in having to retell the story in Spanish, considered to be their L2, while perhaps wanting to express themselves in their more dominant L1. The lexical insertions could in fact lend support in favor of not being able to suppress their L1 as posited by Hermans et al. (1998). Cross-linguistic influence may have also been experienced by those Spanish heritage speakers that consider English to be their more dominant language. As previously mentioned, further studies are needed to distinguish between Spanish heritage speakers with Spanish as their dominant

language and those that claim English to be their dominant language.

In terms of the picture naming task, the interference as documented by Hermans et al. (1998) may have been experienced by both the L2 learners and the Spanish heritage group. The L2 learners may not have been able to successfully match the picture with its corresponding Spanish word due to low frequency vocabulary, as presented on the second picture naming task, as well as having to perhaps overcome some interference of the English name for the picture. With regard to the Spanish heritage group, their interference may have been attributed to their L2, given that they demonstrated cases of lexical insertions that were in fact identified correctly on the picture naming task. Thus, the activation of the L2 that was employed for the insertion of the English lexical item may not have been suppressed during the picture naming task. While the story retelling task and the picture naming task may have triggered some sort of interference, the levels of cross-linguistic influence may have depended on the type of task. That is, the story retelling task focused on production and the picture naming task could have been considered a comprehension task as was previously mentioned. The distinction between production and comprehension is worth noting, and may have had some influence on the results, given that research has found that the activation is different in recognition and production (Kroll, Dussias, Bogulski and Valdés Kroff, 2012). Although this type of analysis falls outside the scope of the present study, it is interesting to consider in the overall understanding of bilingual speech production in cases of lexical insertion in code-switching contexts. Future investigations are needed to clarify how each specific task may affect the language switching in bilinguals, with a specific focus on Spanish heritage speakers considered to have reached a threshold of vocabulary knowledge.

## 6.7 Vocabulary Threshold

While previous studies have explained bilingual language production in terms of the activation level of both languages (Dell, 1986; Levelt, 2001; Roelofs, 1992; among others) the role of vocabulary threshold has yet to be considered with regard to lexical insertion tendencies of code-switching bilinguals. The term “lexical robustness” employed by Costa, Santesteban and Ivanova (2006) and Schwieter and Sunderman (2008) has been found to impact the language-specific selection mechanism in bilingual speech production. According to these researchers, “lexical robustness involves the familiarity with and frequency of access that leads to greater automaticity of retrieval of lexical items” (Schwieter and Sunderman, 2008, p. 216). That is, they claim that lexical robustness of L2 items dictates whether inhibitory control or a language-specific selection mechanism is called upon by the bilingual during language switching (Costa et al., 2006; Schwieter and Sunderman, 2008). Although vocabulary threshold as seen in the current study is not representative of lexical robustness (Schwieter and Sunderman, 2008) per se, the findings of the present study show support for the notion of having to attain a threshold. More importantly, the results of the present study point to vocabulary threshold as a critical factor in understanding the motive behind L2 learners and Spanish heritage speakers choosing to insert lexical items in code-switching contexts. The tendency to insert more lexical insertions as seen in the results of Montoya (2011) may be indicative of not having the availability of immediate access to the vocabulary as accounted for in the present study.

An alternative explanation that has been put forth with the intent to test the Weaker Links hypothesis in relation to lexical accessibility is the Activation hypothesis

(Gollan, Montoya, Cera and Sandoval, 2008). This account states that a ceiling effect must be met based on the activation levels of lexical items considered to be either high frequency words or low frequency words (Gollan et al., 2008). Therefore, the more the lexical item is used the greater the accessibility to that item and thus, Gollan et al. (2008) predicted that bilinguals should have more difficulty accessing low frequency words. This hypothesis may in fact be considered a possible explanation for the results of the current study in attributing more English lexical insertions due to low frequency vocabulary as evidenced by all groups during the second spoken narrative. However, due to the variability in the Spanish heritage speakers, it is difficult to assess which words are used on a frequent basis and would therefore be considered high frequency words as opposed to low frequency words.

## **6.8 Summary**

This chapter has provided a closer look at the results according to the research questions presented in this study. The findings indicate that lexical insertion in intrasentential code-switching does not reveal differences in the lexical retrieval process of L2 learners and Spanish heritage speakers. Although both groups attained a threshold of vocabulary knowledge, the results did not reveal a similar distribution of lexical insertions across categories (noun, verb, adjective, preposition). The lexical insertion of nouns and discourse markers were found to be favored most by all three participant groups. With regard to lexical access, the findings lend partial support in stating that L2 learners and Spanish heritage speakers tend to insert more English lexical items when trying to access low frequency words.

The results of the present study are significant and shed light on the differences in lexical insertion in intrasentential code-switching contexts as evidenced by L2 learners and Spanish heritage speakers that have attained a threshold of vocabulary knowledge. That is, the lexical insertions of both L2 learners and Spanish heritage speakers in this study provide further evidence as to why bilinguals tend to switch languages during bilingual speech production. In order to eliminate the common assumption that L2 learners and especially Spanish heritage speakers code-switch to compensate for an unknown lexical item, a vocabulary test was administered to each participant. Recall that each participant was expected to name 30 pictures in both English and Spanish in order to participate in the study using the Multilingual Naming Test (MINT) (Gollan et al., 2012). It is worth noting that 10 out of the 30 pictures that the participant was asked to name were lexical items that were represented in one of the two video clips.<sup>1</sup> Therefore, the lexical insertions produced would not be indicative of a limited vocabulary size (Bialystok et al., 2008b) or difficulties in lexical access (Costa and Santesteban, 2004; Dell, 1986; among others) as mentioned in the second chapter. Although previous studies have explained bilingual language production based on either inhibitory control (Green, 1986, 1998) or a language-specific selection mechanism (Costa and Santesteban, 2004), the main issue that remains unanswered is an explanation for the occurrence of lexical insertion in code-switching contexts in bilinguals that have availability of immediate access to vocabulary. Therefore, the picture naming task employed in the present study provided confirmation that the lexical insertions occurred regardless of having prior knowledge of the vocabulary. That is, in some cases L2 learners inserted lexical items

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<sup>1</sup> The first video clip included seven items that were also pictures on the vocabulary test. The second video clip included three items that were present on the vocabulary test.

due to difficulty in the lexical retrieval process or because they did not possess the lexical item in their lexicon. On the other hand, the Spanish heritage speakers earned high scores on both picture naming tasks and thus provide evidence as to having lexical knowledge of the referent, regardless of the language switch.

The following chapter highlights the main findings and relevance of the dissertation study. Recall that the goal was to investigate lexical access and retrieval in a select group of L2 learners and Spanish heritage speakers. In doing so, the results provide a significant contribution for research in code-switching as well as other linguistic fields. Overall, the concluding chapter reviews the findings of the current study and highlights some thoughts for future research.

## **Chapter 7**

### **Conclusion**

#### **7.1 Introduction**

The goal of the present study was to investigate lexical insertion and retrieval in L2 learners and Spanish heritage speakers that have attained a threshold of vocabulary knowledge. In doing so, the dissertation concludes by highlighting the main findings in order to understand the competition that takes place in language selection in the bilingual mind of this select group of bilinguals. With regard to the assessment of lexical retrieval and timing costs involved in the completion of a picture naming task, the study found that all three groups required more time in the completion of the second picture naming task. Specifically, the retrieval costs in terms of timing were greater for the L2 learners in comparison to the Spanish heritage speakers due to the low frequency vocabulary.

Based on these findings, the chapter resumes by revisiting the research questions and addresses the relevance of these results in understanding the lexical insertions produced by a specific group of bilinguals. The implications for bilingual speech production, with a focus on heritage language acquisition and pedagogy are also highlighted. At this point, the chapter continues with the limitations found in the study. These limitations include accounting for the variability in the amount of tokens produced for each narrative, as well as the examination of external factors that may have influenced lexical insertion across groups. In addition to presenting the limitations of the current study, the chapter concludes with how future research can contribute to the investigation and understanding of the code-switching practices of Spanish-English heritage speakers.

#### **7.2 Research Questions Addressed**

In order to present the main findings and relevance of the results, it is essential to

revisit the research questions put forth in the current study. As listed in Chapter 4, the first research question was put forth with the intent to investigate what differences emerge among the L2 learners and Spanish heritage speakers with respect to lexical insertion of English items in code-switching contexts. As noted in the previous chapter, the hypothesis for this research question was confirmed, given that the lexical insertion in intrasentential code-switching did not reveal differences in the lexical retrieval process of the L2 learners and Spanish heritage speakers. That is, the low number of lexical insertions confirms that regardless of having three distinct participant groups that attained a threshold of vocabulary, all participants demonstrated similar retrieval tendencies. Again, it is worth noting that the incorporation of the MINT vocabulary test (Gollan et al., 2012) along with the DELE Spanish language test allowed for the participant to be considered to have a substantial language capacity and knowledge of the language. With that said, the lexical insertions produced by these bilinguals can be considered a distinct type of code-switching, given that their ability to do so is not attributable to a lack of vocabulary. This finding is of critical importance and puts to rest the common assumption that bilinguals, especially Spanish heritage speakers tend to insert lexical items or code-switch due to their lack of vocabulary. Instead, this finding reveals that lack of vocabulary is not the main factor driving lexical insertions among the Spanish heritage speakers and that other factors such as frequency of activation may be at play.

While models for speech production (De Bot and Schreuder, 1993; Green, 1986; Kroll and Stewart, 1994; Levelt, 1989; among others) have explained code-switching based on the process of activation and suppression and the psycholinguistics literature concludes that both languages are in fact activated (Kroll, Dussias, Bogulski and Valdés



Kroff, 2012), the current study focuses on vocabulary threshold as a key feature. In other words, the role of vocabulary knowledge in this type of code-switching shows us how lexical insertion works in this select group of L2 learners and Spanish heritage speakers. With respect to engaging in code-switching in order to compensate for an unknown lexical item, the results support Zentella (1981, 1997), who proposed that switching in heritage speakers is not due to “crutching.” While this claim may be representative of the L2 learners as a way to overcome the gap of vocabulary not yet acquired, it is not true for heritage speakers. Of particular importance, the current study has showed that Spanish heritage speakers tend to insert lexical items even when they have the vocabulary available by providing evidence of vocabulary recognition with the completion of the picture naming tasks.

With regard to the second research question posed in the current study, a similar distribution of lexical insertions did not exist across categories (noun, verb, adjective, preposition) despite having reached a threshold of vocabulary knowledge. Therefore, the second hypothesis was not confirmed. As stated in Chapter 4, the second research question was put forth with the intent to investigate what lexical insertions tend to be most frequent across participant groups that have reached a threshold of vocabulary knowledge. The findings indicate that nouns and discourse markers tend to be favored most by all three participant groups and thus, provide further support for the claim that nouns tend to be inserted more than any other lexical category (Marian and Kaushanskaya, 2007). While recognizing that lexical insertion does take place in the speech production of L2 learners and Spanish heritage speakers, the type of switching is not considered to be arbitrary. Therefore, we can affirm that despite having reached a

certain level of vocabulary knowledge the type of lexical insertions are limited to certain categories. Furthermore, let us remember that a similar result was also reported in the study carried out by Montoya (2011) as discussed in Chapter 3.

Given that the participants in the current study had achieved a threshold of vocabulary knowledge, the third research question specifically aimed to investigate whether these L2 learners and Spanish heritage speakers would tend to insert more English lexical items when trying to access low frequency words. Recall from the previous chapter that all three groups did in fact insert more English lexical items during the retelling of the second story in comparison to the first story. Also, given that the second video clip was shown to the participants in order to have them access low frequency vocabulary, the results are telling with regard to vocabulary threshold and levels of activation. While more lexical insertions were evidenced during the second spoken narrative in comparison to the first narrative, the results shed light on lexical retrieval and timing costs. Recall that all three groups did in fact take a bit longer in the completion of the second picture naming task as shown in Figure 5.12. In doing so, the lexical retrieval costs of the L2 learners were greater in comparison to the Spanish heritage speakers in terms of timing, due to low frequency vocabulary. The results suggest that regardless of having reached a threshold of vocabulary knowledge, the timing costs evidenced in the activation of low frequency vocabulary may lend support in favor of the language-nonspecific selection hypothesis (Costa, 2005) and also for the Weaker Links hypothesis (Gollan, Montoya, Fennema-Notestine and Morris, 2005) as discussed in Chapter 6. While recognizing that the results may be explained by these two accounts, the results also have implications for understanding code-switching practices

with regard to heritage language acquisition and pedagogy.

Let's assume that the language-nonspecific type of processing (Costa, 2005) is the reason for the English lexical items inserted when trying to access low frequency vocabulary. With regard to lexical access, this hypothesis would indicate that the L2 learners produced lexical insertions due to having difficulty in accessing the low frequency items and the Spanish heritage speakers evidenced lexical insertions due to the selection based on the highest level of activation (Costa, 2005). Hence, it is not sufficient to conclude that code-switching implies a deficit in the bilingual's ability to remain in the target language. Instead, these code-switching tendencies suggest quite the opposite. In cases of language switching, the bilingual has to filter through two lexicons and in the end selects the item that receives the greatest activation as put forth by Costa (2005). This hypothesis seems plausible, given that the picture naming task provided evidence that the bilingual did in fact have knowledge of the lexical item, yet the participant inserted English lexical items during the retelling of the narratives. Therefore, the insertions occurred based on having the English items receive higher activation as opposed to the items in Spanish (Costa, 2005).

With respect to lexical retrieval and timing costs, the results can be interpreted in favor of Gollan et al.'s (2005) Weaker Links hypothesis. This hypothesis may perhaps explain the differences as well as difficulties in lexical retrieval, given that all three groups required more time in the completion of the second picture naming task. As mentioned in the previous chapter, Gollan et al. (2005) hypothesized that bilinguals employ both of their languages less frequently in terms of word production in comparison to monolinguals and thus, their overall use of each language is less. Of course this

hypothesis may not necessarily reflect the lexical insertion tendencies of the L2 learners, although it can be considered for the Spanish heritage group. If it is assumed that the Spanish heritage group is using both Spanish and English on a daily basis, it would seem logical that their lexical retrieval abilities are going to suffer a bit given the extra time that may be required for them to select the target item in the intended language. Furthermore, the lexical insertions may be explained as the result of having to activate low frequency vocabulary, which according to Gollan et al. (2005) differentiates bilinguals from monolinguals. In other words, according to this hypothesis the Spanish heritage group is considered to have a lexicon that includes more low frequency items (Gollan et al., 2005). Regardless of which proposal one is to accept in order to interpret the results, the third hypothesis was confirmed.

These results also provide insight into how critical it is to thoroughly understand the reasons for why bilinguals may choose to code-switch. Furthermore, the results of the present study are noteworthy for pedagogical purposes.<sup>1</sup> That is, educators need to be knowledgeable and aware of the struggles and differences that L2 learners and Spanish heritage speakers go through in acquiring a second language or heritage language, respectively. Having showed that code-switching, as evidenced by English lexical insertions in oral narratives, takes place regardless of having attained sufficient vocabulary knowledge and successfully having passed both picture naming tasks, we must consider altering our perceptions of what it means to code-switch. Perhaps in a follow-up study, the participants would complete both picture naming tasks, as carried out in the current study, in addition to the incorporation of a third video clip. This third

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<sup>1</sup> Consult Potowski, Jegerski and Morgan-Short (2009) for discussion on the effects of instruction on language development in Spanish heritage speakers.

video clip would combine vocabulary from both previous videos as well as new vocabulary in order to test Costa's (2005) language-nonspecific selection hypothesis. Since the participants would have previously activated the low frequency vocabulary as seen in the second picture naming task, the results would provide further evidence as to whether or not the insertions would still occur. It would be interesting to note whether prior activation of the low frequency vocabulary as seen on the picture naming task would be sufficient and aid in the lexical retrieval process. If the lexical insertions are still to persist, this would have us question how much activation is necessary for the bilingual to not switch languages and thus challenges the notion of lexical selection occurring based on activation levels as suggested by Costa (2005).

Although it was hypothesized that both groups would tend to insert more English lexical items when trying to access low frequency words, the findings are to be interpreted with caution given the variability in the number of tokens produced per video clip. Of course the results are telling in that they provide authentic evidence of the types of lexical insertions produced during the retelling of two different video clips, yet at the same time there were some methodological challenges involved with the type of experimental tasks employed. Therefore, the following section will address the outcome of incorporating the two story retelling tasks.

### **7.3 Variability in Token Production**

Recall that the incorporation of the two videos was done with the intent to present high frequency vocabulary, based on the first video clip, and low frequency vocabulary, as seen in the second video clip. The results, based on a limited number of lexical insertions, lend partial support in stating that L2 learners and Spanish heritage speakers

will tend to insert more English lexical items when trying to access low frequency words. Although these results lend some support to the third hypothesis, great variability existed in the data collected. That is, each participant provided a different length narrative for each of the two videos. Therefore, the total number of tokens coded, based on the English lexical insertions produced, were not considered to be extracted from a narrative with a specific target word count produced for each individual video. Although this may be considered a limitation to the extent that the coding of the lexical insertions produced were based on narratives of various lengths, the experimental task of having each participant retell both stories allowed for the analysis of lexical insertions as produced in natural spontaneous speech production. It is worth noting that in order to focus on this specific type of intrasentential code-switching involving the insertion of English lexical items in oral narratives, the goal was to have the participant narrate the story as they would normally do so and avoid any type of reading that may alter the speech production of the participant.

Of course the type of methodology incorporated in order to investigate lexical insertion and retrieval needs to be adapted accordingly, with the intent to elicit the most natural form of code-switching possible, if any at all. Although the current study employed a specific type of methodology that took into account the participants' vocabulary threshold with the incorporation of the vocabulary test, it did not account for additional external factors that may have played a role in the amount of lexical insertions produced. Therefore, the following section will address the external factors.

## 7.4 External Factors

Although the participants provided extensive information on their language background, based on the completion of the Language Background Questionnaire, the role of external factors were not specifically addressed.<sup>2</sup> These external factors include age, place of birth, Spanish-speaking countries visited or lived in and length of time involved, and languages exposed to and spoken at specific ages. Perhaps certain correlations may have existed with regard to which external factors influence the production of English lexical items in oral Spanish narratives.

While the current study investigated lexical insertion in adult second language learners and Spanish heritage speakers with a minimum age of 18, perhaps the exploration of how code-switching progresses based on specific age ranges could provide further insight into the development of this linguistic ability. That is, the age at which the bilingual first evidenced this type of language switching on a consistent basis is important and perhaps makes us question whether every bilingual is able to insert or switch languages with such ease. This line of inquiry is similar to that of the Critical Age Hypothesis proposed by Lenneberg (1967) that puts forth the notion of a “critical period” existing for language acquisition. Perhaps the case may be that bilinguals exposed to the switching of languages at an early stage in life are more likely to insert lexical items as opposed to those that have not grown up around this type of bilingual speech.

In addition to accounting for the age at which the bilingual begins to switch languages in oral production, the birth order of siblings may also play a role in the amount of lexical insertions produced. Although the Language Background

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<sup>2</sup> Consult Gass and Selinker (2001, 2008) for nonlinguistic factors that impact second language acquisition.

Questionnaire did not elicit this specific type of information, there could be a correlation between those that have siblings that code-switch and therefore code-switch themselves, whereas only children or those that do not engage in switching languages with their siblings are less likely to evidence lexical insertions in their speech.

Another external factor of interest, with regard to the lexical insertions produced, was the participant's place of birth. As was mentioned in Chapter 5, the participants were categorized as code-switchers and non code-switchers based on whether they inserted any lexical items during the retelling of the stories. While recognizing that there was almost an even distribution of code-switchers and non code-switchers among the three participant groups, the question remains as to whether the participant's place of birth was a critical factor. A case in point would be that the majority of the participants were born in either New Jersey or New York. Given the diverse population and specifically large Hispanic population that are found in these states, the participants may have grown up surrounded by those that tend to switch languages in their daily conversations and therefore, been exposed to this type of speech. Even the L2 learners that did not necessarily grow up in a Spanish-speaking home may perhaps have been influenced by this type of discourse and acquired it gradually as opposed to those that were born and grew up in states with a less diverse population.

Furthermore, the participants' experience abroad and their time spent visiting Spanish-speaking countries along with the length of time involved may have also accounted for the code-switching produced. Given that most of the participants in all three groups spent a minimum of at least a week in a Spanish-speaking country, while some participants visited for as long as six months, each experience abroad may have



played a role in their overall language skills. The time spent abroad may in fact play a larger role than expected, given that the L1 has been shown to be inhibited in L2 learners who were immersed in Spanish (Linck, Kroll and Sunderman, 2009). While the participants' experience abroad in the current study may have improved their language abilities in general, their language of choice may have shifted given the new environmental context and thus, increased their code-switching tendencies. In other words, the L2 learners may have felt more inclined to insert English lexical items as a way to continue a conversation, whereas the Spanish heritage speakers may have switched languages for other reasons. On the other hand, the length of time spent living in a Spanish-speaking country may have decreased the probability of having the participant engage in the switching of languages. Indeed, we would expect their Spanish-speaking abilities to improve and assume they have gained more confidence with the ultimate goal of engaging in complete conversations primarily in one language.

Finally, the languages the participants were exposed to and spoke at a certain age may have also been a key factor in their overall code-switching tendencies.<sup>3</sup> Recall from Chapter 4 that the participants were asked several questions with regard to which languages they have been exposed to, in addition to stating which language they consider their first language and which is their second language. It would be interesting to note what impact these other languages play in the processes of lexical access and retrieval. Although Schwieter and Sunderman (2008) suggest carrying out further research that takes into account L2 lexical robustness with participants that possess an L3 or L4, of critical interest is how these factors would play out with the methodology employed in

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<sup>3</sup> Consult Montrul (2008) for age effects in bilingualism.

the current study. In other words, while Schwieter and Sunderman (2008) investigated the language switching based on a more structured testing environment using a picture-naming task, further research is needed that incorporates more authentic spontaneous speech that allows for the randomness of lexical insertions to occur as if in natural speech. More importantly, what remains unclear is what type of lexical insertion and retrieval would be evident in the code-switching practices of a select group of bilinguals that have attained a threshold of vocabulary knowledge and also possess an L3 or L4 as stated by Schwieter and Sunderman (2008).

### **7.5 Future Research**

While the current study consisted of a select group of Spanish heritage speakers considered to have availability of immediate access to vocabulary, future research needs to compare this select group with a group of Spanish heritage speakers that lack the vocabulary threshold. The comparison of these two distinct groups of Spanish heritage speakers may provide essential information with respect to differences in lexical insertion and retrieval. Such differences would provide the fields of bilingualism, heritage language acquisition and pedagogy, and language contact an “ideal” representation of a code-switching Spanish-English heritage speaker. In addition, understanding how and why Spanish heritage speakers code-switch will benefit teachers and allow for proper instruction and assessment to take place.

Given these findings, the implications for bilingual programs that specifically focus on heritage language acquisition and pedagogy are imperative for the accurate classification of these heritage speakers in order to follow through with proper assessment. In other words, it is extremely challenging to consider the Spanish heritage

speakers a homogeneous group given their different levels in language capacity.

Although the current study has investigated the code-switching tendencies in a select group of heritage speakers with a certain level of vocabulary knowledge, the study did not account for whether the language was acquired at home or at school. This distinction would be valid, given that Kroll, Dussias, Bogulski and Valdés Kroff (2012) note that differences in the bilingual's linguistic environment with a specific focus on language use and exposure to code-switching are quite telling. Therefore, future research may be able to distinguish differences in lexical insertion by certain types of heritage speakers.

Although previous studies have investigated code-switching in young children (Lanza, 1992) as well as their communicative competence (Genesee, Boivin, and Nicoladis, 1996), specific research on code-switching in adult simultaneous and sequential heritage speakers is worthy of further investigation. In other words, in addition to exploring the traits that encompass a code-switching heritage speaker, the heritage speakers in the current study could be classified further as either being a simultaneous or a sequential bilingual. This specific distinction in the Spanish heritage speakers would allow for a thorough understanding in terms of what type of bilingual is more susceptible to lexical insertion or code-switching tendencies.

Finally, another factor that future research needs to take into consideration in cases of replicating or carrying out a similar study would be the participants' language dominance as suggested by Heredia and Altarriba (2001). The investigation of this particular factor would provide a more thorough explanation as to which bilinguals have a greater tendency to insert lexical items as evidenced by code-switching. Especially with regard to having reached a certain vocabulary threshold as in the current study, the notion

of language dominance would provide further insight into the language switching of this select group of bilinguals. Although this factor was not investigated in the present study, it is simply suggested as a possible avenue for further research.

## **7.6 Conclusion**

The overall goal of this dissertation was to investigate lexical insertion as evidenced in the bilingual speech of second language learners and Spanish heritage speakers that were considered to have attained a certain vocabulary threshold. While the research in code-switching continues to expand and has been studied in various linguistic fields, the hope and intentions of this particular study was to investigate a very specific kind of code-switching that has not yet been explored until now with regard to the relation between lexical insertion and vocabulary threshold. Having provided additional research that addresses this particular type of code-switching, perhaps a follow-up goal would be to expand or entertain the notion of creating a bilingual speech production model that focuses on vocabulary threshold as a determining factor in a subtype of intrasentential code-switching that involves English lexical insertions in Spanish oral narratives. Although this design seems a bit complex, perhaps this study will initiate the start of what could be extremely beneficial for future research, but also in general in order to fully appreciate and comprehend the phenomenon that is intrasentential code-switching.

**Appendix A****SPANISH LANGUAGE QUESTIONNAIRE**

Instructions: Please carefully read the questions and answer them as sincerely and honestly as possible. Some questions ask you to rate or circle the most appropriate answer, others ask for short answers. If some questions do not apply to you, just leave them blank.

**Demographic Information**

1. Name: \_\_\_\_\_
2. Age: \_\_\_\_\_
3. Gender: \_\_\_\_\_

**Background Information**

4. Year at Rutgers (please circle: 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> 4<sup>th</sup> 5<sup>th</sup> Graduate Other)
- 5a. Major(s) or field(s): \_\_\_\_\_
- 5b. Minor(s) or subfield(s): \_\_\_\_\_
- 5c. Undecided (Circle. If you have the intention to declare a major or minor please specify)
- \_\_\_\_\_
6. Place of birth, including country if not United States:
- \_\_\_\_\_
7. If you were born outside of the fifty states, at what age did you come to the United States?
- (specify age: \_\_\_\_\_)

### Linguistic Information

Before you respond to this section please keep in mind the following:

*Native language(s)* is / are the language(s) in which you were spoken to and that you spoke from birth until you were 3 years old. You may **not** be a **dominant** speaker of that language but it is / they are your **native language(s)**.

8. To what language(s) were you exposed (languages that were spoken to you on a regular basis) from 0-3 years of age?

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9. What language(s) did you speak from 0-3 years of age?

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10. To what language(s) were you exposed to from 3-12 years of age?

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11. What language(s) did you speak from 3-12 years of age?

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12. What language(s) do you consider your first language(s) (the one(s) that you spoke and in which you were addressed from 0-3 years old)?

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13. Which language(s) do you consider your second language(s) (the one(s) that you spoke and in which you were addressed after 3 years old)?

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## 14. What are the reasons for learning Spanish?

|                                        | Strongly disagree |   | Strongly agree |   |   |
|----------------------------------------|-------------------|---|----------------|---|---|
| Curiosity/challenge/fun/different      | 1                 | 2 | 3              | 4 | 5 |
| General interest in language           | 1                 | 2 | 3              | 4 | 5 |
| Better job, career                     | 1                 | 2 | 3              | 4 | 5 |
| Plan to work overseas                  | 1                 | 2 | 3              | 4 | 5 |
| Status of the language in the world    | 1                 | 2 | 3              | 4 | 5 |
| Family heritage                        | 1                 | 2 | 3              | 4 | 5 |
| Acquaintance with speakers of language | 1                 | 2 | 3              | 4 | 5 |
| Interest in literature                 | 1                 | 2 | 3              | 4 | 5 |
| To further global understanding        | 1                 | 2 | 3              | 4 | 5 |
| Friends' recommendation                | 1                 | 2 | 3              | 4 | 5 |
| For use in studies, research           | 1                 | 2 | 3              | 4 | 5 |
| Advisor's recommendation               | 1                 | 2 | 3              | 4 | 5 |
| Reputation of program/institution      | 1                 | 2 | 3              | 4 | 5 |
| Transfer of credits to college         | 1                 | 2 | 3              | 4 | 5 |
| For an easy "A"                        | 1                 | 2 | 3              | 4 | 5 |

## 15. Rate your language skills in Spanish (1: not proficient) (5: native-like proficiency)

|                    |   |   |   |   |   |
|--------------------|---|---|---|---|---|
| Speaking           | 1 | 2 | 3 | 4 | 5 |
| Reading            | 1 | 2 | 3 | 4 | 5 |
| Listening          | 1 | 2 | 3 | 4 | 5 |
| Writing            | 1 | 2 | 3 | 4 | 5 |
| Cultural Knowledge | 1 | 2 | 3 | 4 | 5 |

## 16. What do you think are important factors in learning a language well?

|                                                              | Strongly disagree |   | Strongly agree |   |   |
|--------------------------------------------------------------|-------------------|---|----------------|---|---|
| Good teachers                                                | 1                 | 2 | 3              | 4 | 5 |
| Good teaching materials                                      | 1                 | 2 | 3              | 4 | 5 |
| Use of the language outside the class                        | 1                 | 2 | 3              | 4 | 5 |
| Combining native and non-native speakers<br>in the classroom | 1                 | 2 | 3              | 4 | 5 |
| Study abroad                                                 | 1                 | 2 | 3              | 4 | 5 |
| Language learned in K-12                                     | 1                 | 2 | 3              | 4 | 5 |

17. What do you think is the status of Spanish in the US society?

| Looked down upon |   |   |   | Highly regarded |  |
|------------------|---|---|---|-----------------|--|
| 1                | 2 | 3 | 4 | 5               |  |

18. Please rate the following statements:

|                                                                                             | Never |   |   | Always |   |
|---------------------------------------------------------------------------------------------|-------|---|---|--------|---|
| a. I watch TV, movies or videos in Spanish                                                  | 1     | 2 | 3 | 4      | 5 |
| b. I watch news and / or read newspapers in Spanish                                         | 1     | 2 | 3 | 4      | 5 |
| c. I listen to music in Spanish                                                             | 1     | 2 | 3 | 4      | 5 |
| d. I seek out and participate in events and activities related to Spanish-speaking cultures | 1     | 2 | 3 | 4      | 5 |

19. List all the languages that you speak in the following situations:

- a. At home \_\_\_\_\_
- b. At work \_\_\_\_\_
- c. With family and friends \_\_\_\_\_

20. Do you consider yourself a heritage language learner of Spanish?

Yes \_\_\_\_\_ No \_\_\_\_\_

Why?

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21. Would you speak to your children in Spanish?

Yes \_\_\_\_\_ No \_\_\_\_\_

Why?

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**Appendix B****DELE (Diploma de Español como Lengua Extranjera) Spanish language test****Prueba de opción múltiple**

Por favor, complete los espacios en blanco con la palabra que mejor corresponda.

1. Al oír del accidente de su buen amigo, Paco se puso \_\_\_\_\_.  
a. alegre                      b. fatigado                      c. hambriento                      d. desconsolado
2. No puedo comprarlo porque me \_\_\_\_\_ dinero.  
a. falta                      b. dan                      c. presta                      d. regalan
3. Tuvo que guardar cama por estar \_\_\_\_\_.  
a. enfermo                      b. vestido                      c. ocupado                      d. parado
4. Aquí está tu café, Juanito. No te quemes, que está muy \_\_\_\_\_.  
a. dulce                      b. amargo                      c. agrio                      d. caliente
5. Al romper los anteojos, Juan se asustó porque no podía \_\_\_\_\_ sin ellos.  
a. discurrir                      b. oír                      c. ver                      d. entender
6. ¡Pobrecita! Está resfriada y no puede \_\_\_\_\_.  
a. salir de casa                      b. recibir cartas                      c. respirar con dificultad                      d. leer las noticias
7. Era una noche oscura sin \_\_\_\_\_.  
a. estrellas                      b. camas                      c. lágrimas                      d. nubes
8. Cuando don Carlos salió de su casa, saludó a un amigo suyo: -Buenos días, \_\_\_\_\_.  
a. ¿Qué va?                      b. ¿Cómo es?                      c. ¿Quién es?                      d. ¿Qué tal?
9. ¡Qué ruido había con los gritos de los niños y el \_\_\_\_\_ de los perros!  
a. olor                      b. sueño                      c. hambre                      d. ladrar
10. Para saber la hora, don Juan miró el \_\_\_\_\_.  
a. calendario                      b. bolsillo                      c. estante                      d. despertador

11. Yo, que comprendo poco de mecánica, sé que el auto no puede funcionar sin \_\_\_\_\_.
- a. permiso                      b. comer                      c. aceite                      d. bocina
12. Nos dijo mamá que era hora de comer y por eso \_\_\_\_\_.
- a. fuimos a nadar              b. tomamos asiento              c. comenzamos a fumar              d. nos acostamos pronto
13. ¡Cuidado con ese cuchillo o vas a \_\_\_\_\_ el dedo!
- a. cortarte                      b. torcerte                      c. comerte                      d. quemarte
14. Tuvo tanto miedo de caerse que se negó a \_\_\_\_\_ con nosotros.
- a. almorzar                      b. charlar                      c. cantar                      d. patinar
15. Abrió la ventana y miró: en efecto, grandes lenguas de \_\_\_\_\_ salían llameando de las casas.
- a. zorros                      b. serpientes                      c. cuero                      d. fuego
16. Compró ejemplares de todos los diarios pero en vano. No halló \_\_\_\_\_.
- a. los diez centavos              b. el periódico perdido              c. la noticia que deseaba              d. los ejemplos
17. Por varias semanas acudieron colegas del difunto profesor a \_\_\_\_\_ el dolor de la viuda.
- a. calmar                      b. dulcificar                      c. embromar                      d. estorbar
18. Sus amigos pudieron haberlo salvado pero lo dejaron \_\_\_\_\_.
- a. ganar                      b. parecer                      c. perecer                      d. acabar
19. Al salir de la misa me sentía tan caritativo que no pude menos que \_\_\_\_\_ a un pobre mendigo que había allí sentado.
- a. pegarle                      b. darle una limosna              c. echar una mirada              d. maldecir
20. Al lado de la Plaza de Armas había dos limosneros pidiendo \_\_\_\_\_.
- a. pedazos                      b. paz                      c. monedas                      d. escopetas

21. Siempre maltratado por los niños, el perro no podía acostumbrarse a \_\_\_\_\_ de sus nuevos amos.
- a. las caricias      b. los engaños      c. las locuras      d. los golpes
22. ¿Dónde estará mi cartera? La dejé aquí mismo hace poco y parece que el necio de mi hermano ha vuelto a \_\_\_\_\_.
- a. dejármela      b. deshacérmela      c. escondérmela      d. acabármela
23. Permaneció un gran rato abstraído, los ojos clavados en el fogón y el pensamiento \_\_\_\_\_.
- a. en el bolsillo      b. en el fuego      c. lleno de alboroto      d. Dios sabe dónde
24. En vez de dirigir el tráfico estabas charlando, así que tú mismo \_\_\_\_\_ del choque.
- a. sabes la gravedad      b. eres testigo      c. tuviste la culpa      d. conociste a las víctimas
25. Posee esta tierra un clima tan propio para la agricultura como para \_\_\_\_\_.
- a. la construcción de trampas      b. el fomento de motines      c. el costo de vida      d. la cría de reses
26. Aficionado leal de obras teatrales, Juan se entristeció al saber \_\_\_\_\_ del gran actor.
- a. del fallecimiento      b. del éxito      c. de la buena suerte      d. de la alabanza
27. Se reunieron a menudo para firmar un tratado pero no pudieron \_\_\_\_\_.
- a. desavenirse      b. echarlo a un lado      c. rechazarlo      d. hacerlo
28. Se negaron a embarcarse porque tenían miedo de \_\_\_\_\_.
- a. los peces      b. los naufragios      c. los faros      d. las playas
29. La mujer no aprobó el cambio de domicilio pues no le gustaba \_\_\_\_\_.
- a. el callejeo      b. el puente      c. esa estación      d. aquel barrio
30. Era el único que tenía algo que comer pero se negó a \_\_\_\_\_.
- a. hojearlo      b. ponérselo      c. conservarlo      d. repartirlo

### **Prueba de llenar espacios en blancos**

En esta prueba algunas palabras han sido elididas y remplazadas por números de 1 al 20. Primero, lea el texto completo para que lo pueda entender. Luego, léalo después y escoja la palabra correcta que corresponde de la hoja de respuestas. Marque su respuesta con un círculo en la hoja de respuesta y no llenando el espacio en blanco en el texto.

#### **Al gusto de los famosos**

Los Premios de la Academia no terminan con la ceremonia del 7 (1) \_\_\_\_\_ marzo.

Posterior a la transmisión televisiva, el evento anual, (2) \_\_\_\_\_ reconoce a las mejores películas y sus creadores, continúa con la gala conocida como el Governors Ball que en esta ocasión estará inspirada en los años 30's.

“Esta fiesta fusionará lo ecléctico con elementos innovadores de diseño que hacen (3) \_\_\_\_\_ el estilo de Streamline Moderne de finales de los 30”, dijo con el entusiasmo que la caracteriza Cheryl Cecchetto, productora de la celebración (4) \_\_\_\_\_ 21 años consecutivos.

Al salón en el centro de Hollywood & Highland llegarán sin nervios pero (5) \_\_\_\_\_ mucho apetito y ganas de celebrar 1,500 personas, entre ganadores, nominados y otros invitados.

Por eso, los organizadores se esmerarán en satisfacer el gusto de los famosos invitados, (6) \_\_\_\_\_ todo con respecto a la comida.

“Nuestro arte está en lo que (7) \_\_\_\_\_ en un plato para que todos lo disfruten y saboreen. Usamos los ingredientes de mejor calidad y nos enfocamos en el sabor”, dijo el chef Wolfgang Puck en su décimo sexto año consecutivo como creador del menú de este festejo.

El experto culinario de origen austriaco, con la (8) \_\_\_\_\_ de su equipo, preparará aperitivos tales como mini hamburguesas, camarón tempura con langosta, pizza de salmón ahumado con caviar y crema en eneldo.

En la cena, se (9) \_\_\_\_\_ salmón ahumado con tarta de papa, crema fresca, vegetales y un panecillo; y un pot pie de pollo con papas y verduras.

Para el (10) \_\_\_\_\_, las celebridades podrán degustar de un bar con todo tipo de chocolates, así como un pastel de nieve, entre otros.

La comida (11) \_\_\_\_\_ acompañada por la champaña de Moët & Chandon y el coctel The Moët Golden Glamour, creado especialmente (12) \_\_\_\_\_ la ocasión.

Pero no solamente el menú (13) \_\_\_\_\_ delicioso, los floristas de Mark's Garden se han asegurado que las 15 mil flores que decorarán la fiesta (14) \_\_\_\_\_ luzcan espectaculares.

“Este año (15) \_\_\_\_\_ una hermosa colección de flores y colores, como el naranja fuerte y un brillante color púrpura”, dijo Luis Martínez, diseñador de Mark's Garden, compañía que ha estado encargada de los arreglos florales por 17 años consecutivos.

Alcatraces de Ecuador, orquídeas, tulipanes y hojas exóticas también serán usadas en floreros que variarán (16) \_\_\_\_\_ tamaño, así como velas y espejos en los centros de las mesas largas y redondas.

El resto de la decoración del salón estará basado en el trabajo de Paul Williams, decorador de la tienda Saks Fifth Avenue de Nueva York (17) \_\_\_\_\_ utilizó iluminación indirecta; y en los diseños de Dorothy Draper en forma de curva utilizados en varios hoteles.

Asimismo, telas como el satín color coñac, el tafetán en tono carbón, caminos en las mesas y vistosos candelabros serán utilizados para (18) \_\_\_\_\_ el ambiente de los 30s.

A diferencia de otros años, los músicos de la orquesta, (19) \_\_\_\_\_ como los meseros, utilizarán un uniforme en color naranja con toques morados, en guantes o cintos en el traje de las mujeres o en el saco de los hombres.

Otra de las novedades es que los ganadores recibirán la placa con su nombre que será pegada a la estatuilla esa misma noche. Anteriormente, esto se (20) \_\_\_\_\_ semanas después de la entrega de los galardones.

**Hoja de respuestas**

- |                 |                |               |
|-----------------|----------------|---------------|
| 1. a. en        | b. a           | c. de         |
| 2. a. cual      | b. con         | c. que        |
| 3. a. recuerdo  | b. recordar    | c. recordaron |
| 4. a. durante   | b. sobre       | c. de         |
| 5. a. con       | b. por         | c. en         |
| 6. a. al        | b. sobre       | c. para       |
| 7. a. presentar | b. presentamos | c. presentó   |
| 8. a. ayuda     | b. capacidad   | c. fuerza     |
| 9. a. buscará   | b. servirá     | c. intentará  |
| 10. a. postre   | b. almuerzo    | c. desayuno   |
| 11. a. será     | b. sea         | c. era        |
| 12. a. sobre    | b. para        | c. en         |
| 13. a. es       | b. estará      | c. estuvo     |
| 14. a. ya       | b. también     | c. así        |
| 15. a. tenemos  | b. tuve        | c. tuviera    |
| 16. a. con      | b. en          | c. al         |
| 17. a. cuando   | b. donde       | c. como       |
| 18. a. ver      | b. crear       | c. ser        |
| 19. a. todo     | b. así         | c. ya         |
| 20. a. hace     | b. hacía       | c. había      |

## Appendix C



una zanahoria



una palmera



un payaso



un adorno de nieve



unas gafas de sol



un paraguas



un iglú



una bufanda



una mariposa



una piscina



una salida de emergencia



un hueso



un esqueleto



una sirena



un guante



una pecera



un martillo



un muñeco de nieve

## Appendix D

### Vocabulary Test

#### Target Nouns in the Vocabulary Test<sup>1</sup>

1. hand

*mano*



2. dog

*perro*



3. tree

*árbol*



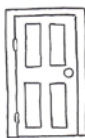
4. bed

*cama*



5. door

*puerta*



6. sun

*sol*



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<sup>1</sup> Consult Gollan et al., 2012 for complete version of the Multilingual Naming Test (MINT).



7. book      *libro*



8. butterfly      *mariposa*



9. scissors      *tijeras*



10. key      *llave*



11. chair      *silla*



12. moon      *luna*



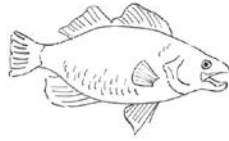
13. airplane      *avión*



14. apple      *manzana*



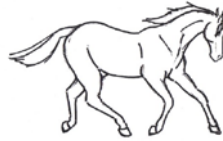
15. fish

*pescado, pez*

16. grapes

*uvas*

17. horse

*caballo*

18. drum

*tambor*

19. glove

*guante*20. lightbulb *foco, bombilla*

21. cake

*pastel, tarta*

22. watch

*reloj*

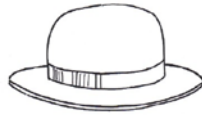
23. bear

*oso*

24. fork

*tenedor*

25. hat

*sombrero*

26. leaf

*hoja*

27. tie

*corbata*

28. candle

*vela*

29. basket

*canasta, cesta*

30. clown

*payaso*

**Appendix E****LANGUAGE BACKGROUND QUESTIONNAIRE**

1. Name: \_\_\_\_\_
2. Age: \_\_\_\_\_
3. Gender: \_\_\_\_\_
4. Place of birth, including country if not United States:  
\_\_\_\_\_
5. If you were born outside of the fifty states, at what age did you come to the United States?  
(specify age: \_\_\_\_\_)
6. Where was your mother born? \_\_\_\_\_
7. Where was your father born? \_\_\_\_\_
8. Year at Rutgers (please circle: 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> 4<sup>th</sup> 5<sup>th</sup> Graduate Other)
9. Major(s): \_\_\_\_\_
10. Minor(s): \_\_\_\_\_
11. Undecided (Circle. If you have the intention to declare a major or minor please specify)  
\_\_\_\_\_  
\_\_\_\_\_
12. What Spanish-speaking countries have you been to or lived in and for how long?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Before you respond to questions #13-18 please keep in mind the following:**

**Native language(s)** is / are the language(s) in which you were spoken to and that you spoke from birth until you were 3 years old. You may **not** be a **dominant** speaker of that language but it is / they are your **native language(s)**.

13. To what language(s) were you exposed (languages that were spoken to you on a regular basis) from 0-3 years of age?

---

14. What language(s) did you speak from 0-3 years of age?

---

15. To what language(s) were you exposed to from 3-12 years of age?

---

16. What language(s) did you speak from 3-12 years of age?

---

17. Which language(s) do you consider your first language(s) (the one(s) that you spoke and in which you were addressed from 0-3 years old)?

---

18. Which language(s) do you consider your second language(s) (the one(s) that you spoke and in which you were addressed after 3 years old)?

---

| 19. What are the reasons for learning Spanish?                                            | Strongly disagree |   | Strongly agree |   |   |
|-------------------------------------------------------------------------------------------|-------------------|---|----------------|---|---|
| Curiosity / challenge / fun / different                                                   | 1                 | 2 | 3              | 4 | 5 |
| General interest in language                                                              | 1                 | 2 | 3              | 4 | 5 |
| Better job, career                                                                        | 1                 | 2 | 3              | 4 | 5 |
| Plan to work overseas                                                                     | 1                 | 2 | 3              | 4 | 5 |
| Status of the language in the world                                                       | 1                 | 2 | 3              | 4 | 5 |
| Family heritage                                                                           | 1                 | 2 | 3              | 4 | 5 |
| Acquaintance with speakers of language                                                    | 1                 | 2 | 3              | 4 | 5 |
| Interest in literature                                                                    | 1                 | 2 | 3              | 4 | 5 |
| To further global understanding                                                           | 1                 | 2 | 3              | 4 | 5 |
| Friends' recommendation                                                                   | 1                 | 2 | 3              | 4 | 5 |
| For use in studies, research                                                              | 1                 | 2 | 3              | 4 | 5 |
| Advisor's recommendation                                                                  | 1                 | 2 | 3              | 4 | 5 |
| Reputation of program / institution                                                       | 1                 | 2 | 3              | 4 | 5 |
| Transfer of credits to college                                                            | 1                 | 2 | 3              | 4 | 5 |
| For an easy "A"                                                                           | 1                 | 2 | 3              | 4 | 5 |
| 20. Rate your language skills in Spanish (1: not proficient) (5: native-like proficiency) |                   |   |                |   |   |
| Speaking                                                                                  | 1                 | 2 | 3              | 4 | 5 |
| Reading                                                                                   | 1                 | 2 | 3              | 4 | 5 |
| Listening                                                                                 | 1                 | 2 | 3              | 4 | 5 |
| Writing                                                                                   | 1                 | 2 | 3              | 4 | 5 |
| Cultural knowledge                                                                        | 1                 | 2 | 3              | 4 | 5 |

21. What do you think are important factors in learning a language well?

|                                                   | Strongly disagree |   |   | Strongly agree |   |
|---------------------------------------------------|-------------------|---|---|----------------|---|
| Good teachers                                     | 1                 | 2 | 3 | 4              | 5 |
| Good teaching materials                           | 1                 | 2 | 3 | 4              | 5 |
| Use of the language outside of class              | 1                 | 2 | 3 | 4              | 5 |
| Combining native and non-native speakers in class | 1                 | 2 | 3 | 4              | 5 |
| Study abroad                                      | 1                 | 2 | 3 | 4              | 5 |
| Language learned in K-12                          | 1                 | 2 | 3 | 4              | 5 |

22. What do you think is the status of Spanish in the US society?

| Looked down upon |   |   |   | Highly regarded |  |
|------------------|---|---|---|-----------------|--|
| 1                | 2 | 3 | 4 | 5               |  |

23. Please rate the following statements:

|                                                                                          | Never |   |   | Always |   |
|------------------------------------------------------------------------------------------|-------|---|---|--------|---|
| I watch TV, movies or videos in Spanish                                                  | 1     | 2 | 3 | 4      | 5 |
| I watch news and / or read newspapers in Spanish                                         | 1     | 2 | 3 | 4      | 5 |
| I listen to music in Spanish                                                             | 1     | 2 | 3 | 4      | 5 |
| I seek out and participate in events and activities related to Spanish-speaking cultures | 1     | 2 | 3 | 4      | 5 |

24. Do you consider yourself a heritage language learner of Spanish? Yes No

25. Were you raised hearing both Spanish and English? Yes No

26. Were you raised speaking both Spanish and English? Yes No

27. Do you plan on having your children grow up hearing and speaking both Spanish and English? Yes No

28. Which language do you feel helps you the most in your daily routine?

Spanish      English

29. Do you find yourself switching between Spanish and English while speaking in your daily conversations?      Yes      No

30. If you are speaking in Spanish and are not sure how to say something, do you continue your Spanish sentence by switching over to English?      Yes      No

31. If you are speaking in English and are not sure how to say something, do you continue your English sentence by switching over to Spanish?      Yes      No

32. Do you find yourself at a loss for words in Spanish?      Yes      No

33. Do you find yourself at a loss for words in English?      Yes      No

34. Are you familiar with the term “code-switching” and if so, how would you define it?

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---

35. If you answered yes to question #34, do you consider yourself to use this linguistic behavior?      Yes      No

36. If you answered yes to question #35, in what contexts do you use this linguistic behavior?

(circle all that apply)    home    school    work    with friends    other \_\_\_\_\_

37. My mother speaks:

Spanish only      English only      both Spanish and English combined

38. My father speaks:

Spanish only      English only      both Spanish and English combined

**Questions #39-42:**

**S = Spanish    E = English    S/E = both Spanish and English combined**

39. Which language do you speak the most at home?      S      E      S/E

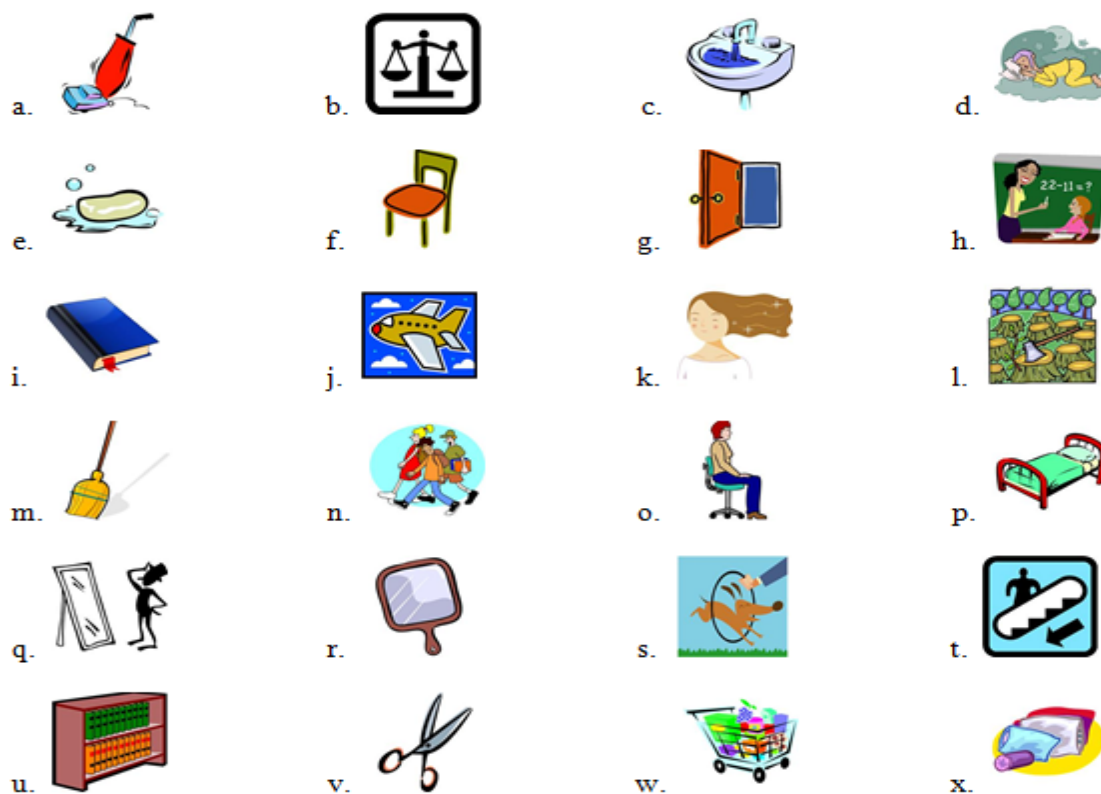
40. Which language do you speak the most at school?      S      E      S/E

41. Which language do you speak the most at work?      S      E      S/E

42. Which language do you speak the most in social situations?      S      E      S/E



## Appendix F



1. \_\_\_\_ equilibrar

2. \_\_\_\_ soñar

3. \_\_\_\_ el cabello

4. \_\_\_\_ el libro

5. \_\_\_\_ la escoba

6. \_\_\_\_ el jabón

7. \_\_\_\_ caminar

8. \_\_\_\_ la cama

9. \_\_\_\_ el espejo

10. \_\_\_\_ bajar

11. \_\_\_\_ la silla

12. \_\_\_\_ sentarse

13. \_\_\_\_ el estante

14. \_\_\_\_ mirarse

15. \_\_\_\_ enseñar

16. \_\_\_\_ el lavamanos

17. \_\_\_\_ volar

18. \_\_\_\_ saltar

19. \_\_\_\_ la aspiradora

20. \_\_\_\_ las tijeras

21. \_\_\_\_ abrir

22. \_\_\_\_ la almohada

23. \_\_\_\_ comprar

24. \_\_\_\_ cortar



1. \_\_\_\_\_ tomar
2. \_\_\_\_\_ cantar
3. \_\_\_\_\_ el tiburón
4. \_\_\_\_\_ arrastrar
5. \_\_\_\_\_ esconder
6. \_\_\_\_\_ el cangrejo
7. \_\_\_\_\_ el gancho
8. \_\_\_\_\_ la playa
9. \_\_\_\_\_ perseguir
10. \_\_\_\_\_ romper
11. \_\_\_\_\_ el cinturón
12. \_\_\_\_\_ nadar

13. \_\_\_\_\_ colgar
14. \_\_\_\_\_ la maleta
15. \_\_\_\_\_ crecer
16. \_\_\_\_\_ la pecera
17. \_\_\_\_\_ relajarse
18. \_\_\_\_\_ oler
19. \_\_\_\_\_ el pescado
20. \_\_\_\_\_ el camión
21. \_\_\_\_\_ la cuerda
22. \_\_\_\_\_ la langosta
23. \_\_\_\_\_ el pescador
24. \_\_\_\_\_ manejar

## Appendix G

**Please read the following sentences carefully and indicate whether sentence (a) is acceptable, whether sentence (b) is acceptable or whether both sentences are acceptable (c).**

1.     a. *El pájaro* left although it was injured.  
        b. *El pájaro se fue* although it was injured.  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable
  
2.     a. *El gato vive en* the house.  
        b. *El gato vive* in the house.  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable
  
3.     a. *La doctora lee* the book.  
        b. *La doctora* reads the book.  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable
  
4.     a. *La profesora* is proud of her students.  
        b. *La profesora está orgullosa* of her students.  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable
  
5.     a. *La niña tiene un bowl de pez muy grande.*  
        b. *La niña tiene un fish bowl muy grande.*  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable
  
6.     a. *La mujer* is happy from cooking all day.  
        b. *La mujer está feliz* from cooking all day.  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable
  
7.     a. *El doctor ve* the patient.  
        b. *El doctor* sees the patient.  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable
  
8.     a. *Se puso la corbata durante* the ceremony.  
        b. *Se puso la corbata* during the ceremony.  
        \_\_\_\_\_ (a) is acceptable     \_\_\_\_\_ (b) is acceptable     \_\_\_\_\_ (c) both are acceptable

9. a. *El dinero*, he didn't bring any.  
b. The money, he didn't bring any.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
10. a. *El niño* breaks the glass.  
b. *El niño rompe* the glass.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
11. a. *El belt de cuero lo compré en Italia*.  
b. The leather belt *lo compré en Italia*.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
12. a. *La abeja* that I stepped on was big.  
b. The bee that I stepped on was big.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
13. a. *El perro se* got sick.  
b. *El perro se enfermó*.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
14. a. The jungle frog *tiene muchos colores*.  
b. The frog *de la selva tiene muchos colores*.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
15. a. *El hombre está en* a meeting.  
b. *El hombre está* in a meeting.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
16. a. *La ballena*, we didn't see it at all.  
b. The whale, we didn't see it at all.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
17. a. My niece, I miss her a lot.  
b. *Mi sobrina*, I miss her a lot.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
18. a. *El abrigo es* really warm.  
b. *El abrigo* is really warm.  
\_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable

19. a. *La toalla blanca se volvió rosada en la secadora.*  
 b. *La toalla blanca se* turned pink in the dryer.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
20. a. *La cabra es* extremely shy.  
 b. *La cabra* is extremely shy.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
21. a. *El hermano* ran after lunch.  
 b. *El hermano corrió* after lunch.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
22. a. *El jugo de mango* that I bought was delicious.  
 b. The mango juice that I bought was delicious.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
23. a. *La piña* was cut before the guests arrived.  
 b. *La piña se cortó* before the guests arrived.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
24. a. *La blusa es* a present.  
 b. *La blusa* is a present.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
25. a. *Mi sobrino se* became happy.  
 b. *Mi sobrino se puso contento.*  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
26. a. *El profesor está cansado* from teaching.  
 b. *El profesor* is tired from teaching.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
27. a. *El novio de ella* is a lawyer.  
 b. *El novio de ella es* a lawyer.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable
28. a. *Un mosquito es* a small insect.  
 b. *Un mosquito* is a small insect.  
 \_\_\_\_\_ (a) is acceptable \_\_\_\_\_ (b) is acceptable \_\_\_\_\_ (c) both are acceptable

29. a. The book that she read was interesting.  
b. *El libro* that she read was interesting.  
\_\_\_\_\_ (a) is acceptable    \_\_\_\_\_ (b) is acceptable    \_\_\_\_\_ (c) both are acceptable
30. a. *La novia es* very attractive.  
b. *La novia* is very attractive.  
\_\_\_\_\_ (a) is acceptable    \_\_\_\_\_ (b) is acceptable    \_\_\_\_\_ (c) both are acceptable

## Appendix H

### Transcriptions

#### Video A

P022 Intermediate:

1.@Begin el señor pienso que es *Mr. Bean*...um quiere cortar su pelo y no puede ver...um *I guess* no puede verse muy bueno...y um...primero...lleva un un *pillow*...y después *the pillow wasn't...the pillow wasn't um high enough...and then he grabs four books cause like everything seems to be very symmetrical...and the whole thing like everything has to be even so he like grabs four books...and then he seems very like meticulous to detail*...y um...um...y um cuando estaba cortando su pelo creo que hace los dos um no son los dos pares no son iguales y...um sigue y estaba siguiendo um cortando su pelo y se *he's bald*.

P008 Advanced:

1.@Begin ok bueno había un un hombre que quería cortarse el cabello y...um *so* él trae...trajo una...una silla al espejo en en el baño...um pero el tamaño de...la altura del...de la silla no llega a ajustarse bien en...enfrente de del espejo...*so* él anda a la sala para recoger unas um...unos libros y él pone los libros abajo de la silla...para que...la altura de la silla es más ajustado para verse bien...*so* él puede ver lo que él está haciendo en el espejo...y um pero...um ahora la altura de de la silla es demasiado alto...y él está más arriba de que...de donde queda el espejo...*so* él abre todos los libros a casi el medio de del libro...para bajar sólo un poquito la altura de la silla y después él se sienta bueno primero él él trata de usar una almohada...pero la almohada no fue suficientemente firme y él se inundó en el...en las plumas de...de la almohada...*so* él empezaba con todos los libros...y ahora cuando los libros estuvieron...abiertos um...él estuvo completamente ajustado bien...y él podría verse bien...y él empezaba de cortar o trataba de empezar de cortar su su su cabello pero...él no podría cortarse um...sin mover la sábana...que él tenía protegiendo um *or* como protector de su ropa...y *so* por eso él toma los um...tijeras y él se corta *or* cortó el sábana...para que sus manos podrían salir...de las mangas...de de la sábana y...um él sí entonces después de todo eso él podría cortar um su cortarse su cabello y él empezaba de cortarse y él se tomó mucho del del lado derecha y se tomó mucho del lado izquierda y él decide que ésto es demasiado *so* él termina cortando todo su cabello afeitándolo completamente.

P007 Heritage:

1.@Begin *so* había un señor que quería cortarse el pelo...y um...tomó una silla y lo puso lo pus... y lo puse en enfrente del um en el baño en el frente del um...um...en el frente de...el...*sink*...y después estaba mirándose en en...um tomó la tijera y y estaba sentado y cuando no podía verse *so*...um...él fue y...cogió una almohada...y cuando se sentó estaba muy alto y todavía no podía ver *so* después cogió un libro...y lo puso debajo de la silla y todavía estaba muy alto y después cogió cuatro libros y lo abrió y lo puse debajo de la silla y ahí podía ver...um después de eso empezó a cortarse el pelo hasta...hasta que no tenía pelo.

## Video B

P044 Intermediate:

1.@Begin hay un hombre que um maneja a la playa...um con su...*I think this is wrong*...pescado...um y um cuando llega...a la playa um...um...el hombre permite que su pescado um...um...*swim*...um en el mar y um um...en el mar un um...pescado más grande que el pescado del hombre um...come el pescado del hombre y...um...hay un...ropa que conecta el...pescado y el hombre y cuando el pescado más grande come el...um pescado pequeño um *it pulled the* el hombre en el mar y...um luego hay un *shark* que um...*chase*...um todos y um...un pescador um...*caught*...um...um...el hombre y los dos pescados y um...um...um luego el pescador *hung*...um...el pescado más grande y el hombre puede...salvar su...pez.

P008 Advanced:

1.@Begin ok en este um el mismo hombre...um fue a la playa con su mascota su pez dorado um y como me imagino para pasear al pez en el océano en el mar um él ata él ató un um hilo al pez a a un lado y en el otro extremo él se ató el el...él ató el um el hilo a su su dedo grande en su pie y él está el pez está nadando como no sé como tomar un perro de de pasear...el pez está nadando en el el mar y viene una...marlin *or* una...pez de nariz de...espada...y se come...y comió el el...y comió el...*or* comía el pez um dorado del del señor y um porque...el señor está atado al pez y el pez está...um comido...um entre el el el otro pescado el pez grande...él se fue volando...*or*...sí *so*...con el movimiento de de pez grande él se fue volando... entrando en el mar...um por el por el hilo...um por ser atado al hilo y...um *so* él está ...como...um...siendo jalado en el el mar...um bajo el bajo el mar...y viene un tiburón para comer el otro pez...el pez...un tiburón viene para comer el pez de de nariz espalda de espada...y sí *so* um y...justo en el punto donde el...el tiburón va a comer el otro pez y el señor um...un...cómo se llamaba...*fisherman* pescador...un pescador um...viene y *or* no un pescador um...con su su su gancha gancho sí...su gancho...él um se se atrapa el el el otro pez de nariz de...de espalda de espada perdón...y...él se jale todos al entrar en su su bote o sí su nave o su...no sé la palabra correcta para...um *boat* bote *or* su nave y...todos entran...y um el señor está...se él está reunificado con su pez de mascota...al final.



P046 Heritage:

1.@Begin um el hombre está manejando a la playa con su um...pescado um en una...jaula *whatever* um con agua arriba de su um carro...y sigue manejando pero cada vez que...va por un...roca o algo así um sale agua entonces le está llenando el agua a su pescado...y cuando llega a la playa...lo um se acuesta en la en la arena y le ha subido en una...una...tiro de...*a string* a su pescado y le pone alrededor de su...um de su dedo para como una *leash* para él para que nada y no se vaya um y está acostado tomando um...no sé vino um en el sol y después de de pronto um otro pescado más grande se come a su pescado y se va um fuera del más centro del del del océano y le lleva con todo al dueño y le empieza a jalar en el en el mar cuando de repente um un tiburón le persigue al dueño del primer pescado y le está persiguiendo hasta que um para comerle y de pronto un pescador le coge al...pez el pez que le comió a su pescado y le saca al a su um...*boat*...a su...um...*I forgot how to say boat*....lo saca en su *boat* y um...y le salva la vida al dueño del pescado y que es um ...que um está ahí con su um con su pescado más pequeño que sale de la boca del pescado más grande y se reúnen en el barco.

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