AGE AND INPUT EFFECTS IN THE ACQUISITION OF CLITIC CLIMBING CONSTRUCTIONS IN HERITAGE AND SECOND LANGUAGE (L2) SPANISH

by

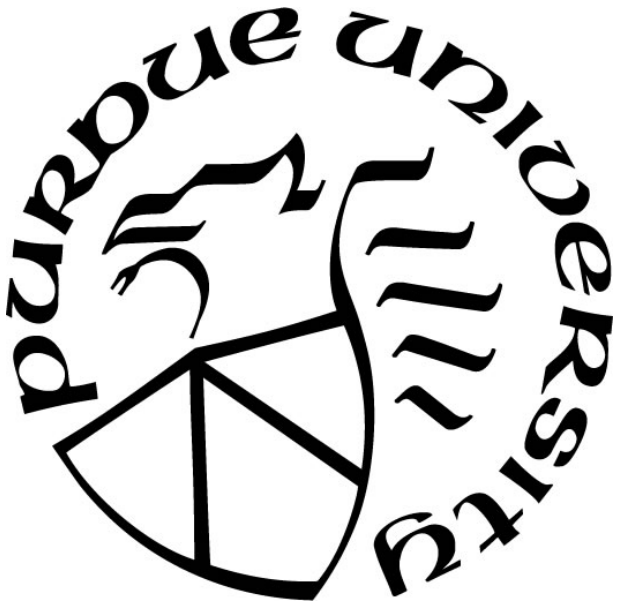
Antonio Martín Gómez

A Dissertation

Submitted to the Faculty of Purdue University

In Partial Fulfillment of the Requirements for the degree of

Doctor of Philosophy



School of Languages and Cultures

West Lafayette, Indiana

May 2020

THE PURDUE UNIVERSITY GRADUATE SCHOOL
STATEMENT OF COMMITTEE APPROVAL

Dr. Alejandro Cuza, Chair
Department of Spanish & Portuguese
Dr. Elaine Francis
Department of English
Dr. Mariko Moroishi Wei
Department of East Asian Languages
Dr. Colleen Neary-Sundquist
Department of Spanish & Portuguese

Approved by:
Dr. Jennifer William

ACKNOWLEDGMENTS

First of all, I would like to thank my advisor (Dr. Alejandro Cuza) and committee members (Dr. Elaine Francis, Dr. Mariko Wei, and Dr. Colleen Neary-Sundquist) for their graduate seminars, their guidance, encouragement, and patience with me over the years. Thank you for the quality of your courses, your advising, and your feedback in the papers. I leave Stanley Coulter's halls with feelings of personal accomplishment and gratitude. Special thanks go to Dr. David Reineke at the University of Wisconsin-La Crosse for his invaluable help with the statistical analyses at the very end of the degree.

I am deeply indebted to Dr. Mercedes Uscola Fernández for her guidance and advice during her years in West Lafayette: thank you for introducing me to the intricacies of the statistical analysis and helping me to cope with the imposter syndrome, which only leads to depression and isolation. ¡Gracias amiga!

Thank you to all the participants who were part of this research, graduate colleagues, and especially to José Sigala for borrowing his voice to record the test tokens, and thanks to Dr. Gisela Carlos Fregoso for inviting me to her place in Guadalajara, Mexico for the recruitment of native participants.

Another round of special thanks go to Dr. Francisco Salgado-Robles, a good friend, a respectable scholar in the field, and a source of inspiration of hard work and dedication to students. Gracias amigo, ¡por todo!

And of course, I would also like to thank my loving family (Antonio, Mª Jesús, Noemí and Sonia) for their support, patience, comprehension, trust, and encouragement during these challenging years (how lucky I am!), and very specially to my wonderful companion since the beginning of this journey back on the Fall of 2013, my dear Dr. María Moreno.

God bless you all.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

1	First person (I, we)
2	Second person (you)
3	Third person (s/he, it, they)
sg	Singular
pl	Plural
acc	Accusative case
dat	Dative case
m	Masculine
f	Femenine
cl	Clitic

ABSTRACT

The present study contributes to our understanding of the effects of age and type of linguistic input in the acquisition of Spanish as a second language in adulthood. I examine the Spanish syntax (word order) of three groups of speakers, monolingual Spanish speakers from Mexico and two bilingual English-Spanish speakers born and raised in the United States ($N = 53$) to measure the effects of an early, oral-based versus a late, written-based exposure to the target language. The study of how a second language develops in adulthood is of great interest to language specialists and language educators in general, given that the aforementioned bilingual profiles are most common in higher education settings. On one hand, heritage language learners are speakers who are immersed in a home where a language other than English is spoken, who speak or at least understand the language, and who are to some degree bilingual in that language and in English (Valdés, 2001); on the other, traditional classroom learners are students who start learning a second language later in life, when the majority of their native language is developed.

Although studies comparing the interlanguage grammars of heritage speakers and second language (L2) learners invariably report that the former show advantages in oral language production and perception, these are not so evident in the syntactic domain (Au, Knightly, Jun & Oh, 2002; Knightly, Jun, Oh & Au., 2003; Polinsky, 2007; Silva-Corvalán, 1994). The present study adds new data to this debate, by examining the production and intuition of "clitic climbing" constructions (Kayne, 1994, Rizzi, 1982), the optional placement of an object clitic pronoun in the domain of a finite matrix verb taking an infinitival complement, as in *lo voy a ver* vs. *voy a verlo* '(I'm) going to see it'.

In this study I test the production and intuition of clitic climbing sentences in four periphrastic conditions (auxiliary-like verbs, modal-like verbs, impersonal sentences, and sentences with embedded negations) in two experimental groups of heritage speakers and L2 learners of Spanish with two degrees of proficiency (intermediate, advanced) and a control group of native Spanish speakers. Results from a sentence completion task show comparable behavior across all groups in the four verb conditions, with a strong tendency to favor the no climbing (enclisis) option, and a proficiency effect among the experimental groups. Results of an acceptability judgment task show comparable behavior across all groups, accepting grammatical proclitic placement and rejecting ungrammatical sentences with climbing. Neither proficiency or

group effects were found in this task, although the judgments of the experimental groups were less categorical compared to the native speakers'. The combined results of these two tasks point to an absence of age or input effects in the L2 acquisition of this syntactic phenomenon in Spanish.

In sum, while the production of proclitic placement in verbal periphrases is subject to a proficiency effect, English-Spanish bilinguals seem to follow the reported native trends in the variationist literature (Davies, 1995). These bilinguals are also aware of the syntactic restrictions of this syntactic operation, although the fact that their judgments of ungrammatical sentences were not as categorical as native speakers' suggests that a significant amount of written-based input is also necessary to acquire a full-fledged knowledge of clitic climbing constructions in Spanish. Taken together, these data suggest that the acquisition of this syntactic operation does not seem to be affected by age or type of input effects.

CHAPTER 1: INTRODUCTION

1.1 Introduction and Goals of the Study

Spanish has become one of the fastest-growing languages in the United States. The US Census Bureau estimates that in 2060 28.6% of the population will be of Hispanic origin. Even with the implementation of restrictive language policies such as the "English Only Movement" during the 1980s or the more recent Arizona anti-immigrant law, the number of English-Spanish bilinguals has been growing over the last decades, up 233% since 1980. To these staggering figures we have to add almost eight million students enrolled in courses of Spanish as a foreign language during the 2016 year, according to the latest annual report of the Instituto Cervantes. This vigorous growth is changing the linguistic landscape of the country, appearing in new forms of English-Spanish bilingualism across all socio-economic levels; scholars, educators, and students highlight the overall positive effects of bilingualism, biculturalism, and biliteracy in the US educational context (García, 2009; García & Otheguy, 2017).

Heritage speakers and second language (L2) learners are the most common English-Spanish bilingual profiles in post-secondary education. These speakers are more dominant in the majority language (e.g., English), but their minority or second language has undergone a different developmental path: while heritage speakers are exposed to Spanish early in childhood through oral and informal interaction with their caregivers in a culturally embedded context (early bilinguals), L2 learners have a later exposure (post puberty) through written texts and reduced interaction with a native or non-native instructor, in a classroom setting (late bilinguals) (Montrul, 2008; Pascual y Cabo, 2015; Rothman, Tsimpli & Pascual y Cabo, 2016). Interestingly, when both groups achieve a certain degree of proficiency, their linguistic gaps often coincide: lack of gender agreement, gaps in verb paradigms, errors with pronouns, wrong word order, to cite a few (Montrul, 2016). For language researchers, early and late bilinguals present unique opportunities for testing hypotheses that measure the amount of time it takes for a second language to develop and become stabilized, so that changes in the input cannot affect it.

Although heritage speakers invariably show selective advantages over traditional classroom learners in oral production and perception tasks (Au, Knightly, Jun & Oh, 2002; Knightly, Jun, Oh & Au., 2003; *inter alia*), these advantages are not so evident in aspects of core

syntax (Silva-Corvalán, 1994; Polinsky, 2007). My research adds to existing debates on how second languages develop in adulthood by identifying differences and similarities between L2 acquisition and L1 attrition in a bilingual setting in the development of the Spanish syntax, through the lenses of the generative framework (Chomsky, 1995, 2001).

To carry out this task I will examine how these bilinguals produce and interpret "clitic climbing" constructions. In Spanish, two types of pronominal forms coexist: personal and object pronouns (clitics). The former are autonomous words, while the latter require a stressed form onto which they can lean (i.e., verbs). They must be placed before finite verbs (e.g., *lo veo* '(I) see it') or attached to non-finite forms (e.g., *verlo* 'to see it'). However, in verbal periphrases (e.g., V + infinitive) clitics may be placed either enclitic to the embedded non-finite form (no climbing) as in *Quiero verlo* 'I want to see it', or proclitic to the finite matrix (clitic climbing) as in *Lo quiero ver* (Luján, 1980). Either option does not alter the overall meaning, but the climbing option tends to be more common in the oral register (Davies, 1995).

Given that the production of variable object clitic placement in Spanish is regulated by the degree of grammaticalization (i.e., loss of semantic meaning) of the finite matrix verb, do early and late bilinguals show similar production rates of clitic climbing constructions across an array of matrices with high and low degrees of grammaticalization? Also, the syntax of these constructions shows restrictions of which native speakers are aware. Thus, in order to develop full-fledged knowledge of this syntactic operation speakers must know when this movement is possible and when it is not. Do heritage speakers and L2 learners of Spanish know the syntactic restrictions of variable object clitic placement? By addressing these research questions this thesis contributes to the understanding of how the syntactic domain develops in adulthood, and by extension to the larger theories of age and input effects in the acquisition of second languages.

1.2 Outline of the Dissertation

After this introduction, Chapter 2 reviews the discussion on the effects of age and type of input in second language (L2) acquisition in various populations: from children who are acquiring their first language to adult learners who start the acquisition process of a second language after their first language has completed its regular development. Children of immigrant families (heritage speakers) are an interesting case in the literature of age effects. Given that bilingual environments present additional challenges in the mastery of the L1, I also review how age and

type of input affect the acquisition of home languages. When traditional classroom learners and heritage speakers meet in the classroom, they present interesting similarities and differences in the syntactic domain. For this reason, I also review what the existing literature on age effects reports across languages other than Spanish. The goal is to describe the main debate to which this thesis contributes with new data, and by extension to the overarching field of second language acquisition in general.

In Chapter 3 I review the morphological and syntactic properties of Spanish object clitic pronouns in general, paying special attention to the syntactic phenomenon at hand, clitic climbing constructions. I start by describing the Spanish object clitic paradigm, concentrating exclusively on the morphosyntactic features of the standard forms that can be found in the majority of the major Spanish dialectal variants. Then I describe the clitic climbing phenomenon, providing the reader with an overview of the structural conditions in which it takes place, and the formal, generativist, and functional approaches that have been proposed to account for its optionality. The chapter finishes with a description of the learning task that L1 English speakers have to tackle in order to acquire native-like command of Spanish object clitics and clitic climbing constructions.

Chapter 4 offers a state-of-the-art of the acquisition of Spanish clitic climbing constructions. The aim of this section is to summarize the findings from studies to date that examine the state of variable object clitic placement in English-Spanish bilingual grammars and to identify methodological gaps and questions that still remain unanswered. To better understand the L2 acquisition of the syntactic phenomenon at hand, it is necessary to review how the properties of clitic climbing constructions are acquired by native speakers of Spanish, adult L2 learners whose native languages have clitics or not, as well as child and adult heritage speakers of Spanish. The majority of these studies employ traditional experimental (offline) methods, although some studies have started to include psycholinguistic measurements, allowing researchers to examine how these populations parse clitics compared to native Spanish speakers. Therefore, a subsection devoted to online tasks is included. Clitic climbing constructions in US Spanish have been examined under the lenses of the variationist tradition as well. These studies identify highly-frequent patterns of use in the speech of heritage speakers, and for this reason a comprehensive review has been included as well. Lastly, I identify the gaps that have not yet been addressed in relation to the literature on age and input effects in L2 acquisition discussed in chapter 2 and the properties of this phenomenon described in Chapter 3.

In Chapter 5, I propose a new research design that addresses the limitations of previous studies to better understand the status of clitic climbing constructions in bilingual grammars. I describe the methods employed to further advance knowledge of L2 Spanish syntax in adult bilingualism: the pool of individuals who participated in the study, the structures under examination (test conditions) and the tasks employed to elicit data from the participants and the results obtained in the two tasks. Ultimately, these data will add to the ongoing discussion of whether the advantages of an early exposure to L2 input not only affect the phonological domain, but also extend to the syntactic domain.

Finally, in Chapter 6 I interpret the data provided by participants in both tasks. With the results from the statistical analysis I answer the research questions formulated in Chapter 5. Lastly, I discuss the limitations of the study and provide suggestions for future follow-up studies.

CHAPTER 2: AGE AND INPUT EFFECTS IN L2 ACQUISITION

2.1 Introduction

This chapter offers a summarized review of the effects of age and type of experience with linguistic input in bilingual populations. The goal is to establish the boundaries of where this research lies, and to justify the contribution of this experiment to theories of second language (L2) acquisition in adulthood. The common view when discussing when it is the appropriate time to learn a second language is that earlier is better. However, other factors apart from age affect language development. The picture is more complex in the case of bilingual populations, who are also affected by factors that do not necessarily apply to traditional classroom learners. Eventually, classroom learners and speakers of heritage languages can develop a good command of their less dominant language, with distinct differences in each group due to a different experience. This chapter reviews the populations of interest for this study, and it is structured as follows: First I review how first languages develop and the dramatic effects of language deprivation in children (2.2), evidence that has been employed to justify early immersion in foreign language education. Next I review the main points of debate in the critical period hypothesis for L2 acquisition (2.3). The following section discusses factors other than age that affect L2 development (2.4). Given that regular development of home languages in second-generation immigrant populations is interrupted by the dominant language e.g., English in the United States, the next section reviews how it is possible to extend the debate of age effects in L2 learning to bilingual populations (2.5). Section 2.6 discusses the main differences of L2 learners and heritage speakers when (re)learning a language in adulthood, in terms of strengths and weaknesses, and the nature of their linguistic knowledge.

2.2 The Critical Period Hypothesis in L1 Acquisition

The idea that successful language development is best achieved while in childhood is supported by early work of neurologists Penfield & Roberts (1959), who first proposed a biological "critical period" for the development of human languages, based on the findings of biologists investigating animal behavior. Hubel & Wiesel (1965) for example found that by patching an eye of a young kitten, the animal could not develop depth perception at a later stage of maturation. The

researchers interpreted this and similar findings as evidence of maturational periods that affect the functions of biologic organs (e.g., stimuli for visual development). If this natural process is interrupted, it may result in impaired development of such organic system. Lenneberg (1967) mentions studies of child and adult patients who sustained brain damage. If the right cerebral hemisphere suffered injuries, children experience language problems but adults are not affected. The opposite situation happens in surgical procedures that affect the left hemisphere of the brain: adults experience almost total language loss while children are not affected by it. This contrast led Lenneberg to conclude that the biological mechanisms of the brain are different during childhood than in adulthood.

If there is a critical period for regular language development, its effects are more evident in first language acquisition, as it has been attested by cases of deaf children and neglected children who were deprived of social contact during their infancy. Typically, languages are learnt during childhood by being immersed in an environment with adult native speakers (Guasti, 2002; Meisel, 2009; Prévost, 2009). Children who are diagnosed with profound deafness and are later exposed to sign language observe certain deficits compared to children exposed to sign language from infancy (Emmorey, 2002; Mayberry, 1993; Morford, 2000; Singleton & Newport, 2004). Additional evidence supporting the existence of a critical period for first language development comes from cases of children who were subjected to total isolation, as it is the case of Genie (Curtiss, 1977). By the time she was rescued at age thirteen, Genie could not speak a word of English. When efforts were made to teach her the language, she made substantial progress -especially in vocabulary- although she diverged from native standards in specific syntactic constructions. These cases, deaf children who are later exposed to sign language and children who are denied social interaction during their infancy, have been interpreted as evidence that supports the existence of a maturational period for first language development (Long, 1990). More evidence comes from Chugani, Behen, Muzik, Juhász, Nagy & Chugani's (2001) study, who examined the neural activity of ten Romanian orphanages. They found that social deprivation of institutionalized children results in long-term cognitive and behavioral disadvantages, consequences that are later evidenced in language development.

However, evidence supporting a critical period for second language development is less clear: To date, there is still no consensus on its duration, ranging from birth to late adolescence (Singleton, 2005), or the presumed domains affected by it: before age four for L2 phonology, after

four for lexicon, and by mid adolescence for grammar, according to Granena & Long (2012). The complexity of this debate has led most scholars to use the terms "sensitive" period for L2 acquisition (Bialystock & Hakuta, 1999; Flege, Yeni-Komshian & Liu, 1999; Knudsen, 2004) or "age effects" (Birdsong, 2005; Hakuta, Bialystock & Wiley, 2003), terms that entail softer boundaries and less strict theoretical implications.

2.3 Age Effects in L2 Acquisition

Inspired by the findings from Penfield & Roberts (1959), Lenneberg (1967) advocated for early immersion in a second language at school, arguing that for the same reason our first language(s) develop during the early years of life, there could also be a critical period for the acquisition of second languages. According to this hypothesis, reaching native-like attainment in a second language is possible if exposure starts within, not after, a limited time span during childhood. As it has been attested, there is an inverse relationship between age of arrival (AoA) i.e., the age of first exposure to the second language, and native-like attainment: a higher AoA results in decreased proficiency in pronunciation (Scovel, 1988) and grammatical accuracy (Johnson & Newport, 1989).

A shared feature of studies testing critical periods in L2 acquisition is the absence of a clear terminus point after which native-like attainment of is no longer possible. Compared to L1 acquisition, evidence for a true critical period in L2 acquisition is more elusive given that non-biological factors (e.g., schooling) affect the process (Birdsong, 1999; Moyer, 2004). Two positions have emerged: On one hand, a "strong" approach to this hypothesis establishes a clear difference between adult and child second language development, based on an early (or late) AoA to the second language (Bley-Vroman, 1990; DeKeyser, 2000). If AoA to the second language exceeds the limits of a predictable window of opportunity, native-like attainment in the L2 is not possible. This is evident in the phonetics/phonology domain (Scovel, 2006) but also in morphosyntax (Hawkins & Franceschina, 2004; Hawkins & Casillas, 2008). The Interpretability Hypothesis (Tsimpli & Dimitrakopoulou, 2007) for example states that certain features in the second language (e.g., tense, gender) with no direct counterpart in the L1 may be unavailable for the L2 learner if acquisition starts at a later age. The lexicon is apparently not affected by age effects (Abrahamsson & Hyltenstam, 2009; Hyltenstam, 1992; Silverberg & Samuel, 2004). On the other, a "weak" approach establishes softer boundaries between adult and child second

language development, and allows for external influences that also seem to impact second language development, such as differences with input or patterns of socialization (Singleton & Ryan, 2004; Montrul, 2008; Herschensohn, 2009). It has been argued that adult and child L2 learners are similar in many ways. White & Genesee (1996) measured the reaction times in a computerized grammaticality judgment task in twenty-nine near-native English speakers with AoA before twelve years old and thirty-three non-native learners with later AoA, finding no age effects within those groups: late starters behaved similarly to early starters (longer reaction times) when acquiring the Subjacency and Empty Category principles, evidence that supports the idea that access to UG and the ability to reach native-like proficiency levels are possible even at a later age. Unsworth (2005) found that in L2 Dutch, children and adult learners show similarities in how they handle movement of direct objects and gender agreement with determiners. Recent work by Hartshorne, Tenenbaum & Pinker (2018) with a dataset of 669,498 native and non-native English speakers who were teste on their knowledge of simple and complex syntactic constructions proposes that the ability to acquire a second language is preserved until age 17, with a sharp decline afterwards.

A complication of studies examining age effects in L2 acquisition is the lack of agreement on how to select and design an adequate array of tasks that allow for proper measures of nativelikeness. Some studies claim to have found evidence of native-like performance among L2 learners with late AoA (Birdsong, 1992; Bongaerts, 1999; Ioup, Boustagui, El Tigi & Moselle, 1994; White & Genesee, 1996), but those findings have been put to question by other researchers (DeKeyser, 2006; DeKeyser & Larson-Hall, 2005; Long, 2005, 2007), arguing that a small battery of language tests is not enough to properly examine true competence in the L2. Moreover, if those learners had been subjected to more demanding tasks, their limitations would be more evident to the researcher. Examples of measurements employed to assess the nativeness mark in L2 learners are global accent ratings in phonology (Asher & García, 1969; Oyama, 1978), and grammaticality judgments in morphosyntax (Johnson & Newport, 1989). More fine-grained studies have concentrated on specific language features, such as voice onset time in phonology (Abrahamsson & Hyltenstam, 2009). In morphosyntax, studies have examined locality constraints (Johnson & Newport, 1991) or aspectual properties of verbs (Montrul & Slabakova, 2003), for example.

Interestingly, an early AoA is not guarantee of native-like acquisition in an L2: Abrahamsson & Hyltenstam (2009) tested 195 learners of Swedish with several AoAs using ten

measures of grammar, pronunciation and vocabulary. From those participants, 41 were rated as natives by uninformed native speakers in an accent judgment task, but few reached the nativeness mark across all tests. From those few, no L2 learner with a AoA superior to 8 years old performed at native levels in all tasks. Conversely, aptitude is a more effective predictor for native-like attainment for late AoA. Using native speakers as a comparison yardstick, Abrahamsson & Hyltenstam (2008) found that late L2 learners of Swedish with high levels of language aptitude passed were passed for native speakers. Other authors have proposed that aptitude may lessen the effects of language attrition (Bylund, Abrahamsson & Hyltenstam, 2010). As it has been shown, there are additional factors other than age that apply in late second language development. Input and other contextual factors play a role in the process.

2.4 Input and Contextual Factors in L2 Acquisition

While evidence points to possible age effects due to a late AoA, especially in the phonology/phonetics productive and receptive skills and to some extent in the morphosyntactic domain, these are hard to identify and generalize to larger and heterogeneous L2 learner populations. Factors that are non-existent in L1 acquisition --where age effects are more clear-- apply to L2 acquisition during infancy, puberty and in adulthood. Factors that are non-existent in L1 acquisition --where age effects are more clear-- apply to L2 acquisition during childhood, such as proficiency in the first language, language dominance, frequency of use between the L1 and the L2, and access to native input among others (Flege, 2009; Unsworth, 2014). In this section I review the most important factors that impact the context of acquisition.

Quantity of input seems to affect children's acquisition of vocabulary and morphosyntactic properties. Cobo-Lewis, Pearson, Eilers & Umbel (2002) found that children in Miami with low socioeconomic status who attended English-only schools and employed both Spanish and English at home perform worse in measures of vocabulary in both languages. In examining the acquisition of gender in Dutch and Greek in bilingual children whose first language was English, Unsworth, Argyri, Cornips, Hulk, Sorace & Tsimpli (2014) found that amount of input rather than AoA was a predictive factor to explain difficulties among children learning L2 Dutch, a language that does not show explicit grammatical gender marking compared to Greek. The overall amount of linguistic input to which preschool children are exposed may have an impact on the rate of acquisition for certain language domains up to certain levels. Thordardottir (2011, 2014) found

that simultaneous bilingual children between three and five years of age who spend at least 40% of their waking hours since birth in a language environment can reach monolingual performance levels in grammar and vocabulary in that specific language, but not those who received lower levels of exposure. Cuza & Perez-Tattam (2016) found non-target use of masculine forms and ungrammatical syntax in a picture-naming task with heritage Spanish children in the United States, findings that were linked to difficulties in restructuring English features onto the Spanish lexicon and reduced input of the minority language.

L1 proficiency also affects L2 development. Paradis (2011), examining the child L2 acquisition of English vocabulary and verbal morphology, found that the proficiency level of the speakers at home had an effect on the chidren's outcomes. Chondrogianni & Marinis's (2011) study with bilingual Turkish-English children reports that complex syntax and vocabulary are affected by the mothers' low proficiency in English.

L2 acquisition in immigration settings is subject to many variables, e.g., richness and complexity of input, or social and cultural factors. For example, Jia, Aaronson & Wu (2002) found lower levels of L2 English proficiency and stronger age effects in a group of seventy-two speakers of three Asian languages, compared to thirty-two speakers of six western languages. Additionally, forty-four Mandarin-English bilinguals with higher AoA showed inverse grammatical accuracy when tested in their L1 (Mandarin) and in their L2 (English). Also, the quantity of input and the number of opportunities to employ the L2 may differ from individual to individual. In a longitudinal study, Jia & Aaronson (2003) documented the acquisition of ten Chinese learners of English with ages between five and sixteen. They noticed that children aged 5 years old had access to more contexts of L2 use compared to the adolescent participants. The younger learners had more English-speaking friends. During 6 years and 8 months, Winitz, Gillespie & Starcev (1995) documented the development of speech patterns in a native Polish child who emigrated to the United States at age seven. By the last observation, the child was rated as having native accent. The situation was different for other Polish children who also emigrated early in childhood, but were placed in remedial ESL classes in large urban area schools, where they had more contact with other immigrants.

Another contextual factor is the quality of the target language experience, defined by the range of contexts where the target language is employed by the L2 learner outside the classroom as well as the interactivity required in those contexts (e.g., watching TV vs. face-to-face

conversation). Moyer (2005) tested three syntactic features among thirty-one learners of German as a foreign language in written and oral tasks. He found that formal instruction favored written fluency, but oral fluency was more dependent on access to multiple domains of informal interaction. In short-term abroad immersion experiences, length of immersion plus relative use of L2 compared to L1 have been found to predict L2 fluency. Freed, Dewey & Segalowitz (2004) tested three groups of L2 French learners in different learning contexts: at home, intensive immersion, and study abroad. Not surprisingly, those in intense immersion made significant gains in speech fluency (higher number of words spoken, higher length of the longest turn, and higher rate of speech), followed by those on study-abroad.

Lastly, affiliation to the L2 is an interesting predictor of success in phonological attainment. Several studies report the positive role of socio-psychological factors, such as linguistic and cultural affiliation to the target language, the learner's identity in relation to the L2, active engagement in searching for opportunities to use the L2, or the desire to pass for native speakers, result in better phonological skills in the L2 (Major, 1993; Piller, 2002; Moyer, 2004).

As it has been reported, differences in how learners engage in interaction with the L2 (number of contexts where the L2 is used, social and cultural affiliation to the L2-speaking community, motivation, schooling, etc) affect the native-like acquisition of an L2. However, it may not be possible to separate AoA from the contexts where L2 learning takes place. This is more evident when we compare L2 acquisition and heritage language acquisition in adulthood, where both AoA and type of input are different in each group of learners. The following subsection describes these two populations and how their L2 learning takes place.

2.5 Adult L2 Learners and Heritage Speakers: Similarities and Differences

In a bilingual setting as it happens in the United States, two types of learners are common in the classroom, each with a different onset of exposure to the L2. On one hand, traditional classroom learners who are already native speakers of English by the time they are first exposed to the target L2. On the other, heritage speakers or second-generation immigrants who have being exposed to the target L2 early in childhood at home with their caregivers (Montrul, 2010a, Polinsky, 2006; Polinsky & Kagan, 2007; Silva-Corvalán, 1994; Valdés 2001). Regarding the type of input these learners receive, classroom L2 learners are instructed in the formal aspects of the language, and receive abundant written input --but limited aural interaction-- in the foreign

language. Heritage speakers however do not usually receive instruction in their home language, and it is common that by the time they reach adulthood they have developed a more informal (vernacular) variety of the target language. An important difference between these two groups is that heritage language learners are part of an ethnolinguistic community that provides them opportunities to develop socio-cultural competence in their home language, and sometimes access to informal instruction (Carreira & Kagan, 2011; Montrul, 2010a, 2016; Yeni-Komshian, Flege & Liu, 2000). However, L2 learners (and perhaps third or fourth generation inmigrants) do not have strong links with the target linguistic community compared to the former, and consequently opportunities to develop sociolinguistic aspects of the target culture are more limited.

Several studies report that heritage speakers are granted with advantages in speech production and perception due to an early start (Au, Knightly, Jun & Oh, 2002; Knightly, Jun, Oh & Au, 2003; Lukyanchenko & Gor, 2011; Oh, Jun, Knightly & Au, 2003; Saadah, 2011). Knightly et al. (2003) found that adults who overheard Spanish during childhood outperformed late L2 learners in measures of voice onset time and degree of lenition and accent perception measures. Kim (2015) examined the perception of Spanish heritage speakers and English L2 learners of Spanish to assess the influence of English in their non-target-like behavior, finding that heritage speakers did not produce the Spanish stress in a target-like manner but compared to L2 learners, their overall performance was closer to native speakers'.

However, these advantages are not necessarily extended to the morphosyntactic domain. As it has been mentioned earlier, heritage speakers do not use overt subject pronouns compared to native speakers (Silva-Corvalán, 1994; Polinsky, 2007), verb placement (Håkansson, 1995), or relative clauses (O'Grady, Kwak, Lee & Lee, 2001). When compared to L2 learners, the evidence is varied. Heritage speakers outperform L2 learners in certain morphosyntactic features. Mikhaylova (2012) examined the knowledge of high-proficiency L2 learners and heritage speakers of Russian in aspectual properties of verbs, telicity and boundedness, features that are overtly marked by verbs with different morphemes. She found that although both groups deviated from monolinguals in the interpretations, heritage speakers showed better performance than L2 learners in some semantic contrasts.

Heritage speakers can be at disadvantage over L2 learners in aspects that are learnt (activated) through formal education. For example, Rothman (2007) compared data from heritage speakers of Brazilian Portuguese with Rothman & Iverson's (2007) data with advanced L2 learners

and educated monolingual speakers in their knowledge of inflected infinitives. The heritage participants performed worse compared to the L2 and native groups in a grammaticality judgment task and in a sentence matching task, possibly due to the absence of formal input containing properties that are not explicit in colloquial dialects. The opposite situation occurs with structures that are not typically taught in the classroom. Cuza & Frank (2015) tested the production and intuition of double complementizer questions in Spanish, finding that although both groups deviated from monolinguals, the heritage speakers outperformed the L2 learners group in grammatical use and interpretation of these questions. Among other reasons, the authors concluded that constructions that are less frequent in the input are more challenging for L2 learners.

Some language structures interfacing various linguistic domains are difficult for both heritage speakers and L2 learners. Laleko & Polinsky (2016) compared the knowledge of topic and subject particles among heritage speakers and L2 learners of Japanese and Korean. Topic marking in these languages interfaces the pragmatic domain, but subject marking is purely syntactic. The results of an acceptability judgment task testing knowledge of grammatical and ungrammatical topic and subject markers use showed that overall, both groups had more difficulties with contexts at the syntax-pragmatics interface. Zapata, Toribio & Sánchez (2004) examined the interpreation and production of fronted direct direct objects (clitic left dislocations) in the Spanish of a group of heritage speakers and a group of L2 learners with a monolingual group as a comparison baseline. Clitic left dislocations are syntactic configurations that interface with lexical and discourse properties. The results showed that heritage speakers had better performance and knowledge than L2 learners in Topicalizations involving generic and specific DPs.

Additionally, these two groups show different performance depending on how language is accessed. Due to a different experience with input i.e., the nature of input received, heritage speakers and L2 learners seem to favor different types of knowledge: explicit knowledge is accessed through declarative memory, can be verbalized, but is not executed with speed and automaticity; implicit knowledge is stored in the declarative memory, cannot be verbalized, but can be executed fast and automatically (Bialystock & Hakuta, 1994; Ellis, 2004; Han & Ellis, 1998; Hu, 2002; Hulstijn, 2005). These two types of knowledge are activated using specific tasks: implicit knowledge can activated through elicited imitation tests, timed grammaticality judgments, and oral-based tests; explicit knowledge can be accessed via untimed grammaticality judgments and tasks that rely on metalinguistic skills (Absi, 2014; Akakura, 2011; Norris & Ortega, 2001;

Ellis, 2006; Spada & Tomita, 2010). Therefore, the task employed to access the linguistic knowledge of these two groups of language learners may be more implicit in nature (relying more on intuition) or more explicit (relying on learned and verbalized grammar rules). These differences --type of linguistic knowledge developed due to a different experience with the L2 and how this knowledge can be accessed-- must be taken in consideration to better understand the L2 grammars of these bilingual groups.

2.6 Conclusions

The goal of this chapter was to review the effects of age and type of input in second language development, and how these differences impact the acquisition process in adulthood. The groups of interest in this study involve traditional classroom learners who start learning Spanish later in life through (mostly) written input in a formal environment, and speakers of minority languages, who start the learning process early but show limitations in certain morphosyntactic constructions. Having established the characteristics of each type of learner, this research seeks to explore their knowledge of complex syntactic constructions that involve object clitic pronouns in Spanish, which is the goal of the next chapter.

CHAPTER 3: A THEORETICAL ACCOUNT OF CLITIC CLIMBING CONSTRUCTIONS IN SPANISH

3.1 Introduction

In this chapter I summarize the morphosyntactic properties that affect the Spanish object clitic pronoun paradigm, and review various theoretical approaches (formal, generative, functional) to clitic climbing constructions in Spanish. While the phenomenon at hand has received significant attention (Ordóñez, 2002, 2012; Raposo & Uriagereka, 2005; Roberts, 2010, to cite a few), to date there is not a single, unifying approach that captures all the aspects that regulate the nature of this optional syntactic movement. Therefore, the goal of this chapter is to (1) to describe the basic morphosyntactic properties of Spanish object clitics as well as the most prominent theoretical accounts to Romance cliticization, and (2) to examine the clitic climbing phenomenon in Spanish, focusing on the structural conditions in which it takes place. I start by reviewing the nature of clitics. Then I describe the Spanish object clitic paradigm, concentrating exclusively on the morphosyntactic features of the standard forms that can be found in the majority of the major Spanish dialectal variants. An analysis of Spanish clitics would not be complete without mentioning the two most widely known generativist approaches that account for cliticization in Romance. The next section describes the "movement" and "base-generation" proposals. Then I describe the clitic climbing phenomenon, providing the reader with an overview of the structural conditions in which it takes place, and the proposed formal, generativist, and functional analyses that attempt to capture such optionality. The last portion of this chapter offers a description of the learning task that L1 English speakers have to tackle in order to acquire native-like command of Spanish object clitics and clitic climbing constructions.

3.2 Conceptualizing Clitics

Clitics are functional elements in the syntax with some features typical of independent words and some of inflectional affixes within words, such as gender or number. They are present in numerous languages, and their nature allows them to appear in the sentence as heads, arguments, or modifiers, although they behave more closely to affixes, which depend on adjacent words (Zwicky, 1994). English clitics for example, are 'simple' in that they are the result of phonological

reduction of a free morpheme, becoming phonologically subordinate to a neighboring word (e.g., *We gave'em to 'er*). Cliticization of this sort usually correlates with a certain style, such as casual or rapid speech. Spanish object clitics however are classified as "special", in the sense that they emerge in a distinct position from their associated strong forms, but since they are reduced words, they cannot stand alone (Klavans, 1995, p. 48; Gerlach, 2002), as it happens in (1):

(1) a. ¿A quién besaste? A él/*lo
To who kiss? To him/*cl.3.sg.acc
'Who did you kiss? Him.'

Such dual nature allows these functional categories to resemble affixes that require a stressed host and independent words in the sentence at the same time (Hopper & Traugott, 2003). This characteristic of Spanish object clitics evidences their "special" syntax, in particular with verbal periphrases, as it will be described later.

3.3 Spanish Object Clitics: Morphology and Syntax

Spanish has two distinct types of pronouns: personal pronouns (stressed, strong forms) and object pronouns (unstressed, weak forms). These latter are also known as clitics, because they lean onto a stressed phonological head. Strong and weak (clitic) pronouns diverge in their morphological, phonological, and syntactic properties (Zwicky, 1994; Fernández Soriano, 1993). For instance, clitic pronouns cannot be coordinated. This property however is allowed in strong forms. See the following example (2), adapted from Ordóñez (2012):

(2) Ella/*la y él/*lo llegaron tarde.
She/*cl-3.sg.f and he/* cl-3.sg.m arrived late
'She and he arrived late.'

The Spanish clitic system is not as rich as that in other Romance languages. Spanish clitics always function as objects, except for the impersonal *se* form. Object clitics can be further divided according to their morphological marking: "person" clitics are first and second person pronouns (*me* 'me', *nos* 'us', *te* 'you (sg.)', *os* 'you (pl.)', and reflexive/reciprocal and impersonal *se*); "non-

person" clitics *lo(s)* 'him/it/them', *la(s)* 'her/it/them', *le(s)* 'him/her/it' correspond to the third person. The dative form *le* appears as *se* when if it is accompanied by a direct object clitic pronoun in sentences with two object clitics (see example 3b below). The literature refers to this variant as the "spurious *se*" (Perlmutter, 1970). Clitics also carry a feature of definiteness, to guarantee a unique referent per object in the context. For this reason, accusative clitics are not bounded to indefinite DPs (Fernández Soriano, 1999). Apart from being marked by their phi-features (i.e., gender, person, number), Spanish object clitics also encode case (accusative, dative) (Bonet, 1995; Kayne, 2000). Table (1) shows the full paradigm. Notice that the *os* form is only used in Peninsular Spanish.

Table 1: The Spanish object clitic paradigm (adapted from Halle & Marantz, 1994, p. 280)

		3p		2p		1p	
		Masc	Fem	Masc	Fem	Masc	Fem
ACC	Sg	lo	la	te		me	
	Pl	los	las	os		nos	
DAT	Sg	le		same form as for ACC			
	Pl	les					
REFL	Sg	se					
	Pl						

Another complex fact that Romance grammars attempt to capture is clitic placement within the syntactic configuration. The basic word order in most Modern Romance languages is SVO (3a) but changes to SOV when dative and accusative DPs pronominalize, as in (3b).

(3) a. Karla compra un dulce a su amiga (SVO)
Karla bought a candy to her friend
'Karla bought some candy for her friend'

b. Karla **se lo** compró (SOV)
Karla cl-3.sg.dat cl-3.sg.m.acc bought
'Karla bought it (for) her'

The syntax of strong and clitic pronouns therefore requires different treatments. Generally speaking, Romance object clitics invariably appear in a position close to the verb, where full DPs or strong pronouns cannot appear (Fischer & Goldbach, 2016, p. 371). In Spanish, clitics precede tensed verbs (a process also known as "proclisis"), while they are attached to non-finite forms ("enclisis") (5a, b):

(4) a. **Lo** compró.
cl.3.sg.m.acc bought
'(S/he) bought it.'

b. Es mejor hablar**lo**.
is better to speak-cl.3.sg.m.acc
'It is better to talk about it.'

There are two ways to form commands with Spanish object clitics, each corresponding to the formal and informal addressing forms affirmatively or negatively. Affirmative mandates attach clitic pronouns to the right of the conjugated verb, both in formal and informal uses (6a, b), and the opposite with negative commands: similarly to finite verbs in indicative and subjunctive moods, object clitic pronouns precede the verb in both registers (7a, b).

(5) a. Cómpre**lo**. (formal)
Buy-cl.3.sg.acc

b. Cómpra**lo**. (informal)
Buy-cl.3.sg.acc
'Buy it.'

(6) a. No **lo** compre. (formal)
No cl.3.sg.acc buy

b. No **lo** compres. (informal)
No cl.3.sg.acc buy
'Don't buy it.'

As we see, Spanish clitics are complex functional elements in that they show some features typical of independent words, but do not show syntactic independence. Theoretical approaches to cliticization find difficulties in creating a uniform theory because the nature of clitics affects multiple levels of representation, such as their position, linear order, and interpretation. The following section reviews the most prominent approaches to Romance clitics within the generative tradition.

3.4 Cliticization in Generative Grammar

Theories and approaches to cliticization in Romance have been ongoing during the past forty years. Several frameworks have been employed to describe the nature and properties of object clitic placement, such as Optimality Theory (Gerlach, 2002; Grimshaw, 2001), the Lexical Functional Grammar (Grimshaw, 1982), or the Head-driven Phrase Structure Grammar (Monachesi, 1999). In addition to those, the generative model (Chomsky, 1981, 1995, 2001, etc.) seeks to identify the nature of clitics, whether they are heads or phrases, the relationship between these categories and their associated canonical positions in the sentence, as well as the functional categories that can host them in the syntactic derivation. This subsection reviews the most prominent approaches to Romance cliticization within the generative tradition.

One way to explain cliticization in Spanish is via syntactic movement (cf. Kayne, 1975; Quicoli, 1976; Uriagereka, 1995, among others). This approach was firstly motivated by the observation that French clitics and their full DP counterparts show a complementary distribution (Kayne, 1975). These approaches share the idea that Romance clitics generate in canonical positions as verb arguments (i.e., as an object complement) which move to their surface position i.e., to the left of the verb as a consequence of a syntactic operation (e.g., Move-alpha) and language-specific rules. Under this view, a clitic is first generated as a regular VP-argument, acquires case and theta-assignment, and then procliticizes to the left of the matrix verb, leaving a trace (8).

(7) Marcos [**lo$_i$** compró] t_i

Marcos [cl$_i$.3.sg.m.acc bought] t_i

'Mark bought it'

Kayne (1989) suggests that the finite verb moves first to T in order to check agreement features, and subsequently the clitic is left-adjoined to the V + T complex via syntactic movement from the canonical VP-argument position. Evidence of a movement operation is shown by the existence of a "trace" (an empty category) in the place abandoned by the constituent. The derivation of *María lo pidió* 'Mary requested it' is shown in Figure (2):

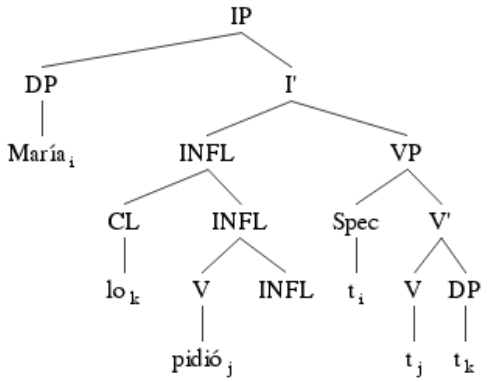


Figure 1: Cliticization under Kayne's (1989) proposal

One of the major strengths of movement-based approaches is their uniformity and simplification across the data. However, certain constructions in Spanish challenge the view that both clitics and full DPs surface in complementary distribution, as it is the case of "clitic doubling". In a sentence such as *Le vi a María* 'I (cl) saw Mary', a dative clitic co-occurs with animate, human referents. In this case, the movement hypothesis cannot explain which category is theta-marked.

The "base-generation" hypothesis provides a more natural account for this phenomenon. According to these analyses, clitics generate in a position to the left of the verb, while the co-indexed DP generates in its canonical VP-internal argument position. Clitics therefore become adjuncts (e.g., lexical units) of the verb, not as arguments that receive thematic role (Borer, 1984; Jaeggli, 1982; Rivas, 1977; Strozer, 1976; Suñer, 1988). Suñer's (1988) proposal states that clitics are co-indexed with the argument position by chain co-indexing. Her "Matching Principle" states

that clitics and DPs in the same chain must have equal agreement features, a condition that severely restricts their co-ocurrence. Therefore, clitic doubling can now be captured any time language-specific rules apply, allowing both clitic and DP to surface. The derivation of *Le vi a María* is shown in Figure (3).

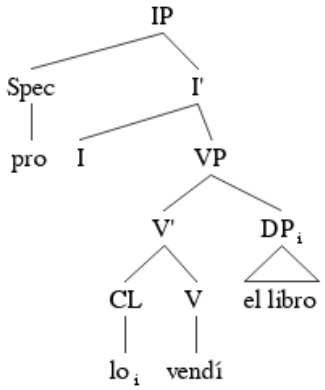


Figure 2: Cliticization under Suñer's (1988) proposal

The main criticism against base-generation approaches is that clitics cannot undergo movement at all. If clitics are part of the verb head, the [cl + V] lexical constituent must behave as a single unit, and thus movement of its components is not allowed. The locality constraints that affect clitic placement remain unexplained.

In sum, clitic placement and distribution in Spanish are regulated by syntactic and phonological principles. Some clitic-related phenomena (e.g., clitic doubling) cannot be accounted for by syntactic operations only, which makes it necessary to include the interaction between syntax and semantics of the doubled DP (e.g., specificity, animacy). So far, no proposal so far has been able to explain all aspects of clitic placement across Romance languages. These proposals, as we will see in the following section, are challenged by "clitic climbing" constructions.

3.5 Clitic Climbing

3.5.1 Overview

In certain verbal periphrases, object clitics can move beyond the verb that subcategorizes for them. This property allows them to procliticize the finite matrix verb or remain enclitic on the

tenseless sentential complement verb. When the relevant conditions are met, both alternatives are equally acceptable and, at least in Spanish, their interpretation is the same in the majority of cases. This phenomenon is known in the literature as "clitic climbing", or "clitic promotion" (Kayne, 1989; Luján, 1980; Rizzi, 1982) (8a, b):

(8) a. Tengo que verlo.
have-1.sg to see-cl-3.sg.m.acc

b. Lo tengo que ver.
'(I) have to see it.'

Thus, clitics may not always be found as complements to the verb they logically belong to. Instead, they may be 'attracted' to the matrix verb. This is an anomalous phenomenon that also happens in other non-Romance languages such as Dutch, German, Serbo-Croatian, or Kru languages. It is anomalous in the sense that these forms appear in the matrix (finite) domain rather than in the complement domain where they originate, with no reason whatsoever forcing them to move (Bok-Bennema, 2006). Determining the distribution of clitic climbing is a complex task since it is constrained by the structural description and the lexicon (i.e., the matrix verbs that meet the structural context). Structurally, this phenomenon is restricted to certain classes of matrices that take non-finite sentential complements, such as the so-called "restructuring" verbs (modals, aspectual, movement), subject control, causative and perception verbs (Rizzi, 1982). There are also lexical restrictions. Even if the structural conditions are met, some matrices present low rates in clitic climbing acceptability (9a, b).

(9) a. Juana intentó hacer**lo** ayer.
Juana tried to do-cl.3.sg.m.acc yesterday

b. ?Juana **lo** intentó hacer ayer.
Juana cl.3.sg.m.acc tried to do yesterday
'Juana tried to do it yesterday.'

Other verbal periphrases never allow clitic climbing, such as factive verbs (10a, b) or impersonal constructions (11a, b).

(10) a. Lamento conocer**te**.
regret-1.sg know-cl.3.sg.dat

***Te** lamento conocer.
cl.3.sg.dat regret-1.sg. know
'I regret having met you.'

(11) a. Es mejor hablar**lo**.
is better to speak-cl.3.sg.m.acc

***Lo** es mejor hablar.
cl.3.sg.m.acc is better to speak
'It is better to talk about it.'

Clitics cannot cross intervening heads (e.g., wh-elements, adverbials, negations), as in (12, 13). In fact, any element that occupies the Complementizer (C) position acts as a blocking agent, preventing clitics to be extracted to the higher functional T projection. Wh-elements are assumed to occupy the Spec CP area, and an empty [+wh] head is hosted on C (Kayne, 1989).

(12) a. Sé cómo decir**lo** en inglés.
know.1.sg how to say-cl.1.sg.dat in english

b. ***Lo** sé cómo decir en inglés.
'(I) know how to say it in English.'

(13) a. Prefiero no hacer**lo**.
prefer.1.sg not to do-cl-3.sg.m.acc
'(I) prefer not to do it.'

b. ***Lo** prefiero no hacer.

In sum, clitic climbing refers to a type of non-obligatory movement which may apply, in the absence of an obvious trigger (Rizzi, 1982; Roberts, 1997; Rooryck, 2000). But the question of what motivates clitics to climb to the functional projection of the matrix verb still remains. At a first glance, the nature of the matrix verb is key for clitic climbing acceptability, but other syntactic, lexical and pragmatic factors are also at play. In the following, I review the most important formal, generativist, and functional accounts that attempt to describe cliticization of this sort in Spanish.

3.5.2 'Restructuring' Accounts

One way to derive the syntax of clitic climbing constructions is by establishing a binary rule to determine which verbal matrices allow it and which ones do not. These accounts revolve around the notion of "restructuring", which states that verbs that allow clitic climbing undergo an optional process that converts "an underlying bi-sentential structure" (Rizzi, 1982, p. 2) into a simple one. In other words, a complex verbal unit consisting of a main verb and an embedded one.

Aissen & Perlmutter (1976) noticed that some verbs undergo a process of "clause reduction", making dependents of a complement (embedded) verb become dependents of the matrix verb. Similarly to Rizzi, this rule predicts that "trigger verbs" may host clitics from the complement, non-finite verb. Therefore, "restructuring" or "trigger" verbs are restricted to three classes: modals, aspectuals and aspectuals containing motion verbs. Similar taxonomies have been proposed for Italian by Napoli (1981), Catalan by Picallo (1990), and Spanish by Zagona (2002). A limitation of formal accounts is that they cannot explain how verbs trigger clitic climbing some times and not on others, regardless the matrix verb falls into the categories of "restructuring" or "trigger". Nevertheless, the generative analyses accounting for clitic placement in Romance take advantage of these concepts, and although they cannot explain the matrices' optionality for

attracting clitics from their arguments, they provide more detailed accounts of the internal operations that are at play.

3.5.3 Generativist Accounts

Under generativist accounts, clitic climbing has often been linked to the Null Subject Parameter (Kayne, 1989; Rodríguez Mondoñedo, Snyder & Sugisaki, 2005). Kayne (1989) argues that the null subject parameter observes two possible values, distinguishing languages with "strong" INFL and languages with "weak" INFL. The strong INFL can license null subjects in the Spec, INFL (TP) position and can L-mark its VP complement. For example, null-subject languages such as Italian or Spanish have strong INFL properties that allow the VP to lose its barrierhood. In these languages clitics may move from an infinitival complement position up to the matrix V domain. This is not possible in French whose INFL setting is weak (14a, b, c):

(14) a. *Jean les veut parler.
John them want-3.sg talk
'John wants to talk to them.'

b. Gianni li vuole parlare.

c. Juan les quiere hablar.

This hypothesis has been later refined to determine the exact nature of the clitic as well as the concrete landing site. Kayne (1991, 1994) proposes that (1) the clitic originates as a subpart of the VP-internal DP argument, that is, as a determiner D whose NP sister is the empty category *pro*; and (2) clitic placement is determined by the [+/- finite] feature of the verb. Therefore, finite and non-finite verbs show particular local cliticization patterns. In finite clauses, the finite verb adjoins to T to form a complex with the element that occupies it, and subsequently, this V + T complex adjoins to the AGR head to pick up the agreement suffix. The clitic escapes the DP complement and moves directly to the left of an abstract functional head devoid of features above the highest verb morpheme projection, yielding the [cl V] order. This projection is called "Clitic Holder (XP) phrase". Figure (4) shows the proclitic construction of *María lo vio* 'Mary saw it'.

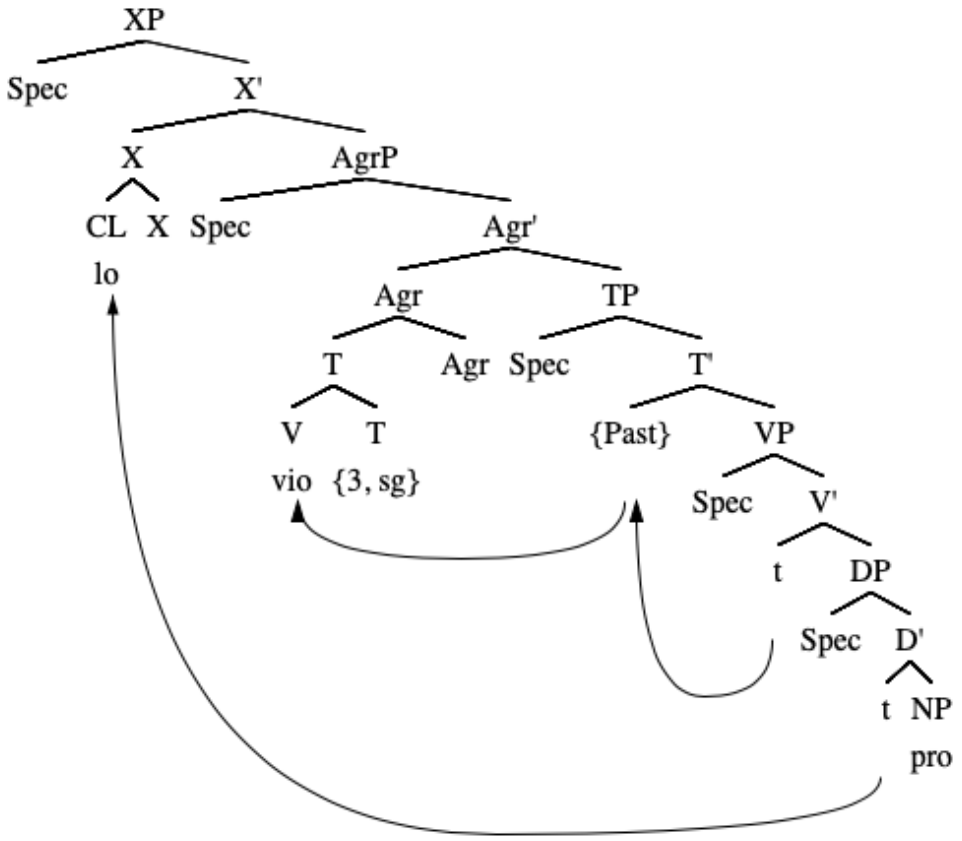


Figure 3: Kayne's (1994) derivation for lo vio '(S/he) saw it'

In Romance infinitival clauses, the AGR and T categories do not project. However, Kayne (1991) proposes that non-inflected clauses have an abstract functional projection within T, and an empty functional node "InFn" which holds the infinitive marker (e.g., Spanish verbs show the following infinitival suffixes: "-ar", "-er" and "-ir"). A clitic moves up out of the complement DP and left-adjoins to the abstract functional head T. Then, the bare verb raises to InFn to pick up the marker and subsequently, the infinitive V + InFn complex adjoins to the left of the clitic, yielding the [V-cl] order. Figure (5) shows the enclitic construction of *verlo* 'seeing it'. t_i

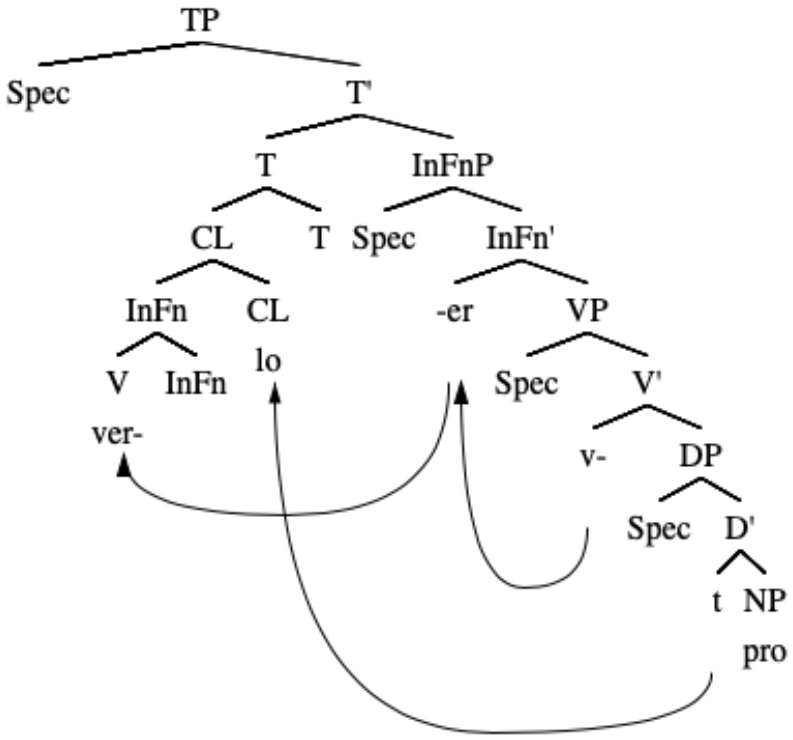


Figure 4: Kayne's (1994) derivation for verlo 'seeing it'

In non-local cliticization, as it is the case of clitic climbing constructions, a clitic appears attached to the matrix verbal complex instead of being linked to the verb that subcategorizes for it. In line with Kayne (1991, 1994), Blasco Aznar (2002) postulates that clitic climbing results as a clitic movement from an embedded tenseless domain (where the clitic heads the DP complement of that domain) directly to the left of the abstract functional head in the Clitic Phrase above the matrix verbal complex. If we consider that the Clitic Holder phrase is an extension of AGR, it can be claimed that the clitic does not cross over any intervening head and thus, it is allowed to move in a single movement to its landing site. The non-finite verb of the embedded clause and the finite verb of the matrix sentence must move up in the manner indicated before (i.e., local cliticization), so that they can pick up their corresponding verbal suffixes. In addition, the author assumes that some kind of clause union should take place (i.e., the lower verb and C reanalyse with the matrix verb). The derivation of *María lo quiere ver* 'Mary wants to see it' is presented in Figure (6).

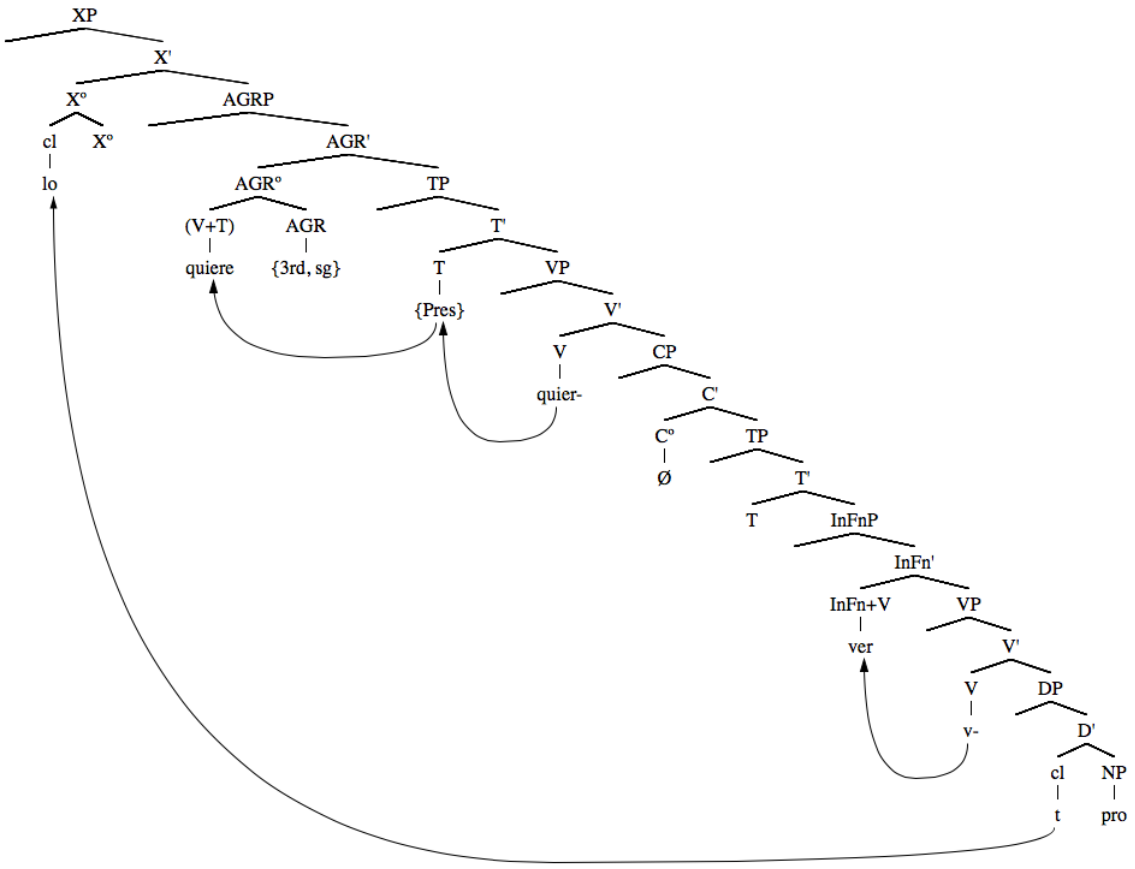


Figure 5: Blasco Aznar's (2002) derivation for lo quiere ver '(S/he) wants to see it'

This movement-based analysis provides us with an acceptable derivation to represent the data in Spanish, although it is not clear what precisely motivates clitics to move. It has been proposed that due to their weak morphophonemic nature, clitics are not true independent categories and therefore need to be moved to obtain stress form the host element adjacent to them (Ouhalla, 1989). Formal and functional approaches show their limitations in that they can only tell us the well-formedness of clitic climbing sentences based on grammaticality judgments, but they cannot explain the language-internal factors that drive clitics to abandon (or not) their canonical argument positions when the relevant structural conditions are met. To know more about these factors, it is necessary to examine the conditions in which these structures are more frequent in the speakers' utterances.

3.5.4 Functional Accounts

Functional studies seem to better capture the apparent optionality of matrices capable of attracting clitics from their non-finite complements. In these analyses, the aim is to identify high and low frequency rates of clitic climbing constructions in oral and written corpora. Therefore, clitic climbing is not seen as a binary process which formal or generativist accounts propose, but rather as one in which language-specific rules apply before Spell-Out (Embick & Noyer, 2001). In what follows, I summarize the most important language-internal factors that have been found to affect clitic climbing optionality.

Similar to formal accounts, functional studies have identified the semantic properties of the matrix verb as the most reliable variable to predict clitic climbing. Myhill (1989) relates the underlying synchronic grammaticalisation process of the matrix verb with its ability to attract clitics from its non-finite complement. In his results (p. 355), the author noticed that those verbal periphrases indicating progressive aspect (*ir* 'go' + gerund, *estar* 'be' + gerund, and *ir a* 'be going to' as a future marking) were among the ones with the highest degree of clitic climbing acceptability. These forms are interpreted by native speakers as 'bleached' of their semantic reading of motion, becoming merely auxiliary forms and therefore allowing proclitic placement. Other studies arrive to similar conclusions: Napoli (1981) hipothesizes varying degrees of "conceptual unity" between matrix and embedded verbs, and Rosen (1989) makes a distinction between "light" and "heavy" verbs. Davies (1995) proposes a semantics-based approach as a better way to account for clitic climbing. In his study he selected thirty-two verbs from written and oral corpora, and ordered them in a continuum-like spread of acceptability. His approach has the advantage that it captures those matrices with a certain degree of clitic climbing acceptability but did not belong to a strict grouping (e.g., auxiliary, modal). For example, *saber* 'to know/to know how' showed higher acceptability to clitic climbing (33%) compared to *necesitar* 'need' or *deber* 'must', modal verbs with a 20% of acceptability, or aspectual verbs (e.g. *comenzar a* 'start to' and *dejar de* 'stop', both at 25%).

The nature of the clitic itself is a conditioning factor for clitic climbing incidence or optionality (phi-features, animate vs. inanimate, single clitic vs. clitic cluster) also constrain clitic climbing. Regarding phi-features, Gudmestad (2006) analyzed clitic climbing in a corpus of verbal periphrases headed only by the verb ir 'to go', finding that second-person clitics show higher likelihood for climbing compared to first- and third-person (98.6% > 93.9% > 90.0%). However,

it is difficult to establish a relationship between clitic climbing incidence and the person value of the clitic since those values are very close and the author only focused on the matrix with higher degree of CC incidence. Another important feature was the number of clitics: singular-form clitics show a higher chance of climbing compared to clitic clusters (95.7% vs. 78.6%). Gender was not examined. Clitic animacy/topicality has more predicitive power for clitic climbing incidence compared to phi-features. Myhill (1989, p. 242; 1992, p. 224) found that the animacy/person of the clitic predicts its ability to climb: animate clitics are more likely to be preposed compared to those with inanimate referents. However, Gudmestad's (2006) results with ir 'to go' showed the opposite: inanimate clitics climbed more than inanimate ones (96.2% vs. 89.6%), suggesting that the semantics of the matrix verb may override the influence of the semantics of the clitic in matrices with high auxiliary nature. Regarding the person value, Myhill also noted that clitic animacy in relation to the likelihood to climb varies according to the subject of the matrix verb: second-person clitics triggered clitic climbing more frequently than third-person, plural, inanimate clitics. In other words: more animate second- and first-person pronouns are more topical in the discourse and consequently more likely to procliticize. However, Myhill's (1989, 1992) proposed hierarchy has recently been found not to be strictly categorical in Argentinian Spanish (Sitaridou, Whimpanny & Ayres, 2015). Finally, Davies's (1995) results show that number of clitics (single vs. multiple) also affects clitic climbing in spoken Spanish. Multiple clitics are significantly more often preposed than single ones (87% vs. 68%).

These findings from functional approaches suggest that this phenomenon is affected by more than one factor. Under formal and generativist accounts, this complex relationship between the semantics of the verb and the of the clitic would be more difficult to account for. It seems therefore that this is a complex phenomenon in which syntactic and pragmatic principles interact with each other in the speakers' utterances of [V inf] constructions with clitics.

3.6 The Learning Task of Heritage Speakers and L2 Learners of Spanish

I have examined some of the properties of Spanish object clitics as well as those of clitic climbing constructions. However, I have not discussed the learners' first language and the properties of their pronominal inventory. The English object pronoun inventory is simpler in comparison to the unstressed Spanish one (Quirk, 1985, p. 336), as Table (2) shows:

Table 2: Distribution of English object pronouns

	1ST	2ND	3RD	
Sg	*Me*	*You*	M	*Him*
			F	*Her*
			N-P	*It*
Pl	*Us*		*Them*	

Regarding their morphology, accusative and dative case marking employ the same form, and there is certain syncretism among them: A single second-person form *you* denotes both singular and plural forms. Similarly, the third person plural form *them* does not show gender features, contrary to its singular counterparts *him/her*. The *it* form is used to denote non-personal entities; it does not mark neuter gender. Finally, there are two first person variants for singular and plural marking, *me/us*. Their syntax shows properties from independent words. English pronouns are strong and contrary to clitics, they behave as full DPs and occupy argument positions in the sentence, showing a strict SVO derivation, regardless of the finiteness of the verb selecting them (15a, b):

(15) a. I don't have it.
b. Find it, then.

Therefore, the English and Spanish pronominal paradigms present important differences: the inventory of English pronouns is simpler than the Spanish one because the English strong forms do not show plural and case marking, while Spanish clitics mark these phi-features in their morphology. Additionally, Spanish clitics show different syntactic distribution according to the finiteness of the verb that selects them, whereas English object pronouns always remain in post-verbal positions. Proclitic and enclitic constructions in [V inf] constructions do not exist in English, and therefore L1 English learners must learn a new pronominal inventory with unique morphosyntactic properties, which do not coincide with their native system, and the optionality shown in clitic climbing constructions. We have also learned that the acquisition of Romance cliticization is intimately related to syntactic movement, while in English these operations are more

reduced. The L2 learner of Spanish will have to add these properties to his/her interlanguage in order to acquire native-like command of Spanish clitic climbing constructions.

3.7 Conclusion

In this chapter I review differences between weak and strong pronouns, I have summarized some of the most important morphosyntactic properties of the Spanish object clitic system, and explained how the special nature of clitics works in complex verbal constructions that involve a matrix verb taking an infinitival complement. The proposed theoretical accounts to Spanish clitic climbing show that this phenomenon is contingent upon several syntactic and semantic factors. First, the structural conditions that allow clitic climbing to occur must take place (e.g., a finite matrix with certain degree of grammaticalisation and a non-finite complex that selects an argument DP that cliticizes); and second, there must be no intervening heads at the embedded CP level and the matrix TP must project its AGR features (i.e., no impersonal constructions). For the purposes of this study I consider clitics to be Xº heads that may undergo movement from their non-finite VP complement positions to a functional category within the AGR projection of the matrix verb; a movement that can be predicted by the degree of grammaticalisation degree of the matrices (e.g., auxiliary, modal). As we have seen, impersonal constructions (e.g., *hay que* 'one has to') may take non-finite complements but these verbal periphrases do not project AGR properties, and thus clitic climbing is not possible. The effect of these factors will be studied in the interlanguage grammars of L2 Spanish speakers. The following chapter reviews the studies to date on the acquisition of Spanish clitic climbing.

CHAPTER 4: THE ACQUISITION OF SPANISH CLITIC CLIMBING CONSTRUCTIONS

4.1 Introduction

This chapter offers a state-of-the-art of the L2 acquisition of Spanish clitic climbing constructions. The goal of this section is to summarize the studies to date that examine the state of variable object clitic placement in English-Spanish bilingual grammars and to identify methodological gaps and questions that still remain unanswered. The majority of these studies examine knowledge of clitic climbing among other clitichood-related phenomena (e.g., "clitic doubling" or the simultaneous occurrence of a clitic with a DP pronoun in argument position, as in *Lo vimos a Juan* 'We saw Juan'). To better understand the L2 acquisition of the syntactic phenomenon at hand, it is necessary to review how the properties of clitic climbing constructions are acquired by native speakers of Spanish (4.2). Then I review studies on adult acquisition (4.3), describing populations whose L1 has clitics or not (e.g., French vs. English). The next sections concentrate on the performance of child and adult bilinguals; sections (4.4) and (4.5), respectively. In this latter section I concentrate on the few studies that compare L2 learners and heritage speakers of Spanish. The majority of these studies employ traditional experimental (offline) methods, although some studies have started to include psycholinguistic measurements, allowing researchers to examine how these populations parse clitics compared to native Spanish speakers. Therefore, a subsection devoted to online tasks is included in this chapter (4.6). Clitic climbing constructions in US Spanish have been examined under the lenses of the variationist tradition as well. These studies identify highly-frequent patterns of use in the speech of heritage speakers, and for this reason a comprehensive review has been included in section (4.7). Then, I identify the gaps that have not yet been addressed in relation to the literature on age and input effects in L2 acquisition discussed in the previous chapter and the properties of this phenomenon described in chapter 3 (4.8). A summary of the findings closes this chapter (4.9).

4.2 The L1 Acquisition of Clitic Climbing

Children already incorporate clitics in their speech at an early age (Grohmann & Neokleous, 2014; Larrañaga & Guijarro-Fuentes, 2012), and for this reason research studies on

child Spanish examine on how and when children acquire the grammatical placement of clitics. Clitic climbing constructions have been used as a ground test for hypotheses on parameter setting under the Universal Grammar framework. For example, seeking to test Kayne's (1989) proposal that ties clitic climbing phenomena to the Null Subject parameter and Wexler's (1996, 1998) hypothesis that clitic climbing constructions are among the early-set parameters in language acquisition, Rodríguez-Mondoñedo, Snyder & Sugisaki (2005) examined five transcriptions of child speech from the CHILDES database (MacWhinney, 2000). Broadly speaking, Kayne's (1989) proposal is based on the idea that Null Subject languages such as Spanish select "strong" INFL properties that allow clitics to escape from infinitival VP complements. French however selects the "weak" parameter and thus does not allow clitic climbing. Wexler's (1996, 1998) hypothesis of early parametter-setting states that basic parameters such as null subjects licensed by matrix infinitives are set correctly when the child reaches the "two-word" stage, approximately by eighteen months. Even though the results were preliminary, the authors found that Spanish children start using clitic climbing constructions as soon as they develop knowledge of clitics and verb complements in infinitive. For example, Eduard was reported to invariably use clitic climbing by the end of his corpus (age 3;10). Additionally, the results of a binomial test to measure whether children acquired non-climbing forms first were negative. The authors concluded that although few test subjects were investigated, their findings support Kayne's (1989) and Wexler's (1996, 1998) hypotheses.

Eisenchlas (2003) employed an elicited imitation task to examine object clitic placement in Spanish verbal periphrases on seventy-one children from Argentina. The rationale of her methodology is the following: If the participant's grammar matches the grammar of the stimuli, the repetition will probably be accurate. Inaccurate answers may instead reveal certain differences between grammars, or differences in the process of producing complex sentences with clitics. Therefore, word order changes in the responses were scored as inaccurate. Participants were thus divided into seven age groups: "3;0-3;6", "3;7-4;0", "4;1-4;6", "4;8-5;0", "5;2-5;6", "5;7-6;0", "6;1-6;4". The stimuli included sentences with modals followed by non-finite complements, alternating clitic positions (preverbal, postverbal) and type of object (indirect, direct). Results showed a strong tendency (93% of the overall imitations) to alter stimuli with postverbal clitics, regardless of the type of object. A developmental curve was found to stabilize at around age 4, and the rates of pre- to post-verbal repositioning was very low (6% across all repositioning errors),

among the older age groups. Given that clitics were consistently placed in appropriate positions, the author concluded that in respect to variable object clitic placement in Spanish, there is early parallel between child and adult grammars.

In a more comprehensive study with monolingual children that manipulated finite verb and animacy, Requena (2015) reports that by age 4;0 children not only match adults in their community in the overall preference for proclisis over enclisis, but also that at that age children also use lexical and semantic constraints to variable object clitic placement reported for monolingual adults.

4.3 The Acquisition of Clitic Climbing by Adult L2 Spanish Learners

Studies testing traditional classroom learners have approached the acquisition of clitics and other clitichood-related phenomena as an issue of parameter resetting: English object pronouns are strong and show the syntax of independent words, while Spanish clitics are prosodically weak and observe idiosyncratic syntax. The learning task is therefore to incorporate these properties to the learners' interlanguage. Not surprisingly, authors have tested knowledge of clitics among participants whose L1 have clitics (French) or not (English).

One of the first works on the acquisition of L2 Spanish clitic climbing is Liceras' (1985) study. The author noticed that in spite of being exposed to the same input, L2 Spanish learners seem to deal with clitics in two distinct ways, either as affixes that attach to words or as independent elements in the sentence. Thirty L1 French and thirty L1 English speakers performed an oral narrative task in which they had to narrate a story (or alternatively write a dialogue), describing a series of images. As expected, some L2 learners produced instances in which clitics were incorrectly placed between the tensed verb and the infinitive (*V cl inf) as in **yo quiero lo leer* "I want to read it", but the author does not specify which participants produced those. Other L2 learners had better knowledge of clitic placement, but again the author does not indicate the medium in which those instances took place. Did the L2 learners exert the 'climbing' option in the compositions or in the dialogues? The author concluded that L2 learners "are not sensitive to the relevant information […] that would lead them to locate cliticization exclusively within the lexicon" (p. 162). Therefore it is possible for some L2 learners to acquire the optionality of clitic climbing, but the medium in which elicitation was performed was a conditioning factor, since clitic climbing has been found to be more frequent in the oral speech (Davies, 1995). The author did not

mention which learners produced those instances, therefore it is not possible to ascertain whether the L1 facilitates parameter resetting.

Like Spanish, French also has clitics, but their placement properties differ from the former. Bruhn-Garavito & Montrul's (1996) hypothesized that if adult French learners of Spanish are still granted access to UG, they may reset the parameters associated to verb raising and clitic climbing in French (e.g., *Je veux le acheter* vs. *Lo quiero comprar* "I want to buy it") (Kayne, 1991; Rizzi, 1994). Twenty participants performed two written tasks: a production task where subjects were asked to replace DPs by clitic pronouns and a grammaticality judgment task. The authors discarded the oral data from the judgments, which could have shown a higher number of proclitic instances (Davies, 1995). The written data showed that participants correctly placed clitics across several conditions, but they rated clitic climbing as ungrammatical. The authors interpreted those judgments as evidence that once parameter resetting in "Aux V" contexts has been initially reset, a certain amount of time is required until all the associated features to infinitive raising are available. This could explain why participants preferred the "no climbing" option. However, their proficiency rated 73.5% in the written section of the MLA Spanish Placement Test, which may indicate intermediate level. At this stage of L2 acquisition, transfer from the L1 can be expected (Schwartz & Sprouse, 1996). Combined with the written nature of the tasks, these two factors could explain the low rates of clitic climbing.

The syntax of clitic climbing in L2 Spanish has also been studied by examining other syntactic restrictions. Halloran & Rothman (2012) examined knowledge of object clitic placement in L2 Spanish in periphrases with Exceptional Case Marking (ECM). Spanish perception verbs do not allow two clitics to appear together, contrary to what clitic solidarity mandates, resulting in pro-endoclitic sentences as in *Juan me escuchó cantarla ayer* 'Juan heard me sing it yesterday' (Strozer, 1976). However, clitic solidarity applies to restructuring contexts, as in *Juan me la quería cantar ayer* or *Juan quería cantármela ayer* 'Juan wanted to sing it to me yesterday'. Sixty-five English L2 Spanish speakers divided into three proficiency levels performed a scalar grammaticality judgment task. Only the advanced and native groups showed sensitivity to clitic solidarity restrictions in both ECM and non-ECM constructions, accepting grammatical pro-endoclitic constructions and rejecting ungrammatical ones. The beginner and intermediate groups showed no knowledge of clitic solidarity constraints, treating clitics in ECM and non-ECM contexts similarly. These results were interpreted as evidence of target mental representation of

Spanish pronominal clitics in addition to language-specific clitic placement, supporting the hypothesis that Full Access to Universal Grammar is possible in adulthood. A limitation of this study is that there is no production task: although the advanced groups knew that certain sentences did not seem possible in Spanish, we do not know yet the extent of their knowledge when placing clitics in these contexts.

4.4 The Acquisition of Clitic Climbing by Child Heritage Speakers of Spanish

Pérez-Leroux, Cuza & Thomas (2011) employed clitic climbing constructions to measure cross-linguistic transfer effects in the Spanish of twenty-three bilingual children from Toronto. Given that variable object clitic placement in Spanish poses no semantic effects, any possible signs of transfer effects from the dominant language could be accounted to surface overlap in the two languages (Müller & Hulk, 2001). The authors replicated Eisenchlas's (2003) sentence repetition task with simultaneous and sequential bilingual children. Overall, word repetition patterns in both word linearizations (climbing vs. no climbing) was strongly affected by language dominance and experience i.e. fluency: sequential bilingual children performed better than simultaneous bilinguals in repeating proclitic and enclitic sentences. Both groups showed similar rates of "fronting" errors (approximately 15%) to the preverbal position when they were asked to repeat sentences with no climbing, in contrast with Eisenchlas's monolingual data. While monolingual Spanish children did not repeat a preverbal clitic as postverbal, simultaneous children's performance was worse, responding instead with enclitic responses, and with clitic omissions in preverbal and postverbal contexts. An enclisis bias not attested in monolingual children was present in both bilingual groups. The authors concluded that while monolingual children perform at ceiling by that age, bilingual children may be affected by age of onset of exposure to the dominant language. Therefore, cross-linguistic transfer effects in child minority Spanish are present not only in pragmatic phenomena but also in core syntax. A limitation of this study is that the authors employed modal-like matrices *poder* 'to be able to' and *querer* 'to want', verbs with reported low probabilities to attract clitics to their domains (Davies, 1995).

Acknowledging the limitations in eliciting clitic climbing using experimental tasks, Shin, Requena & Kemp (2017) analyzed children's naturalistic production data. The authors examined third person accusative clitic pronouns from interviews with seventeen bilingual children of Mexican descent (ages 6;0-11;9) and forty-three children from Mexico (ages 6;3-11;9). The

authors did not find significant differences between both groups of children, neither in enclitic contexts nor in rates with verbs with varying degrees of grammaticalization (34% vs. 29%). Moreover, the rates of proclitic and enclitic placement of bilingual children matched those of twenty-one adults (ten monolingual, eleven bilingual) from the same community. Bilingual children choice of enclisis with *querer* 'to want' was higher compared to monolingual children, but these differences were not significant. Consistent with previous findings, after age 3;0 monolingual children show comparable use of proclitic and enclitic placement with specific verb constructions. The authors also suggested that if a child shows divergent patterns of clitic placement, this may indicate language impairment.

The discrepancies between Pérez-Leroux et al.'s (2011) and Shin et al.'s (2017) studies motivated Requena & Dracos's (2018) to further analyze whether the methodology employed (experimental vs. corpus) or the type of community (low- vs. high-density) were responsible for differences in the data from simultaneous and sequential bilingual children. By controlling these two factors, it would be possible to understand how crosslinguistic transfer operates in simultaneous bilingualism. To see whether bilingual children display knowledge of lexical and semantic preferences in clitic climbing constructions, twenty-nine Spanish-English bilingual children (9;0-12;0) from a high-density Hispanic community in Waco, TX performed an elicited production task. Sentences included third person object clitics with verbs with high and low degrees of grammaticalization, i.e. *ir a* 'go to' + infinitive, *tener que* 'have to' + infinitive, and *querer* 'want to' + infinitive. Overall, clitic climbing was performed in 87% of the responses, and not surprisingly the rates between *ir a* and *tener* significantly differed from each other (96% vs. 65%). Consistent with Davies's (1995) corpora, the authors found that proclisis is higher with animate referents than inanimate referents. The high overall rates and the differences found among lexical verbs led the authors to conclude that simultaneous bilinguals' patterns of use resemble those of monolingual speakers at least in high-density Hispanic communities in the US.

4.5 The Acquisition of Clitic Climbing by Adult Heritage Speakers of Spanish

More recent work compares the linguistic abilities of classroom learners and heritage speakers of Spanish (early vs. late English-Spanish bilinguals), seeking points of convergence and divergence in aspects of morphosyntax. In the following, I describe three studies where knowledge and interpretation of clitic climbing constructions is tested among these two bilingual populations.

In general, heritage speakers show better production of these constructions compared to their L2 counterparts. However, L2 learners in general benefit from exposure to formal registers of the target language and the development of metalinguistic skills, allowing them to identify contexts where clitic climbing is not an option.

Montrul (2010a) measured the effects of the dominant language in the Spanish of seventy-two L2 learners of Spanish and sixty-seven heritage speakers. Data were extracted from an oral production task and a written acceptability judgment task. The native and heritage groups produced more climbing than L2 learners, and the judgment task showed that all groups knew the distribution of clitics according to verb finiteness, discarding ungrammatical (*V cl inf) constructions. In their ratings, native and heritage speakers rated climbing and no climbing similarly, and the L2 learners assigned low ratings to sentences with climbing. The low proficient heritage group behaved similarly to L2 learners across all proficiency levels when rating enclitic periphrases. The author concluded that (1) an early exposure to the target language confers advantages for phonology and certain areas of morphosyntax, and (2) the core syntax seems to be less vulnerable to transfer from the majority language, as it has been suggested in previous variationist and acquisition studies (Gutiérrez & Silva-Corvalán, 1993; Silva-Corvalán & Gutiérrez, 1995; Montrul, Foote & Perpiñán, 2008).

The same author analyzed the production and interpretation of clitic climbing contexts among heritage speakers and L2 learners from the previous study with the lowest proficiency. Montrul's (2010b) study shows that even low proficient heritage speakers had comparable knowledge of clitics to native speakers': in the oral production task, the L2 group did not produce clitic climbing at all while heritage speakers and the native participants used the climbing option more freely than the former. Again, both groups rated as ungrammatical (*V cl inf) constructions, but few L2 learners knew that the grammatical (cl V inf) option was possible in Spanish. These findings reinforce the idea that an early age of onset of exposure translates into a more native-like knowledge of clitic placement. Also, and in line with previous L2 acquisition studies, it seems that low and intermediate L2 learners are not aware of the full range of options in structures with more than one option for clitic placement.

Thomas (2012) examined the lexical, semantical and structural properties of clitic climbing in two groups of advanced-level proficiency in Spanish (ten heritage speakers, sixteen L2 learners). A picture elicitation task was employed to test knowledge of the lexical properties verbs with

varying degrees of clitic climbing acceptability (*ir a* 'to be going to', *querer* 'to want' and *preferir* 'to prefer'). Similarly to previous studies, the heritage group outperformed the monolingual and L2 learner groups using proclisis across all matrices; L2 learners' responses were similar to monolingual speakers', preferring proclitic placement with more auxiliary-like verbs and enclisis with modals. The semantic properties of clitic climbing were examined by comparing the acceptance of proclitic constructions with the auxiliary verb *ir a* expressing future motion (e.g., *va a* X) and the perfective past tense of *ir a* denoting motion interpretation (e.g., *fue a* X). All groups showed sensitivity to these constraints, preferring proclitic constructions with the former one. The syntactic properties of clitic climbing were tested via an acceptability/preference task. When asked to rate ungrammatical proclitic sentences with embedded negations, some heritage speakers showed indeterminate judgments as in **Juan lo quisiera no saber* 'John wanted to not know it'. The author explained that the general proclisis bias shown by heritage speakers across both tasks could be explained by the lack of awareness of written registers. Heritage speakers are more used to informal, unplanned speech while L2 learners have mostly received formal and written input, and therefore their production and interpretation is affected by this limited use of clitic climbing structures. Native speakers are more aware of the register differences that affect this optionality and consequently, can adjust their placement choices according to the aforementioned intra-linguistic variables. This may be the reason why L2 learners and native speakers had similar production. Again, these results support the hypothesis that an early age of onset of acquisition results in better acquisition of this optionality and its associated properties from other language domains (e.g., syntax, lexicon, semantics).

4.6 The Acquisition of Clitic Climbing in Adult English-Spanish Bilinguals via Psycholinguistic Experiments

Other studies have complemented traditional offline GJs with online behavioral tasks. In this subsection I review three studies with both types of learners. Duffield & White (1999) used an online sentence-matching task and an offline grammaticality judgment task in two intermediate- and advanced-level learners of Spanish whose L1s were French and English. Since the participants were from Quebec, Spanish was actually the third language (L3): the English-speaking subjects had been previously exposed to French, and viceversa. In line with previous studies, the combined results from both tasks showed that L2 learners had limitations with clitic climbing constructions.

When participants were asked to make corrections, the majority opted for lowering clitic objects (V inf cl) in both grammatical and ungrammatical contexts. Only in 18.5% of the corrections the "climbing" option was exerted. The authors interpreted these results as evidence that clitic climbing is not considered an option in L2 Spanish, but the acquisition of properties that do not match those from the L1 is possible. However, both experiments produced written data.

Meijer & Fox Tree (2003) examined priming effects in the Spanish of eighteen English-Spanish bilinguals using sentences with climbing and no climbing. Syntactic priming refers to the likelihood of a syntactic construction to be produced again after being heard, repeated or read. The idea is that if a certain grammatical rule is part of the participant's mental grammar, it will be recalled easily if it is activated by a prime. Using a sentence recall task, the researchers elicited twenty verb-object pairs, ten in which the object preceded the matrix verb and ten in which the object was enclitic to the infinitival form, as in *La radio es muy fuerte cuando los niños la quieren escuchar* 'The radio is very loud when the children want to listen to it'. Before participants repeated the sentence, a prime was presented, as in *The phone probably stopped ringing before Cecilia was able to answer it*. In general, 93.3% of the responses were correctly recalled, which suggests that bilinguals are well aware of the syntactic rules that affect object clitic placement in verbal periphrases. However, only in 25.6% of the critical items participants opted for proclitic placement. These results were interpreted as evidence of a unitary system for storing the grammar rules from both languages. From this pool, only the appropriate rules for the words contained in the utterance are selected during sentence production. One caveat of this study is that the authors did not control for proficiency.

Rossi, Diaz, Kroll & Dussias (2017) examined sensitivity to wrong restructuring constructions (*V cl inf) in twenty-five highly proficient L2 Spanish learners. The participants were presented a series of sentences using a word-by-word self-paced reading moving window task, and at the end they were asked to make a grammaticality judgment as fast and accurately as possible. The investigators concentrated on the response times of the critical regions of interest (ROIs), finding that late bilinguals showed native-like sensitivity to wrong word order in the L2, as it was reflected by slower reading times in ROIs where clitics were incorrectly placed. However, the task did not request participants to provide correct responses to ungrammatical sentences, which may reveal whether proficient L2 learners would have preferred the "climbing" option.

Taken together with previous offline behavioral studies, this study shows that adult late bilinguals show sensitivity to L2-specific linguistic constructions.

4.7 Variationist Studies on Clitic Climbing in Heritage Spanish

The variationist literature examining the Spanish of the United States has employed clitic climbing constructions to gauge the effects of the dominant language (Gutiérrez & Silva-Corvalán, 1993; Silva-Corvalán, 1994; Silva-Corvalán & Gutiérrez, 1995). The advantage of these studies is that they employ naturalistic data obtained through oral interviews, situations in which language is most spontaneous and natural (Labov, 1996). Contrary to what is expected from a prolonged exposure to the dominant language (i.e., a stronger tendency to favor enclisis), bilingual populations maintain the climbing option across generations, although in more simplified ways compared to monolingual speakers. To date, I have not found any studies examining clitic climbing variation among L2 populations.

Focusing on the number of years in contact with English, several studies divide informants into three generational groups: those who are born outside of the United States and immigrate after age eleven, those who are born in the country or have arrived to the host country before age six, and those who are born in the country and have one ancestor belonging to the other generational groups. A first analysis of recorded utterances with clitics in simple and complex sentences revealed that enclisis is the preferred choice across the three generations of bilinguals (73%, 80%, 74%) (Gutiérrez & Silva-Corvalán, 1993), but the opposite in a subsequent study (Silva-Corvalán & Gutiérrez, 1995), with highly grammaticalized verbs such as *ir a* 'going to' with future value (92%, 97%, 92%), progressive *estar* 'be' + gerund (91%, 95%, 89%), and modal *poder* 'may' (60%, 95%, 83%). More variation has been found with certain modals and incoative expressions (Gutiérrez, 2008): *empezar a* 'begin', *deber* 'must', *tener que* 'have to', *querer* 'want', *tratar de* 'try' + infinitive. Peace (2012) found similar results in the Spanish of two generations of bilinguals from Massachusetts. Apparently, these constructions are maintained across generations although bilinguals with less exposure to monolingual Spanish interpret less familiar matrices as lexical units, thus favoring the enclitic option.

Gutiérrez (2014) noticed that bilinguals' preferences also change over time, similarly to monolingual speakers. Comparing data from oral interviews between the decades of 1990 and 2009, the author found a slight decrease in clitic climbing instances (77.8% vs. 71.1%) overall,

and also that proclisis with gerunds had become almost categorical (86.9%, 88.3%, 88.7% vs. 94%, 90.7%, 93.7%). Again, more variation was found with matrices taking infinitival complements, which progressively favor enclisis (66.1%, 67.8%, 69.7% vs. 50%, 54.5%, 57.5%); others had almost lost their acceptability (e.g., *empezar/comenzar a* 'start' and *tener que* + infinitive). To my knowledge, Limerick's (2017) study is the latest work on clitic climbing variation in US Spanish. As in previous work, the analysis of co-occurrences showed that proclitic placement with gerunds was significantly higher than with infinitives (89% vs. 67%). Instances of clitic climbing with infinitival periphrases were found with *ir a* 89%, *poder* 77%, and *querer* 58%. Age of arrival (US-born 74%, arrivals before age 26 69%, arrivals after age 26 48%) and length of residence (longer 73%, shorter 61%) significantly affected the rates of clitic climbing production.

4.8 The Gap in the Literature

So far, we have analyzed the production and interpretation of clitic climbing constructions among two populations of bilinguals which share English as the dominant language, but with different times of first exposure to the second language (early vs. late) as well as with their experience with linguistic input (oral vs. written). The studies on L2 classroom learning show that learners can acquire the syntactic and certain lexical and semantic features of clitic climbing constructions. The acquisition process requires however large amounts of time and significant mastery in the L2, and even at advanced stages of proficiency classroom learners do not always see the climbing option as possible in Spanish. Heritage language learners, however, show better production rates compared to L2 learners. Montrul's (2010b) study shows that her low-proficient heritage participants exerted the climbing option at higher rates than their L2 counterparts.

However, these studies have employed written grammaticality judgments to test possible and impossible sentences with climbing. As I have exposed in chapter 2, heritage speakers are at disadvantage in written tasks by virtue of not having received formal instruction in the language during childhood. Additionally, the oral nature of clitic climbing cannot be properly captured via written production tasks (Davies, 1995; Torres Cacoullos, 1999). It seems necessary to test knowledge of possible and impossible constructions via oral judgments. Oral tasks tap into the implicit knowledge of a language, where true linguistic competence is. Therefore, it is necessary to move from written to oral judgments.

The next gap that the literature does not fully address is that clitic climbing constructions in Spanish are regulated by certain lexical and syntactic properties. Usage-based studies show that highly grammaticalized matrices (i.e., auxiliar-like) are more likely to attract clitics compared to matrices that are more lexical in nature. In Thomas's (2012) study, L2 learners and heritage speakers showed different production and interpretation patterns. On one hand, heritage speakers exert the climbing option at rates similar to native speakers, although their judgments of impossible sentences with climbing seem to be affected by the type of input received. On the other, L2 learners' production rates show a tendency to favor the enclitic option, although near-native learners seem to have acquired the subtle lexical properties that affect clitic placement as a result of their metalinguistic awareness. To my knowledge, no other study so far has examined the L2 acquisition of this phenomenon using a selection of matrices with varying degrees of grammaticalization. To obtain a more accurate picture of this phenomenon, it is necessary to test an array of (V inf) periphrases with varying degrees of clitic climbing acceptability. Moreover, clitic climbing should be studied on a verb-by-verb fashion because multiple factors are at play and not all restructuring verbs behave similarly (Gudmestad, 2005). Davies's (1995) study identified thirty-two verbs with varying degrees of acceptability. The testing proper selection of matrices with high and low degrees of clitic climbing acceptability would allow us to test the production and intuition of early and late English-Spanish bilinguals in relation to the semantic properties of these constructions.

Finally, no study so far has examined the contexts where clitic climbing in Spanish is not possible (syntactic properties). The results from Thomas (2012) show that heritage speakers tend to overextend the climbing option to verbal periphrases with embedded heads. L2 learners, by virtue of having developed metalinguistic skills in the L2, did not accept ungrammatical sentences with climbing. As we have seen in chapter three, clitic climbing is impossible in impersonal sentences. Can early and late bilinguals acquire this syntactic property in adult L2 acquisition? To my knowledge, this question still remains unanswered.

The present work takes into account all these findings and proposes alternative offline behavioral tasks to test knowledge of these constructions among L2 Spanish learners and heritage speakers of Spanish with intermediate- and advanced-level proficiency. The findings from this study add to the existing body of L2 acquisition studies on clitic climbing constructions by testing new lexical and syntactic conditions via oral tasks.

4.9 Conclusions

In this chapter I provide a succinct review of studies on the acquisition of Spanish clitic climbing. The literature on this topic has examined the production and interpretation of these constructions among classroom L2 learners and heritage speakers. I have also included studies that employ psychometric measurements, and the variationist literature on this phenomenon in US Spanish. The results from these works report that both types of learners are capable of acquiring most of the syntactic and lexical features, although their knowledge is more simplified compared to native Spanish speakers. Heritage speakers may overextend the climbing option to contexts where it is not possible, and L2 learners do not always accept the climbing option as acceptable in Spanish. This study contributes to this debate by analyzing novel conditions and employing oral-based tasks for both production and interpretation. The next section describes the methodology of the experiment as well as the results found.

CHAPTER 5: THE STUDY

5.1 Introduction

Taking in consideration the effects of age and type of input in adult heritage and L2 acquisition, the complex nature of the syntactic phenomenon at hand, and the findings from previous studies on the production and interpretation of verbal periphrases with object clitics among English-Spanish bilinguals, I propose a new research design that attempts to addresses the limitations of previous studies to better understand the status of clitic climbing constructions in bilingual grammars. The present chapter shows the methods employed to further advance knowledge of L2 Spanish syntax in adult bilingualism. Ultimately, these data add to the ongoing discussion of whether the advantages of an early exposure to L2 input not only affect the phonological domain, but also extend to the syntactic domain in heritage and second language acquisition.

The structure of this chapter is the following: In (5.2) I formulate the research questions this experiment seeks to answer, along with my expected outcomes (hypotheses). In (5.3) I describe the pool of individuals who participated in the study, their linguistic background and their proficiency in the case of the experimental groups. In (5.4) I describe the structures under examination (test conditions) and the tasks employed to elicit data from the participants, a sentence completion task and an acceptability judgment task. Section (5.5) reports the results obtained in the two tasks: a summary of the raw data, two logistic regression analyses that examine effects between groups (natives, L2 learners, heritage speakers) and four verb conditions (auxiliary, modal, impersonal, embedded negation), two logistic regression analyses that examine effects between the experimental groups (heritage speakers, L2 learners), proficiency (intermediate, advanced) and the four verb conditions, and an analysis of individual responses per task. A summary of the experiment in (5.6) closes this chapter.

5.2 Research Questions and Hypotheses

As it has been mentioned earlier, heritage speakers of minority languages are granted advantages over traditional L2 learners in aspects related to the phonological domain by virtue of an early exposure to their first language. However, these advantages are rather selective in core

syntactic properties. Factors such as task modality (oral vs. written) and task explicitness (implicit vs. explicit) for example matter when accessing the mental representations of these learners. Clitic climbing constructions in Spanish are regulated by certain lexical and syntactic properties. Corpus-based studies show that highly grammaticalized verbs (i.e., auxiliary-like) are more likely to attract clitics compared to verbs that are more lexical in nature. The available empirical evidence on the L2 acquisition of Spanish clitic climbing constructions suggests that L2 learners and heritage speakers show different production and interpretation patterns. On one hand, heritage speakers exert the climbing option at rates similar to native speakers (Montrul, 2010a, 2010b; Thomas, 2012). On the other, L2 learners' production rates show a tendency to favor the enclitic option, although near-native speakers seem to have achieved sensitivity to the more subtle lexical properties that affect clitic placement as a result of their metalinguistic awareness (Halloran & Rothman, 2012; Montrul, 2010a; Thomas, 2012). All these factors must be considered to obtain a better understanding of these bilinguals' knowledge of the phenomenon at hand.

So far, no other study investigated the L2 acquisition of this phenomenon using a selection of matrices i.e., the main verb in a verbal periphrasis, with varying degrees of grammaticalization. The reported variationist trends show that clitic climbing with *estar* 'to be' + gerund has become categorical in both native and heritage Spanish (Gutiérrez, 2014), therefore only verbal periphrases involving infinitives (V inf) will be tested, given that these matrices show more variation among the native speakers. If heritage speakers and L2 learners overextend their clitic placement preferences (proclisis among heritage speakers, enclisis among the L2 learners), the effects of type of linguistic input received in the L2 to which bilinguals have been exposed will become more evident in the results. So far, the majority of acquisition studies have employed instead one or two matrices taking infinitival complements (e.g., *ir a* 'to be going to' + infinitive, *poder* 'to be able to' + infinitive) (Duffield & White, 1999; Montrul, 2010a, 2010b). Only Thomas's (2012) study employed three matrices with decreasing grammaticalization rates: *ir a* 'to be going to', *querer* 'to want', and *preferir* 'to prefer'. Moreover, Davies' (1995) corpus of native Spanish shows that matrices do not group in strict groups (auxiliary vs. modal) in oral clitic climbing production. For example, aspectual verbs *comenzar a* 'start to' and *dejar de* 'stop' only show 25% rate of grammaticalization. I propose using instead a selection of matrices that takes into account these varying degrees of grammaticalization and grouping them in two classes: auxiliary-like verbs, or those with a high grammaticalization degree; modal-like verbs, or those with low

grammaticalization rates. One disadvantage of this design is that the testing environment as well as the elicitation technique becomes more controlled and therefore may alter the utterances of the informants, becoming less spontaneous and therefore relying more on explicit knowledge. In order to balance this effect, the elicitation task will be oral-based. Considering all these factors, the following research question is formulated.

RQ1: To what extent do English-speaking L2 learners of Spanish and Spanish heritage speakers show target use and intuition of clitic climbing constructions compared to monolingual speakers across the verbal conditions under examination (i.e., auxiliary, modal, impersonal sentences, and sentences with embedded negations)?

> H1a: The heritage speakers will overextend proclitic constructions across all verbal contexts in production, and they will accept ungrammatical sentences with climbing in their judgments.
>
> H1b: The L2 learners will produce less instances of proclitic constructions across all verbal contexts, and the they will reject grammatical sentences with climbing.

RQ2: To what extent will the L2 learners and the heritage speakers diverge from each other in production and intuition across the four verbal conditions?

> H2: The L2 learners and the heritage speakers will behave significantly different from each oher. Specifcally, the heritage speakers will overextend clitic climbing use across the four verbal contexts and they will accept ungrammatical clitic climbing. The L2 learners will avoid clitic climbing use across all conditions and will reject grammatical clitic climbing constructions in their intuitions.

These predictions are in line with previous findings showing that heritage speakers overproduce clitic climbing constructions and rate ungrammatical sentences with climbing (Thomas, 2012); the L2 learners, in contrast, show a strong tendency to avoid clitic climbing constructions in their oral productions due to a mostly written-based exposure to input and they will rate grammatical

sentences with climbing as impossible (Bruhn-Garavito & Montrul, 1996; Montrul, 2010a, b; Thomas, 2012). I predict divergent use and intuition from the native norm among the experimental groups due to the type of experience with input received: early and oral-based in the case of heritage speaker and late and written-based in the case of L2 learners.

RQ3: To what extent does language proficiency play a role in clitic climbing production and intuition among L2 learners and heritage speakers of Spanish?

> H3: There will be a relationship between proficiency and the rate of clitic climbing in production, and between proficiency and the rate of rejection of ungrammatical constructions across the four verbal contexts.

The more proficient heritage speakers and L2 learners are, the more accurate they will be in their production and intuition of clitic climbing structures across the four verbal conditions. The more proficient participants will show higher rates of clitic climbing instances with auxiliary and modal verbs, and they will show more categorical rejection of ungrammatical clitic climbing with impersonal verbs and with embedded negation.

To answer these research questions two experimental groups of heritage speakers and L2 learners and a control group of Spanish monolinguals were interviewed. The following section provides information about their linguistic background.

5.3 Participants

Data from fifty-three (N = 53) participants were elicited for this study: Twenty native speakers from Mexico, seventeen L2 learners, and sixteen heritage speakers, who were recruited through online and paper advertising. All participants signed a consent form and completed a language history questionnaire from Cuza & Frank (2015), which includes two sections. Section one elicited sociolinguistic information, such as place of birth, languages that were spoken during childhood, the parents' first language, language(s) of schooling and other linguistic patterns of use. 7-point scales comprising a gradience of options from "English only" to "Spanish only" were used to indicate the participants' language uses at home, school, work, and in social situations. The

informants from the experimental groups were also requested to indicate the language in which they were more comfortable. The second section was a self-assessment test of the four language skills, receptive (reading, comprehension) and productive (writing, speaking) in English and Spanish, with scales ranging from "limited" (1) to "native-like" (4). The participants were also requested to complete a written proficiency test in Spanish as well, consisting of a set of thirty questions with four possible options and an incomplete passage with twenty questions each with three possible answers, from a version of the Diploma de Español como Lengua Extranjera (DELE), taken from Cuza, Pérez-Leroux & Sánchez (2013). The highest score for this proficiency test was 50 points. Following the methodology from previous work (e.g., Montrul & Bowles, 2010; Montrul & Slabakova, 2003), scores were divided to assign proficiency groups: those between 40 to 50 points were taken as "advanced", those between 30 to 39 points were assigned "intermediate" proficiency, and "low" proficiency scores were those between 0 to 29 points.

The heritage speakers group comprised sixteen (N = 16) college Spanish heritage speakers. Twelve were born and raised in the United States, one was born in Mexico, one was born in Guatemala, one was born in Argentina and another one was born in Puerto Rico. These four participants arrived to the country before age 3. All participants from the experimental groups were undergraduate and graduate students at a large Midwestern university. The mean age at the time of testing was 25 (range, 18-45, SD = 7.24). There were seven men and nine women. In 88% of the cases the first generation were native speakers of Spanish. In the recent past, all participants except two had visited Spanish-speaking countries. At school, 64% of the participants reported speaking slightly more English or mostly English and 17% reported that they speak both English and Spanish. 47% use slightly more or mostly Spanish at home. At work, 64% reported speaking slightly more English or mostly English. In social situations, 76% of the participants reported using mostly English, and both languages were equally employed only by 17%. For the majority, English was was the language of instruction in primary school (70%), high school (76%) and university (70%). 52% reported being more comfortable using mostly English, and 47% indicated English and Spanish. Their self-assessment score means in Spanish across the four language skills was 2.7/4 (adequate) and in English it was almost native-like 3.7/4. In the proficiency test, ten (62.5%) fell into the advanced range (range 40-50), and six (37.5%) fell into the intermediate range (range 30-39). I assumed that these participants had near-native proficiency in English, based on their sociolinguistic and linguistic information.

The L2 learners group comprised seventeen (N = 17) college-level native English speakers. All participants from this group were born and educated in the United States except one who was born in the United Kingdom. 26 years old (range, 19-68, SD = 11.46) was their mean age at time of testing. There were seven males and ten females. All except five had visited Spanish-speaking countries in the past. Their patterns of language use are as follows: At school, 63% indicated that they spoke slightly more English or mostly English and 26% reported speaking slightly more Spanish or mostly Spanish. 84% indicated that they use slightly more English or mostly English at home. 52% reported using slightly more English or mostly English at work, and 84% reported that they use mostly English in social contexts. For the majority English was the dominant language of instruction in elementary school (100%), high school (74%) and university (42%). 74% reported that they were more comfortable using mostly English and 21% indicated being equally comfortable using English and Spanish. Their self-assessed skills in Spanish were rated as 3.2/4 (good) and in English they rated themselves as native speakers (4/4). The reported proficiency scores show that eleven L2 learners (64.7%) fell into the advanced range (40-50), and six (35.2%) fell into the intermediate range (30-39).

The control group comprised twenty (N = 20) native Spanish speakers born and raised in Mexico. There were six males and fourteen females with a mean age of 22 years old (range, 18-33, SD = 4.34) at time of testing. Sixteen participants were college students at a large university in western Mexico and four were employed. Most of the participants had taken beginner-level English courses in high school, but they did not believe themselves to have developed bilingualism. Similarly to the experimental groups, the native participants filled out a language background questionnaire and a language self-assessment. Their self-assessment in Spanish had a mean value of 3.7/4 (native-like) and in English it was 2.7/4 (adequate). For the statistical analysis native-like proficiency (50/50) was assumed among the controls (e.g., no intermediate-level native speakers) and no proficiency tests were conducted. Table 1 shows a summary of the characteristics of all participants.

Table 3: Experimental groups: Descriptive statistics for the variables age at testing, proficiency self-rating, and proficiency scores

Groups	N	Proficiency scores (max = 50)		Proficiency self-rating (maximum 4)		Age at testing	
		M	(SD)	M	Range	M	Range
Native:	20	-	-	3.7	3.7-3.8	22.6	18-33
Heritage:	16	41.2	(4.3)	3.1	2.6-3.7	25.25	18-45
Advanced	10	43	(2.1)	3	2.4-3.7	27.8	18-45
Intermediate	6	36.5	(2.8)	3.2	3-3.7	20	18-21
L2 learners:	17	41	(4.5)	3.2	2.4-3	26.5	19-68
Advanced	11	44.9	(2.7)	3.5	3.4-3.7	29.6	20-68
Intermediate	6	37.1	(2.1)	2.7	2.4-3	21	19-27

5.4 Test Conditions and Tasks

To examine the participants' knowledge of the lexical and syntactic conditions that regulate clitic climbing in Spanish, an array of periphrases comprised of matrices with varying degrees of climbing acceptability, impersonal constructions, and periphrases with embedded negations was selected. The selected highly grammaticalized matrices were *ir a* 'be going to' (.86), *soler* 'be accustomed to' (.86), *acabar de* 'have just + participle' (.85), *haber de* 'have to' (.80), *volver a* 'do again' (.81) and *poder* 'be able to' (.60). Those with lower acceptability rates were *aprender a* 'learn to' (.45), *tener que* 'have to'(.38), *salir a* 'leave' (.35), *necesitar* 'need' (.33), *deber* 'must'(.32), and *pensar* 'think of'(.24). To test knowledge of the syntactic conditions that disable this phenomenon, six impersonal sentences were created: *hay que* '(one) has to', *es mejor* '(it) is better to', *es necesario* '(it) is necessary to', *es urgente* '(it) is urgent to', *es preferible* '(it) is preferable to', and *es recomendable* '(it) is advisable to'. Six verbal periphrases with embedded negation adverbs were created to test this condition. A summary of the test conditions with examples is presented in Table 2.

Table 4: Testing conditions: The symbols represent the probability a clitic will be attracted to the matrix verb domain according to its degree of grammaticalization (higher √√ vs. lower √), and the conditions in which clitic climbing is ungrammatical.

Type of matrix verb	Proclitic placement	Enclitic placement
High acceptability:		
(5) Lo va a cuidar bien Va a cuidarlo bien *S/he is going to take care of him*	√√	√
Low acceptability:		
(6) Necesitan comprarla La necesitan comprar *They need to buy it*	√	√√
Impersonal periphrasis:		
(7) Es mejor llamarlo luego *Lo es mejor llamar luego *It is better to call him later*	*	√
Periphrasis with an embedded negation adverb:		
(8) Prefiere no pintarlo *Lo prefiere no pintar *S/he prefers not to paint it*	*	√

5.4.1 Sentence Completion Task

In order to elicit clitic climbing constructions across the two lexical and two syntactic conditions, all groups performed an oral sentence completion task. These tasks prompt participants to produce forms in a more controlled environment and are more efficient than spontaneous speech (Cuza et al., 2013; Eisenbeiss, 2010; Gropen, 2000). The aim was to investigate the behavior of these groups when placing clitics in periphrastic conditions in a gradient of clitic climbing acceptability rates. It has been claimed that semi-structured elicitation techniques are very informative in studies of rare phenomena, phenomena with subtle semantic differences, or simply to examine the productivity of learners' utterances (Eisenberg, 2005). In order to find an optimal balance of task explicitness, a sentence completion task was designed. For this task the informants sat with the researcher and were presented a series of hypothetical situations accompanied by pictures to facilitate the comprehension. Then, they were prompted with a question related to that situation and had to speak aloud their answers, using two given verbs in parentheses (i.e., each pair belonging to one of the four testing conditions). To control for task modality, the descriptions and

prompts were recorded so participants could read and listen to each situation. The responses for each informant were firstly recorded and later transcribed for analysis. Table 5 shows a representative test token of a highly grammaticalized matrix with four possible answers.

Table 5: Sample test token, sentence completion task

Vicente completó la última tarea del curso y la envió por e-mail hace un instante. ¿Cuándo envió la tarea? 'Vicente completed the last assignment of the course and he submitted it by e-mail a while ago. When did (he) send his assignment?'

Vicente (ACABAR DE, ENVIAR) hace un momento. 'Vicente (HAVE JUST, SEND) a while ago.'
Possible answers: (9) Proclitic object: 'Vicente la acaba de enviar hace un momento' √√ (10) Enclitic object: 'Vicente acaba de enviarla hace un momento' √ (11) DP object: 'Vicente acaba de enviar la tarea hace un momento' (12) Null object: 'Vicente acaba de enviar ∅ hace un momento'

5.4.2 Acceptability Judgment Task

An oral acceptability judgment task was employed to measure knowledge of grammatical and ungrammatical sentences with climbing among the experimental groups. The task was carried out in the presence of the researcher. Participants were read aloud a series of slides describing hypothetical situations accompanied by pictures. The descriptions in each slide were previously recorded to ease the oral and written comprehension. Participants were asked speak aloud their ratings of sentences using 1-5 point Likert scale, assigning the following values: 1 = *Muy mal* 'Very bad', 2 = *Mal* 'Bad', 3 = *No sé/No estoy seguro* 'I don't know/I am not sure', 4 = *Bien* 'Good', 5 = *Muy bien* 'Very good'. The task was untimed but participants were requested to answer the prompts as intuitively as possible and to avoid going back. The total time necessary for

completing this task was approximately 15–20 minutes. The designed task included a total of 12 proclitic and 12 enclitic verbal periphrases. Of the twelve proclitic sentences, 6 of them included ungrammatical sentences with climbing. 24 fillers were included, one after each test token. Two versions, A and B, of the same task were designed to avoid learning effects. Table 6 shows a representative test token of ungrammatical clitic climbing.

Table 6: Sample test token, acceptability judgment task

¡El carro de Carina siempre está averiado! ¿Qué piensa Carina sobre su carro? 'Carina's car is always broken! What does Carina think about her car?'				
				
*¡Lo es necesario cambiar ya! 'It is necessary to replace it now!'				
Muy mal	Mal	No sé/No estoy seguro	Bien	Muy bien
Very bad	Bad	I don't know/I'm not sure	Good	Very good

5.5 Results

5.5.1 Sentence Completion Task

5.5.1.1 Description of raw counts

All responses were coded and counted for each participant. Wrong responses were coded as 'other'. The following tables show the raw counts of each type of response (proclisis, enclisis, DP object, null object, other) according to each verbal condition (auxiliary, modal, impersonal, embedded negation) and by group. Because the number of participants in each group is different, percentages instead of means are provided for comparison.

Table 7: Sentence Completion Task, raw counts of objects in highly grammaticalized matrices by group

Group	N	Proclitic object		Enclitic object		DP object		Null object		Other	
		Count	%	Count	%	Count	%	Count	%	Count	%
Native speakers:	20	7	5.83% (7/120)	80	66.66% (80/120)	23	19.2% (23/120)	10	8.32% (10/120)	-	-
Heritage speakers:	16	13	13.54% (13/96)	41	42.7% (41/96)	33	34.37% (33/96)	11	11.45% (11/96)	-	-
L2 learners:	17	11	10.8% (11/102)	48	47.05% (48/102)	19	18.62% (19/102)	25	24.5% (25/102)	-	-

Table 7 shows the object production counts in highly grammaticalized matrix verbs per group. Overall, all groups favored the enclitic object option, followed by the DP and null object options. Contrary to what was expected, the production rates of proclitic instances among native speakers and heritage speakers were low. Both heritage and L2 learners behaved alike when exerting the "climbing" option in auxiliary matrices taking infinitival complements. The enclitic option was the preferred choice, especially among the native participants. The experimental groups show similar production of "no climbing" instances. The counts of DP and null object production were low among native participants. When neither the proclitic or enclitic options are an option for heritage speakers, they opt for resolving sentences using DP objects. L2 learners however, avoided the use of objects slightly more than heritage speakers. Participants did not produce wrong sentences in this context.

Table 8: Sentence Completion Task, raw counts of objects in low grammaticalized matrices by group

Group	N	Proclitic object		Enclitic object		DP object		Null object		Other	
		Count	%	Count	%	Count	%	Count	%	Count	%
Native speakers:	20	-	-	70	58.33% (70/120)	8	6.66% (8/120)	42	35% (42/120)	-	-
Heritage speakers:	16	-	-	33	34.37% (33/96)	18	18.75% (18/96)	44	45.83% (44/96)	1	1.04% (1/96)
L2 learners:	17	4	3.92% (4/102)	43	42.15% (43/102)	14	13.72% (14/102)	41	40.2% (41/102)	-	-

Table 8 shows the object production counts in low grammaticalized matrix verbs per group. As expected, native speakers strongly favored the enclitic option, to the point that there were no instances of clitic climbing. Proclitic instances among the experimental groups were non-existent among the heritage learners and marginal in the case of L2 learners. However, the enclitic option was not the preferred choice always. Native speakers show a high rate of enclitic instances but also there is a tendency to avoid objects, an unexpected finding. The rates of null objects in this context

were similar across all groups, with few instances of DP objects. Similarly to highly grammaticalized verbal periphrases, participants did not produce wrong sentences in this context except for one instance in the heritage group.

Table 9: Sentence Completion Task, raw counts of objects in impersonal periphrases by group

Group	N	Proclitic object		Enclitic object		DP object		Null object		Other	
		Count	%	Count	%	Count	%	Count	%	Count	%
Native speakers:	20	-	-	94	78.33% (94/120)	9	7.5% (9/120)	11	9.16% (11/120)	6	5% (6/120)
Heritage speakers:	16	-	-	57	59.37% (57/96)	8	8.33% (8/96)	15	15.62% (15/96)	17	17.7% (17/96)
L2 learners:	17	-	-	47	49% (47/102)	9	8.82% (9/102)	16	15.7%(16/102)	30	29.41% (30/102)

Table 9 shows the object production counts in impersonal periphrases per group. As expected, the production of proclitic instances was zero among the native participants, but also among the experimental groups. The enclitic option was by far the preferred choice among the native participants. Heritage and L2 learners behaved alike when exerting the "no climbing" option. The rates of DP object realization were low across all groups, as well as the instances of null objects. However, impersonal periphrases were problematic for L2 learners, given the number of wrong responses. Heritage speakers however showed a slightly better command of these periphrases. The number of wrong instances among the native speakers was marginal.

Table 10: Sentence Completion Task, raw counts of objects in sentences with embedded negation by group

Group	N	Proclitic object		Enclitic object		DP object		Null object		Other	
		Count	%	Count	%	Count	%	Count	%	Count	%
Native speakers:	20	1	.83% (1/120)	82	68.33% (82/120)	14	11.66% (14/120)	22	18.33% (22/120)	1	.83% (1/120)
Heritage speakers:	16	1	1.04% (1/96)	47	49% (47/96)	10	10.42% (10/96)	31	32.3% (31/96)	5	5.2% (5/96)
L2 learners:	17	3	2.94% (3/102)	40	39.21% (40/102)	4	3.92% (4/102)	43	42.15% (43/102)	11	10.8% (11/102)

Finally, Table 10 shows the object production counts in periphrases with embedded negation per group. As expected, the count of clitic climbing instances was almost zero across all groups, with enclitic placement as the favored option. Native speakers exerted the "no climbing" option at high rates, while heritage speakers and L2 learners behaved alike. In this context, few

instances of DP object were found across all groups, and L2 learners opted for the null object option slightly more than heritage speakers. The number of wrong sentences was low across all groups, although L2 learners had more difficulties with these constructions. Figure 6 shows the percentages of proclitic placement across the four periphrastic conditions by group, and Figure 7 shows the percentages of enclitic placement across the four periphrastic conditions by group.

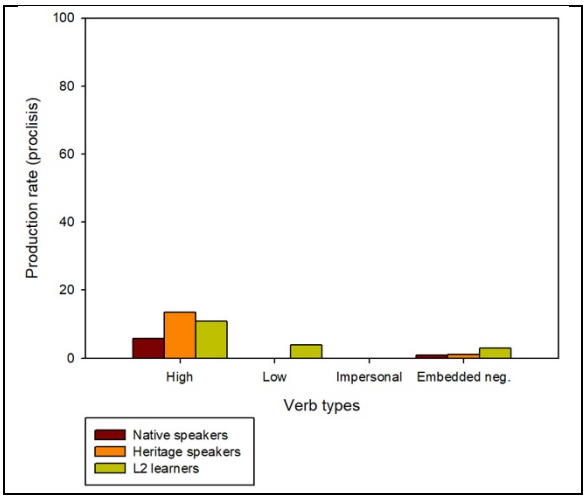


Figure 6: Sentence completion task, rate of proclitic placement responses among the three groups

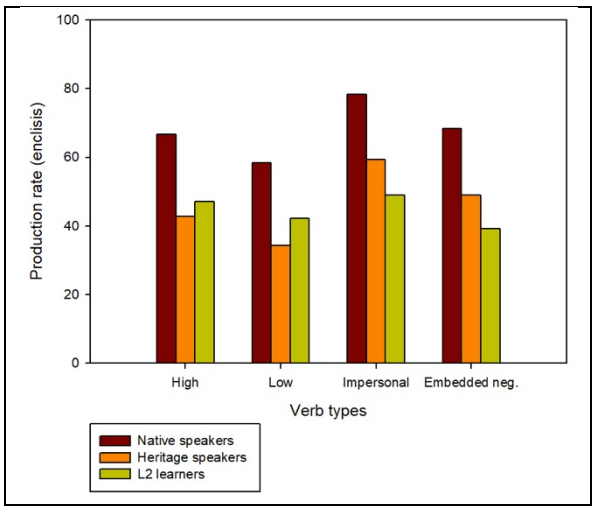


Figure 7: Sentence completion task, rate of enclitic placement responses among the three groups

The goal of this task was to investigate whether English-Spanish bilingual groups are capable of producing clitic climbing constructions at rates similar to native speakers. In the following section I provide a statistical analysis that contrasts the production rates of these learners focusing on clitic placement only (proclisis vs. enclisis).

5.5.1.2 Statistical Analysis: Clitic Climbing Production Rates by Group and Verb Types

A mixed logistic regression model with random intercepts was fitted to predict whether or not a clitic climbing response was given with group (natives, heritage speakers, L2 learners) and verb type (auxiliary-like, modal-like, impersonal sentence, sentence with embedded negation) as fixed effects and the repeated measures on speaker as a random effect. A 5% level of significance (i.e., *p*-value is under 5%) is considered for all hypothesis testing, and 95% confidence for all interval estimates. Statistical analysis was performed using R (R Core Team, 2019) with the *Lme4* function (Bates, Maechler, Bolker & Walker, 2015) to fit the binary logistic mixed regression model and the package *sjPlot* (Lüdecke, 2020) was used to create tables to display the resulting odds ratios, confidence intervals and *p*-values.

Group and verb type did not have a significant interaction effect ($\chi^2 = 7.92, df = 6, p = 0.244$) according to a likelihood ratio test comparing models with and without the interaction. There was a significant effect from verb type ($\chi^2 = 61.6, df = 3, p < 0.001$), but not from group ($\chi^2 = 2.62, df = 2, p = 0.270$). The table showing odds ratios, their confidence intervals, and *p*-values for individual terms in the model without interaction is as follows.

Table 11: Odd rations, confidence intervals, and p-values for individual variables

	Proclitic Response		
Predictors:	Odds Ratios	95% CI	p
Group [HS]	2.441	0.677 – 8.798	0.172
Group [L2]	2.555	0.725 – 9.009	0.145
VerbType [Modal]	0.096	0.032 – 0.289	**<0.001**
VerbType [Impersonal]	0.000	0.000 – 5.9E87	0.863
VerbType [Embedded Neg]	0.122	0.045 – 0.333	**<0.001**
Random Effects:			
σ^2	3.29		
$\tau_{00\ Speaker}$	1.41		
$n_{\ Speaker}$	53		
Observations	1272		
Marginal R^2 / Conditional R^2	0.930 / 0.951		

Note: Group [Control] and VerbType [Auxiliary] are not included because they comprise the comparison baseline reference for each independent variable.

According to the marginal and conditional Nakagawa R^2, 93.0% of the variation in proclitic occurrence is due to the fixed effects in the model and 95.1% is due to both the fixed effects and the random effects due to repeated measures on speakers. The odds of proclitic responses being chosen for modal verbs are 90.4% lower than the odds of proclitic responses being chosen for auxiliary verbs ($z = -3.91, p < 0.001$). The odds of proclitic responses being chosen for embedded negations are 87.8% lower than the odds of CC being chosen for auxiliary verbs ($z = -3.86, p < 0.001$). There was no significant difference between impersonal sentences and auxiliary verbs ($z = -0.173, p = 0.863$) given that the occurrence of proclitic responses for impersonal verbs is lower than for auxiliary verbs.

5.5.1.3 Statistical Analysis: Clitic Climbing Production Rates among Experimental Groups and Proficiency

The statistical model employed to measure the relationship between the dependent variable (i.e., production rate of proclitic placement) and the independent variables (i.e, type of verb: highly grammaticalized or auxiliary-like, low grammaticalized or modal-like, impersonal, embedded negation; group: L2 learners, heritage speakers; and proficiency: intermediate, advanced) was a binary logistic regression. I also predicted the proportion of producing proclitic sentences in terms of log odds among the experimental groups (heritage speakers vs. L2 learners), type of verb (highly grammaticalized, low grammaticalized, impersonal, embedded negation), proficiency (intermediate, advanced), and the interaction of group by verb as fixed types (independent variables). Native speakers were not added to this analysis because their proficiency in Spanish was not measured during the data collection. The logistic regression analysis was conducted using the Logistic procedure in SAS v. 9.3 (SAS Institute Inc., 1999) in the Windows 10 environment. Firth's adjustment (i.e. penalized likelihood estimation) was incorporated due to some very small proportions. Penalized likelihood methods increase the likelihood rates with a penalty function for very small estimated proportions.

Overall, no significant differences were found in the rate of clitic climbing production for both groups. In other words, there is little evidence that the experimental groups behave differently when exerting the climbing option ($\chi^2 = .093$, $df = 1$, $p = .761$). However, there were significant effects on the rate of clitic climbing responses due to auxiliary verbs ($p < .0001$) and also due to proficiency ($p = .0041$). In the absence of differences among the experimental groups, participants showed the following tendencies of producing clitic climbing across the four verb conditions: The odds of exerting the climbing option when the verb is auxiliary are 6.8 times the odds of exerting climbing when the verb is modal, assuming that the other variables of the model remain constant. The odds of exerting the climbing option among modal verbs are 8.4 times the odds when the verb is impersonal. For both experimental groups, the odds of exerting the climbing option in sentences with embedded negations are not significantly different from the odds of producing clitic climbing sentences when the verb is modal. Going back to the proficiency variable, the odds of producing a sentence with climbing increase by a factor of 1.15 for every unit increase in the proficiency scores, provided all other variables are held constant. Figure 8 shows the production rates of proclitic responses according to proficiency by group and verb type. With this model I calculated

the predicted probability of exerting the climbing option by group and verb. These are summarized in Table 12.

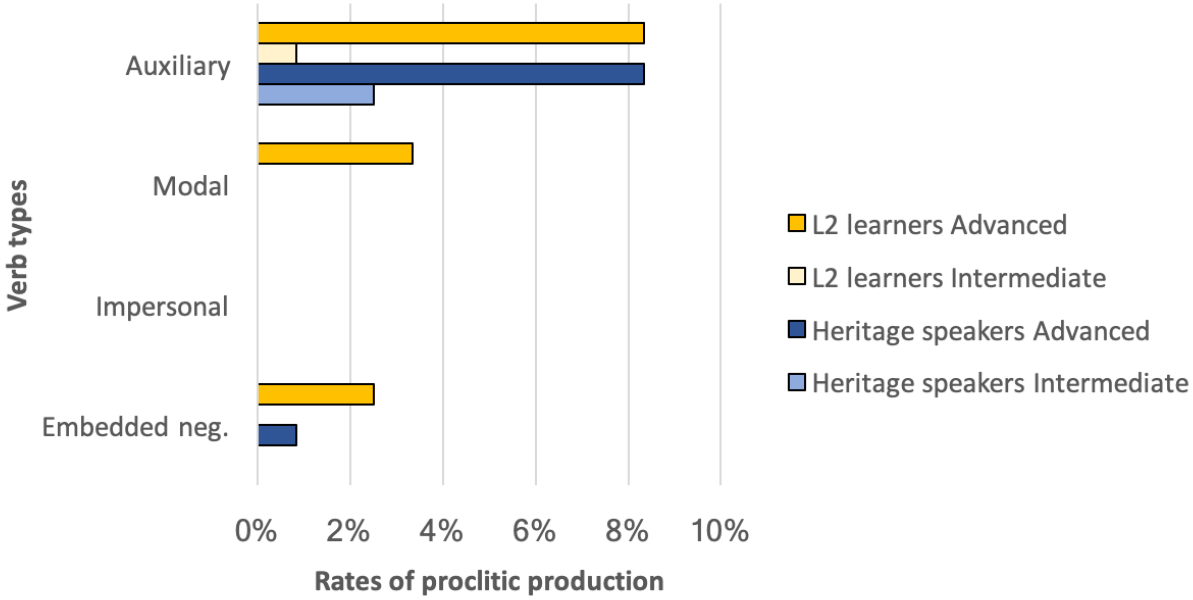


Figure 8: Rates of proclitic production across proficiency and verb types for the experimental groups

Table 12: Predicted probability (mean values) of selecting CC by group and verb

Verb:	Auxiliary	Modal	Impersonal	Embedded negation
Group:				
Heritage speakers	0.1048	0.0187	0.0021	0.0191
L2 learners	0.1158	0.0209	0.0023	0.0213

5.5.1.4 Analysis of individual results

An extra analysis was performed in order to examine whether differences across all groups and type of object clitic placement (proclisis, enclisis) were visible at the individual level. For the individual results analysis, I divided the participants according to the number of responses: high

achievers (5-6 = upper range), mid achievers (3-4 = mid range), low achievers (1–2 = low range) or no response, regardless of their proficiency.

Table 13 presents the individual results for highly grammaticalized periphrases. Proclisis across the three groups is low, with the majority of participants falling into low-range and no response categories, especially among the native group. Enclisis was the most frequent option among the native speakers, with nine participants falling into the upper-range category. Heritage and L2 learners showed more variability in their enclitic responses, with the majority of participants within mid-range. At the individual level, heritage speakers and L2 learners' enclitic placement was not as categorical as native speakers', showing instead more variability.

Table 13: Individual results of object production in highly grammaticalized periphrases by group

Group	Range	Number of items	Proclisis % of participants	Enclisis % of participants
Native (N = 20)	Upper-range	5-6	0% (0/20)	45% (9/20)
	Mid-range	3-4	0% (0/20)	35% (7/20)
	Low-range	1-2	30% (6/20)	15% (3/20)
	No response	0	70% (14/20)	5% (1/20)
Heritage speakers (N = 16)	Upper-range	5-6	0% (0/16)	12.5% (2/16)
	Mid-range	3-4	6.25% (1/16)	43.75% (7/16)
	Low-range	1-2	56.25% (9/16)	31.25% (5/16)
	No response	0	37.5% (6/16)	1.25% (2/16)
L2 learners (N = 17)	Upper-range	5-6	0% (0/17)	17.6% (3/17)
	Mid-range	3-4	11.7% (2/17)	41.1% (7/17)
	Low-range	1-2	23.5% (4/17)	23.5% (4/17)
	No response	0	64.7% (11/17)	17.6% (3/17)

Table 14 presents the individual results for low grammaticalized periphrases. Proclisis was not considered an option for any participant except for two L2 learners, with the majority of responses at bottom. Similarly to highly grammaticalized periphrases, all three groups showed more variability when producing enclisis: most of the participants in each group fall within the mid and low ranges.

Table 14: Individual results of object production in low grammaticalized periphrases by group

Group	Range	Number of items	Proclisis % of participants	Enclisis % of participants
Native (N = 20)	Upper-range	5-6	0% (0/20)	20% (4/20)
	Mid-range	3-4	0% (0/20)	60% (12/20)
	Low-range	1-2	0% (0/20)	25% (3/20)
	No response	0	100% (20/20)	5% (1/20)
Heritage speakers (N = 16)	Upper-range	5-6	0% (0/16)	6.25% (1/16)
	Mid-range	3-4	0% (0/16)	25% (4/16)
	Low-range	1-2	0% (0/16)	56.25% (9/16)
	No response	0	100% (16/16)	12.5% (2/16)
L2 learners (N = 17)	Upper-range	5-6	0% (0/17)	12% (2/17)
	Mid-range	3-4	6% (1/17)	47% (8/17)
	Low-range	1-2	6% (1/17)	24% (4/17)
	No response	0	88% (15/17)	17% (3/17)

Table 15 presents the individual results for impersonal periphrases. Neither of the three groups exerted the proclitic option, except for two L2 learners. Similarly to enclisis in the low grammaticalized matrices, similar variability was found across the experimental groups, with the majority of participants with the mid and low ranges. Native speakers' enclitic responses were however more categorical, with the majority of participants within the upper and mid ranges.

Table 15:Individual results of object production in impersonal periphrases by group

Group	Range	Number of items	Proclisis % of participants	Enclisis % of participants
Native (N = 20)	Upper-range	5-6	0% (0/20)	55% (11/20)
	Mid-range	3-4	0% (0/20)	45% (9/20)
	Low-range	1-2	0% (0/20)	0% (0/20)
	No response	0	100% (20/20)	0% (0/20)
Heritage speakers (N = 16)	Upper-range	5-6	0% (0/16)	37.5% (6/16)
	Mid-range	3-4	0% (0/16)	37.5% (6/16)
	Low-range	1-2	0% (0/16)	19% (3/16)
	No response	0	100% (16/16)	6% (1/16)
L2 learners (N = 17)	Upper-range	5-6	0% (0/17)	17.65% (3/17)
	Mid-range	3-4	0% (0/17)	41% (7/17)
	Low-range	1-2	0% (0/17)	17.65% (3/17)
	No response	0	100% (17/17)	23.5% (4/17)

Table 16 presents the individual results for periphrases with embedded negation. In this verb condition marginal proclitic responses were found among the three groups. Enclisis was the preferred choice across all groups. Although the majority of native participants were unanimous in their responses, the experimental groups showed again more variability, with the majority of heritage speakers within the mid and low ranges, and more variability in the responses of the L2 learners.

Table 16: Individual results of object production in periphrases with embedded negation by group

Group	Range	Number of items	Proclisis % of participants	Enclisis % of participants
Native (N = 20)	Upper-range	5-6	0% (0/20)	55% (11/20)
	Mid-range	3-4	0% (0/20)	25% (5/20)
	Low-range	1-2	5% (1/20)	20% (4/20)
	No response	0	95% (19/20)	0% (0/20)
Heritage speakers (N = 16)	Upper-range	5-6	0% (0/16)	18.75% (3/16)
	Mid-range	3-4	0% (0/16)	43.75% (7/16)
	Low-range	1-2	6.25% (1/16)	31.25% (5/16)
	No response	0	93.75% (15/16)	6.25% (1/16)
L2 learners (N = 17)	Upper-range	5-6	0% (0/17)	23.5% (4/17)
	Mid-range	3-4	0% (0/17)	29.5% (5/17)
	Low-range	1-2	11.75% (2/17)	11.75% (2/17)
	No response	0	88.25% (15/17)	35.25% (6/17)

Overall, the analysis of individual results confirms the group results presented earlier: although the number of proclitic instances is low across all groups, the few instances take place in highly grammaticalized verbs, consistent with the reported trends (Davies, 1995). Enclisis was the preferred choice across all groups and verb contexts, a behavior that is also noted in the individual analysis of high and low grammaticalized verbs.

5.5.2 Acceptability Judgment Task

5.5.2.1 Description of mean ratings

As it was mentioned earlier, this task included a total of 12 proclitic and 12 enclitic verbal periphrases. Of the twelve proclitic sentences, 6 of them included ungrammatical sentences with climbing. 24 fillers (distractors presenting alternative constructions such as imperfect vs. preterite tense or subjunctive mood) were included, one after each test token. Two modalities of the same task were created to avert learning effects. After data were collected, a methodological mistake was noted in the design of version B of this task: instead of having 3 test tokens with climbing and 3 with no climbing per verb condition, the modal and embedded negation verb conditions had

instead two test tokens with climbing (proclisis) and four test tokens with no climbing (enclisis). Nevertheless, SAS observes this discrepancy and it did not affect the statistical output. All responses were coded and counted for each participant. Table 17 shows the mean ratings of each type of response (proclisis, enclisis) according to each verbal condition (auxiliary, modal, impersonal, embedded negation) and by group (native, heritage speakers, L2 learners).

As it was expected, native speakers assigned higher ratings to grammatical sentences with climbing and non-climbing, and lower ratings to ungrammatical sentences with climbing, as it is the case of impersonal periphrases and periphrases with embedded negation. The experimental groups also assigned higher ratings to grammatical proclitic sentences, although their ratings of ungrammatical clitic climbing were less categorical compared to native speakers. Native speakers rated ungrammatical proclisis in impersonal periphrases as 1.8/5, while heritage speakers' and L2 learners' ratings were 2.44/5 and 2.74/5. Ungrammatical proclisis in periphrases with embedded negation was rated 2.2/5 by the native group, while the heritage and L2 learners groups assigned values of 2.94/5 and 2.63/5 respectively. Figure 3 shows the acceptability ratings of proclitic sentences across the four verb conditions by group and proficiency.

Native speakers rated grammatical enclitic placement slightly better than grammatical proclitic placement, regardless of the degree of matrix grammaticalization: 3.86 vs. 4.23 in highly grammaticalized periphrases, 4.05 vs. 4.45 in low grammaticalized periphrases. The experimental groups show similar trends in regards to both types of matrix verbs. Figure 4 illustrates the ratings of enclitic sentences across the four verb conditions by group and proficiency.

Table 17: Acceptability Judgment Task, acceptability ratings of grammatical and ungrammatical sentences across the four verbal conditions by group and proficiency

Sentence types and example numbers	Native speakers (N = 20)		Heritage speakers (N = 16)		L2 learners (N = 17)	
	M	(SD)	M	(SD)	M	(SD)
High grammaticalized matrices: AUX						
(1a) proclisis √√	3.86	(1.02)	3.81	(.82)	3.82	(1.07)
(1b) enclisis √	4.23	(.59)	3.92	(.85)	4.39	(.60)
Low grammaticalized matrices: MOD						
(2a) proclisis √	4.05	(.88)	4.09	(.53)	3.97	(.90)
(2b) enclisis √√	4.45	(.55)	4.6	(.41)	4.26	(.84)
Impersonal periphrases: IMP						
(3a) *proclisis	1.8	(.61)	2.44	(.87)	2.74	(1.21)
(3b) enclisis	4.27	(.63)	4.10	(.69)	4.24	(1.01)
Periphrases with embedded negations: EMB						
(4a) *proclisis	2.2	(.72)	2.94	(.98)	2.63	(1.25)
(4b) enclisis	3.79	(.82)	3.91	(.64)	3.78	(1.10)

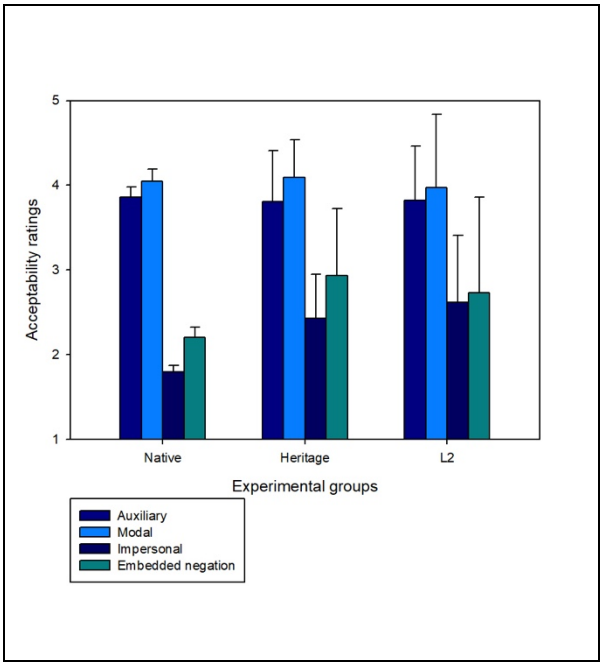


Figure 9: Acceptability ratings of proclitic sentences across the four verb conditions by group and proficiency

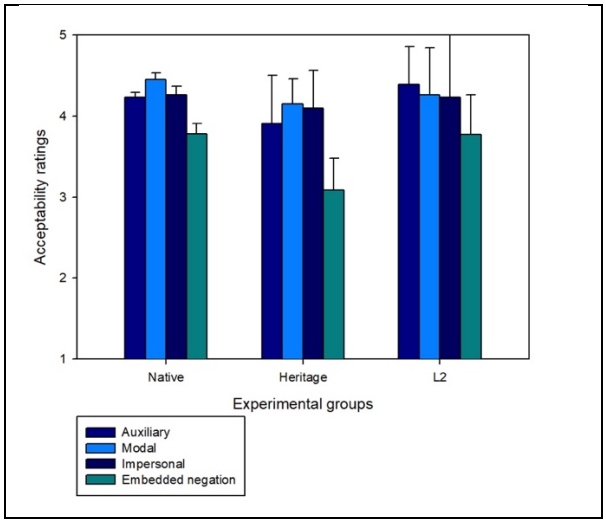


Figure 10: Acceptability ratings of enclitic sentences across the four verb conditions by group and proficiency

5.5.2.2 Statistical Analysis: Clitic Climbing Acceptability Ratings by Group and Verb Types

A mixed ordinal logistic regression model with random intercepts was used to model the acceptability ratings for proclitic responses (grammatical in the case of auxiliary- and modal-like verbs, ungrammatical in the case of impersonal and embedded negation sentences) as a function of fixed effect from group (natives, heritage speakers, L2 learners) and verb type (auxiliary-like, modal-like, impersonal sentence, sentence with embedded negation), including the interaction between them, with repeated measures on speakers entered as a random effect. Flexible thresholds were chosen for this ordinal model. A 5% level of significance (i.e., p-value is under 5%) is considered for all hypothesis testing, and 95% confidence for all interval estimates. Statistical analysis was performed using R (R Core Team, 2019) with the *cclm* function in the *ordinal* package (Christensen, 2019) used to fit the ordinal logistic mixed regression model.

With the original five acceptability responses grouped into three ordered categories, "Very bad or Bad", "I don't know/I'm not sure", and "Good or Very good", group and verb type was observed to have a significant interaction effect ($\chi^2 = 17.3, df = 6, p = 0.008$) according to a likelihood ratio test comparing models with and without the interaction. Table 18 showing odds ratios, their confidence intervals, and p-values for individual terms in the model is as follows.

Table 18: Odd rations, confidence intervals, and p-values for individual variables

	Acceptability ratings		
Predictors:	Odds Ratios	95% CI	p
Very bad, Bad|Don't know	0.108	0.050 – 0.234	**<0.001**
Don't know|Good, Very good	0.270	0.128 – 0.567	**0.001**
Group [Heritage]	1.319	0.418 – 4.169	0.637
Group [L2]	1.025	0.342 – 3.072	0.965
VerbType[Modal]	1.409	0.513 – 3.868	0.506
VerbType[Impersonal]	0.008	0.003 – 0.026	**<0.001**
VerbType[Embedded Neg]	0.029	0.011 – 0.081	**<0.001**
Group [Heritage] * VerbType[Modal]	6.120	0.561 – 66.776	0.137
Group [L2] * VerbType [Modal]	1.039	0.226 – 4.782	0.960
Group [Heritage] * VerbType[Impersonal]	4.984	1.146 – 21.679	**0.032**
Group [L2] * VerbType [Impersonal]	10.571	2.526 – 44.241	**0.001**
Group [Heritage] * VerbType[Embedded Neg]	3.968	0.955 – 16.496	0.058
Group [L2] * VerbType [Embedded Neg]	4.432	1.108 – 17.723	**0.035**
Random Effects:			
σ^2	3.29		
$\tau_{00\ \text{Participants}}$	0.82		
$n_{\ \text{Participants}}$	53		
Observations	530		
Marginal R^2 / Conditional R^2	0.492 / 0.593		

Note: Group [Control] and VerbType [Auxiliary] are not included because they comprise the comparison baseline reference for each independent variable. The odds ratios for the interaction terms should not be interpreted alone, but to understand the interaction effect, it is first necessary to combine the coefficients associated with a particular combination of group and verb type.

According to the marginal and conditional Nakagawa R^2 (Nakagawa, Johnson, and Schielzeth, 2017), 49.2% of the variation in these data is due to the fixed effects in the model and 59.3% is due to both the fixed effects and the random effects due to repeated measures on speakers. In other words, when impersonal verbs are encountered, the odds of heritage speakers rating proclitic placement are 6.6 times the odds of native speakers ($z = 2.14, p = 0.032$). Similarly, the odds of L2 speakers rating proclitic placement with impersonal verbs are 10.8 times the odds of native speakers with impersonal verbs ($z = 3.23, p = 0.001$). The odds of L2 speakers rating proclitic placement with impersonal verbs are 5.4 times the odds of native speakers with impersonal verbs ($z = 2.11, p = 0.035$). None of the other group and verb type combinations showed significant interactions.

5.5.2.3 Statistical Analysis: Clitic Climbing Acceptability Ratings among Experimental Groups and Proficiency

The statistical model employed to measure the relationship between the dependent variable (i.e., mean ratings of proclitic placement in highly and low grammaticalized verbs vs. mean ratings of proclitic placement in impersonal and embedded negation periphrases) and the independent variables (i.e, type of verb: highly grammaticalized, low grammaticalized, impersonal, embedded negation, and type of group: L2 learners, heritage speakers) was an ordinal logistic regression. To analyze the proclitic sentence ratings across verbs and groups, responses were divided into three categories, the first category included "1 = Very bad" and "2 = Bad" responses, the second one included "3 = I don't know/I'm not sure" responses, and the last included "4 = Good" and "5 = Very good" responses.

The analysis of grammatical sentences with climbing among auxiliary and modal verbs was the following: Overall, there are no significant effects on the acceptability ratings across group (p = .300), verb (p = .054) or proficiency (p = .637) at the 5% level of significance. There was nearly a significant difference between the verb type (p = .054) if a 5% level of significance is used. The interpretation of the coefficient for verb would be that the odds of a person having a higher valued response for auxiliary verbs are 2.9 times the odds for modal verbs. The analysis of ungrammatical sentences with climbing among impersonal constructions and sentences with embedded negations was the following: Overall, there were no significant effects on the ratings of ungrammatical sentences with climbing across groups (p = .591) or proficiency (p = .374) at the

5% level of significance. However, type of verb had a significant effect (t = -1.99, df = 130, p = .049) on the acceptability ratings. The odds of a person having a higher valued response for impersonal verbs are 1.9 times the odds for embedded negations.

Table 19 shows the probabilities for both groups of rating proclitic sentences by verb type, according to the aforementioned categories: P(Y=1) includes the "1 = Very bad" and "2 = Bad" responses, P(Y=2) includes "3 = I don't know/I'm not sure" responses", and P(Y=3) includes "4 = Good" and "5 = Very good" responses.

Table 19: Predicted probabilities of selecting P(Y=1), P(Y=2), and P(Y=3) type responses by verb and group in proclitic sentences

	P(Y=1)	P(Y=2)	P(Y=3)
Heritage speakers:			
Auxiliary	0.0436	0.0341	0.9223
Modal	0.0156	0.0129	0.9715
Impersonal	0.6326	0.1546	0.2128
Embedded neg.	0.4746	0.1853	0.3401
L2 learners:			
Auxiliary	0.0974	0.0687	0.8339
Modal	0.0362	0.0287	0.9351
Impersonal	0.5812	0.1676	0.2512
Embedded neg.	0.4211	0.1888	0.3901

5.5.2.4 Analysis of individual results

An individual results analysis was conducted in order to examine whether divergencies between groups and type of object clitic placement (proclisis, enclisis) were visible at the individual level. For the individual results analysis, I classified participants by their number of responses: high achievers (5-6 = upper range), mid achievers (3-4 = mid range), or low achievers (1–2 = low range), regardless of their proficiency.

Table 20 presents the individual judgments for highly grammaticalized periphrases. In this condition, judgments of sentences with and without climbing were rated favorably across the three

groups, although the enclitic option was preferred at a slightly higher rate compared to proclisis, especially among the native (95%) and L2 learners (98%) groups. Heritage speakers show equal favorable ratings in both types of sentences (81.2%).

Table 20: Individual results for the acceptability ratings in highly grammaticalized periphrases by group

Group		Number of items	Proclisis # of responses	Enclisis # of responses
Native (N = 20)	Accepted	4-5	75% (45/60)	95% (57/60)
	Unsure	3	13.3% (8/60)	3.3% (2/60)
	Rejected	1-2	11.6% (7/60)	1.6% (1/60)
Heritage speakers (N = 16)	Accepted	4-5	81.2% (39/48)	81.2% (39/48)
	Unsure	3	6.2% (3/48)	8.3% (4/48)
	Rejected	1-2	12.5% (6/48)	10.4% (5/48)
L2 learners (N = 17)	Accepted	4-5	76.4% (39/51)	98% (50/51)
	Unsure	3	7.8% (4/51)	0% (0/51)
	Rejected	1-2	15.6% (8/51)	1.9% (1/51)

Table 21 presents the individual judgments for low grammaticalized periphrases. Let us remember that due to a methodological mistake the number of test tokens in this condition is not balanced (2 proclitic, 4 enclitic), which explains the mismatch in the total number of responses per group. In this periphrastic context, all groups showed comparable positive judgments of both proclitic and enclitic placement; participants were unanimous in their favorable judgments (high-achievers). Similarly to the highly grammaticalized contexts, native speakers showed slightly higher ratings of enclisis in low grammaticalized contexts.

Table 21: Individual results for the acceptability ratings in low grammaticalized periphrases by group

Group		Number of items	Proclisis # of responses	Enclisis # of responses
Native (N = 20)	Accepted	4-5	80% (32/40)	97.5% (78/80)
	Unsure	3	12.5% (5/40)	2.5% (2/80)
	Rejected	1-2	7.5% (3/40)	0% (0/80)
Heritage speakers (N = 16)	Accepted	4-5	96.8% (31/32)	98.4% (63/64)
	Unsure	3	0% (0/32)	1.5% (1/64)
	Rejected	1-2	3.1% (1/32)	0% (0/64)
L2 learners (N = 17)	Accepted	4-5	82.3% (28/34)	89.7% (61/68)
	Unsure	3	5.8% (2/34)	2.9% (2/68)
	Rejected	1-2	11.7% (4/34)	7.3% (5/68)

Table 22 presents the individual judgments for impersonal constructions in proclitic and enclitic placement. Let us remember that proclisis in this periphrastic context is ungrammatical. The default enclitic option is the only possible. Native speakers were unanimous in their judgments of impossible sentences (90%) while more variation was found among the experimental groups, with 60.4% of heritage speakers and 56.8% rating this context as not suitable for clitic climbing. More heritage participants than L2 learners showed indeterminate judgments (25% vs. 9.8%), but at the same time more L2 learners than heritage speakers rated climbing in impersonal sentences as perfectly possible in Spanish (33.3% vs. 14.5%). In contrast with ungrammatical proclisis, the judgments of enclitic placement in this context were positive across all groups, although some judgments by the L2 group show that this group did not accept the default option as possible (13.7%).

Table 22: Individual results for the acceptability ratings in impersonal periphrases by group

Group		Number of items	Proclisis # of responses	Enclisis # of responses
Native (N = 20)	Accepted	4-5	0/60 (0%)	56/60 (93.3%)
	Unsure	3	6/60 (10%)	3/60 (5%)
	Rejected	1-2	54/60 (90%)	1/60 (1.6%)
Heritage speakers (N = 16)	Accepted	4-5	7/48 (14.5%)	45/48 (93.7%)
	Unsure	3	12/48 (25%)	0/48 (0%)
	Rejected	1-2	29/48 (60.4%)	3/48 (6.25%)
L2 learners (N = 17)	Accepted	4-5	17/51 (33.3%)	44/51 (86.2%)
	Unsure	3	5/51 (9.8%)	0/51 (0%)
	Rejected	1-2	29/51 (56.8%)	7/51 (13.7%)

Table 23 presents the individual judgments for sentences with embedded negations in proclitic and enclitic placement. Proclisis in this periphrastic context is ungrammatical. The default enclitic option is the only possible. Let us remember that due to a methodological mistake the number of test tokens in this condition is not balanced (2 proclitic, 4 enclitic), which explains the mismatch in the total number of responses per group. Overall, participants' judgments of ungrammatical proclitic placement were not unanimous across the three groups, although the judgments of the native participants were almost categorical (72.5%). The judgments of ungrammatical sentences with climbing among the heritage and L2 learners groups are divided, with one half of the responses rating these sentences as "Good" or "Very good" (40.6% vs. 38.2%) and the other half rating these sentences as "Bad" or "Very bad" (43.7% vs. 50%). The ratings of the only possible clitic placement option in this context were more categorical, with 71.2% of positive judgments among the native speakers compared to heritage speakers (85.9%) and L2 learners (76.4%). Overall, heritage speakers (regardless of their proficiency) had better familiarity of clitic placement in this context compared to L2 learners: 20.5% of their judgments were negative, compared to heritage speakers' (3.1%).

Table 23: Individual results for the acceptability ratings in periphrases with embedded negations by group

Group		Number of items	Proclisis # of responses	Enclisis # of responses
Native (N = 20)	Accepted	4-5	2/40 (5%)	57/80 (71.2%)
	Unsure	3	9/40 (22.5%)	16/80 (20%)
	Rejected	1-2	29/40 (72.5%)	7/80 (8.75%)
Heritage speakers (N = 16)	Accepted	4-5	13/32 (40.6%)	55/64 (85.9%)
	Unsure	3	5/32 (15.6%)	7/64 (10.9%)
	Rejected	1-2	14/32 (43.7%)	2/64 (3.1%)
L2 learners (N = 17)	Accepted	4-5	13/34 (38.2%)	52/68 (76.4%)
	Unsure	3	4/34 (11.7%)	2/68 (2.9%)
	Rejected	1-2	17/34 (50%)	14/68 (20.5%)

Overall, the analysis of individual results confirms the group results presented earlier: the control and experimental groups discern between grammatical and ungrammatical sentences with climbing. While there seems to be unanimity among the native speakers in their judgments of ungrammatical sentences with climbing, the experimental groups' judgments show less certainty.

5.6 Conclusions

In Chapter 5 I have described the conditions for a new research study on the production and interpretation of clitic climbing constructions in L2 and heritage Spanish. Taking in consideration the different age of arrival to the L2 and type of input received among the two experimental groups, the major theoretical approaches to account for clitic climbing constructions in the experimental and variationist linguistics, and previous findings from acquisition studies of this syntactic phenomenon, a new model that addresses the limitations from previous studies has been carried out. Two research questions have been formulated along with the predicted outcomes based on what is known to date. The linguistic properties of the control and experimental populations are described as well as the proficiency in Spanish of the English-dominant informants. To answer those research questions, two tasks and the lexical and syntactic conditions have been employed. The results have been described descriptively and for the statistical analyses, two logistic regression models have been employed. Additionally, I have performed two individual

analyses to contrast group results. In the next chapter I discuss these results according to the formulated research questions, I discuss the methodological limitations, and offer some indications for future studies on the acquisition of this phenomenon.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction

In this final section I will answer the research questions formulated in the previous chapter by interpreting the data provided through an elicited production task and an acceptability judgment task (6.2). In (6.3) I discuss the limitations that were found and provide suggestions for future follow-up studies. A concluding paragraph puts an end to this chapter.

6.2 Discussion of Results

6.2.1 Research Question 1

The first research question was formulated in order to attest diverging behavior in target use and intuition of clitic climbing constructions between the experimental groups (L2 learners, heritage speakers) compared to a control group of native Spanish speakers across four periphrastic contexts (auxiliary, modal, impersonal sentences, and sentences with embedded negations). I hypothesized that heritage speakers would show a tendency to overuse proclisis across all verbal conditions and would rate ungrammatical sentences with climbing as possible. I also hypothesized that L2 learners would employ less proclitic placement across all contexts, favoring the enclitic (non-climbing) option, and would reject grammatical sentences with climbing.

In terms of production, the raw counts from the sentence completion task show that overall, the control and experimental groups behaved similarly in their use of proclitic sentences. The few instances of clitic climbing occurred in highly grammaticalized (auxiliary-like) contexts, and no group exerted the climbing option in periphrases with low grammaticalized (modal-like) verbs. All groups behaved alike in contexts where climbing is not possible, resorting to the enclitic option. The statistical analysis performed with the three groups and the four verbal contexts showed that verb type (but not group) was a significant factor in predicting clitic climbing responses among these groups: the odds of exerting the climbing option among modal-like verbs and sentences with embedded negations were very low across all groups, and there were no significant differences between impersonal constructions and auxiliary-like contexts due to the fact that the number of these responses across all groups was very low.

In terms of intuition, the acceptability ratings show that all groups assigned higher ratings to grammatical constructions with climbing, although the ratings of the experimental groups in ungrammatical sentences with climbing were not as categorical as the native speakers' judgments. The statistical analysis performed with the three groups and the four verbal contexts showed that when responses were grouped in three distinct categories (Accepted, Unsure, Rejected), the interaction between the "Rejected" and "Unsure" responses and the interaction between "Accepted" and "Unsure" were statistically significative. This was expected since all groups showed knowledge of possible and impossible sentences with climbing. Clitic climbing ratings across impersonal constructions and sentences with embedded negations also observed significant effects across groups. More specifically, the interaction between the heritage group and impersonal contexts was significative, and the interactions of impersonal sentences and periphrases with embedded negations with L2 learners also showed significative differences. The ratings of heritage speakers in sentences with embedded negations were not different from native speakers' judgments, while the L2 group behave differently than the monolinguals in their ratings of all ungrammatical sentences with climbing. It seems that heritage speakers in general show better intuition of ungrammatical sentences with clitic climbing.

Therefore, none of my hypotheses were confirmed. While previous findings (Montrul, 2010a, 2010b; Thomas, 2012) show divergent behavior in terms of production and intuition, all groups behaved alike in their production but not in their intuition. While more testing would be necessary, this finding in the productions of these speakers could indicate a change in the language, in the lines of Silva-Corvalán (1994), who suggested that in situations of language contact, changes in progress may be accelerated. Let us remember that recent variationist literature reported that object clitics with *ser*+gerund ('to be' + present participle) periphrases had become invariably procliticized in heritage Spanish (Gutiérrez, 2014; Limerick, 2017). L2 learners' judgments of ungrammatical clitic climbing were less categorical than native speakers' and heritage speakers's judgments were less determinate only with impersonal sentences, which are less productive in the oral register. At the time of testing L2 learners would have received more formal instruction in Spanish and would have had more time to develop their metalinguistic skills compared to heritage speakers'. These results may be indicative that perhaps heritage speakers have had more opportunities to familiarize with the object clitic pronominal system in Spanish, compared to L2

learners. Consequently, adult early bilinguals may show slightly better knowledge of these constructions compared to adult L2 learners.

6.2.1 Research Question 2

The second research question was formulated to ascertain whether differences exist between the experimental groups of L2 learners and heritage speakers due to a different experience with input (early and oral-based in the case of heritage speakers, late and written-based in the case of L2 learners). I hypothesized that due to these differences, L2 learners and heritage speakers would show different behavior from each other: heritage speakers would overextend proclisis across the four verb conditions and would accept ungrammatical sentences with climbing. L2 learners would do the opposite: avoid proclitic use across all conditions and reject grammatical sentences with climbing.

In terms of production, no differences were found among the experimental groups, but verb context was found to be a predictor. Auxiliary-like verbs allowed proclisis to take place at rates of 6.8 points higher than modal verbs regardless of group, a finding that was confirmed in the predicted probabilities of clitic climbing use across experimental groups and verbal contexts. Although the chances of finding instances of proclisis were very low, they will likely happen with auxiliary verbs regardless participants are L2 learners or heritage speakers, as it can be observed by the similar mean values: 0.1048 in the case of heritage speakers and 0.1158 for L2 learners.

In terms of intuition, both groups behaved alike when rating grammatical sentences with climbing, with the odds of rating clitic climbing in auxiliary-like being 2.9 times the odds for modal verbs. Similarly, the ratings of ungrammatical sentences with climbing did not differ statistically between the experimental groups, with both groups rating impersonal constructions 1.9 times the odds for embedded negations.

Therefore, in the absence of differences among L2 learners and heritage speakers in terms of production and intuition, my hypotheses were not confirmed. Given that heritage speakers do not show advantages (more accurate production, better intuition) than L2 learners, the second and heritage language acquisition of clitic climbing constructions in Spanish is apparently impervious to age or type of input effects. Both groups can achieve a good command of this construction regardless their experience with input.

6.2.1 Research Question 3

The third research question was formulated to gauge the effects of proficiency in the production and intuition of clitic climbing constructions among the two experimental groups of L2 learners and heritage speakers. I hypothesized that more proficient heritage speakers and L2 learners will show more accurate production and intuition of clitic climbing constructions among the four verbal conditions: higher rates of clitic climbing production with auxiliary and modal verbs, and more categorical rejections of ungrammatical sentences with climbing with impersonal sentences and sentences with embedded negations.

In terms of production, a proficiency effect was found: the odds of producing a sentence with climbing increase by a factor of 1.15 points for every increase unit in the proficiency scores, assuming all other variables are constant. In terms of intuition, no differences were found due to proficiency: both groups behaved alike in their intuitions, both for grammatical and ungrammatical sentences with climbing.

Therefore, my hypothesis is partially confirmed: the more proficient experimental participants are, higher rates of clitic climbing production with auxiliary and modal-like verbal periphrases, contexts where clitic climbing may occur. Regardless of their experience with input, both L2 learners and heritage speakers will behave alike at higher levels of proficiency with the target language. If clitic climbing is lexically and syntactically allowed (i.e., presence of auxiliary- or modal-like periphrases and absence of adverb heads), no ceiling effects for any group should exist. The following section discusses the methodological limitations and suggestions for follow-up studies.

6.3. Limitations of this Study and Future Directions

While the evidence presented here present interesting outcomes for theories of second language acquisition, these results should be interpreted cautiosly, given that the main limitations of the research design is the reduced number of informants. The pool of participants in this study was slightly higher compared to Thomas's (2012) study, who interviewed ten heritage speakers and sixteen L2 learners. However, a pool of at least seventy-two L2 learners and sixty-seven heritage speakers would have shown statistically more accurate results. If possible, future follow-up studies should set the standard for participant recruitment to these figures.

The study was not free of methodological errors when the data collection took place. A methodological error already mentioned was on version B of the acceptability judgment task. Although SAS observed this discrepancy, having the same number of test tokens per verb condition (three proclitic, three enclitic) may have provided a more accurate statistical analysis of the speakers's ratings. However, the statistical model employed in this study converged with the collected data. The results support previous hypotheses stating that the acquisition of core syntactic properties of the L2 (compared to structures interfacing other domains of language), are more impervious to age or input effects. The syntactic properties of clitic climbing constructions do not interface other language domains; the lexical properties of the matrix verbs taking infinitival complements affect the rates of proclitic placement in both spontaneous and non-spontaneous speech, although this latter has been shown to strongly affect proclitic placement across all groups. Even in these conditions, the data reported here is congruent with the tendencies found in the variationist literature: if clitic climbing is to happen, it will likely happen in verbal periphrases undergoing a high degree of grammaticalization.

Finally, these data point to interesting pedagogic outcomes. To explain the L2 learners' unfamiliarity of clitic climbing constructions it has been suggested that in the absence of semantic effects, it is difficult for non-native speakers to notice in the input that clitics can be preposed (Bruhn de Garavito, 2002, 2013; Bruhn-Garavito & Montrul, 1996). In other words, if L2 learners do not perceive certain periphrases to comprise a single lexical unit they will not exert the climbing option. The fact that there are no changes in meaning makes the acquisition of this syntactic operation even more challenging for L2 learners, given that this option in less salient in the available input. If this is the case, the acquisition of the clitic inventory and its properties and the acquisition of clitichood-related phenomena are in fact two separate processes. Clitic climbing is not acquired until much later, if at all. The data presented here shows that it is possible for L2 learners to exert optional proclitic placement in a controlled environment. The fact that a proficiency effect was noted in their production reinforces the idea that in order to manage this optionality, L2 learners must first acquire all aspects related to clitics. If they were capable of use this option in non-spontaneous speech, it is likely that in an uncontrolled elicitation task these learners may produce clitic climbing constructions in high grammaticalized contexts. I suggest creating large L2 spontaneous speech corpora and analyze prociltic placement in (V inf) contexts to see if these speakers assimilate to the native trends.

6.4. Conclusions

The aim of this research was to investigate the interlanguage grammars of two types of bilingual speakers in terms of syntactic knowledge and investigate possible advantages in the acquisition of clitic climbing constructions due to an early exposure and oral-based experience with input to the target language. After reviewing the existing literature on this phenomenon in L2 and heritage Spanish, a methodology was proposed to test the production and intuition of these sentences in a controlled environment. The results of a sentence completion task fitted to test the reported tendencies of proclitic placement in an array of verbs with similar high and low levels of grammaticalization showed an effect by verb type, with auxiliary verbs more likely to attract clitics to the matrix verb domain across both experimental groups, and a proficiency effect. The results of an acceptability judgment task designed to test knowledge of the syntactic properties of this phenomenon among two groups of bilinguals with different experiences with the target language showed no differences across groups or proficiency, suggesting that while the production of clitic climbing sentences is strongly affected by the elicitation mode, knowledge of these constructions is not affected by age or type of input, findings that add to existing debates on the limits and possibilities of an early and oral-based vs. a late and written-based exposure to the second language in adulthood. In the case of clitic climbing constructions in Spanish, the native and non-native production of these forms are alike, and knowledge of the syntactic restrictions among heritage speakers and L2 learners seem to converge towards native patterns.

LIST OF REFERENCES

Abrahamsson, N. & Hyltenstam, K. (2008). The Robustness of Aptitude Effects in Near-Native Second Language Acquisition. *Studies in Second Language Acquisition*, *30*(4), 481-509.

Abrahamsson, N. & Hyltenstam, K. (2009). Age of Onset and Nativelikeness in a Second Language: Listener Perception Versus Linguistic Scrutiny. *Language Learning*, *59*(2), 249-306.

Absi, Z. A. A. (2014). Metalinguistic knowledge and speaking proficiency in Syrian university-level learners of English (Unpublished doctoral dissertation). University of Essex, Essex.

Aissen, J. & Perlmutter, D. M. (1976). Clause Reduction in Spanish. In H. Thompson et al. (Eds.), *Proceedings of the 2nd Annual Meeting of the Berkeley Linguistics Society* (pp. 1-30). Berkeley, CA: Berkeley Linguistics Society.

Akakura, M. (2011). Evaluating the effectiveness of explicit instruction on implicit and explicit L2 knowledge. *Language Teaching Research, 16*(1), 9-37.

Asher, J. J., & García, R. (1969). The Optimal Age to learn a Foreign Language. *The Modern Language Journal*, *53*(5), 334-341.

Au, T. K., Knightly, L. M., Jun, S-A., & Oh, J. S. (2002). Overhearing a language during childhood. *Psychological Science*, *13*(3), 238-243.

Bates, D., Maechler, M., Bolker, B. & Walker, S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software, 67*(1), 1-48.

Bialystok, E. & Hakuta, K. (1994). In Other Words: The Science and Psychology of Second-Language Acquisition. New York: Basic Books.

Bialystok, E. & Hakuta, K. (1999). Confounded age: Linguistic and cognitive factors in age differences for second language acquisition. In D. Birdsong (Ed.), *Second language acquisition research. Second language acquisition and the Critical Period Hypothesis* (pp. 161-181). Mahwah, NJ: Lawrence Erlbaum.

Birdsong, D. (1992). Ultimate Attainment in Second Language Acquisition. *Language, 68*(4), 706-755.

Birdsong, D. (1999). *Second Language Acquisition and the Critical Period Hypothesis*. Mahwah, NJ: Lawrence Erlbaum Associates.

Birdsong, D. (2005). Interpreting Age Effects in Second Language Acquisition. In J. F. Kroll & A. M. B. De Groot (Eds.), *Handbook of Bilingualism: Psycholinguistic Approaches* (pp. 109-127). New York: Oxford University Press.

Blasco Aznar, M. V. (2002). *On the acquisition of object pronominal clitics in Spanish* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Global. (Order No. 3063805).

Bley-Vroman, R. (1990). The Logical Problem of Foreign Language Learning. *Linguistic Analysis, 20*(1-2), 3-49.

Bok-Bennema, R. (2006). Clitic Climbing. In M. Everaert & H. Riemsdijk (Eds.), *The Blackwell Companion to Syntax* (pp. 469-518). Malden, Mass: Blackwell.

Bonet, E. (1995). Feature Structure of Romance Clitics. *Natural Language and Linguistic Theory, 13*(4), 607-647.

Bongaerts, T. (1999). Ultimate Attainment in L2 Pronunciation: The Case of Very Advanced Late L2 Learners. In D. Birdsong (Ed.), *Second Language Acquisition and the Critical Period Hypothesis* (pp. 133-160). Mahwah, NJ: Erlbaum.

Borer, H. (1984). *Parametric Syntax*. Dordrecht: Foris.

Bruhn de Garavito, J. (2002). Verb raising in Spanish: A comparison of early and late bilinguals. In B. Skarabela, S. Fish & A. H.-J. Do (Eds.), *Proceedings of the 26th annual Boston University Conference on Language Development* (pp. 84-94). Somerville, MA: Cascadilla Press.

Bruhn-Garavito, J., & Montrul, S. (1996). Verb-Movement and Clitic Placement in French and Spanish as a Second Language. In A. Stringfellow, D. Cahana-Amitay, E. Hughes & A. Zukowski (Eds.), *Proceedings of the 20th Annual Boston University Conference on Language Development* (pp. 123-134). Sommerville, MA: Cascadilla Press.

Bylund, E., Abrahamsson, N. & Hyltenstam, K. (2010). The Role of Language Aptitude in First Language Attrition: The Case of Pre-pubescent Attriters. *Applied Linguistics*, *31*(3), 443-464.

Carreira, M., & Kagan, O. (2011). The results of the National Heritage Language Survey: Implications for teaching, curriculum design, and professional development. *Foreign language annals, 44*(1), 40-64.

Chomsky, N. (1981). A Note on non-control PRO. *Journal of Linguistic Research*, *1*(4), 1-11.

Chomsky, N. (1995). *The Minimalist Program*. Cambridge, Mass: The MIT Press.

Chomsky, N. (2001). Derivation by phase. In M. Kenstowicz (Ed.), *Ken Hale: A life in language* (pp. 1-52). Cambridge, Mass: The MIT Press.

Chondrogianni, V., & Marinis, T. (2011). Differential effects of internal and external factors on the development of vocabulary, tense morphology and morpho-syntax in successive bilingual children. *Linguistic Approaches to Bilingualism, 1*(3), 318-345.

Christensen, R. H. B. (2019). ordinal - Regression Models for Ordinal Data. R package version 2019.3-9. Retrieved from http://www.cran.r-project.org/package=ordinal/

Chugani, H. T., Behen, M. E., Muzik, O., Juhász, C., Nagy, F., & Chugani, D. C. (2001). Local brain functional activity following early deprivation: a study of postinstitutionalized Romanian orphans. *Neuroimage*, *14*(6), 1290-1301.

Cobo-Lewis, A., Pearson, B. Z., Eilers, R. E., & Umbel, V. C. (2002). Effects of bilingualism and bilingual education on oral and written Spanish skills: A multifactor study of standardized test outcomes. In D. K. Oller & R. E. Eilers (Eds.), *Language and Literacy in Bilingual Children* (pp. 98–117). Clevedon, UK: Multilingual Matters.

Curtiss, S. (1977). *The Case of Genie: A Modern Day 'Wild Child'*. New York: Academic Press.

Cuza, A. & Frank, J. (2015). On the role of experience and age-related effects: Evidence from the Spanish CP. *Second Language Research, 31*(1), 3-28.

Cuza, A., Pérez-Leroux, A. T., & Sánchez, L. (2013). The Role of Semantic Transfer in Clitic Drop among Simultaneous and Sequential Chinese-Spanish bilinguals. *Studies in Second Language Acquisition*, *35*(1), 93-125.

Cuza, A. & Pérez-Tattam (2016). Grammatical gender selection and phrasal word order in child heritage Spanish: A feature re-assembly approach. *Bilingualism: Language and Cognition, 19*(1), 50-68.

Davies, M. (1995). Analyzing Syntactic Variation with Computer-Based Corpora: The Case of Modern Spanish Clitic Climbing. *Hispania, 78*(2), 370-380.

DeKeyser, R. (2000). The Robustness of Critical Period Effects in Second Language Acquisition. *Studies in Second Language Acquisition, 22*(4), 499-533.

DeKeyser, R. (2006). A critique of recent arguments against the critical period hypothesis. In C. Abello-Contesse, R. Chacón-Beltrán & M. D. López-Jiménez (Eds.), *Age in L2 Acquisition and Teaching* (pp. 49-58). Bern, Switzerland: Peter Lang.

DeKeyser, R. & Larson-Hall, J. (2005). What Does the Critical Period Really Mean?. In J. F. Kroll & A. M. B. De Groot (Eds.), *Handbook of Bilingualism: Psycholinguistic Approaches* (pp. 88-108). New York: Oxford University Press.

Duffield, N., & White, L. (1999). Assessing L2 Knowledge of Spanish Clitic Placement: Converging Methodologies. *Second Language Research, 15*(2), 133-160.

Eisenbeiss, S. (2010). Production methods in language acquisition research. In E. Blom & S. Unsworth (Eds.), *Experimental Methods in Language Acquisition Research* (pp. 11-34). Philadelphia: John Benjamins.

Eisenberg, S. (2005). When Conversation Is Not Enough. Assessing Infinitival Complements Through Elicitation. *American Journal of Speech-Language Pathology*, *14*(2), 92-106.

Eisenchlas, S. (2003). Clitics in child Spanish. *First Language*, *23*(2), 193-211.

Ellis, R. (2004). The Definition and Measurement of L2 Explicit Knowledge. *Language Learning, 54*(2), 227-275.

Ellis, R. (2006). Modelling Learning Difficulty and Second Language Proficiency: The Differential Contributions of Implicit and Explicit Knowledge. *Applied Linguistics, 27*(3), 431-463.

Embick, D., & Noyer, R. (2001). Movement operations after syntax. *Linguistic inquiry, 32*(4), 555-595.

Emmorey, K. (2002). The effects of modality on spatial language: How signers and speakers talk about space. In R. P. Meier, K. Cormier & D. Quinto-Pozos (Eds.), *Modality and Structure in Signed and Spoken Languages* (pp. 405-421). New York: Cambridge University Press.

Fernández Soriano, O. M. (1993). *Los pronombres átonos*. Madrid: Taurus.

Fernández Soriano, O. M. (1999). El Pronombre Personal. Formas y Distribuciones. Pronombres Átonos y Tónicos. In Demonte, V. & Bosque, I. (Eds.) *Gramática Descriptiva de la Lengua Española* (pp. 1209-1274). Madrid: Espasa Calpe.

Fischer, S. & Goldbach, M. (2016). Object clitics. In S. Fischer & C. Gabriel (Eds.), *Manual of Grammatical Interfaces in Romance* (pp. 363-390). Berlin/Boston: Walter de Gruyter GmbH.

Flege, J. E. (2009). Give Input a Chance!. In T. Piske & M. Young-Scholten (Eds.), *Input Matters in SLA* (pp. 175–190). Buffalo: Multilingual Matters.

Flege, J. E., Yeni-Komshian, G. H., & Liu, S. (1999). Age Constraints on Second-Language Acquisition. *Journal of Memory and Language*, *41*(1), 78-104.

Flege, J. E., & Liu, S. (2001). The Effect of Experience on Adults' Acquisition of a Second Language. *Studies in Second Language Acquisition, 23*(4), 527-552.

Freed, B. F., Segalowitz, N. & Dewey, D. P. (2004). Context of Learning and Second Language Fluency in French: Comparing Regular Classroom, Study Abroad, and Intensive Domestic Immersion Programs. *Studies in Second Language Acquisition*, *26*(2), 275-301.

García, O. (2009). Bilingual Education in the 21st Century: A Global Perspective. Malden, MA and Oxford: Basil/Blackwell.

García, O., & Otheguy, R. (2017). Interrogating the Language Gap of Young Bilingual and Bidialectal Students. International Multilingual Research Journal, 11(1), 52–65.

Gerlach, B. (2002). *Clitics between Syntax and Lexicon*. Philadelphia: John Benjamins.

Granena, G., & Long, M. H. (2012). Age of onset, length of residence, language aptitude, and ultimate L2 attainment in three linguistic domains. *Second Language Research*, *29*(3), 311-343.

Grimshaw, J. (2001). Optimal Clitic Positions and the Lexicon in Romance Clitic Systems. In G. Legendre, J. Grimshaw & S. Vikner (Eds.), *Optimality-Theoretic Syntax* (pp. 205-240). Cambridge, MA: The MIT Press.

Grimshaw, J. (1982). On the lexical representation of Romance reflexive clitics. In J. Bresnan (Ed.), *On the Lexical Representation of Romance Reflexive Clitics* (pp. 87-148). Cambridge, MA: The MIT Press.

Grohmann, K. K., & Neokleous, T. (Eds.). (2014). *Developments in the Acquisition of Clitics*. Newcastle upon Tyne: Cambridge Scholars Publishing.

Gropen, J. (2000). Methods for studying the production of argument structure in children and adults. In L. Menn & N. Bernstein Ratner (Eds.), *Methods for studying language production* (pp. 95-113). Mahwah, NJ: Lawrence Erlbaum Associates.

Guasti, M. T. (2002). *Language Acquisition*. The MIT Press.

Gudmestad, A. (2006). Clitic climbing in Caracas Spanish: a sociolinguistic study of 'ir' and 'querer'. *IULC Working Papers Online, 6*.

Gutiérrez, M. J. & Silva-Corvalán, C. (1993). Clíticos en una situación de contacto. *Revista Española de Lingüística, 23*(2), 207-220.

Gutiérrez, M. J. (2014). La subida de clíticos en tiempo real y aparente en el español de Houston. In A. Enrique-Arias, M. J. Gutiérrez, A. Landa & F. Ocampo (Eds.), *Perspectives in the Study of Spanish Language Variation. Papers in Honor of Carmen Silva-Corvalán* (pp. 301-320). Universidade de Santiago de Compostela: Servizo de Publicacións e Intercambio Científico.

Halle, M. & Marantz, A. (1994). Some key features of distributed morphology. *MIT Working Papers in Linguistics, 21*, 275-288.

Håkansson, G. (1995). Syntax and morphology in language attrition. A study of five bilingual expatriate Swedes. *International Journal of Applied Linguistics, 5*(2), 153-171.

Hakuta, K., Bialystok, E., & Wiley, E. (2003). Critical Evidence: A Test of the Critical-Period Hypothesis for Second-Language Acquisition. *Psychological Science, 14*(1), 31-38.

Halloran, B. & Rothman, J. (2012). The acquisition of clitics in L2 Spanish. Examining restrictions on clitic solidarity. In J. Smith & T. Ihsane (Eds.), *Selected papers from the 42nd Linguistic Symposium on Romance Languages* (pp. 3-16). Philadelphia: John Benjamins.

Han, Y. & Ellis, R. (1998). Implicit knowledge, explicit knowledge and general language proficiency. *Language Teaching Research, 2*(1), 1-23.

Hartshorne, J. K., Tenenbaum, J. B., & Pinker, S. (2018). A critical period for second language acquisition: Evidence from 2/3 million English speakers. *Cognition*, *177*, 263-277.

Hawkins, R. & Casillas, G. (2008). Explaining frequency of verb morphology in early L2 speech. *Lingua*, *118*(4), 595-612.

Hawkins, R. & Franceschina, F. (2004). Explaining the acquisition and non-acquisition of determiner-noun gender concord in French and Spanish. In P. Prévost & J. Paradis (Eds.), *The Acquisition of French in Different Contexts: Focus on functional categories* (pp. 175-206). Philadelphia: John Benjamins.

Herschensohn, J. R. (2009). Fundamental and gradient differences in language development. *Studies in Second Language Acquisition*, *31*(2), 259-289.

Hopper, P. J., & Traugott, E. C. (2003). *Grammaticalization*. Cambridge: Cambridge University Press.

Hu, G. (2002). Psychological Constraints on the Utility of Metalinguistic Knowledge in Second Language Production. *Studies in Second Language Acquisition, 24*(3), 347-386.

Hubel, D. H., & Wiesel, T. N. (1965). Receptive Fields and Functional Architecture in Two Nonstriate Visual Areas (18 and 19) of the Cat. *Journal of Neurophysiology*, *28*(2), 229-289.

Hulstijn, J. H. (2005). Theoretical and Empirical Issues in the Study of Implicit and Explicit Second-Language Learning: Introduction. *Studies in Second Language Acquisition, 27*(2), 129-140.

Hyltenstam, K. (1992). Non-Native Features of Near-Native Speakers: On the Ultimate Attainment of Childhood L2 Learners. *Advances in Psychology, 83*, 351-368.

Ioup, G., Boustagui, E., El Tigi, M., & Moselle, M. (1994). Reexamining the critical period hypothesis: A Case Study of Successful Adult SLA in a Naturalistic Environment. *Studies in Second Language Acquisition*, *16*(1), 73-98.

Jaeggli, O. (1982). *Topics in Romance Syntax*. Dordrecht: Foris Publications.

Jia, G., & Aaronson, D. (2003). A longitudinal study of Chinese children and adolescents learning English in the United States. *Applied Psycholinguistics*, *24*(1), 131-161.

Jia, G., Aaronson, D. & Wu, Y. (2002). Long-term language attainment of bilingual immigrants: Predictive variables and language group differences. *Applied Psycholinguistics*, *23*(4), 599-621.

Johnson, J. S., & Newport, E. L. (1989). Critical period effects in second language learning: The influence of maturational state on the acquisition of English as a second language. *Cognitive Psychology*, *21*(1), 60-99.

Johnson, J. S., & Newport, E. L. (1991). Critical period effects on universal properties of language: The status of subjacency in the acquisition of a second language. *Cognition*, *39*(3), 215-258.

Kayne, R. S. (1975). *French Syntax: The Transformational Cycle*. Cambridge, MA: The MIT Press.

Kayne, R. S. (1989). Null subjects and clitic climbing. In O. Jaeggli & K. Safir (Eds.), *The Null Subject Parameter*, 239-261. Norwell, MA: Kluwer Academic Publishers.

Kayne, R. S. (1991). Romance Clitics, Verb Movement, and PRO. *Linguistic Inquiry, 22*, 647-686.

Kayne, R. S. (1994). *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.

Kayne, R. S. (2000). *Parameters and Universals*. New York: Oxford University Press.

Kim, J.-Y. (2015). Perception and production of Spanish lexical stress by Spanish heritage speakers and English L2 learners of Spanish. In E. W. Willis, P. M. Butragueño & E. H. Zendejas (Eds.), *Selected Proceedings of the 6th Conference on Laboratory Approaches to Romance Phonology* (pp. 106-128). Somerville: Cascadilla Press.

Klavans, J. (1995). On Clitics and Cliticization: The Interaction of Morphology, Phonology, and Syntax. New York: Garland.

Knightly, L. M., Jun, S.-A., Oh, J. S. & Au, T. K. (2003). Production benefits of childhood overhearing. *The Journal of the Acoustical Society of America, 114*(1), 465-474.

Knudsen, E. I. (2004). Sensitive Periods in the Development of the Brain and Behavior. *Journal of Cognitive Neuroscience*, *16*(8), 1412-1425.

Labov, W. (1996). When intuitions fail. In L. McNair, K. Singer, L. Dobrin, and M. Aucoin (Eds.), *CLS 32: Papers from the Parasession on Theory and Data in Linguistics*. Chicago: Chicago Linguistics Society (pp. 77–105).

Laleko, O., & Polinsky, M. (2016). Between syntax and discourse: Topic and case marking in heritage speakers and L2 learners of Japanese and Korean. *Linguistic Approaches to Bilingualism*, *6*(4), 396-439.

Larrañaga, P., & Guijarro-Fuentes, P. (2012). Clitics in L1 bilingual acquisition. *First Language*, *32*(1-2), 151-175.

Lenneberg, E. H. (1967). *Biological Foundations of Language*. New York: Wiley.

Liceras, J. (1985). The Value of Clitics in Non-Native Spanish. *Second Language Research, 1*(2), 151-168.

Limerick, P. P. (2017). Variable clitic placement in US Spanish. In J. E. MacDonald (Ed.), *Contemporary Trends in Hispanic and Lusophone Linguistics. Selected papers from the Hispanic Linguistic Symposium 2015* (pp. 49-70). Philadelphia: John Benjamins.

Long, M. H. (1990). Maturational Constraints on Language Development. *Studies in Second Language Acquisition*, *12*(3), 251-285.

Long, M. (2005). Problems with supposed counter-evidence to the Critical Period Hypothesis. *International Review of Applied Linguistics in Language Teaching*, *43*(4), 287-317.

Long, M. (2007). *Problems in SLA*. Mahwah, NJ: Erlbaum.

Lüdecke, D. (2018). sjPlot - Data Visualization for Statistics in Social Science. (Version 2.6.2). Retrieved from https://CRAN.R-project.org/package=sjPlot

Luján, M. (1980). Clitic Promotion and Mood in Spanish Verbal Complements. *Linguistics*, *18*(5-6), 381-484.

Lukyanchenko, A. & Gor, K. (2011). Perceptual Correlates of Phonological Representations in Heritage Speakers and L2 Learners. In N. Danis, K. Mesh, & H. Sung (Eds.), *Proceedings of the 35th annual Boston University Conference on Language Development* (pp. 414-426). Somerville: Cascadilla Press.

MacWhinney, B. (2000). *The CHILDES Project: The database*. Mahwah, NJ: Lawrence Erlbaum.

Major, R. C. (1993). Sociolinguistic factors in loss and acquisition of phonology. In K. Hyltenstam & Å. Viberg (Eds.), *Progression and regression in language: Sociocultural, neuropsychological, & linguistic perspectives* (pp. 463–478). Cambridge: Cambridge University Press.

Mayberry, R. I. (1993). First-Language Acquisition After Childhood Differs From Second-Language Acquisition: The Case of American Sign Language. *Journal of Speech, Language, and Hearing Research*, *36*(6), 1258-1270.

Meijer, P. J. & Fox Tree, J. E. (2003). Building Syntactic Structures in Speaking: A Bilingual Exploration. *Experimental Psychology, 50*(3), 184-195.

Meisel, J. M. (2009). Second Language Acquisition in Early Childhood. *Zeitschrift für Sprachwissenschaft*, *28*(1), 5-34.

Mikhaylova, A. (2012). Aspectual Knowledge of High Proficiency L2 and Heritage Speakers of Russian. *Heritage Language Journal, 9*(2), 50-69.

Monachesi, P. (1999). *A Lexical Approach to Italian Cliticization*. Stanford, CA: CSLI.

Montrul, S. (2008). Incomplete Acquisition in Bilingualism: Re-examining the Age Factor. Philadelphia: John Benjamins.

Montrul, S. (2010a). Dominant Language Transfer in Adult Second Language Learners and Heritage Speakers. *Second Language Research, 26*(3), 293-327.

Montrul, S. (2010b). How Similar are Adult Second Language Learners and Spanish Heritage Speakers? Spanish Clitics and Word Order. *Applied Psycholinguistics, 31*(1), 167-207.

Montrul, S. (2016). *The Acquisition of Heritage Languages*. Cambridge: Cambridge University Press.

Montrul, S., & Bowles, M. (2010). Is grammar instruction beneficial for heritage language learners? Dative case marking in Spanish. *Heritage Language Journal*, *7*(1), 47-73.

Montrul, S., Foote, R. & Perpiñán, S. (2008). Gender Agreement in Adult Second Language Learners and Spanish Heritage Speakers: The Effects of Age and Context of Acquisition. *Language Learning, 58*(3), 503-553.

Montrul, S., & Slabakova, R. (2003). Competence similarities between native and near-native speakers: An investigation of the preterite-imperfect contrast in Spanish. *Studies in Second Language Acquisition*, *25*(3), 351-398.

Morford, J. P. (2000). Delayed Phonological Development in ASL: Two Case Studies of Deaf Isolates. *Recherches Linguistiques de Vincennes*, 29, 121-142.

Moyer, A. (2004). Age, Accent, and Experience in Second Language Acquisition: An Integrated Approach to Critical Period Inquiry. Buffalo, NY: Multilingual Matters.

Moyer, A. (2005). Formal and Informal Experiential Realms in German as a Foreign Language: A Preliminary Investigation. *Foreign Language Annals*, *38*(3), 377-387.

Müller, N., & Hulk, A. (2001). Crosslinguistic influence in bilingual language acquisition: Italian and French as recipient languages. *Bilingualism: Language and cognition*, *4*(1), 1-21.

Myhill, J. (1989). Variation in Spanish Clitic Climbing. In T. J Walsh (Ed.), *Synchronic and Diachronic Approaches to Linguistic Variation and Change* (pp. 227-250). Washington D. C.: Georgetown University Press.

Myhill, J. (1992). Typological Discourse Analysis, Quantitative Approaches to the Study of Linguistic Function. Oxford: Blackwell.

Nakagawa, S., Johnson, P. C. D., and Schielzeth, H. (2017). The coefficient of determination R2 and intra-class correlation coefficient from generalized linear mixed-effects models revisited and expanded. *Journal of The Royal Society Interface, 14*(134), 20170213.

Napoli, D. J. (1981). Semantic Interpretation vs. Lexical Governance: Clitic Climbing in Italian. *Language, 57*(4), 47-69.

Norris, J. M. & Ortega, L. (2001). Does Type of Instruction Make a Difference? Substantive Findings From a Meta-analytic Review. *Language Learning, 51*(s1), 157-213.

O'Grady, W., Kwak, H. Y., Lee, O. S., & Lee, M. (2011). An emergentist perspective on heritage language acquisition. *Studies in Second Language Acquisition*, *33*(2), 223-245.

Oh, J. S., Jun, S-A., Knightly, L. M., & Au, T. K. (2003). Holding on to childhood language memory. *Cognition, 86*(3), B53-B64.

Ordóñez, F. (2002). Some clitic combinations in the syntax of Romance. *Catalan Journal of Linguistics*, *1*, 201-224.

Ordóñez, F. (2012). Clitics in Spanish. In J. A. Hualde, A. Olarrea & E. O'Rourke (Eds.), *The Handbook of Hispanic Linguistics* (pp. 423-451). Malden, MA: Wiley-Blackwell.

Ouhalla, J. (1989). Clitic Movement and the ECP: Evidence from Beber and Romance Languages. *Lingua, 79*(2-3), 165-215.

Oyama, S. (1978). The Sensitive Period and Comprehension of Speech. *NABE Journal*, *3*(1), 25-40.

Paradis, M. (2011). Individual differences in child English second language acquisition: Comparing child-internal and child-external factors. *Linguistic Approaches to Bilingualism, 1*(3), 213-237.

Pascual y Cabo, D. (2015). Issues in Spanish Heritage Morphosyntax. *Studies in Hispanic and Lusophone Linguistics, 8*(2), 389–401.

Peace, M. M. (2012). ¿Lo puedo subir o puedo subirlo? La subida del clítico en el español del oeste de Massachusetts. *Southwest Journal of Linguistics, 31*(1), 131-160.

Penfield, W. & Roberts, L. (1959). *Speech and Brain Mechanisms*. Princeton, NJ: Princeton University Press.

Pérez-Leroux, A. T., Cuza, A., & Thomas, D. (2011). Clitic placement in Spanish–English bilingual children. *Bilingualism: Language and Cognition*, *14*(2), 221-232.

Perlmutter, D. M. (1970). Surface Structure Constraints in Syntax. *Linguistic Inquiry, 1*(2), 187-225.

Picallo, C. (1990). Modal Verbs in Catalan. *Natural Language and Linguistic Theory, 8*(2), 285-312.

Piller, I. (2002). Passing for a native speaker: Identity and success in second language learning. *Journal of sociolinguistics*, *6*(2), 179-208.

Pires, A., & Rothman, J. (2009). Disentangling sources of incomplete acquisition: An explanation for competence divergence across heritage grammars. *International Journal of Bilingualism*, *13*(2), 211-238.

Polinsky, M. (2006). Incomplete Acquisition: American Russian. *Journal of Slavic linguistics*, *14*(2), 191-262.

Polinsky, M. (2007). Reaching the end point and stopping midway: Different scenarios in the acquisition of Russian. *Russian Linguistics, 31*(2), 157-199.

Polinsky, M., & Kagan, O. (2007). Heritage Languages: In the 'Wild'and in the Classroom. *Language and linguistics compass*, *1*(5), 368-395.

Prévost, P. (2009). The Acquisition of French: The development of inflectional morphology and syntax in L1 acquisition, bilingualism, and L2 acquisition. Amsterdam/Philadelphia: John Benjamins Publishing.

Quicoli, C. (1976). Conditions on Clitic Movement in Portuguese. *Linguistic Analysis, 2*(3), 199-223.

Quirk, R. (1985). A Comprehensive Grammar of the English Language. New York: Longman.

Raposo, E. P. & Uriagereka, J. (2005). Clitic Placement in Western Iberian: A Minimalist View. In G. Cinque & R. S. Kayne (Eds.), *The Oxford Handbook of Comparative Syntax* (pp. 639-697). Oxford: Oxford University Press.

Requena, P. E. & Dracos, M. (2018). Impermeability of L1 Syntax: Spanish Variable Clitic Placement in Bilingual Children. In A. B. Bertolini & M. J. Kaplan (Eds.), *Proceedings of the 42nd annual Boston University Conference on Language Development* (pp. 644-658). Somerville, MA: Cascadilla Press.

Requena, P. (2015). *Direct object clitic placement preferences in Argentine child Spanish* (Unpublished doctoral dissertation). Pennsylvania State University, University Park, PA.

Rivas, A. M. (1977). *A theory of clitics* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses Global. (Order No. 0336009)

Rizzi, L. (1982). *Issues in Italian Syntax*. Dordrecht: Foris.

Roberts, I. (1997). Restructuring, head movement and locality. *Linguistics Inquiry, 28*: 423-460.

Roberts, I. (2010). Agreement and Head Movement. Clitics, Incorporation and Defective Goals. Cambridge, MA: The MIT Press.

Rodríguez-Mondoñedo, M., Snyder, W. & Sugisaki, K. (2005). The Parameter of Clitic-Climbing: The View from Child Spanish. In K. U. Deem, J. Nomura, B. Schulz & B. D. Schwartz (Eds.), *The Proceedings of the Inaugural Conference on Generative Approaches to Language Acquisition North America, Honolulu. Vol. 2* (pp. 241-248). Storrs, CT: MIT Working Papers in Linguistics.

Rooryck, J. (2000). Configurations of sentential complementation. Perspectives from Romance languages. London: Routledge.

Rosen, S. T. (1989). *Argument Structure and Complex Predicates*. Unpublished dissertation. Brandeis University.

Rossi, E., Diaz, M., Kroll, J. F. & Dussias, P. E. (2017). Late Bilinguals Are Sensitive to Unique Aspects of Second Language Processing: Evidence from Clitic Pronouns Word-Order. *Frontiers in Psychology, 8*(342). 1-13.

Rothman, J. (2007). Heritage speaker competence differences, language change, and input type: Inflected infinitives in Heritage Brazilian Portuguese. *International Journal of Bilingualism*, *11*(4), 359-389.

Rothman, J., & Iverson, M. (2007). Input type and parameter resetting: Is naturalistic input necessary?. *International Review of Applied Linguistics in Language Teaching*, *45*(4), 285-319.

Rothman, J., Tsimpli, I. M., & Pascual y Cabo, D. (2016). Formal linguistic approaches to heritage language acquisition. Bridges for pedagogically oriented research. In D. Pascual y Cabo (Ed.), *Advances in Spanish as a Heritage Language* (pp. 13-26). Philadelphia: John Benjamins.

Saadah, E. (2011). *The production of Arabic vowels by English L2 learners and heritage speakers of Arabic* (Unpublished doctoral dissertation), University of Illinois at Urbana-Champaign. Urbana, IL.

Scovel, T. (1988). A Time to Speak: A Psycholinguistic Inquiry into the Critical Period for Human Speech. New York: Newbury House.

Scovel, T. (2006). Age, acquisition, and accent. In C. Abello-Contesse, R. Chacón-Beltrán, M. D. López-Jiménez & M. M. Torreblanca-López (Eds.), *Age in L2 Acquisition and Teaching* (pp. 31-48). Bern, Switzerland: Peter Lang.

Shin, N. L., Requena, P. E., & Kemp, A. (2017). Bilingual and Monolingual Children's Patterns of Syntactic Variation: Variable Clitic Placement in Spanish. In A. A. Benavides & R. G. Schwartz (Eds.), *Language Development and Disorders in Spanish-speaking Children* (pp. 63-88). Cham, Switzerland: Springer.

Silva-Corvalán, C. & Gutiérrez, M. J. (1995). On Transfer and Simplification: Verbal Clitics in Mexican-American Spanish. In P. Hashemipour, R. Maldonado Soto, M. Van Naerssen & T. D. Terrell (Eds.), *Studies in Language Learning and Spanish Linguistics in Honor of Tracy D. Terrell* (pp. 302–312). San Francisco: McGraw-Hill.

Silva-Corvalán, C. (1994). *Language contact and change: Spanish in Los Angeles*. Oxford: Clarendon Press.

Silverberg, S., & Samuel, A. G. (2004). The effect of age of second language acquisition on the representation and processing of second language words. *Journal of Memory and Language*, *51*(3), 381-398.

Singleton, D. (2005). The Critical Period Hypothesis: A coat of many colours. *International Review of Applied Linguistics in Language Teaching*, *43*(4), 269-285.

Singleton, J. L. & Newport, E. L. (2004). When learners surpass their models: The acquisition of American Sign Language from inconsistent input. *Cognitive Psychology*, 49(4), 370-407.

Singleton, D. M., & Ryan, L. (2004). *Language Acquisition: The Age Factor*. Buffalo: Multilingual Matters.

Sitaridou, I., Whimpanny, H. & Ayres, L. (2015). Variation and Optionality in Clitic Climbing in Argentinean Spanish. *Isogloss, (1)*2. 247-291.

Spada, N. & Tomita, Y. (2010). Interactions Between Type of Instruction and Type of Language Feature: A Meta-Analysis. *Language Learning, 60*(2), 263-308.

Strozer, J. R. (1976). *Clitics in Spanish* (Unpublished doctoral dissertation). University of California, Los Angeles.

Suñer, M. (1988). The Role of Agreement in Clitic-Doubled Constructions. *Natural Language and Linguistic Theory, 6*(3), 391-434.

Thomas, D. L. T. (2012). Grammatical Optionality and Variability in Bilingualism: How Spanish-English bilinguals limit clitic-climbing (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses A&I (Order No. NR97479).

Thordardottir, E. (2011). The relationship between bilingual exposure and vocabulary development. *International Journal of Bilingualism, 14*(5), 426-445.

Thordardottir, E. (2014). The typical development of simultaneous bilinguals: Vocabulary, morphosyntax and language processing in two age groups of Montreal preschoolers. In T. Grüter & J. Paradis (Eds.), *Input and Experience in Bilingual Development* (pp. 141-160). Philadelphia: John Benjamins.

Tsimpli, I. M., & Dimitrakopoulou, M. (2007). The Interpretability Hypothesis: Evidence from wh-interrogatives in second language acquisition. *Second Language Research*, *23*(2), 215-242.

Unsworth, L. (2005). Investigating subject-specific literacies in school learning. In L. Unsworth (Ed.), *Researching Language in Schools and Communities: Functional Linguistic Perspectives* (pp. 245-274). New York: Cassel.

Unsworth, S. (2014). Comparing the role of input in bilingual acquisition across domains. In T. Grüter & J. Paradis (Eds.), *Input and Experience in Bilingual Development* (pp. 181-202). Philadelphia: John Benjamins.

Unsworth, S., Argyri, F., Cornips, L., Hulk, A., Sorace, A., & Tsimpli, I. (2014). On the Role of Age of Onset and Input in Early Child Bilingualism in Greek and Dutch. *Applied Psycholinguistics*, *35*(4), 765-805.

Uriagereka, J. (1995). Aspects of the Syntax of Clitic Placement in Western Romance. *Linguistic Inquiry, 26*(1), 79-123.

Valdés, G. (2001). Heritage language students: Profiles and possibilities. In J. K. Peyton, D. Ranard & S. McGinnis (Eds.), *Heritage languages in America: Preserving a national resource* (pp. 37 – 77). McHenry, IL: Delta Systems and Center for Applied Linguistics.

Wexler, K. (1996). The development of inflection in a biologically based theory of language acquisition. In M. L. Rice (Ed.), *Toward a Genetics of Language* (pp. 113-144). Mahwah, NJ: Lawrence Erlbaum.

Wexler, K. (1998). Very early parameter setting and the unique checking constraint: A new explanation of the optional infinitive stage. *Lingua*, *106*(1-4), 23-79.

White, L. & Genesee, F. (1996). How Native is Near-Native? The Issue of Ultimate Attainment in Adult Second Language Acquisition. *Second Language Research*, *12*(3), 233-265.

Winitz, H., Gillespie, B. & Starcev, J. (1995). The development of English speech patterns of a 7-year-old Polish-speaking child. *Journal of Psycholinguistic Research*, *24*(2), 117-143.

Yeni-Komshian, G., Flege, J. E., & Liu, S. (2000). Pronunciation proficiency in the first and second languages of Korean–English bilinguals. *Bilingualism: Language & Cognition, 3*(2), 131-149.

Zagona, K. (2002). *The Syntax of Spanish*. New York: Cambridge University Press.

Zapata, G. C., Toribio, A. J. & Sánchez, L. (2004). *The (In) Stability of Linguistic Systems: Evidence from the Performance of Spanish Monolinguals, Heritage Speakers, and Second Language Learners*. Working Paper, University of Alberta Edmonton, Edmonton, AB T6G 2R3, Canada. Available online: http://www.rci.rutgers.edu/~lsanchez/publications/LL.pdf (accessed on 1 May 2019).

Zwicky, A. M. (1994). What is a clitic? In J. A. Nevis, B. D. Joseph, D. Wanner & A. M. Zwicky (Eds.), *Clitics: A Comprehensive Bibliography 1892-1991* (pp. xii-xx). Philadelphia, PA: John Benjamins.