EXPLORING THE ROLE OF L1-L2 OVERLAP, STRUCTURAL COMPLEXITY, AND TASK EFFECTS IN THE PROCESSING OF BILINGUAL SPANISH MORPHOSYNTAX

By JUAN PABLO COMÍNGUEZ

A dissertation submitted to the
Graduate School-New Brunswick
Rutgers, The State University of New Jersey

In partial fulfillment of the requirements
For the degree of Doctor
of Philosophy
Graduate Program in Spanish

Written under the direction of Nuria Sagarra and Liliana Sánchez

And approved by

____________________________________
____________________________________
____________________________________
____________________________________

New Brunswick, New Jersey

October 2016
ABSTRACT OF THE DISSERTATION

Exploring the Role of L1-L2 Overlap, Structural Complexity, and Task Effects in the Processing of Bilingual Spanish Morphosyntax.

By JUAN PABLO COMÍNGUEZ

Dissertation Directors:
Nuria Sagarra
Liliana Sánchez

It is unclear whether postpuberty second language (L2) learners can achieve a native-like representation and processing in the target language. Some researchers argue that lack of convergence in postpuberty L2 systems results from their fundamentally different nature, which cannot instantiate new grammatical features that are absent in the L1 of the learners due to maturational constraints (e.g., Franceschina, 2005; Hawkins and Franceschina, 2004). Moreover, as the underlying grammatical representation is non-native-like, L2 systems cannot apply a full parsing route to the incoming linguistic input in the L2, especially with grammatical long-distance dependencies (Claussen and Felser, 2006a, 2006b, 2006c). By contrast, other researchers claim that postpuberty L2 systems are fundamentally identical to native systems, and variability in the L2 representation and...
processing is the result of different factors, such as L1-L2 overlap, individual cognitive differences (e.g., working memory), task demands, structural complexity, exposure to the target language, and proficiency level, among others (e.g., Dekydtspotter and Renaud, 2014; Hopp, 2007; Lardiere, 2009).

This dissertation investigates the role of L1-L2 overlap, structural complexity, and task effects in the processing of L2 Spanish. Specifically, it explores how L1 English advanced postpuberty learners of L2 Spanish process grammatical gender and number agreement violations in Spanish clitic-doubled left dislocations, and whether they parse this type of long-distance grammatical dependency by applying syntactic island constraints. In order to do so, a group of L1 English advanced postpuberty learners of L2, and a control group of Spanish native speakers completed a series of experiments employing the moving-window paradigm (Just et al., 1982).

Results reveal that L2 learners can acquire and process grammatical features that are absent in their L1 in a native-like fashion, regardless of whether the online tasks require subjects to answer comprehension or acceptability questions. Moreover, they show that postpuberty L2 speakers can parse grammatically complex representations that are subject to syntactic island constraints such as clitic-doubled left dislocations in a native-like way. From these results, it is possible to conclude that the nature of L2 systems is fundamentally identical to that of natives’. The findings of this dissertation contribute to a better understanding of L2 verb-object agreement relations, an understudied domain in the field of second language acquisition, which has been shown to be particularly problematic for postpuberty L2 speakers (e.g., Tremblay, 2005). Finally, the findings are also informative about how this type of dependency is parsed in
a Romance language like Spanish for which there is few psycholinguistic research (e.g., Coughlin and Tremblay, 2013; Leal Méndez, Farmer, and Slabakova, 2014; Pablos, 2006).
ACKNOWLEDGMENTS

I would like to thank a lot of people, whose assistance and support have been extremely helpful throughout the process of finishing my graduate studies and, in particular, this dissertation. First and foremost, I want to thank my advisors, Liliana Sánchez and Nuria Sagarra, for their wonderful guidance from the very beginning of this project. The fact that I was able to produce this dissertation is because of their constant advice and encouragement. I would also like to thank the internal members of my dissertation committee, Jennifer Austin and José Camacho, for their key comments, observations, criticisms, and suggestions from the initial proposal to the final version of this dissertation. I am also extremely thankful to Aurora Bel, the external reader of this dissertation, for her careful reading and the ability to ask me deep questions about what I wrote. All of you have made me a better researcher, and made this research project much better. Thank you! Some preliminary versions of the research reported in this dissertation have been presented at academic conferences (HLS, LSRL, SLRF, WSS8), and the comments of several colleagues have made me reflect in new ways about the findings, something that I tried to incorporate to the final version of the text. A generous Language Learning Dissertation Grant provided me with funding to collect data for this research project. I am very grateful for having been awarded this prestigious grant.

Without participants, psycholinguistic research projects of any sort would be impossible to conduct. For this reason, I am extremely thankful to all of them, and all the people who were interested in this project. I was assisted by several people at Rutgers University to recruit participants for the experiments, so I want to thank all of them for that. In addition to the professors and teaching assistants, I have special gratitude to
Carolyn Burger, from the Institute for Global Languages at Rutgers, for her assistance concerning the facilities for running the experiments. All of my colleagues from the Bilingualism and Second Language Acquisition program have always contributed to my professional, academic, and personal development. I am very grateful to all of them for all these years of extremely productive academic and personal interactions. The splendid staff in our Department has made administrative things easier. Thank you, Jennifer Flaherty, Rosy Ruiz, and Vivian Vega for your efficiency, hard work, and smiles.

Finally, I want to thank Coco, Marga, and El Neno for their support and understanding during all these years far from home. Los quiero y son los imprescindibles, de principio a fin. I am also extremely indebted to Katie for all these years together, her love, and support. Esta tesis está dedicada a ustedes, Coco, Marga, and Neno. It is also dedicated to you, Katie.
# TABLE OF CONTENTS

ABSTRACT .................................................................................................................. ii-x

ACKNOWLEDGMENTS ................................................................................................. v-x

CHAPTER ONE: INTRODUCTION ............................................................................. 1

CHAPTER TWO: GENERAL BACKGROUND ............................................................ 14

2.1 Current Generative Accounts of L2 Morphosyntactic Variability .................... 14

2.1.1 Deficit accounts of L2 morphosyntactic variability .................................. 14

2.1.2 Non-deficit accounts of L2 morphosyntactic variability .......................... 16

2.2 The Linguistic Phenomenon ............................................................................. 20

2.2.1 Morphological, syntactic, pragmatic, and semantic properties of Spanish CLLDs .......................................................... 21

2.2.2 CLLDs and Hanging Topic Left Dislocations ........................................ 33

2.2.3 English Topicalization and Left Dislocation ....................................... 39

2.3 Parsing of Spanish CLLD .................................................................................. 47

2.3.1 Parsing the CLLD-clitic dependency ..................................................... 47

2.3.2 The CLLDed-DP-clitic dependency, the human language sentence parser, and the HLSP Left-Corner Model .................................................. 51

2.4 The Adult L2 Acquisition of Spanish CLLDs ................................................. 57

2.4.1 Lack of convergence and persistent L1 effects ....................................... 58

2.4.2 Persistent difficulties with the mapping of morphosyntax onto semantics ............................................................................. 61

2.4.3 Remarks on the reviewed studies and motivation for the experiments of the dissertation ................................................................. 63
CHAPTER THREE: THE PARSING OF GRAMMATICAL FEATURE MISMATCHES IN L2 SPANISH CLLD

3.1 Introduction ........................................................................................................66

3.2 Background .........................................................................................................71
   3.2.1 The morphosyntax of grammatical gender and number in Spanish ..71
   3.2.2 Current generative approaches to L2 inflectional variability ........74
   3.2.3 The L2 acquisition and parsing of grammatical gender and number agreement .................................................................76
   3.2.4 The linguistic phenomenon: Spanish CLLDs ..................................79
   3.2.5 Native parsing of CLLDs .................................................................82
   3.2.6 L2 acquisition and parsing of CLLDs ............................................83

3.3 The Study ........................................................................................................85
   3.3.1 Research questions ..................................................................................85
   3.3.2 Participants ...............................................................................................87
   3.3.3 Materials and Procedure .......................................................................88
      3.3.3.1 Language background questionnaire ........................................88
      3.3.3.2 Spanish proficiency test (learners only) ......................................88
      3.3.3.3 Self-paced reading tasks ..............................................................88
         3.3.3.3.1 Comprehension self-paced reading task .........................89
         3.3.3.3.2 Acceptability self-paced reading task .........................93
      3.3.3.4 Clitic cluster acceptability test (learners only) .......................94
   3.3.4 Scoring .........................................................................................................94

3.4 Results ...............................................................................................................95
3.4.1 Comprehension SPR .................................................................95
3.4.2 Acceptability SPR ...............................................................98
3.5 Discussion and Conclusion ................................................................101

CHAPTER FOUR: L2 ONLINE SENSITIVITY TO SYNTACTIC ISLAND
CONSTRAINTS: EVIDENCE FROM SPANISH CLLD ...........................................108

4.1 Introduction .........................................................................................108
4.2 Background .........................................................................................110
    4.2.1 Accounting for L2 parsing differences: Qualitative versus
    quantitative approaches in the case of syntactic island constraints in L2
    systems ........................................................................................................110
        4.2.1.1 Linguistic competence and performance: The grammar and
        the human language parser ..................................................................110
        4.2.1.2 Models of L2 parsing and existing evidence on the L2
        parsing of syntactic islands .................................................................114
    4.2.2 The linguistic phenomenon: Spanish CLLDs ...............................118
        4.2.2.1 The morphosyntax, semantics, and pragmatics of
        CLLDs ..................................................................................................118
        4.2.2.2 Native parsing of CLLDs ..........................................................121
        4.2.2.3 L2 acquisition and parsing of CLLDs ......................................123
    4.3 The Study ..........................................................................................125
        4.3.1 Research questions ......................................................................125
        4.3.2 Participants ..................................................................................127
        4.3.3 Materials and procedure .............................................................128
4.3.3.1 Spanish proficiency test (learners only) ..................... 128
4.3.3.2 Moving-window task ............................................. 128
4.3.3.3 Clitic cluster acceptability test (learners only) ............ 131
4.3.3.4 Language background questionnaire ......................... 132
4.3.4 Scoring ..................................................................... 132
4.4 Results .......................................................................... 133
4.4.1 Moving-window task .................................................. 133
   4.4.1.1 Residual RTs ......................................................... 134
   4.4.1.2 Acceptability Scores ............................................. 136
4.5 Discussion ...................................................................... 137
4.6 Conclusions .................................................................... 142

CHAPTER FIVE: SUMMARY OF FINDINGS AND CONCLUDING REMARKS ..143
5.1 Summary of Findings in the Light of Previous Research on L2 Spanish
   CLLDs and Verb-object Agreement .................................... 144
   5.1.1 Findings on the sensitivity to grammatical gender and number
         violations in L2 CLLDs (Chapter Three) ......................... 145
   5.1.2 Findings on the processing of the RCIC in L2 Spanish CLLDs
         (Chapter Four) .......................................................... 147
5.2 Future Directions .......................................................... 149
5.3 Final Remarks .............................................................. 152

BIBLIOGRAPHY .................................................................. 156
APPENDICES ...................................................................... 170
CHAPTER 1:
INTRODUCTION

The extent to which postpuberty second language systems are characterized by protracted variability and lack of convergence with the target language is currently under much debate in the field of generative second language acquisition (for a review, see Slabakova, 2016). This variability and lack of convergence affect different levels of knowledge of language such as phonology (e.g., Oyama, 1976), morphosyntax (e.g., DeKeyser, 2000), semantics (e.g., Valenzuela, 2005), and discourse (e.g., Sorace and Filiaci, 2006). In the last twenty years, generative second language acquisition has paid particular attention to representational, computational, and parsing variability in L2 morphosyntax, and its interfaces with semantics, pragmatics, prosody, and the lexicon (e.g., Franceschina, 2005; Goad and White, 2008; Hawkins and Franceschina, 2004; Hawkins and Liszka, 2003; Hopp, 2007, 2010, 2013; Montrul and Slabakova, 2003; Slabakova and Montrul, 2003; Prévost and White, 2000; Slabakova, 2008; Sorace, 2011; van Hout, Hulk, Kuiken, and Towell, 2003; among many others). This dissertation aims at contributing to this body of research by exploring whether L1 English postpuberty learners of L2 Spanish can attain a native-like representation, computation, and parsing of a linguistic phenomenon in Spanish that involves the interface of syntax with morphology, semantics, and pragmatics; namely, clitic doubled left-dislocations, or CLLDs.

In the case of L2 morphosyntactic variability, some scholars have proposed that it results from an underlying impaired grammatical representation (e.g., Hawkins and Franceschina, 2004; Hawkins and Hattori, 2006; Tsimpli and Dimitrakopoulou, 2007),
which affects the implementation of syntactic computations (e.g., Hawkins, 2009), and
universal parsing principles on L2 input (e.g., Clahsen and Felser, 2006a, 2006b, 2006c).

Roughly speaking, grammatical information that is not available in the L1 of the second
language learners (L2ers) cannot be acquired in postpuberty second language acquisition,
or SLA, due to maturational constraints.

In contrast, other researchers have proposed that all grammatical information is
acquirable by L2ers regardless of maturational constraints. For them, non-native patterns
in L2 morphosyntax are caused by different factors. On the one hand, some scholars boil
down non-nativeness to developmental factors, such as the difficulties posed by the
process of learning and processing new grammatical information in the L2 that is not
the different stages in interlanguage restructuring driven by incremental exposure to the
target language (Schwartz and Sprouse, 1996), and the lack of functional categories in
initial states of L2 development (Vainikka and Young-Scholten, 2011). On the other
hand, other scholars focus more on factors affecting the implementation of L2 knowledge
in real time in production and comprehension as L2 development takes place. For
instance, Prévost and White (2000) argue that L2 systems resort to less complex
grammatical forms under communicative pressure in production. Along these lines,
Lardiere (1998) shows the existence of difficulties in with phonological realizations of
failure in blocking default forms in the morphological component, which affects both
production and comprehension.
These accounts focus on grammatical information in terms of grammatical features\(^1\). This is because they are theoretically couched within the research program in generative theory known as *Minimalism* (Chomsky, 1995, 2000, 2001, 2005, 2007, 2008, 2011, 2013). According to this research program, the human language faculty is an innate cognitive system with a domain-specific generative procedure\(^2\) that performs syntactic operations on lexical categories (noun, verb, adjective) and functional categories (determiner, tense, mood) during a syntactic derivation. These categories are stored in a pre-syntactic lexicon and are manipulated by the generative procedure through an operation called *Merge* (Chomsky, 2000, 2001, 2005, 2007, 2008). In plain language, *Merge* concatenates two elements (e.g., [eat] and [beef]) to build syntactic structure (e.g., [[eat] [beef]]). This operation is applied by the generative procedure in order to derive a syntactic output that is interpreted at the conceptual-intentional interface (a system that connects the syntactic output to semantic-pragmatic interpretations), and externalized at the sensory-motor interface (a system that connects syntactic outputs to the external world via linguistic production and perception). Both lexical categories and functional categories are endowed with grammatical features (e.g., [number] in determiners and nouns in a language like Spanish).

---

\(^1\) A grammatical feature is a theoretical unit that refers to grammatical information such as number (e.g., [singular]), gender ([feminine]), and tense ([past]), among others.

\(^2\) Following Chomsky (2005, 2007, 2008, 2011, 2013; among many others), the generative procedure is characterized as being domain-specific in generative grammar due to its nature and defining properties (i.e., the generation of an unbounded set of sentences through the implementation of *Merge* on a finite set of elements) do not exist in other areas of knowledge of language such as phonology or morphology, nor in other cognitive domains (e.g., spatial cognition; see Curtiss (2013) for further details). In other words, the recursive capacity of the generative procedure made possible by *Merge* is not available in other linguistic and non-linguistic computations (Chomsky, 2005, 2007, 2008; Fitch, Hauser, and Chomsky, 2005; Hauser, Chomsky, and Fitch, 2002; among many others).
Following current generative linguistic theory (e.g., Carstens, 2000, 2003; Chomsky, 2000, 2001; Pesetsky and Torrego, 2004; among others), these grammatical features can be interpretable (ifeature) or uninterpretable (ufacture) depending on whether they are semantically interpretable or not. The uninterpretable features have to be valued and deleted from the syntactic derivation before they reach the conceptual-intentional interface. By doing so, the system prevents the existence of legibility issues at this interface due to uninterpretability of syntactic objects (Berwick and Chomsky, 2011; Chomsky, 2005; among many others). That is, all the grammatical features that remain in the syntactic output have to be interpretable (“legible”) at this interface. The syntactic operation in charge of feature valuing and deleting is Agree. Through Agree, an uninterpretable feature in a constituent, the goal, is valued and deleted by an interpretable number feature of another constituent, the probe.

For instance, obtaining a phrase in Spanish such as las perras (the\textsubscript{FEM.PL} dog\textsubscript{FEM.PL}) involves the application of Merge on [la] and [perras] in order to generate [[las] [perras]]. In addition to this structure-building operation, both items contain grammatical features that trigger Agree operations between them so that all their features are legible at the conceptual-interface, or CI. In the case of perras, it is a noun endowed with an interpretable number feature ([iNumb: PL]) and an interpretable gender feature ([iGender: FEM]), two features that have semantic interpretation at CI. In contrast, las is a determiner, and as such it is comprised of a bundle of grammatical features including, for example, an interpretable definiteness feature ([D]), an uninterpretable number feature ([uNumb]), and another uninterpretable gender feature. ([uGender]). Through Agree, the uninterpretable number and gender features borne by the determiner are valued (i.e.,
assigned a specific value such as singular or plural in the case of number, or masculine or feminine in the case of gender) by the interpretable number and gender features of the noun. After valuing them, Agree deletes the uninterpretable features so that all the features can be interpreted at CI. This Agree process is illustrated in (1).

(1) \[[D, \#\text{Gend}: \text{FEM}, \#\text{Numb}: \text{PL}] \mid [N, \text{DOG, } \#\text{Gend}: \text{FEM, } \#\text{Numb}: \text{PL}]\]

Agree

In Minimalism, there is a dissociation between syntax and morphology. According to the Distributed Morphology framework (Halle and Marantz, 1993; Harley and Noyer, 1999), once all the syntactic operations described above have been applied by the generative procedure and a syntactic output is generated, this output is transferred to the morphology component of the faculty of language at the sensory-motor interface. In this postsyntactic component, the output gets its morphophonological realization of the grammatical features of lexical and functional categories. For example, a determiner like las, which is represented by the bundle of features \[[D \text{ FEM PL}]\] in the syntactic output, gets its morphophonological realization through the insertion of l-, -a, and -s in the morphology\(^3\).

\[^3\] In this respect, it is important to remark that, in the case of functional categories such as determiners, the generative procedure only manipulates the bundles of features that come from the presyntactic lexicon with no actual morphophonological content, and then, in the morphology, one of the two postsyntactic lexicons, functional categories as determiners get their morphophonological realization as is the case with las. In the case of lexical categories such as nouns, the generative procedure manipulates the item and the features it bears (e.g., perr- and interpretable grammatical features like gender and number). In the morphology, the morphophonological items that match those grammatical features (-a for \[#\text{Gend}: \text{FEM}\]; -s for \[#\text{Number: PL}\]) are inserted, giving rise to fully-fledged items such as perras. The other postsyntactic lexicon lies in the CI, where the meaning of the words are associated with the syntactic output (e.g., \text{perras} = 'female mammals that bark, etc.’).

\[^4\] For further details about the operation of the morphology component, see Chapter Three of this dissertation.
Merge and Agree are the core syntactic operations of all human languages, and variation among languages reduces to how grammatical features are instantiated and assembled into lexical and functional categories in a given language. Agree, Merge, and the grammatical features ⁵ are argued to be part of the genetic endowment of the human species, and constitute the initial state of the faculty of language (e.g., Chomsky, 2005, 2007, 2008, 2011, 2013). Language acquisition occurs through the interaction of this genetic endowment with experience and principles that are not specific to language such as principles of data analysis and “principles of structural architecture and developmental constraints” (Chomsky, 2005, p. 6). Specifically, this process consists in making a one-time selection of a subset of grammatical features from a universal inventory (Chomsky, 2000), which are hypothesized to be a reflex of universal cognitive capacities (Harley and Ritter, 2002). This subset of features is thus instantiated and assembled into lexical and functional categories through a learning algorithm that detects positive evidence in the linguistic environment. (e.g., Thráinsson, 1996; Longobardi, 2001).

Against this background, the focus of contemporary generative approaches to second language acquisition on grammatical features follows from their fundamental role in the development of a particular linguistic system in current generative linguistic theory. In this regard, the research conducted within this framework in the last two decades has consisted in determining whether these features are available during

⁵ For the sake of explanatory simplicity, only grammatical features (interpretable and uninterpretable features such as [Gender], which are called phi-features) that are involved in the Agree operation have been mentioned so far. It should be clarified that, in addition to these features related to Agree (phi-features), which are necessary to connect expressions with the systems of sound and meaning, there are other grammatical features called edge features. These features are used by Merge in order to construct structured expressions (for further details about these types of features, see Chomsky (2008) and references therein). In other words, edge features trigger Merge, and phi-features trigger Agree. What defines cross-linguistic variation are phi-features, since edge features are available in all natural languages, as a condition for recursion.
postpuberty second language acquisition, and whether they can be implemented during production and comprehension in the target language. By doing so, the research aimed at exploring the process of second language development from its initial to its final state, and the extent to which different factors (e.g., age, individual cognitive differences, L1-L2 overlap, among others) affect this process at two levels: the representational level (i.e., knowledge of the target language) and the performance level (i.e., the implementation of this knowledge in production and comprehension).

This dissertation tests contemporary generative approaches to second language acquisition through a series of experiments whose goal is to empirically examine the underlying grammatical representation, computation, and parsing of an understudied linguistic phenomenon in the field; namely, verb-object agreement. More specifically, the series of experiments investigates whether L1 English advanced learners of L2 Spanish can acquire new grammatical features (e.g., gender) of CLLDs, utilize them in real time in sentence processing, and implement native-like parsing patterns in different types of tasks (reading sentences for comprehension vs. reading sentences for detecting grammatical anomalies). CLLDs are a type of verb-object agreement that make it possible to explore the predictions of current current generative hypotheses on different phenomena that have been argued to cause insurmountable difficulties at the representational and performative levels in second language learners. Some of these phenomena that are explored in this dissertation on the acquisition and parsing of CLLDs are default morphological forms in L2 morphosyntax (e.g., McCarthy, 2007, 2008, 2012), L2 grammatical features that are absent in the L1 of the acquirers (e.g., Hawkins, 2009).
long-distance grammatical dependencies (e.g., Clahsen and Felser, 2006a, 2006b, 2006c),
and the type of task that subjects are required to perform (Roberts, 2013).

CLLD is a linguistic phenomenon involving long-distance grammatical
dependencies between a left-dislocated direct or indirect object, or other sentence
constituents, and a clitic with which it agrees in phi-features (e.g., grammatical gender
and number) and case. This relationship is represented in (2), in which the constituent *el
libro* [the book] undergoes movement to the sentence left-periphery from the position
where it was first-merged.

(2)  El libro, Juan lo dejó <el libro> en la casa.⁶

    the book.sg.masc, Juan Cl.Acc.masc.sg left in the house.

    ‘The book, Juan left in the house.’

Any feature mismatch between the clitic and the dislocated direct object turns the
sentence ungrammatical like in (3). This is because the clitic is the morphological spell-
out of phi-feature and case agreement between the verb and the dislocated constituent as
it undergoes movement in the lower field of the sentence.

(3)  a.  * El libro, Juan la dejó en la casa.

    the book.sg.masc, Juan Cl.Acc.fem.sg left in the house.

    b.  * El libro, Juan los dejó en la casa.

    the book.sg.masc, Juan Cl.Acc.masc.pl left in the house.

---

⁶ The angle brackets, <>, are used with constituents like in the case of <el libro> to indicate where they are first-merged or the *loci* in the sentence through which they have undergone movement.
Moreover, CLLD is a grammatical long-distance phenomenon related to the ways in which word order can be exploited in human languages to bear discourse information. As a configurational-discourse language (Kiss, 1995; Miyagawa, 2010, among others), Spanish sentence word order determines the discourse status of its constituents. For instance, the unmarked word order in Spanish is SVO like in (4).

(4) Q: What happened?
   A: Juan rompió el vaso.
   ‘Juan broke the glass.’

However, when a direct or indirect object is part of the background information shared by the speaker and the hearer, it undergoes movement to the left periphery of the sentence like in (5), the word order being OSV.

(5) Q: What happened to the glass?
   A: El vaso, Juan lo rompió.
   the glass.masc.sg, Juan Cl.Acc.masc.sg broke.
   ‘The glass, Juan broke.’

If the word order is SVO, the sequence is infelicitous from a pragmatic point of view, as it does not display the syntactic output associated with shared information between the speaker and the hearer. This is what happens in (6).
(6) Q: What happened to the glass?
A: # Juan rompió el vaso.

In addition to being a linguistic phenomenon involving the interface of syntax with morphology and discourse, CLLDs also involve subtle syntax-semantics mappings. On the one hand, definite left-dislocated DPs have to be reassumed by a clitic like in (7a). Otherwise, the derivation crashes like in (7b).

(7) a. El vaso, Juan lo rompió.
   
   the glass.masc.sg, Juan Cl.Acc.masc.sg broke.
   ‘The glass, Juan broke.’

b. * El vaso, Juan rompió.
   
   the glass.masc.sg, Juan broke.
   ‘The glass, Juan broke.’

By contrast, left-dislocated bare NPs are not reassumed by clitics like in (8a) and (9a). If they are, the sentence becomes ungrammatical like in (8b) and (9b).

(8) a. Libros, Juan lee.
   
   books.masc.pl, Juan reads.
   ‘Books, Juan reads.’

b. * Libros, Juan los lee.
   
   books.masc.pl, Juan Cl.Acc.masc.pl reads.
‘Books, Juan reads.’

(9)  

a. Vino, Juan toma.

wine.masc.sg, Juan drinks.

‘Wine, Juan drinks.’

b.* Vino, Juan lo toma.

wine.masc.sg, Juan Cl.Acc.masc.sg drinks.

‘Wine, Juan drinks.’

Evidence in favor of left-dislocated DPs as constituents undergoing movement to the left-periphery and establishing long-distance dependency formation comes from their sensitivity to syntactic island constraints. These syntactic islands (Chomsky, 1973, 1977; Ross, 1967; and much more subsequent work) are syntactic domains in which long-distance syntactic dependency formation is impossible. For example, relative clauses are an instance of syntactic domains from which a constituent cannot be extracted like in (10).

(10) * What did the policeman arrest the thief [RC who stole <what> from the store]? 

In this sentence, what cannot be extracted from the relative clause headed by who. Thus, a dependency formation between the filler what and its gap cannot be established. For this reason, the existence of the relative clause island constraint has been proposed (Ross, 1967), among other syntactic islands.
CLLDs exhibit the same syntactic behavior as wh-fillers, as shown in (11). In this sentence, a long-distance dependency formation between the left-dislocated constituent a la secretaria and the clitic across this syntactic domain turns the sentence ungrammatical.

(11) *A la secretaria, el jefe [RC que le dio <a la secretaria> las indicaciones] fue suspendido.

DAT the secretary, the boss that Cl.Dat.sg gave the indications was suspended.

‘To the secretary, the boss who gave the indications was suspended.’

In sum, CLLDs constitute a linguistic phenomenon involving the interface of syntax with morphology, semantics, and discourse. They form a long-distance grammatical dependency between a left-dislocated direct or indirect object and a clitic, or other sentence constituents. As constituents establishing long-distance dependencies, they are sensitive to syntactic island constraints. For these reasons, CLLDs constitute a unique linguistic phenomenon to test the predictions of current generative approches to second language acquisition, and contribute to a better understanding of the understudied domain of verb-object agreement in L2 systems.

The dissertation is organized as follows: Chapter Two describes current generative accounts of L2 morphosyntactic variability, gives a detailed description of the linguistic phenomenon investigated in this dissertation, and reviews all the existing evidence on the acquisition of L2 Spanish CLLDs. Chapters Three and Four present the series of experiments on the acquisition and parsing of L2 Spanish CLLDs, the results and their discussion, as well as the conclusions. Chapter Five provides a general
summary and discussion of the experimental findings, points out future directions, and concludes with final remarks.
CHAPTER 2:
GENERAL BACKGROUND

This chapter provides a theoretical review of the approaches to L2 morphosyntax in the generative framework couched within Minimalism. In addition, it gives a detailed description of CLLDs in Spanish, their contrast to other similar structures in the language (Hanging Topic Left-Dislocation), and their comparison to similar constructions in English (Topicalization and Left-Dislocation). Finally, all the generative literature on the acquisition of L2 Spanish CLLDs is presented and discussed. It is shown that the existing evidence is mixed, and it is unclear whether postpuberty learners of L2 Spanish can develop a native-like representation of this linguistic phenomenon.

2.1. Current generative accounts of L2 morphosyntactic variability

2.1.1. Deficit accounts of L2 morphosyntactic variability

Long-lasting variability and lack of native-likeness in L2 morphosyntax have been argued to be the result of the unavailability of uninterpretable features after a critical period for SLA (e.g., Franceschina, 2005; Hawkins and Franceschina, 2004; Hawkins and Hattori, 2006; Hawkins and Liszka, 2003). Under the assumption that first language acquisition consists in making a one-time selection of a subset of grammatical features from a universal inventory (Chomsky, 2000), it is argued that those uninterpretable features that were not part of that subset of features initially selected in first language acquisition are not available in adult second language acquisition. This core thesis
characterizes hypotheses such as the Failed Functional Features Hypothesis, or FFFH, (Hawkins and Chan, 1997), the Interpretable Features Hypothesis, or IFH, (Tsimpili and Dimitrakopoulous, 2007), and the Representational Deficit Hypothesis, or RDH (Hawkins, 2009). These scholars hypothesize that there is an underlying grammatical impairment in L2 systems, which are characterized by lack of syntactic computations on grammatical features that are absent in the L1. In order to compensate for this, L2 systems utilize statistical information about the input in the target language to construct a representation of the L2 that is different from the target system. A main characteristic of non-native systems is their reliance on rules based on frequency and levels of memory-driven activation that affect the access to the statistical information about the target language (e.g., Hawkins, 2009). L2 variability arises as a consequence of differences in the access to this information.

Following this line of reasoning about impaired underlying grammatical representations, some scholars have proposed that L2 parsing is qualitatively different from its monolingual counterpart. Based on the evidence obtained from a series of experimental psycholinguistic research, Clahsen and Felser (2006a; 2006b; 2006c) proposed the Shallow Structure Hypothesis (henceforth, SSH). According to the SSH, L2 sentence parsing is fundamentally different from L1 sentence parsing. This fundamental difference consists in assigning linguistic representations of the L2 sentences that “lack complex hierarchical structure and abstract, configurationally determined elements such as movement traces” (Clahsen and Felser, 2006b, p.111). Along these lines, L2 sentence parsing is characterized as shallow, since only lexico-semantic and pragmatic information is utilized for building a sentence representation. Lexico-semantic and pragmatic
information refers to argument structure, plausibility and theta-roles. This process consists in identifying phrases, segmenting the incoming linguistic input into meaningful parts, and establishing roles between those parts with the verb based upon world knowledge and associative meaning. As pointed out by Clahsen and Felser (2006a, 2006b, 2006c) shallow parsing only involves non-local grammatical dependencies. By contrast, L2 learners can achieve native-like sentence parsing in the case of local dependencies such as morphosyntactic agreement between adjacent constituents like in the case of gender and or number concord as with *las perros* (theFEM.PL dogFEM.PL).

The SSH characterizes L2 sentence parsing as shallow, as a consequence of the impaired nature of the underlying L2 grammatical representation. For this reason, the L2 parser fails to apply parsing principles, as it cannot be fed with enough grammatical information by the L2 grammar. Specifically, Clahsen and Felser (2006b, p. 121) state that “any checking of formal (specifically, uninterpretable) features takes place. As successful feature checking is usually thought to depend on properties of configurational structure such as c-command, we would expect that during shallow processing, nonlocal checking of formal (as opposed to semantic) features will not normally be possible.”

Finally, the SSH states that exposure to the L2, proficiency level, individual differences concerning cognitive resources such as working memory, the native language of the adult L2 learner play no role in the final outcome in L2 sentence parsing. These factors are argued not to alter the fundamentally different nature of the interlanguage grammar, which in turn provides the L2 parser with not enough grammatical information.

2.1.2. Non-deficit accounts of L2 morphosyntactic variability
In contrast to the deficit approaches reviewed above, other researchers have put forward that all grammatical features are acquirable by late L2 learners. Hence, L2 systems can apply syntactic computations involving grammatical features, and build a native-like grammatical representation of the target language (Dekydstpotter and Renaud, 2009, 2014; Lardiere, 2009; McCarthy, 2008; Prévost and White, 2000, Schwartz and Sprouse, 1996; Vainikka and Young-Scholten, 2011). For these approaches, L2 morphosyntactic variability is the consequence of different factors that constrain L2 development, which are explained below.

Some of these accounts focus more on the effects of L1 grammatical features on the L2 initial state. Whereas for the Organic Grammar Approach, or OGA, (Vainikka and Young-Scholten, 2011) the set of L1 grammatical features is advanced not to play any role in the initial state of L2 systems, that is not the case for the Full Transfer / Full Access Hypothesis, or FTFAH (Schwartz and Sprouse, 1996).

For the OGA, L2 initial state is argued to lack functional categories (T, C), regardless of their existence in the L1 of the acquirer. Instead, only lexical categories (noun, verb, adjective) from the L1 are transfer to the L2. Achieving a native-like representation of the L2 takes place in an incremental and piecemeal fashion from the lower functional categories to the higher ones; for instance, following Extended Projection (Grimshaw, 1991), a collection of functional categories such as T and C are associated with the lexical category V, and constitute a projection of the former. For the OGA, the initial state of the L2 will initially have only a VP, and then will instantiate and display a TP and then a CP. This process is triggered via the detection and learning of the
morphemes that realize each functional category of the L2, and nothing prevents the L2 system to achieve native-like convergence.

The FAFTH contrasts with the OGA due to the emphasis put on the L1 as the initial state of the L2. According to this hypothesis, all the features and categories of the L1 are transferred to the interlanguage of the acquirer. As the acquisition process is driven by the input of the L2, once the existing underlying representations fail to license the L2 input, the interlanguage is restructured through the selection of new grammatical features and the instantiation of the functional categories. In contrast to the OGA, the FAFTH emphasizes the abstract morphosyntactic features more than their morphophonological realization; that it, the process is modulated by the detection and learning of those abstract features, regardless of acquiring and realizing the actual specific morphemes of the target language.

Other approaches have put special emphasis on variability concerning L2 inflectional morphology. For the Missing Surface Inflectional Hypothesis, or MSIH, (Prévost and White, 2000), L2 systems can develop a native-like morphosyntactic representation. Nonetheless, the morphology component fails to compute the morphophonological realization of agreement phenomena during communicative pressures. In this regard, the MSIH confines variability to performance factors affecting production. However, McCarthy proposed the Morphological Underspecification Hypothesis, or MUH, (McCarthy, 2007, 2008, 2012), according to which inflectional morphology in L2 systems is affected by non-native-like impoverished feature representations. As a result of this impoverishment, L2 systems are characterized by adopting default forms when realizing the morphophonological features of syntactic
operations not only in production, but also in comprehension.

Other non-deficit accounts focus more on the effects of L1 grammatical features in L2 development and ultimate attainment. For instance, for the Feature Reassembly Hypothesis, or FRH, (Lardiere, 2009), the SLA process consists in: (1) transferring the L1 system of already assembled grammatical features to the L2 system, (2) detecting and instantiating new grammatical features not selected in the L1, (3) redistributing the already existing L1 feature bundles into those of the L2 and distributing new grammatical features into target-like bundle of features, and (4) reassembling those bundles of features into lexical items that are inserted in the morphology component. As pointed out by Lardiere (2012), this process is input-driven as in the FTFAH, and variability in L2 morphosyntax results from the difficulties in isolating and redistributing the grammatical features of the L1 morphemes, and learning the right conditioning contexts for realizing a certain feature in the L2. Whereas native-like convergence in the L2 is possible, it is highly influenced by the L1-L2 morphosyntactic differences and exposure to L2 input, since development takes place in a piecemeal fashion through the atomic detection of L2 features and all their possible combinations.

More recently, Dekydstpotter and Renaud (2009, 2014) put forward the Parser-as-Language Acquisition Device Hypothesis, or P-LADH. The P-LADH builds on the main thesis of the FRH with regard to the SLA process. More specifically, the P-LADH seeks to answer how the redistribution of features into matrices and the reassembly of features into new lexical items happen. For this hypothesis, L2 morphosyntactic variability and (apparent) lack of convergence are epiphenomena of the parsing constraints on the feature (re)assembly process that takes place in second language acquisition (Lardiere,
L2 grammatical features that are absent in the L1 are more difficult to acquire than those that are already instantiated in the L1.

Dekydstspotter and Renaud (2009, 2014) propose that the human language parser drives the feature (re)assembly process, which involves structure generation constrained by domain-specific syntactic computations such as Agree and grammatical features, as well as licensing by a lexicon structured in terms of functional features. The parser, as a language acquisition device (PLAD), instantiates changes to the feature matrices of lexical items when the L1-based functional lexicon cannot license input in the L2. When this happens, different stages of L2 development take place and give rise to L2 morphosyntactic variability, which is what characterizes different stages of interlanguage development.

The changing values of functional categories and lexical items are reflected as transitions between interlanguage states. Once the values cannot license L2 input strings in parses, new category values are registered in the functional lexicon. New grammatical representations reach an activation level that makes them strong after repeated successful parses of L2 input. Previous grammatical representations that failed to license that input are drop out of consideration. For the P-LADH, different factors such as degree of automaticity of lexical access, exposure to naturalistic input, proficiency level, task effects, and individual cognitive factors give rise to L2 morphosyntactic variability.

2.2. The linguistic phenomenon
In this section, a detailed linguistic description of Spanish CLLDs is provided. This description makes it possible to understand the previous studies on the L2 acquisition of this structure in Spanish that are reviewed in this Chapter, discuss their findings, and motivate the series of experiments of this dissertation on the acquisition and processing of new grammatical features and syntactic constraints by late second language learners. The morphological, syntactic, semantic, and pragmatic characteristics of CLLDs are presented, mostly following López’s (2009) theoretical analysis. This analysis shows the grammatical nature of this linguistic phenomenon, namely, a long-distance grammatical dependency that is subject to syntactic constraints on movement and requires morphosyntactic computations involving verb-object agreement.

The morphosyntactic and pragmatic behavior of CLLDs is contrasted to that of Hanging Topic Left Dislocations’, a construction that resembles CLLDs in the surface and displays some overlap with them in their pragmatic behavior. Moreover, Topicalization and Left Dislocation in English are analyzed and compared to CLLDs and HTLDs. English Topicalization and Left Dislocation reveal similar patterns to Spanish CLLDs and HTLDs, respectively, at least in some of their morphosyntactic behavior. It will be shown later in this Chapter that this comparison is crucial to shed light on the underlying reasons for the inconclusive findings that previous research on the acquisition of L2 Spanish CLLDs by L1 English learners has reported, and that may be extensive to learners of other L1s (Chinese and Brazilian Portuguese).

2.2.1. Morphological, syntactic, pragmatic, and semantic properties of Spanish CLLDs
As briefly sketched in Chapter One, Spanish CLLDs involve integrating different levels of grammatical (morphosyntax) and non-grammatical (discourse) knowledge. First, it is a morphosyntactic phenomenon, since the left-dislocated constituent undergoes movement in order to value certain features in the left-periphery of the sentence. By doing so, it establishes an Agree relation in case, number, person, and gender with the verb, which is spelled out by a clitic. Second, the left-dislocated constituent is a contrastive topic, which establishes a strong anaphoric relationship with a previously mentioned entity in the discourse.

The full syntactic derivation of CLLDs takes place as follows. According to the analysis put forth by López (2009, p. 47), pragmatics assigns the features [+a, +c] to CLLDs. [+a] stands for discourse anaphor, namely, any syntactic constituent establishing a strong anaphoric relation with a previously mentioned discourse entity. On the other hand, [+c] stands for contrast. The contrast expressed by the [c] feature encodes the fact that left dislocated elements open up a domain of quantification involving a variable. For instance, CLLDs open up a variable \{x| Pedro brought x\} as in the answer to the question in (1) below. However, as CLLDs are also anaphoric, that variable must be linked to an antecedent (books), establishing a set/member relationship as the one between books and dictionaries in (1). As López points out (2009, p. 17), this anaphoric variable can be expressed as \{x| xR \{books\} & Pedro brought x\}.

(1) Q: What happened to the books?
A: Los diccionarios, Pedro los trajo.
the dictionaries.masc.pl, Pedro CL.Acc.masc.pl brought.
‘The dictionaries, Pedro brought.’

In an example like (1), the CLLDed constituent *los diccionarios* [the dictionaries] is assigned [+a] when it is on the edge of the vP phase. Simultaneously, the complement of the vP phase is assigned the [-a] feature. Once the CLLDed constituent lands in [Spec, FinP], *pragmatics* invades the computational system for human language and assigns [+c] to the CLLDed constituent, and [-c] to the complement of FinP. This process is described in the representation in (2), taken from López (2009, p. 115).

(2)

![Diagram](image)

In (2) the CLLDed constituent is first-merged in [Comp, VP], and undergoes movement to [Spec, vP], where it gets the [+a] feature, and establishes an *Agree* relationship involving case, number, person, and gender features with the v, which is illustrated in (3), taken from López (2009, p. 97).
What triggers movement of constituents like CLLDed DPs is an unvalued feature $[\text{f}']$ along the lines of Chomsky’s (2001) p-features, or Uriagereka’s (1995) F-feature. In order to value this feature, the left-dislocated constituent lands in [Spec, FinP]. In addition to the edge of the vP phase, the edge of the CP phase (i.e., [Spec, FinP] according to the split-CP hypothesis; see (4) below) is another locus where interface interactions take place.

Whereas in the edge of the vP phase it gets the $[+a]$ feature from the pragmatic component invading the computational system for human language, the CLLD gets another feature, $[+c]$, in the edge of the CP phase. Thus, the final landing site of the CLLD is [Spec, FinP], its relationship with other sentence constituents being defined in terms of a first-branching-node definition of c-command. The sentence structure proposed by López (2009, p. 106) splits the CP in two phrases; namely, ForceP and FinP. This structure of the left periphery is illustrated in (4), and shows the landing position of CLLDs.

\[
(4) \quad \left[\text{ForceP} \left[\text{Force} \left[\text{FinP} \left[\text{CLLD} \left[\text{Fin'} \left[\text{Fin} \left[\text{TP} \left[\text{T} \left[\text{vp} \left[\text{v} \ldots \text{vp} \left[\text{v} \ldots \text{vp} \left[\text{v} \ldots \right] \right] \right] \right] \right] \right] \right] \right] \right] \right] \right] \right] \right] \right]
\]
Evidence that supports a movement analysis of CLLDs comes from their sensitivity to syntactic islands. As other constituents that undergo long-distance movement to the left periphery (e.g., wh-operators), CLLDs also do so in a successive-cyclic way in compliance with minimalist principles of economy (Chomsky, 1993, 1995, 1998; Collins, 1997, 2001; among many others). In (5), *a Juan undergoes successive-cyclic movement via [Spec, CP] of the embedded clause before landing in the matrix [Spec, FinP].

(5) A Juan María afirma con convicción *a Juan que el dueño de la compañía lo ofendió *a Juan.

ACC Juan María affirms with conviction that the owner of the company Cl.Acc.masc.sg offended.

‘Juan, María firmly claims that the company owner offended.’

If CLLDs undergo successive-cyclic movement to the left-periphery, then it is predicted that they should exhibit sensitivity to island constraints. This prediction is borne out, since their extraction is constrained by syntactic islands. Hence, there is evidence from CLLDed constituents being first-merged in [Comp, VP] and then undergoing successive-cyclic movement to the left periphery. The sensitivity to island constraints is illustrated in (6), (7), and (8).

(6) *A Pedro, la empleada que le hace descuentos fue despedida.

---

7 For a full battery of tests showing that CLLDs are dislocated constituents base-generated in the lower sentential domain, and then undergo movement to the left periphery, see Chapter 6 in López (2009).
DAT Pedro, the employee that Cl.Dat.sg make discounts was fired.

‘As for Pedro, the employee who gives him discounts was fired.’

(7)  * A Pedro, pienso que ayudarlo es una buena idea.

ACC Pedro, think that help Cl.Acc.masc.sg is a good idea

‘As for Pedro, I think that helping him is a good idea.’

(8)  * A Pedro, iba por la calle cuando lo vi.

ACC Pedro, was by the street when Cl.Acc.masc.sg saw

‘As for Pedro, I was walking on the street when I saw him.’

Following the typology of syntactic islands proposed by Ross (1967), sentence (6) is ruled out due to its violation of the Relative Clause Island Constraint. Sentence (7) is ungrammatical because it violates the Subject Island Constraint. Finally, sentence (8) is illicit since it violates the Adjunct Island Constraint. What all these violations have in common is that the left-dislocated A Pedro has no escape hatch from within the syntactic island, namely, there is no [Spec, CP] available in which it can stop before undergoing further movement to the left-periphery. Note that the same sentences without extracting a Pedro are grammatical, as shown in (9).

(9)  a. La empleada que le hace descuentos a Pedro fue despedida.

‘The employee who gives Pedro discounts was fired.’

b. Pienso que ayudar a Pedro es una buena idea.

‘I think that helping Pedro is a good idea.’

c. Iba por la calle cuando vi a Pedro.
‘I was walking on the street when I saw Pedro.’

Under current minimalist assumptions (Chomsky, 2000, 2001, 2008; among others) island constraints are an epiphenomenon of the ways in which phrase structures are built. More specifically, Phase Theory (Chomsky, 2000, 2001, 2008; Gallego, 2010, 2012; among others) determines that every step in the syntactic movement of a constituent takes place within a phase, or at its edge when two adjacent phases are being merged (Carnie, 2006, p. 50). This gives rise to successive-cyclic movement because a constituent cannot move from within a phase to another phase without landing at the edge of the phase from which it is extracted, in order to be probed by a Probe in the adjacent phase that is being merged. In this respect, island constraints are the result of applying economy principles to syntactic derivations.

The syntactic distribution of CLLDs in the left periphery of the sentence can be further refined by showing their interaction with another type of constituents undergoing A-bar movement such as wh-operators. As the contrast between (10) and (11) shows, CLLDs cannot intervene between wh-operators and the verb.

(10) *¿Qué a la secretaria le dio el cliente?

what DAT the secretary Cl.Dat.sg gave the customer.

‘What did the customer give to the secretary?’

(11) ¿A la secretaria qué le dio el cliente?

DAT the secretary what Cl.Dat.sg gave the customer.

‘What did the customer give to the secretary?’
However, following López (2009), this contrast vanishes when the interaction is between CLLDs and D-linked wh-phrases (discourse linked). D-linked wh-phrases imply the existence of a set of entities, whose knowledge is shared between the speaker and hearer, from which the latter has to answer by making a choice. This type of wh-phrases can either precede or follow CLLDed constituents as the illustrated in (12) and (13).

(12) ¿Qué regalo a la secretaria le dio el cliente?

what present DAT the secretary Cl.Dat.sg gave the customer.

‘Which present did the customer give to the secretary?’

(13) ¿A la secretaria qué regalo le dio el cliente?

DAT the secretary what present Cl.Dat.sg gave the customer.

‘Which present did the customer give to the secretary?’

To account for this asymmetry, López (2009) proposes that CLLDed constituents in the CP have to c-command [-a] constituents (e.g., non-D-linked wh-phrases). In this respect, an interpretive rule [+a] > [-a] is derived from the fact that constituents having [+a] and c-commanding all other constituents in the CP facilitates the anaphoric relationship (López, 2009, p. 128). CLLD and D-linked wh-phrases are [+a], which allows them to either precede or follow each other, entering into asymmetric c-command relationships between them. This contrasts with non-D-linked wh-phrases, which bear a [-a] feature.
The reason for the difference between D-linked wh-phrases and non-D-linked wh-phrases results from the fact that the former have a strong anaphoric relation with previously mentioned discourse entities (the question is about a set of those previously mentioned discourse entities), whereas the latter does not have such an anaphoric relation. These properties of D-linked wh-phrases give rise to the sequence D-linked wh-phrase > CLLD (and its opposite order), since it complies with the interpretive rule [+a] > [-a], as both CLLDs and D-linked wh-phrases are [+a], which allows them to either precede or follow each other. Taking into account this further clarifications, the final landing site of CLLDs in the CP can be illustrated in (14), which further supplements the previously introduced representation of the landing site of CLLDs in (4).

(14)  \[ \text{ForceP} \[ \text{ForceP} \[ \text{FinP} \[ \text{Fin'} \text{ non-D-linked Wh} \text{ Fin} \[ T \[vp\[v...]]]]]]\] \]

In addition to their morphosyntactic and discourse properties, Spanish CLLDs also involve a subtle semantic mapping, as specific definite left-dislocated NPs have to be doubled by a clitic like \textit{los} in (15), otherwise, the sentence is ungrammatical (Leonetti, 2011; López, 2009). By contrast, non-specific indefinite left-dislocated NP are generally assumed not to be doubled by a clitic like in (16) (Leonetti, 2011; López, 2009).

(15)  Los tomates perita, Pedro sí *(los) compró.

  the tomatoes.masc.pl plum, Pedro yes Cl.Acc.masc.pl bought.

  ‘The plum tomatoes, Pedro bought them indeed.’

(16)  Tomates perita, Pedro sí (*los) compró.
tomatoes.masc.pl plum, Pedro yes Cl.Acc.masc.pl bought.

‘Plum tomatoes, Pedro bought them indeed.’

However, a closer look at native Spanish CLLD reveals that the distinction between DPs being doubled by a clitic and bare NPs being not doubled is far from being clear. Whereas it is true that there exists a native preference for associating lack of clitics with non-specific readings like in (17), it is false that clitics cannot double non-specific bare DPs. According to Leonetti (2011, p.116) in (18), there is an example of a bare DP doubled by a clitic, the non-specific reading being available.

(17) Uvas sin pepitas, producen sólo en esta finca.
grapes without seeds, produce only in this estate

‘Seedless grapes, they only produce them at this estate.’

(18) Uvas sin pepitas, las producen sólo en esta finca.
grapes without seeds, Cl.Acc.fem.pl produce only in this estate

‘Seedless grapes, they only produce them at this estate.’

Following Leonetti (2011), there is a subtle difference between (17) and (18). In both cases the bare DP is non-specific. However, whereas in (18) it gets a generic interpretation with the clitic -i.e., the topic refers to all of the members of a kind, in (17) it gets an existential interpretation without the clitic -i.e., the topic refers to some members of a class.

Moreover, in some contexts this difference between generic and existential readings seems to vanish. That is the case in (19), taken from Leonetti (2011, p. 119),
where the clitic can be associated with either a generic or an existential reading of the left-dislocated topic.

(19) Tiburones ballena, en esta zona, no es fácil ver(los).

shark.masc.pl whales, in this zone, not is easy see (Cl.Acc.masc.pl)

‘Whale sharks, in this area, it is not easy to see them.’

In this sentence, *tiburones ballena* with the clitic can either refer to all the members of that kind, or just some members. It is relevant to point out that the preferred reading is the generic one with the clitic. What seems to be at stake is the fact that there is some degree of optionality with regard to the use of clitics and their semantic interpretation in Spanish CLLD.

Along these lines, there are cases in which indefinite CLLDs can get specific and non-specific readings like in (20), an example taken from Leonetti (2011, p. 108).

(20) Un libro, (lo) he leído.

a book.masc.sg, (CL.Acc.masc.sg have read

‘A book, I have read.’

The indefinite specific reading follows from the use of the clitic, whereas the indefinite non-specific reading is associated with the lack of it. However, as Leonetti (2011, p. 108) points out, it is also possible to obtain the indefinite non-specific reading of *un libro* with the clitic. Nevertheless, this reading is less preferred by Spanish speakers. In this
regard, this optionality points out to the fact that there is a form (the clitic) being able to convey a specific and non-specific reading of indefinite CLLDs, whereas the lack of clitic is only associated with the non-specific reading. From this, it follows that the clitic is expanding its semantic mappings, as illustrated in (21).

(21)  
   a. clitic ↔ specific reading of the Left Dislocated DP
       clitic ↔ non-specific-reading of the Left Dislocated DP
   b. no clitic ↔ non-specific reading of the Left Dislocated DP

Along these lines, Leonetti (2011) has advanced that clitics in Spanish CLLD invade the readings traditionally associated with lack of clitics. In other words, there is an overlapping between the two available options. This invasion can be seen in (22).

(22) Readings associated with CLLDs

<table>
<thead>
<tr>
<th></th>
<th>Pronouns/Proper Names</th>
<th>Definite DPs</th>
<th>Indefinite specific DPs</th>
<th>Indefinite non-specific DPs</th>
<th>Bare DPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clitic</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>No Clitic</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

In sum, there is some degree of optionality between clitics and their lack with regard to the interpretation the non-specific DP they are linked to gets. The optionality consists in clitics being more flexible in the kinds of interpretations that topic DPs can obtain. The interpretation of CLLDs linked to lack of clitics is fixed, and they are always
interpreted as non-specific indefinite DPs. Finally, whereas it is true that clitics are more flexible with regard to the readings that non-specific DPs can get (they can be associated with generic and existential readings), there is a native preference for associating generic readings with them.

2.2.2. CLLDs and Hanging Topic Left Dislocations

In spite of their surface resemblance, CLLDs constitute a different type of linguistic phenomenon from Hanging Topic Left Dislocations (henceforth, HTLD) such as Pedro in (23). Both phenomena are characterized by displaying a dislocated constituent in the left periphery of the sentence and being reassumed by a clitic.

(23) Pedro, iba por la calle cuando lo vi.

Pedro, was by the street when Cl.Acc.masc.sg saw.

‘Pedro, I was walking on the street when I saw him.’

Following López (2009), HTLDs differ from CLLDs with regard to the domain where they are first-merged, their landing sites in the left-periphery of the clause, the possibility of being reassumed by a resumptive element, their case morphology and the type of agreement relations they are involved in, and the pragmatic features that they can be assigned by the pragmatics component.

By contrast to CLLDs, HTLDs are first-merged in the left periphery of the sentence. For this reason, they do not undergo movement to the CP field, and are
insensitive to syntactic island constraints like the Adjunct Island Constraint in (23). This contrast can be seen between (24) and (23), repeated below like (25) for expository clarity.

(24)  * A Pedro, iba por la calle cuando lo vi.
       ACC Pedro, was by the street when Cl.Acc.masc.sg saw.
       ‘Pedro, I was walking on the street when I saw.’

(25)  Pedro, iba por la calle cuando lo vi.
       Pedro, was by the street when Cl.Acc.masc.sg saw.
       ‘Pedro, I was walking on the street when I saw him.’

Another difference with regard to their syntactic behavior is that CLLDs can occur in embedded contexts like in (26), but HTLDs cannot, as illustrated in (26).

(26)  María dice que, a Pedro, los amigos lo ayudan.
       María says that, to Pedro, the friends Cl.Acc.masc.sg help.
       ‘María says that, Pedro, the friends help.’

(27)  * María dice que, Pedro, los amigos lo ayudan.
       María says that, Pedro, the friends Cl.Acc.masc.sg help.
       ‘María says that, Pedro, the friends help him.’

Furthermore, HTLDs can be reassumed by a resumptive element in the lower TP field like in (28), an option not possible with CLLDs in (29).
(28) Pedro, nunca puedo ver a ese genio.
‘Peter I can never see that genius.’

(29) * A Pedro, nunca puedo ver a ese genio.
‘To Peter, I can never see that genius.’

The impossibility of CLLDs to be reassumed by resumptive elements provides further evidence regarding the syntactic differences between them and HTDLs. This asymmetry results from HTLDs being first-merged in the CP field, whereas CLLDs are first-merged in the VP domain, and then further undergo successive-cyclic movement to the left-periphery.

Another characteristic that distinguishes HTLDs from CLLDs is case morphology. The latter displays agreement morphology with the sentence internal double (López, 2009, p. 216), as in the case of differential object marking with animate direct objects, the dative marker a in the case of datives. Yet, HTLDs only occur in nominative case. This contrast is illustrated in (30).

(30) a. A Pedro, lo vi en el metro.
   ACC Pedro, Cl.Acc.masc.sg saw in the subway,
   ‘Pedro, I saw in the subway.’

b. Pedro, lo vi en el metro.
   NOM Pedro, Cl.Acc.masc.sg saw in the subway,
   ‘Pedro, I saw in the subway.’
Note that there is a further consequence in this regard related to the difference between HTLDs and CLLDs; namely, the kind of agreement relation between the constituent in the left periphery and the clitic in the TP domain differs. Whereas the agreement relationship between the CLLD and the clitic is grammatical, the one between the HTLD and the clitic is discursive. This means that the former is a grammar relation *sensu strictu*, in which there is an *Agree* computation in a probe-goal fashion. This computation is expressed in the feature valuing process between the CLLD and the verb, whose spell out is the clitic. By contrast, the discourse agreement relation between the HTLD and the clitic is an instance of discourse anaphora based on feature sharing whose compatibility is determined by world knowledge. As pointed put by López (2009, p. 217), the HTLD-clitic relation is another instance of discourse anaphora as the one existing between *John* and *him* in (31).

(31) John is a very tall guy. It is impossible not to see him.

*Him* and *John* share certain phi-features, but do not agree in case. It is in this sense that the relation between both is not grammatical, but discursive. The same holds between HTLDs and clitics. This is a non-trivial characteristic of the distinction between HTLDs and CLLD, since only the latter involve a grammatical non-local dependency between two constituents. For this reason, the experiments of this dissertation have CLLDs as the target structure.
With regard to the pragmatic features that they are assigned, whereas CLLDs necessarily get [+c] and [+a] features, any positive or negative [a] and [c] feature values can be assigned to HTLDs depending on the discursive context. This flexibility is the result of HTLDs being orphans in Hageman’s (1991) sense; namely, they are not integrated to the sentence, since they are first-merged in the CP domain (FinP in López’s (2009) approach).

Finally, the syntactic distribution of HTLDs with D-linked wh-phrases in the left periphery is fundamentally different from that of CLLDs. As shown below in (32), both CLLDs and HTLDs cannot intervene between the non-D-linked wh-phrase and the verb.

(32)  
  a. ¿A Pedro qué le dieron?  
        DAT Pedro what Cl.Dat.sg gave  
        ‘Pedro, what did they give him?’
  b. * ¿Qué a Pedro le dieron?  
        what DAT Pedro Cl.Dat.sg gave  
        ‘Pedro, what did they give him?’
  c. ¿Pedro qué le dieron?  
        NOM Pedro what Cl.Dat.sg gave  
        ‘Pedro, what did they give him?’
  d. * ¿Qué Pedro le dieron?  
        what NOM Pedro Cl.Dat.sg gave  
        ‘Pedro, what did they give him?’
However, whereas CLLDs can intervene between D-linked wh-phrases and the verb, that is not the case with HTLDs, an asymmetry shown in (33).

(33)  

a. ¿A Pedro qué regalo le dieron?  
Dat Pedro what present Cl.Dat.sg gave  
‘Pedro, what present did they give him?’

b. ¿Qué regalo a Pedro le dieron?  
what present Dat Pedro Cl.Dat.sg gave  
‘Pedro, what present did they give him?’

c. ¿Pedro qué regalo le dieron?  
Nom Pedro what present Cl.Dat.sg gave  
‘Pedro, what present did they give him?’

d. * ¿Qué regalo Pedro le dieron?  
what present Nom Pedro Cl.Dat.sg gave  
‘Pedro, what present did they give him?’

This syntactic distribution suggests that HTLDs are merged as adjuncts in a higher position than where CLLDs land in the left periphery. In the light of this distribution, a more refined structure of the syntactic position of CLLDs is provided in (34).

(34)  

[ForceP [Force [FINP HTLD [FINP CLLD [FIN non-D-linked Wh FIN [TP [v ... ]]]]]]]
2.2.3. English Topicalization and Left Dislocation

English displays a distinction between Topicalization (35a) and Left Dislocation (35b), which resembles the existing one in Spanish between CLLDs and HTLDs.

(35)  

  a. John, I didn’t see.

  b. John, I didn’t see him.

According to Casielles-Suárez (2004), Chomsky (1977), Cinque (1977), Culicover (1991), Grohmann (2000), Lasnik and Saito (1992), and Shaer and Frey (2004), among many others, Topicalization (henceforth, Top) involves movement of the dislocated constituent to the left periphery of the sentence, whereas Left Dislocation (henceforth, LD) does not, since the constituent is first-merged directly in the position where it is pronounced. Another distinction between Top and LD is the fact that the latter, but not the former, can be reassumed by a resumptive element (e.g., a strong pronoun) with which establishes a discourse agreement relation involving number and gender features. Along these lines, they also differ in the type of categories that can be Top or LD. As the examples in (36) and (37) show, different lexical categories can be Tops, but only DPs can be LDs.

(36)  

  a. Peter, I really hate.

---

8 In this section, all the sentences either come from the reference source, or from native judgments. Examples that were obtained from linguistics scholars appear with the reference. If there are no references, the sentences were obtained from English native speakers.
b. To Peter, I gave a present.

c. At the party, I met Peter.

(37)  
a. Peter, I really hate him.

b. *To Peter, I gave him a present.

c. *At the party, I met Peter there.

LD, but not Top, is restricted to DPs. This restriction results in lack of case matching between the LD and the resumptive element as in (38), in which the LD is nominative and the resumptive constituent is accusative.

(38)  
Peter, I really hate him.

Note that there is strict case matching between the dislocated constituent and its gap in the case of Top like in the examples above.

Building on the work by the aforementioned researchers, the main evidence in favor of a movement analysis of Top comes from its sensitivity to syntactic constraints such as the Adjunct Island Constraint. By contrast, LD does not exhibit this sensitivity, as seen in (39).

(39)  
a.*Peter, John goes to the pub before he meets.

b. Peter, John always goes to the pub before he meets him.

(Shaer and Frey, 2004, p.472)
Another syntactic difference that seems to hold between the two is whether or not they can occur in both matrix and embedded clauses. It seems that Top can occur in both syntactic positions, whereas LD cannot, as illustrated in (40).

(40)  
\[ \begin{align*}  
& a. \text{I believe that this book, you should read.} 
& b. \text{* I believe that this book, you should read it.} 
\end{align*} \]

(Lasnik and Saito, 1992, pp. 76-77)

However, there are some cases in which LD can occur in embedded positions, as shown in the example from Shaer and Frey (2004, p.484) in (41).

(41)  
\[ \text{John always knew that his father, he’d been a bit of a drinker.} \]

After comparing (40) and (41), it is unclear if this asymmetry is actually syntactic or results from non-linguistic factors. In this sense, Shaer and Frey (2004) argue that there are no grammatical restrictions on LD that prevent it from occurring in embedded contexts (see Shaer and Frey (2004) and references therein for an extensive discussion of this issue).

There are further syntactic differences between Top and LD with regard to their interaction with wh-phrases, which suggest that they occur in different positions in the CP domain. As illustrated in the contrast in (42), wh-phrases are compatible with LDs, but not with Tops.

(42)  
\[ \begin{align*}  
& a. \text{* Those petunias what did Joanne do with?} 
\end{align*} \]
b. Those petunias, what did Joanne do with them?

c. * Those petunias when did Joanne plant?

d. Those petunias, when did Joanne plant them?

(Rodman, 1997, p.33)

However, both Top and LD show the same behavior when it comes to allowing more than one Top or LD in the left periphery like in (43) and (44).

(43)  * To John a letter Mary just sent.

(Rochemont and Culicover, 1990, p. 72)

(44)  * John, Mary, he likes her.

(Lasnik and Saito, 1992, p. 79)

Data in (43) and (44) suggest that there is only position available for Tops to move, or LDs to be first-merged. Hence, more than one phrase of the same category (i.e., Top or LD) cannot co-occur. However, their combination is still possible as in (45) and (46):

(45)  A letter, to John Mary just sent it.

(46)  John, Mary, he likes.

(Lasnik and Saito, 1992, p.78)

Moreover, their combination seems to be restricted, as LDs must precede Tops like in (47) and (48):

(47)  John, Mary, a letter, he likes.

(48)  A letter, John, Mary, he likes.
The sequences in (47) and (48) suggests that Tops and LDs occupy different positions in the English left periphery. As analyzed by Shaer and Frey (2004), the different syntactic patterns attested between Top and LD result from their status as arguments and adjuncts, respectively. In a more specific way, Shaer and Frey (2004) propose an analysis according to which Tops are syntactically integrated in their host sentences, whereas LDs are not.

Building on previous work by Haegeman (1991), they analyze LDs are ‘orphans;’ namely, phrases that are syntactically independent from the sentences that they are associated with. In this respect, they analyze LDs as HTLDs that resemble Spanish HTLDs. By contrast, for them, Tops resemble Romance CLLDs in the sense that they seem to target the same structural position in the left periphery of root and embedded clauses (see, however, Haegeman (2006), and Kempchinsky (2013) for a discussion about Romance CLLDs in adverbial sentences).

Under this analysis, the aforementioned syntactic similarities and differences between Top and LD can be accounted for by assuming that Tops move to [Spec, FinP], whereas LDs are first-merged as adjuncts to FinP, as in (49).

(49) \( [\text{ForceP} \ [\text{Force} \ [\text{FinP} \ \text{LD} \ [\text{FinP} \ \text{Top} \ [\text{Fin'} \ \text{Fin} \ [\text{TP} \ [\text{T} \ [\text{vp} \ [\ldots] \ ]]]]]]]] \)
A look at the interaction between Tops and wh-phases reveals that both target [Spec, FinP], regardless of the D-linked status of the wh-operator, as shown in (50) and (51):

(50)  a. * This book, to whom should we give?
     b. * To whom, this book should we give?
     
     (Chomsky, 1977, p. 94)

(51)  a. * This book, to what person should we give?
     b. * To what person, this book should we give?

Moreover, as wh-phases land in [Spec, FinP], (49) also predicts that LDs and wh-phases can co-occur under the condition that LDs precede wh-phrases and not vice-versa. This prediction is also born out as attested in (52):

(52)  a. This book, to whom should we give it?
     b. * To whom, this book should we give it?
     
     (Chomsky, 1977, p. 94)

In the light of all these data, the following syntactic patterns in (53) concerning Top, LD, and wh-phrases naturally follow:
a. Tops and Wh-phrases cannot co-occur because they target the same position, and are, thus, in complementary distribution.

b. LDs and Wh-phrases can co-occur because they target different positions. This also explains why Tops and LDs can co-occur, too.

c. The order LD > Top results from the latter targeting [Spec, FinP] and the former being adjoined to FinP. This is the reason why Top>LD is ungrammatical.

d. As there is only one position available, more than one Top or LD are banned in English.

In accordance to the data and this cluster of properties, the English left periphery can be characterized in a more accurate way as in (54).

(54) \[
\begin{align*}
\text{[ForceP} & \text{Force} [\text{FinP LD} [\text{FinP Top} [\text{Fin'} Fin [\text{TP} [ T [\text{vp} [ v \ldots ]]])]])]\] \\
\text{[ForceP} & \text{Force} [\text{FinP LD} [\text{FinP Wh} [\text{Fin'} Fin [\text{TP} [ T [\text{vp} [ v \ldots ]]])]])]\]
\end{align*}
\]

As analyzed by Shaer and Frey (2004) for English and Romance, an analysis further supported by the data presented above, a simple comparison between Spanish CLLD and English Top and LD reveals that Spanish CLLD and English Top resemble each other with respect to the core syntax operation involved; namely, they are constituents syntactically integrated to the sentence which are first-merged in the VP domain, and then undergo movement to the left periphery in order to value edge features. Additionally, both can occur in root and embedded contexts, and are sensitive to islands. Moreover, several lexical categories matching in case with their gap can be topicalized.
Finally, and on a separate note, their pragmatic relation seem to be similar. Recall that CLLDs and HTLDs present an overlap in their pragmatic effects; namely, whereas the latter can take any values for the [a] and [c] discourse features, the former only gets [+a] and [+c]. Likewise, Frey (2005) demonstrates that LD can be utilized in the same pragmatic contexts than Top. Under López’s (2009) analysis of value assignment for discourse features, there is good reason to assume that English Top gets [+a] and [+c], whereas LD can get any of the possible values for those features, a particular characteristic of constituents first-merged in the left periphery.

In spite of these similarities, CLLDs and Tops differ in other ways. First, whereas English Tops leave a gap, Spanish CLLDs are reassumed by a clitic. Along these lines, no semantic constraints exist on Top, as they do in CLLDs. As their position in the left periphery, Spanish CLLDs can be stacked and precede wh-phrases. By contrast, only one English Top per sentence is allowed, and they cannot co-occur with wh-phrases. Note that these differences predict no interpretive rules in English as the one existing in Spanish according to which constituents with the [+a] feature in the left periphery can precede each other, but constituents with the [-a] feature must be c-commanded (and thus preceded) by constituents with the [+a] feature. Recall that in Spanish (and more generally in Romance) the interpretive rule [+a] > [-a] allows D-linked wh-phrases to either follow or precede CLLDs, something impossible in English as attested in (51).

In the light of these cross-linguistic differences, a native speaker of English who is acquiring Spanish as a second language is faced with the following tasks with regard to CLLDs: (1) selection of new grammatical features such as grammatical gender and their assembling with other features such as definiteness, number, and case in order to acquire
object clitics; (2) establishment of Agree computations between the verb and the dislocated objects, and spelling out these operations as object clitics; (3) mapping of the specific semantic readings associated with left-dislocated DPs and clitics, and the non-specific readings linked with left-dislocated bare NPs and lack of clitics (4) development of a left periphery along the lines of (34) repeated below as (55) for expository clarity; (5) deduction of the interpretive rule [+a] > [-a], which allows D-linked wh-phrases to either follow or precede CLLDs; (6) learning of the appropriate pragmatic conditions in which CLLDs are utilized in Spanish according to world knowledge. In addition to these morphosyntactic, semantic, and pragmatic properties, a native speaker of English has to implement all this information as she is parsing Spanish sentences with CLLDs. How CLLDs are parsed in Spanish is described in the next section.

\[(55) \quad [\text{ForceP} \ [\text{Force} \ [\text{FinP} \ \text{HTLD} \ [\text{FinP} \ \text{CLLD} \ [\text{Fin'} \ \text{non-D-linked Wh} \ \text{Fin} \ [\text{TP} \ [\text{T} \ [\text{vp} \ [\text{v} \ldots \ ]]]]]]]] ]]

2.3. Parsing of Spanish CLLD

2.3.1. Parsing the CLLD-clitic Dependency

Pablos (2006) conducted a series of experiments employing the moving-window paradigm (Just, Carpenter, and Woolley, 1982) in order to investigate how CLLDs are parsed in native Spanish. Overall, she found that the parser detects left-dislocated DPs as constituents that establish a long-distance dependency with the clitics. These findings
show that CLLDs are parsed in the same way as wh-fillers and gaps. Moreover, the parsing mechanism employed in interpreting long-distance dependencies is the same regardless of the phonetic nature of the constituent resolving the dependency formation (gap or clitic).

In sentences like the ones in (56) and (57), Pablos (2006, p.94) found that in Spanish the parser conducts an active search for a clitic in order to link it to the left-dislocated topic, which acts like a filler.

(56) Early Completion Condition

A estas chicas, mi hermana mayor más tarde les dijo que ya lo cree que las conoce desde hace tiempo.

‘These girls, my old sister later told them that she indeed thinks she knows them for a long time.’

(57) Late Completion Condition

A estas chicas, mi hermana mayor más tarde dijo que ya lo cree que las conoce desde hace tiempo.

‘These girls, my old sister later said that she indeed thinks she knows them for a long time.’

The evidence in favor of Pablos’ claim comes from significant RT differences in the critical regions (e.g., *les dijo* vs. *dijo*) in sentences like (56) and (57). In (56), the verb *dijo* is preceded by the clitic *les*, whereas in (57), it is not. The experiments revealed that the critical region including the clitic were processed faster than in the critical region
without the clitic. Reading differences were also found in the lower areas of the sentences. The clitic \textit{las} in (56) were read slower than in (57), since in the early completion condition the linking between the left dislocated topic \textit{a estas chicas} and the clitic \textit{les} had already taken place. This was impossible in the late completion condition due to the lack of the clitic \textit{les} attached to \textit{dijo}. In this condition, the only possible constituent to which the topic can be link is \textit{las}. From this, it is advanced that the parser treats these linguistic phenomena in accordance with the Active Filler Strategy, of AFS, (see below for a detailed description of this parsing mechanism). The AFS is thought of as a distinctive characteristic of the Human Language Sentence Parser (HLSP), which consists in solving long-distance dependencies such as the ones existing between a wh-filler and gap as soon as possible, and complying with the grammatical principles of particular languages.

Further evidence in favor of parsing CLLDs by means of establishing long-distance dependency formation with the clitic comes from another experiment conducted by Pablos (2006, p. 111). In addition to manipulating the moment of the dependency formation resolution (early vs. late conditions), in this experiment the type of constituent (the CLLD \textit{a estas chicas} vs the non-CLLD \textit{el organizador del cásting}) at the beginning of the sentence was manipulated like in the sentences (58), (59), (60), and (61) in order to determine whether the active search was conducted by any topicalized constituent or by topicalized constituents undergoing A-bar movement.

(58) Topicalization/ Late Completion Condition

A estas chicas, el organizador del cásting ha explicado con todo tipo de detalles que
el mánager las iba a llamar por apellido.

‘These girls, the organizer of the casting has explained with all sorts of details that the manager would call them by surname.’

(59) Topicalization / Early Completion Condition

A estas chicas, el organizador del cásting les ha explicado con todo tipo de detalles que el mánager las iba a llamar por apellido.

‘These girls, the organizer of the casting has explained them with all sorts of details that the manager would call them by surname.’

(60) Non-topicalization/ Late Completion Condition

El organizador del cásting ha explicado con todo tipo de detalles que el mánager las iba a llamar por apellido.

‘The organizer of the casting has explained with all sorts of details that the manager would call them by surname.’

(61) Non-topicalization/ Early Completion Condition

El organizador del cásting les ha explicado con todo tipo de detalles que el mánager las iba a llamar por apellido.

‘The organizer of the casting has explained them with all sorts of details that the manager would call them by surname.’

In this second experiment, Pablos (2006) found that there were no reliable main effects or interactions in any of the regions in the non-topicalization condition. In other words, the parser does not initiate any kind or active search after encountering a preverbal subject like el organizador in (60) and (61). These results support the idea that
left-dislocated topics trigger an active search mechanism for clitics in order to resolve the dependency formation. In contrast, non-CLLD constituents do not trigger such an active search.

Moreover, significant main effects for clitic presence in the conditions with CLLDs were found. These effects were the same as the one reported in the previous experiment, namely, there were faster reading times of the clitic in the early completion condition, and longer reading times for the equivalent critical region without the clitic (*ha explicado*). These results provide further support in favor of the idea that there is an active search mechanism triggered by CLLDs in Spanish consisting in establishing a grammatical dependency formation between the CLLD and the clitic.

2.3.2. The CLLDed-DP-clitic Dependency, the Human Language Sentence Parser (HLSP), and the HLSP Left-Corner Model

Pablos (2006) showed that the active search mechanism is a distinctive feature of the architecture of the human language sentence parser, or HLSP, which establishes a long-distance dependency between CLLDs and clitics in the same way it does between wh-fillers and gaps. From this, parsing CLLDs consists in conducting an active search for a matching clitic in the sentence input. In order to do so, the process involves maintaining the CLLD in working memory until it finds the clitic with which the dependency formation is established. Overall, these findings are consistent with previous research on the ways in which the parser establishes long distance dependencies between wh-fillers and gaps (Aoshima et al. 2004; Crain and Fodor 1985; Frazier, 1987; Lee, 2004; Stowe
1986).

The aforementioned active search in sentence processing has been shown to exist since Crain and Fodor (1985), and Stowe (1986), who found the existence of a so-called filled-gap effect. For instance, in (62) the parser systematically tries to postulate a trace after the verb bring in order to assign a gap to the wh-filler who. However, as demonstrated by Stowe (1986, p. 234) whereas it is possible to do so in (62a), that is incompatible with the structure in (62b). This is because the position to which the parser tries to assign a trace is already filled with us, resulting in a processing delay requiring the parser to review the structure that is building, and assign the trace after the preposition to.

(62)  

   a. My brother wanted to know who\textsubscript{i} Ruth will bring <who\textsubscript{i}> home to Mom at Christmas.  
   b. My brother wanted to know who\textsubscript{i} Ruth will bring us home to <who\textsubscript{i}> at Christmas.  

When the location to which the parser tries to assign the trace is already filled, a filled-gap effect takes place. A parsing principle capturing the filled-gap effect has been put forward by Frazier and Clifton (1989, p. 292), and is known as the Active Filler Strategy (AFS) in (63).

(63)  

Active Filler Strategy  

When a filler of category XP has been identified in a non-argument position, such as
COMP, rank the option of assigning its corresponding gap to the sentence over the option of identifying a lexical phrase of category XP.

What the AFS accounts for is the process by which once the parser finds a constituent in a non-argument position like *who* in [Spec, CP] it triggers an active search in which it tries to postulate a gap at a later point in the phrase structure that is building as fast as possible, and in compliance with grammatical principles (i.e., no trace is postulated within domains not allowed by the grammar as in the case of wh-islands).

In the case of (62) there is the possibility of postulating the trace after *bring* or waiting to encounter a DP in the incoming input which might satisfy the thematic and subcategorization requirements of the verb. Between these options, the AFS forces the parser to opt for the first option (postulating a trace as soon as possible). This explains why in (62b) there is a filled-gap effect, but not in (62a). Further research on native parsing provided more evidence on the existence of the active search mechanism and its compliance with the grammar (e.g., Phillips et al. 2005; Traxler and Pickering, 1996; among many others).

In addition to be consistent with the ways in which the parser establishes dependency formation, Pablos’ (2006) findings provide support to models of incremental parsing which use lexical information and project sentence structure in advance by taking into account bottom-up information. The implications of Pablos’ (2006) findings follow from the fact that clitics are projected by the parser in anticipatory fashion once the CLLD has been encountered in the incoming input. In other words, the projection power
of the parsing algorithm posits a clitic position with its set of grammatical features (i.e., case, number, person, and gender) before encountering the overt realization of the clitic.

Fully-incremental models of sentence parsing advance that the HLSP uses grammatical information as case marking, word order, etc. in order to build phrase structure by identifying arguments and connecting them to the sentence being processed in an anticipatory way before encountering the verbal predicate (Gorrell, 1995; Lombardo and Sturt, 2002; Stabler, 1994; Sturt and Crocker, 1996). That is, the HLSP incorporates every word to the syntactic structure being built as it is encountered, and projects the sentence representation in advance. This commitment to projecting syntactic structure in advance results in the need of reanalyzing sequences when processing input contradicting the already built structure. An example of such reanalysis is the previously mentioned filled-gap effect, when the parser postulates a gap, and needs to reanalyze the structure once *us* is encountered in the input like in sentence (62b). However, there is no delay in processing, as most sequences do not require more than one sentence analysis. The fully incremental approach to sentence processing has the advantage of being a fast process, which economizes memory resources, and connects all the incoming input words in an anticipated syntactic structure.

A particular fully incremental model of HLSP is the so-called *Left-Corner Parser model* (Aoshima 2003; Resnik, 1992; Schneider, 1999; Stabler, 1994; among others). According to this approach, in order to build a bottom-up phrase structure, the parser uses the lexical information from the incoming words and projects a syntactic analysis of the sentence, which is constrained by the grammar of the language. This projection consists in building the parent node of a constituent, and its predicted siblings. For instance, when
parsing a sequence like *fond of John*, the HLSP has to process the incoming word *fond*, and then build the maximal projection AdjP. Additionally, it has to project the sibling node, namely, a PP. Finally, within the PP it also has to project a DP so that it can assign a position in the structure to the incoming DP *John*. This is represented in (64).

(64)

In this regard, the parser anticipates the incoming string of words based on the selectional properties of the lexical items (e.g., *fond* select a PP complement, which also selects a DP complement). For this reason, the parser is argued to be incremental and project structure in an anticipated fashion. This anticipated projection is represented in (64) with the triple-dot punctuation marks. In the representation, they work as terminal nodes that have not been read in the input, since the phrase structure is already projected before the actual incoming words have been detected by the parser.

The anticipatory nature of the HLSP is attested in headless structures⁹, as is the case with phrases lacking an overt head in the input. Their non-overt status makes them unavailable in the incoming string of words. As Lombardo and Sturt (2002) show, there

---

⁹ *Headless structure* stands for an incoming string of words belonging to a phrase whose head is either null, or cannot be read in the input, as it occurs with NPs whose heads come after an ADJP.
are sequences like (65), in which the HLSP has to project structures for which there is no direct lexical information by generating grammatical inferences from the input. These grammatical inferences consist in links including nodes “that are part of projections whose heads have not been read in the input” (Lombardo and Sturt, 2002, pp. 139-140).

(65) He thinks \[ CP [ C [ NP [ ADJP steeper ] prices ] have come about because . . . ] ]

In (65) when the parser finds *thinks* it projects a headless (i.e., a phrase with a null head) CP, as well as a headless NP when it encounters *steeper* –note that the head of the NP comes after the adjective. Projecting both headless structures like in (64), and incorporating them into the structure being built is an example of a characteristic of the incremental nature of the HLSP, which has to make inferences beyond the lexical input in accordance with the grammar of the language being processed in order to build phrase structures. These projections with headless structures are incorporated in the phrase structure via a subtree, which Lombardo and Sturt (2002, p. 140) call a *connection path*. These connection paths are an instance of the anticipatory nature of the HLSP, and it is represented in (66) (Lombardo and Sturt, 2002, p. 141), in which an embedded VP is also projected in accordance with the anticipatory characteristic of fully incremental parsers:

\[(66)^{10}\]

---

10 *SBAR* in the representation stands for *CP*, and *S*, for *TP*. 

To sum up, Pablos’ (2006) findings show that parsing CLLDs involves the same process as parsing wh-fillers. This is in line with theoretical approaches proposing that the active search mechanism known as the AFS is a universal characteristic of the HLSP. Moreover, these findings are consistent with a fully incremental model of the HLSP like the Left-Corner Parser. This is because once the HLSP encounters a CLLD in the incoming input it has to project a clitic position whose features (case, number, person, and gender) are already specified before actually encountering the clitic in the incoming string of words. This model of the HLSP is the underling parsing model assumed for native sentence processing in the series of experiments of this dissertation.

2.4. The adult L2 acquisition of Spanish CLLDs

This section reviews all the existing studies on the adult second language acquisition of Spanish CLLDs. With no exception, these studies focused on the extent to which L2ers complied with the semantic constraints on CLLDs; namely, whether left-
dislocated DPs and bare NPs were clitic-doubled or not. The main generalization from the findings is that, as proficiency increases, L2ers tend to develop a native-like performance, but fail to display a native-like compliance with the aforementioned semantic constraints.

Some researchers claim that the attested patterns are due to a persistent L1 transfer influence even at advanced levels of proficiency, or the result of an underlying impaired grammatical representation. By contrast, others argue that these patterns of L2 systems suggest that L2ers have acquired an underlying grammatical and pragmatic representation of Spanish CLLDs, but the subtle semantic properties associated with CLLDs may lead to long-lasting difficulties in the mapping of morphosyntax onto semantics. The studies that give rise to these different analyses are presented in the next two subsections below.

2.4.1. Lack of convergence and persistent L1 effects

In a pioneer study, Sánchez and Al-Kasey (1999) explored knowledge of CLLDs in adult L1 English beginner and intermediate learners of L2 Spanish, who performed in a non-native way in an oral sentence production task modeled after a frog story, as well as in a picture-sentence matching questionnaire. In particular, the non-native groups produced no instances of CLLDs in the oral sentence production task. Moreover, they showed no recognition or production of clitics in sentences with CLLDs. From these findings, the authors concluded that these groups of L2 learners lacked knowledge of CLLD all across the board.
A similar pattern was found by Zapata, Toribio, and Sánchez (2005) in late L1 English intermediate L2 Spanish acquirers. Through a series of written questionnaires aimed at triggering CLLD structures and their semantic constraints on clitic-doubling, the researchers found extremely low rates of CLLD, regardless of the type of left-dislocated phrase (e.g., DPs or bare NPs). From these results, they concluded that CLLDs constitute a domain of acquisition that is difficult for second language learners, because it involves the interface of syntax with semantics and discourse.

Another study that shows lack of convergence, but in the form of robust L1 transfer effects, is that of Cuza, Pérez-Leroux, and Sánchez’s (2013). These scholars investigated the compliance of L1 Chinese adult learners of L2 Spanish with the semantic constraints on Spanish CLLDs. Their data show that L2ers performed in a non-native like way with regard to the acceptability of ungrammatical sentences containing definite specific and non-specific CLLDs. A non-native-like production of sentences of this type without a clitic was also found. By contrast, they performed in a native-like way with regard to the production and acceptability of sentences with indefinite and non-specific CLLDs. The researchers concluded from these results that the interlanguage of L1 Chinese adult learners of L2 Spanish has a clitic deficit, in addition to remaining fully within the linguistic parameters of Chinese. Along these lines, a more specific characterization of their Spanish interlanguage reveals systematic clitic realization gaps (i.e., no clitic usage), and no awareness of the distributional constraints on the use of clitics with CLLDs. According to the scholars, this non-native performance is argued to be the consequence of extensive patterns of L1 transfer, as Chinese allows null referential objects like, lacks definiteness and specificity in their nominal system, and does not have
a productive use of object pronouns. For these reasons, the attested patterns reported by Cuza et al. (2013) are explained in terms of strong L1 transfer.

Finally, another study that found lack of convergence and analyzed it as a case of L1 transfer is that of Parodi’ (2010). This researcher employed an acceptability judgment task with aural and written stimuli in order to test sensitivity to definiteness in accusative and dative CLLDs in L1 English intermediate and advanced learners of L2 Spanish. The findings revealed that native-like patterns were only found in the acceptability results of the advanced learners. In the lower proficiency group no significant differences were found in the treatment of CLLDs and clitics based on case or definiteness. The author took a further look at the results and pointed out that CLLD with clitics is preferred with definiteness both in the accusative and the dative conditions.

Parodi (2010) analyzes these patterns in the higher proficiency group as compatible with a consistent interpretation of clitics as a strong pronouns, which are the categories available in English. Along these lines, she argues that the English mechanisms underlying Left Dislocations in L1 English are transferred to L2 Spanish. In addition to transferring these mechanisms, L2 learners of Spanish are hypothesized to implement a generalized strategy in order to accept overt agreement morphology in the forms of clitics. In her analysis, this is the result of the salient nature of that type of morphology in the input, which guides the restructuring of the interlanguage from phonetically empty categories to overt elements as a reflex of object agreement. However, the author emphasizes that the fact that L2 learners can accept clitics as being coreferential with definite accusative and dative CLLDs does not necessarily mean that they are recognizing the clitics as agreement
markers. Instead, they may be misanalysing them as pronouns establishing a link with the left dislocated constituents based on the interpretable feature of definiteness.

In short, Parodi (2010) proposes that the native-like patterns in L2 performance concerning definite accusative and dative CLLDs can be interpreted as the result of two transferring strategies resulting from an underlying impaired grammatical representation. First, transferring the underlying mechanisms for Left Dislocation available in English to the Spanish interlanguage. Second, misanalysing object clitics as pronouns, which establish links with definite left-dislocated constituents.

2.4.2. Persistent difficulties with the mapping of morphosyntax onto semantics

In a recent study by Slabakova, Kempchinsky, and Rothman (2012), L1 English learners of L2 Spanish with different proficiency levels (intermediate, advanced and near-native) were administrated an aural selection task concerning knowledge of felicity conditions in the use of CLLDs (i.e., only knowledge of clitic-doubling with left-dislocated DPs, and potential set-member relations between the CLLD and its discourse antecedent). Results show that only near-natives (and some advanced learners) displayed a native-like performance with respect to clitic-doubling left-dislocated DPs, as well as with semantic relations between the CLLD and its discourse antecedent. However, groups of lower proficiency levels exhibited a tendency to accept lack of clitic-doubling with left-dislocated DPs. From these findings, the researchers concluded that the morphosyntax of CLLD, and its interfaces with semantics (at least in what concerns set-
member relations) and pragmatics (felicity conditions with topicalized left-dislocated constituents) are acquirable by L2 learners.

By contrast to this successful case of acquisition, other studies showed that highly-advanced learners of L2 Spanish present difficulties with the semantic constraints on CLLDs, regardless of whether their L1s have CLLDs (Brazilian Portuguese) or not (English). In a more comprehensive study, Valenzuela (2005) administered three tasks (an oral acceptability task, an oral sentence selection task, and a sentence completion task) in order to test L1 English near-natives of L2 Spanish’s knowledge of CLLDs in matrix and embedded clauses, and the extent to which L2ers complied with the semantic constraints on CLLDs. The results in the three tasks revealed non-native-like patterns consisting in overextending the use of clitic-doubling with left-dislocated bare NPs. Following Sorace (2003), Valenzuela (2005) concluded that linguistic phenomena involving the interface of syntax with semantics and discourse are prone to cause residual instabilities, in spite of having acquired the morphosyntactic and pragmatic properties of Spanish CLLDs.

Another study showing lack of native-likeness with the semantic constraints is that of Borgonovo et al.’s (2006). Via a written preference judgment task, these researchers investigated the same phenomena that Valenzuela (2005) did, but with L1 Brazilian Portuguese advanced adult learners of Spanish. The results revealed that L2 learners performed in a native-like way with left dislocated DPs, but non-native patterns arose in the form of clitic-doubling with left-dislocated bare NPs. That is, L2ers overgeneralized the use of clitics with left-dislocated bare NPs. As in Valenzuela (2005), the authors concluded that L2 learners display a native-like acquisition of the Spanish
CLLDs, but their interlanguage shows persistent difficulties in mapping morphosyntax to semantics, presumably due to the complexity of this type of interface phenomena.

To sum up, the existing evidence on the operativeness of semantic constraints on CLLDs in L2 Spanish is characterized by non-native patterns consisting in overextending the use of clitic-doubling with left-dislocated bare NPs, even at the highest levels of proficiency (i.e., near-native). The only study in which native-like performance was found (Slabakova et al., 2012) is uninformative in this respect. This is because they only experimentally manipulated cases of CLLDs with left-dislocated DPs, which necessarily requires clitic-doubling, and did not include in their task cases of left-dislocated bare NPs. From this, it is unclear whether lack of convergence merely affects the L2 acquisition of the semantic constraints on Spanish CLLDs, or whether it actually shows a deficit in the L2 grammatical representation, which makes L2ers to resort to compensatory acquisitional strategies in terms of L1 transfer, as Parodi (2010) claims.

2.4.3. Remarks on the reviewed studies and motivation for the experiments of the dissertation

Against this backdrop, a good way of determining whether or not the underlying grammatical representation of L2 Spanish CLLDs is native-like is through the examination of L2 sensitivity to syntactic island constraints involving this structure, an unexplored domain in the existing studies on the acquisition of CLLDs. The importance of testing the operativeness of syntactic island constraints results from the fact that it is a robust syntactic phenomenon that can provide positive evidence with respect to the
native-like or non-native-like status of the underlying grammatical representation of L2 Spanish CLLDs. For this reason, testing sensitivity to island constraints in L1 English of L2 Spanish is crucial to determine whether or not L1 transfer is possible to be overcome.

In English, Topicalization (*mutatis mutandis*, the morphosyntactic equivalent of Spanish CLLDs) lacks any kind of resumptive or doubling pronouns, and shows island constraint effects. In contrast, English LD (*mutatis mutandis* the morphosyntactic equivalent of Spanish HTLD) requires the co-occurrence of a resumptive pronoun with which it is linked, and does not show island constraint effects. Thus, if L1 English learners of L2 Spanish employ a transfer strategy with Spanish CLLDs as a way of compensating for an underlying impaired grammatical representation as Parodi (2010) argues, then they should show lack of sensitivity to island constraints. On the other hand, if there is no transfer, and L2 acquisition of CLLDs is native-like, sensitivity to island constraints with CLLDs should follow, regardless of the operativeness of the semantic constraints on clitic-doubling in this type of structure.

In addition to testing the persistence effects of the L1 on L2 morphosyntactic variability, and whether this phenomenon is due to an impaired underlying grammatical representation as predicted by the deficit accounts of L2 morphosyntactic variability, the use of both online (moving window paradigm) and offline (acceptability judgements) makes it possible to test to what extent L2 parsing is qualitatively different from its monolingual counterpart with non-local grammatical dependencies. Finally, CLLDs makes it possible to test non-deficit approaches to L2 morphosyntactic variability. More specifically, current evidence on the acquisition and parsing of verb-object agreement phenomena shows that there are prolonged difficulties with grammatical gender in this
domain. This is particularly difficult for L2ers whose L1s are grammatically genderless. In this respect, all the findings suggest that this type of bilinguals cannot overcome morphological underspecification issues, in accordance to the Morphological Underpecification Hypothesis (McCarthy, 2007, 2008, 2012).

For these reasons, a more comprehensive study on the morphosyntactic properties of L2 Spanish CLLD is conducted in the next Chapters. The series of experiments in this dissertation is aimed at filling this gap in the research on the L2 acquisition of Spanish CLLDs, as well as to make significant theoretical contributions within the domain of generative approaches to second language acquisition. Chapter Three presents studies on the parsing and acceptability of grammatical gender and number agreement violations between the left-dislocated DP and the clitic. Chapter Four looks at to what extent adults L2ers are sensitive to syntactic island constraint violations with Spanish CLLDs in both parsing and acceptability.
CHAPTER 3:
THE PARSING OF GRAMMATICAL FEATURE MISMATCHES IN L2 SPANISH CLLD

3.1. Introduction

The inflectional variability displayed by adult second language (L2) speakers has been extensively studied within the generative approach to second language acquisition (for a review, see White, 2003). Particular focus has been put on the variability related to L2 agreement relations involving grammatical features that are absent in the first language (L1) of the acquirer (Franceschina, 2005; Hopp, 2007; White et al., 2004; among others). A well-studied type of L2 agreement relations is gender agreement involving determiners, nouns, and adjectives (e.g., Montrul, Foote, and Perpiñán, 2008; White and Bruhn de Garavito, 2002).

In addition to acquiring the gender class of nouns and their morphological realization in languages with gender classification systems, L2 acquirers have to implement syntactic computations so that the gender agreement relations are established and these relations are spelled out in the morphology component through the insertion of vocabulary items.\(^\text{11}\) Existing evidence on how these phenomena are acquired and parsed in the nominal domain has revealed that it is a particularly difficult task for L2 learners whose L1s are grammatically genderless (e.g., Franceschina, 2005; White et al., 2004).

Nevertheless, native-likeness is possible and is highly modulated by both learner internal factors (e.g., proficiency level: Hopp, 2010; Sagarra and Herschensohn, 2010; \(^\text{11}\) See the Background section below for details about the syntactic operations involving agreement and their morphological realizations.)
WM: Keating, 2010; Sagarra and Herschensohn, 2010; automatization in the target language: López Prego and Gabriele, 2014), and learner external factors (e.g., task demands: Hopp, 2010; animacy: Sagarra and Herschensohn, 2011; Shimanskaya and Slabakova, 2014). This difficulty contrasts with the relative ease with which grammatical number is parsed in the nominal domain by L2 learners whose L1s instantiate this feature (e.g., Sagarra and Herschensohn, 2010).

Against this background, there is still a wide range of grammatical relations involving gender and number agreement outside the nominal domain which remains understudied in SLA. One such grammatical relation is verb-object grammatical agreement. This type of agreement is difficult even at advanced proficiency levels (e.g., Renaud, 2009; 2011; Tremblay, 2005). As objects clitics are inflectional agreement morphemes spelling out verb-object agreement relations (e.g., Franco, 2000; Suñer, 1988; among others), it is not surprising that their L2 acquisition and parsing are also difficult. In particular, a growing body of evidence has found a systematic trend of morphological feature errors with object clitics even at advanced levels of proficiency (e.g., McCarthy, 2008; Santoro, 2007).

Thus, whereas the syntax of object clitics is acquired and parsed in a native-like fashion as L2 proficiency increases (e.g., Hoover and Dwivedi, 1998), there is a protracted tendency to systematically produce and accept morphological default errors (see next section for a description of grammatical gender and number agreement, and its morphosyntax in Spanish). This tendency leads to feature underspecification errors, but not feature clash errors concerning grammatical gender and number in object clitics (e.g., McCarthy, 2008). Feature underspecification errors consist in resorting to the default
gender and number forms (e.g., masculine and singular in Spanish\textsuperscript{12}, respectively in order to establish grammatical gender and number agreement between a noun of the non-default gender and / or number class and the verb. In the case of clitics, this results in the use of the masculine and / or singular object clitics as the morphological spell-outs of grammatical gender and number agreement relations between the verb and the object (for further details, see McCarthy, 2008). Feature clash errors, on the other hand, result in the use of non-default forms (feminine and plural in Spanish) in order to establish grammatical gender and number agreement between a noun of the default gender and/ or number class and the verb. Nevertheless, this tendency to systematically produce and accept morphological default errors seems to be overcome at an advanced level of proficiency when it involves a grammatical feature present in the L1 of the acquirers (e.g., number in the case of the English natives in McCarthy’s (2008) study).

More recent research on the parsing of object clitics provides us with further evidence about the persistent difficulties in this domain. On the one hand, data from events-related potentials (ERPs) reveal that even L1 English advanced speakers of L2 Spanish can achieve native-like sensitivity to number agreement violations, but not to gender agreement violations (Rossi, Kroll, and Dussias, 2014). On the other hand, lack of online sensitivity to gender feature mismatches in L1 English advanced speakers of L2 French has also been reported (Shimanskaya and Slabakova, 2014). The study by Shimanskaya and Slabakova (2014) tested L2 sensitivity to agreement mismatches between a third person singular accusative clitic and the agreeing DP via a behavioral task employing self-paced reading. They found native-like patterns when the agreement

\textsuperscript{12} For an analysis of masculine as the default form in gender, see Harris (1991); for an analysis of singular as the default form in Spanish number, see McCarthy (2007).
process involved an animate singular DP, but not when it involved a human singular DP. These patterns were analyzed by Shimanskaya and Slabakova (2014) as evidence showing that L2 learners relied on their L1 to acquire and process the clitics in the L2, as in English there must be a gender match between third person accusative pronouns (e.g., him, her) and human DPs functioning as their antecedents (e.g., the prince, the princess). The findings of this study suggest that L2 bundles of features that are not assembled in the same way in the L1 of the learner are particularly difficult to acquire and compute in real time in this type of linguistic domain. Finally, Coughlin and Tremblay (2013) studied the online processing of number agreement in L2 French clitic-doubled left dislocations (CLLDs). They found that L1 English advanced learners of L2 French showed native-like sensitivity to number agreement violations in both local and non-local grammatical dependencies, and that this process is modulated by working memory.

In sum, the existing studies on the L2 acquisition and parsing of grammatical gender and number relations involving verb-object agreement have consistently found persistent difficulties. These difficulties result in in adopting default gender forms at both the performance and representational levels, and protracted insensitivity to detecting computational grammatical gender mismatches in real time. These difficulties are particularly long-lasting especially in the case of grammatical features not instantiated in the L1 of the acquirers.

In the light of these findings, this study seeks to expand the current understanding of verb-object grammatical relations by examining the L2 acquisition and processing of grammatical gender and number agreement involving Spanish clitic-doubled left dislocations (CLLDs) in L1 English learners of L2 Spanish. CLLDs involve grammatical
gender, number, case, and person agreement between a verb and an object, whose grammatical spell-out is the clitic (López, 2009; among others). Specifically, the study explores (1) the extent to which grammatical features underlying these verb-object agreement relations in native systems are also operative in L2 systems in real time; and (2) the effect of L1-L2 overlap in modulating the processing of these phenomena. In the present study, these issues are explored by implementing online (self-paced reading task with comprehension questions) and offline (responses to acceptability and comprehension questions) tasks. The findings are informative for current debates on theories of L2 acquisition and processing. This is because they reveal that L2 learners do not have an underlying impaired morphological representation as posited by McCarthy (2007, 2008, 2012). Instead, their morphological representation is native-like and can compute syntactic and morphological operations in real time as native speakers do. Moreover, they are also informative about how this type of dependency is parsed in a Romance language like Spanish for which there is few psycholinguistic research (only three studies: Coughlin and Tremblay, 2013; Leal Méndez, Farmer, and Slabakova, 2014; Pablos, 2006).

The Chapter is structured as follows: section two includes a review of the main and prior findings conducted on the L2 acquisition and processing of grammatical gender and number agreement, and the extent to which these patterns support different predictions of current SLA generative approaches; then, it presents the linguistic phenomenon explored in this study, CLLDs, from theoretical and psycholinguistic perspectives, as well as a brief review of previous research on the L2 acquisition of CLLDs. Section three contains the research questions of the study, the predictions
advanced based on existing evidence, and a detailed description of the study. Section four summarizes the results, and Section five discusses the main findings of the study, and concludes with final remarks.

3.2. Background

3.2.1. The morphosyntax of grammatical gender and number in Spanish

Spanish has two gender (masculine and feminine), and two number (singular and plural) classes, which are borne by animate (hermano “brother-MASC”, hermana “syster-FEM”, hermanos “brother-MASC-PL”, hermanas “syster-FEM-PL”) and inanimate (libro “book-MASC”, libros “book-MASC-PL”, libra “pound-FEM”, libras “pound-FEM-PL”). According to the distributional frequency patterns reported by Teschner and Russell (1984), 99.8% of Spanish feminine nouns end with –a, the most common (transparent) ending indicating feminine gender, whereas the most common (transparent) ending for masculine nouns, 96.3%, is –o.¹³ The transparent plural morpheme attached to nouns is –s for nouns ending in vowels (e.g., hermano-s “brother-MASC-PL”), and the allomorph –es is attached to nouns ending in consonants (e.g., red-es “net-FEM-PL”); few nouns lack overt realization of the plural morpheme (e.g., las tesis “the-FEM-PL dissertation-FEM-PL”).

¹³ There other, however, 600 nouns that do not follow these noun endings. See Harris (1991) for further details about Spanish nouns, their vowel endings, and the gender classes in Spanish. As this paper explores the parsing of transparent grammatical gender and number, no further information is provided concerning non-transparent gender and its morphonological realization variability.
In accordance with current generative syntactic theory (e.g., Carstens, 2000, 2003; Chomsky, 2000, 2001; Pesetsky and Torrego, 2004), grammatical gender and number agreement is a morphosyntactic feature valuing process between nouns and other phrase constituents (e.g., articles, adjectives, verbs, etc.). For these approaches couched within the Minimalist Program (Chomsky, 1995; and much subsequent work), linguistic competence involves knowledge of lexical categories (noun, verbs, etc.), and functional categories (determiner, tense, mood, etc.) which instantiates a set of functional features such as gender, number, person, etc. These features can be interpretable (iFeature) or uninterpretable (uFeature) depending on whether they are semantically interpretable or not. For instance, in the case of grammatical number agreement, there is an agreement operation between a noun like *carros* “car-PL” containing an interpretable number feature (e.g., [iNumb: PL], and another constituent like an adjective (*rojos* “red-PL”) bearing an uninterpretable number feature (e.g., [uNumb: PL]). The agreement operation is a syntactic computation through which the uninterpretable number feature in one constituent, the probe, (e.g., adjective) is valued and deleted by the interpretable number feature of the noun, the goal, like in (1).

(1) \[
\begin{array}{c}
[N, \text{CAR, iNumb: PL}] \quad [\text{Adj, RED, uNumb: PL}] \\
\mid \quad \text{Agree} \\
\end{array}
\]

Following the Distributed Morphology (DM) framework (Halle and Marantz, 1993; Harley and Noyer, 1999), in addition to these syntactic valuing computations involving syntactic nodes, which are necessary for the derivation to converge at the
Conceptual-Intentional interface, these syntactic terminal nodes must be morphophonologically instantiated in the morphology component after the syntactic Spell-Out. Thus, once the syntactic derivation goes to the Phonological Form (PF), Lexical Insertion takes place via spell-out computations in morphology.\(^{14}\) In this respect, when the morphology component gets the syntactic terminal nodes composed of bundles of features as in (1), the lexical items *carros* and *rojos* are inserted after competing with similar forms (e.g., *rojo* “car-SG”).\(^{15}\) As they are the best match, they win the competition and are the morphophonological instantiations of those terminal nodes.

In systems like Spanish, where there are two member classes for grammatical gender and number, a theoretical framework like the Minimalist Program (Chomsky, 1995) makes it possible to adopt an underspecified or default form when it comes to determining the bundle of features representing gender and number. In Spanish, masculine (e.g., \([N, \text{CAR}, \text{iGend: } \emptyset]\)) and singular (e.g., \([N, \text{CAR}, \text{iNumb: } \emptyset]\)) are the default forms for grammatical gender and number borne by the lexical and functional categories (for gender, see Harris, 1991; for number, see McCarthy, 2007). In order to overcome possible default errors in output (e.g., *casa rojo* “house-FEM-SG red-MASC-SG”) in which the underspecified uninterpretable gender feature of the goal is valued by the interpretable gender feature of the feminine noun, the morphology component applies

---

\(^{14}\) *Lexical Insertion* is a morphological spell-out computation through which lexical items are inserted in the corresponding terminal syntactic node. The terminal syntactic node is comprised by bundles of grammatical features with which the lexical item has to be compatible. This operation takes place once the syntactic operation is Spelled-Out and sent to the morphology component on its way to PF (for further details, see Harley and Noyer, 1999; among others).

\(^{15}\) In the DM framework, two lexical items (e.g., *rojo* and *rojos*) compete for insertion in the corresponding terminal node, and the one that best matches the features of the syntactic terminal node wins and is inserted. In the case at hand, *rojos* wins because it is compatible with all the features of the terminal and not a subset of them. See below for further details, and Halle and Marantz (1993; among many others).
a Subset Principle (Halle, 1997), which constrains spell-out computations by choosing the more specified form during lexical competition. By doing so, it prevents the insertion of default forms when the marked ones should be inserted.

From a psycholinguistic perspective, the existence of grammatical gender and number agreement is not merely a series of syntactic and morphological computations. Instead, these types of agreement work as facilitating cues in language processing. Specifically, agreement congruence (e.g., *carros rojos*) speeds up the processing of agreeing constituents in Romance languages, whereas incongruence (e.g., *carros rojas*) results in slowdowns (e.g., Antón-Méndez et al., 2002; Cacciari and Padovani, 2007).

### 3.2.2. Current generative approaches to L2 inflectional variability

The type of asymmetries in L2 inflectional variability mentioned in the Introduction can be accounted for in different ways within the generative framework. Some researchers have proposed that inflectional variability results from the impossibility of acquiring new grammatical features in the L2 due to maturational constraints (e.g., Franceschina, 2005; Hawkins and Franceschina, 2004). For this reason, L2 grammatical features that are not available in the L1 cannot be used in syntactic operations like Agree. During the last decades, this idea about the unavailability of certain grammatical features during the acquisition of a second language has shaped different hypotheses such as the Representational Deficit Hypothesis, or RDH, (Hawkins, 2009). These hypotheses argue in favor of the existence of a representational deficit such that L2 development is not constrained by an innate domain-specific linguistic mechanism; instead, L2 development
takes place by implementing domain-general cognitive mechanisms that utilize statistical information about the input that compensate for lack of categories made available by the faculty of language (Hawkins, 2009, p. 85). From this, inflectional variability is accounted for in terms of frequency and memory-driven activation levels affecting the access to statistical information (Hawkins, 2009). For instance, the fact that L2 systems are characterized by non-native-like overacceptance and overuse of default forms of L2 grammatical features that are absent in the L1 of the late acquirers is a consequence of those forms being more frequent in the L1 input, which leads to lower levels of memory-driven activation.

In contrast, other researchers have put forward that all grammatical features are acquirable by late L2 learners, the acquisition process being constrained by the same innate domain-specific mechanisms involved in L1 acquisition, which are provided by the faculty of language (Dekydstpotter and Renaud, 2009, 2014; McCarthy, 2008; Prévost and White, 2000, Schwartz and Sprouse, 1994, 1996; among others). For these approaches, inflectional variability is the consequence of different factors. For the Missing Surface Inflectional Hypothesis, or MSIH, (Prévost and White, 2000), the underlying syntactic representations involved in grammatical agreement relations are native-like, since all features participate in grammar operations. However, mapping issues arise in the form of adopting default forms when computing morphological spell-outs of the syntactic operations under communicative pressures on output. For this reason, variability is confined to production, not comprehension. Nevertheless, for the Morphological Underspecification Hypothesis, or MUH, (McCarthy, 2008, 2012), L2 inflectional variability is a reflex of non-native-like impoverished feature representations
compromising both production and comprehension. The impoverished representations lie in the morphological component, and consist in adopting default forms during morphological spell-out computations (i.e., during the insertion of vocabulary items to syntactic terminal nodes), especially with L2 grammatical features that are absent in the L1. Finally, for the Parser-as-Language Acquisition Device Hypothesis, or P-LADH (Dekydstpotter and Renaud, 2009, 2014), inflectional variability is an epiphenomenon of the parsing constraints on the feature (re)assembly process taking in place in second language acquisition (Lardiere, 2005, 2009), L2 grammatical features that are absent in the L1 being more difficult to acquire that those that are already instantiated in the L1. Specifically, the P-LADH advances that the human language parser drives the feature (re)assembly process, which involves structure generation constrained by domain-specific syntactic computations such as Agree, as well as licensing by a lexicon structured in terms of features. As the parser as a language acquisition device (PLAD) instantiates changes to the feature matrices of lexical items in response to L2 input licensing failures, different stages of L2 development occur, giving rise to inflectional variability. This variability is overcome with higher L2 proficiency and higher automatization (Hopp, 2010; Segalowitz and Segalowitz, 2003).

In the next section, the existing evidence of the L2 acquisition and parsing of grammatical gender and number is presented, and the predictions of the previously reviewed acquisition and parsing hypotheses on L2 inflectional variability examined in the light of those findings.

3.2.3. The L2 acquisition and parsing of grammatical gender and number agreement
Current research on the adult L2 acquisition and parsing of grammatical gender and number has shown mixed findings with regard to the predictions of the hypotheses reviewed in the previous sections. On the one hand, approaches that account for inflectional variability in terms of representational deficits like the RDH have been unsupported by recent studies, which reveal the existence of parsing patterns consistent with the implementation of linguistic domain-specific online computations involving valuation of features absent in the L1 of the L2 acquirers (e.g., gender: Dekeydspotter and Renaud, 2009; Renaud 2009, 2011, 2014; Hopp, 2013).

Instead of being a consequence of an underlying grammatically impaired representation characterized by lack of grammatical features not instantiated in the L1 of the acquirers, L2 inflectional variability concerning grammatical gender and number agreement has been shown to be modulated by the hierarchical and linear distance between the agreeing constituents (e.g., Keating, 2009, 2010), proficiency level (Sagarra and Herschensohn, 2010), task demands (Hopp, 2010), working memory (Keating, 2010; Sagarra and Herschensohn, 2011), L1 transfer (Shimanskaya and Slabakova, 2014), animacy (Sagarra and Herschensohn, 2013), saliency (Renaud, 2014), and type of constituent (e.g., determiners or adjectives in the nominal domain: Bruhn de Garavito and White, 2002). Finally, another possible reason underlying L2 inflectional variability may result from task instructions. According to Roberts (2013), once proficiency and cognitive capacity (e.g., working memory) have been controlled for, the extent to which L2 parsing lacks grammatical details depends on whether the task (e.g., a self-paced
reading task) requires participants to pay attention to morphosyntactic details in the incoming linguistic input.

Studies explicitly comparing the processing of grammatical gender and number have found in both online and offline tasks that grammatical number tends to be less problematic for adult L2 learners whose L1s are genderless, regardless of their proficiency levels (behavioral data: Sagarra and Herschensohn, 2010, 2011; electrophysiological data: Gillon Dowens et al., 2010; Gillon Dowens, Barber, Guo, Guo, and Carreiras, 2011). In contrast, grammatical gender is particularly difficult, and variability persists even at advanced levels of L2 proficiency and it is found in both comprehension and production (e.g., Bruhn de Garavito and White, 2002; Franceschina, 2005; McCarthy, 2008; White et al., 2004). Along these lines, based on the effects of working memory, it has been advanced that grammatical gender agreement consumes more attentional resources than number agreement (Sagarra and Herschensohn, 2010). It is unclear whether this is an effect of lack of L1-L2 overlap with regard to grammatical gender and number in the L1 of the L2 learners, or if this asymmetry may follow from the different linguistic nature of the phenomena at hand. Under a lexical account (gender is an inherent feature of nouns), gender disagreement forces the parser to return to the lexical identification stage, but number failure merely requires checking of the final processes of syntactic recognition (number is affixal) (e.g., Domínguez et al., 1999; Igoa et al., 1999). Under a grammatical account (gender is more irregular), gender’s large variability (many words have irregular endings) makes it more demanding than more regular number agreement (Hernández et al., 2007).16

---

16 We use the terms *lexical* and *grammatical* to refer to these accounts in order to have consistency with the terminology employed by previous studies on the processing of gender and number agreement (for
Taken together, these findings are compatible with hypotheses on L2 acquisition and parsing for which all the grammatical features are available during SLA (e.g., Dekydtspotter and Renaud, 2014; Lardiere, 2009). Nevertheless, it is worth pointing that the extent to which L2 impoverished morphological representations as conceived by the MUH can finally be overcome remains to be further explored (e.g., gender and number: McCarthy, 2008; gender: Renaud, 2009, 2011). This is because all the evidence showing native-like acquisition and parsing of grammatical gender and number agreement comes from the nominal domain. In contrast, when evidence from the verbal domain is taken into account, research reveals non-native-like patterns consistent with the MUH (McCarthy, 2008).

3.2.4. The linguistic phenomenon: Spanish CLLDs

Following López (2009), CLLDs constitute a grammatical dependency between the left-dislocated DP –e.g., las camisas, and the clitic as in (2).

(2) El criado dice que las camisas\textsubscript{ACC,FEM,PL} las\textsubscript{ACC,FEM,PL} lavaron ayer por la tarde.

The butler says that the shirts\textsubscript{ACC,FEM,PL} they CL\textsubscript{ACC,FEM,PL} washed yesterday by the afternoon.

‘The butler says that, the shirts, they washed yesterday afternoon.’

instance, see Sagarra and Herschensohn, 2010). Technically speaking, both accounts would be lexical. In the first case (lexical account), it refers to the fact that gender is part of the lemma (Jiang, 2000), whereas in the second case (grammatical account) it refers to the fact that the morphophonological realization of gender is more complex than the morphophonological realization of number.
In this structure related to direct or indirect objects, the clitic is the grammatical spell-out of an agreement relation between the left-dislocated DP and the verb, which involves grammatical gender, person, number, and case (López, 2009). As illustrated in (3), the direct object *las camisas* is first merged in [Comp, VP] and then undergoes successive-cyclic movement to the clause left periphery, [Spec, FinP], via [Spec, vP]. It is in the [Spec, vP] position in which the DP enters into an agreement relation with the verb before continuing its way to the left periphery.

(3)

El criado dice que [FinP las camisas [TP las lavaron [V P [las camisas [ACC.FEM.PL las [ACC.FEM.PL lavaron [V P lavaron las camisas]]]]]]].

In addition to landing in the left-periphery of the embedded clause, the left-dislocated DP can do so in the left-periphery of matrix clause as in (4).

(4) Las camisas el criado dice que [FinP las camisas [TP las lavaron [V P las camisas [ACC.FEM.PL las [ACC.FEM.PL lavaron [V P lavaron las camisas]]]]]].

According to López (2009), evidence supporting that left-dislocated DPs are first merged within the VP comes from their sensitivity to syntactic island constraints such as the Relative Clause Island Constraint, or RCIC, (Ross, 1967; among others) as in (5) (López, 2009).

---

17 See Suñer (1988) and Franco (1993, 2000), among others, for further details about how the verb-object agreement takes place and the role of clitics.
(5)  * A los empleados el empresario [RC que los despidió a los empleados] invierte en la construcción.

To the employees the businessman that CL_{ACC,MASC,PL} fired invests in the construction.

‘To the employees the businessman that fired invests in construction.’

Another particular characteristic of Spanish CLLDs is the existence of semantic restrictions on the clitic doubling of definite NPs and non-definite (bare) NPs. Whereas definite NPs as el vino in (6) have to be doubled by an overt clitic, bare NPs such as vino in (6c) have to be doubled by a null clitic (López, 2009). Otherwise, the sequences are anomalous as in (6b) and (6d).

(6)  a. Los viejitos dicen que el vino sólo lo toman a la noche con la comida.

The old men say that the wine_{ACC,MASC,SG} only CL_{ACC,MASC,SG} drink to the night with the food.

‘The old men say that, the wine, they just drink at night with the meal.’

b. * Los viejitos dicen que el vino sólo toman a la noche con la comida.

c. Los viejitos dicen que vino sólo toman a la noche con la comida.

‘The old men say that, wine, they just drink at night with the meal.’

d. * Los viejitos dicen que vino sólo lo toman a la noche con la comida.

In addition to these morphosyntactic characteristics, CLLDs are discourse-linked. That is, they mark topicalization: a phrase that has been previously mentioned is
reintroduced in the discourse, and occurs in the left periphery of the clause (López, 2009; among others).

3.2.5. Native parsing of CLLDs

Psycholinguistic evidence on the processing of Spanish CLLD has shown that the dependency between the DP and the clitic is parsed in the same way as long-distance grammatical dependencies such as filler-gap dependencies or anaphora-antecedent dependencies (Leal Méndez, Farmer, and Slabakova, 2013; Pablos, 2006). That is, parsing CLLDs consists in conducting an active search for a matching clitic in the sentence input. In order to do so, the process involves maintaining the CLLD in working memory until the parser finds the clitic with which the dependency formation is established. In this respect, the parsing algorithm has such a projection power when generating these structures that it posits a clitic position with its set of grammatical features (i.e., case, number, person, and gender) before encountering the overt realization of the clitic.\textsuperscript{18} Overall, these findings are consistent with previous research on the ways in which the parser establishes long-distance dependencies between wh-fillers and gaps (Aoshima, Phillips, and Weinberg, 2004; Crain and Fodor, 1985; Frazier, 1987; Lee, 2004; Stowe, 1986). Moreover, Pablos’ (2006) results fit well with fully-incremental models of sentence parsing. These models argue that the parser uses grammatical

\textsuperscript{18} Observe that this a difference between agreement phenomena within the nominal domain and those within the verbal domain. \textit{A priori}, the congruence effect reported above for the processing of gender and number agreement in the nominal domain is compatible with the aforementioned projection power of the parsing algorithm. \textit{Prima facie}, it should facilitate the processing of grammatical features, but the existing evidence points out in the opposite direction. The degree to which this is a factor to take into account in L2 acquisition and parsing of grammatical gender and number agreement should be addressed empirically.
information as case marking, word order, etc. in order to build phrase structure by
identifying arguments and connecting them to the sentence being processed in an
anticipatory way before encountering the verbal predicate (Gorrell, 1995; Lombardo and
Sturt, 2002; Stabler, 1994; Sturt and Crocker, 1996). Evidence on parsing number
agreement in French CLLD is consistent with these claims (Coughlin and Tremblay,
2013). Further evidence obtained via Event-Related Potential (ERPs) corroborates the
grammatical nature of the type of dependency established between these two constituents
in native Spanish (Santesteban, Zawiszewski, Erdocia, and Laka, 2016). A biphasic
component –LAN and P600– has been obtained on native online sensitivity to
grammatical gender and number violations between the CLLD and the clitic in Spanish.
To date, no other behavioral or electrophysiological experiments have investigated the
processing of CLLDs.

3.2.6. L2 acquisition and parsing of CLLDs

Existing evidence on the acquisition and parsing of CLLDs comes mostly from
offline comprehension and production studies, which found a persistent difficulty with
Spanish CLLDs even at near-native levels of proficiency (e.g., L1 English near-natives of
L2 Spanish: Valenzuela, 2005; L1 Brazilian Portuguese advanced speakers of L2
Spanish: Borgonovo et al., 2006; L1 English advanced speakers of L2 Spanish: Parodi,
2010). Specifically, L1 English advanced and near-native speakers of L2 Spanish do not
comply with the semantic restrictions constraining the clitic doubling of left-dislocated
bare NPs. Instead of employing null object clitics as in (6c), their production and
comprehension is characterized by allowing overt object clitics to double left-dislocated bare NPs as in (6d). Interestingly, in L2 Spanish speakers of object-drop languages such as L1 Chinese, the patterns are the opposite; namely, L1 Chinese low and intermediate learners of L2 Spanish display a systematic overuse of null object clitics, regardless of the aforementioned semantic restrictions (Cuza, Pérez-Leroux, and Sánchez, 2013). This series of difficulties contrasts with the fact that L1 English advanced learners of L2 Spanish can perform in a native-like way in offline tasks eliciting data on overt clitics doubling specific left-dislocated DPs as in (6a) (e.g., Slabakova, Kempchinsky, and Rothman, 2012), and display native-like patterns when processing them along the lines of what Pablos (2006) found for Spanish natives (Leal Méndez et al., 2013). In languages that do not display these restrictions on clitic-doubling in terms of the alternation null / overt that exists in Spanish (e.g., Bulgarian, French), L1 English speakers of L2 Bulgarian perform in a native-like way (e.g., L1 English highly-advanced speakers of L2 Bulgarian: Slabakova and Ivanov, 2011). From these patterns, it seems that the existence of the semantic restrictions in Spanish CLLDs may cause particular difficulties to L2 learners due to certain degree of optionality attested in the null or overt status of the clitic doubling the left-dislocated DP (for a discussion, see Slabakova and Ivanov, 2011). Finally, the only existing study on online sensitivity to grammatical agreement violations is that of Coughlin and Tremblay (2013), who found that L1 English advanced speakers of L2 French are sensitive to grammatical number agreement violation, and that this process is modulated by working memory. No studies have examined the online sensitivity to grammatical gender in L2 CLLDs so far, nor simultaneously manipulated both grammatical gender and number in the same sample pool.
3.3. The study

3.3.1. Research questions

Existing evidence on the L2 acquisition and parsing of morphosyntactic phenomena involving verb-object agreement is particularly challenging for late L2 learners. Specifically, L2 systems exhibit impoverished morphological representations, which results in adopting default forms during morphological spell-out computations, and persistent L1 influences during L2 parsing. This study sheds light on the extent to which late second language learners can acquire and parse grammatical features that are absent in their L1 systems, overcome the aforementioned impoverished morphological representations and L1 online transfer involving verb-object agreement, and whether or not the type of task (reading sentences for comprehension vs. reading sentences for determining grammatical acceptability) affects the processing routes.

In order to do so, it examines the online and offline sensitivity of advanced adult English learners of Spanish to online grammatical gender, and number mismatches between left-dislocated DPs and clitics in sentences with CLLDs. The study utilizes online and offline experimental procedures (the moving window paradigm and grammatical acceptability questions) to investigate these phenomena. More precisely, two self-paced reading tasks were conducted: one with comprehension questions, and another one with acceptability questions. The specific research questions of the study are:
1. Can L2 speakers overcome non-native-like L2 inflectional variability involving grammatical gender and number agreement in the verbal domain?

   Based on previous research (e.g., McCarthy, 2008; Rossi et al., 2014), it is predicted that L2 speakers will perform in a non-native-like way by showing no sensitivity to grammatical gender agreement violations. As shown in comprehension and production studies (e.g., Shimanskaya and Slabakova, 2014; Rossi et al., 2014), difficulties should be found with the forms of L2 grammatical features not instantiated in the L2 of acquirers.

2. Does the existence of a grammatical feature (e.g., number) in the L1 speakers of L2 Spanish have an impact on their online sensitivity to gender, and number agreement mismatches in Spanish CLLDs?

   According to existing evidence (e.g., Shimanskaya and Slabakova, 2014; Rossi et al., 2014), it is predicted that grammatical number will be parsed in a more-native-like way since it is an already existing feature in the L1 of the L2 acquirers. However, non-native-like patterns are expected to arise with regard to sensitivity to grammatical gender agreement mismatches. This is because grammatical gender is a feature absent in the L1 system of the acquirers, and having underspecification errors have been shown to be particularly persistent (e.g., McCarthy, 2008). Finally, the fact that gender seems to be more cognitively taxing and grammatically complex (see the background section) predicts that L2 learners should experience more difficulties processing gender than number.
3. Are there differences in the sensitivity to grammatical gender, and number agreement mismatches depending whether the task asks subjects to read for comprehension of for paying attention to morphosyntactic detail? Based on Roberts (2013), it is predicted that the self-paced reading task that requires participants to provide an acceptability judgement on the read sentences will show more native-like parsing patterns evincing sensitivity to both grammatical gender and number agreement mismatches than the self-paced reading task asking participants to answer comprehension yes-no questions about the read sentences.

3.3.2. Participants

The sample pool consisted of 82 participants: 54 Spanish native speakers (data collected in a university in Spain), and 28 advanced adult English learners of Spanish (data collected in a university in the United States). The Spanish natives were, born and raised in Spain, and the English learners in the United States. The Spanish natives had some knowledge of English, and the English learners had no knowledge of other languages. All participants were homogeneous in terms of age (18-40 years old, because WM decays after age 40 (Park et al., 2003)), and education (at least high school degree). In addition, one one-way ANOVA showed no differences between the two groups on accuracy on the comprehension questions of the first self-paced reading task, $F(1, 2622) = 0.002, p = .966$ (natives: $M= 86.17$ (SD: 34.53); L2 learners: $M= 87.61$ (SD: 32.96)) .
From this, both groups understood the sentences of the task in a non-significantly different way.\(^{19}\) Finally, all the learners started learning Spanish after age 11, once their L1 syntax had been established (Herschensohn, 2007).

3.3.3. *Materials and procedure*

Participants completed a Spanish proficiency test (learners only, 25 minutes), two self-paced reading tasks (30 minutes), a clitic cluster test (10 minutes), and a language background questionnaire (10 minutes), in this order.

3.3.3.1. *Language background questionnaire*

A language background questionnaire was administered to all participants in their L1. This questionnaire asked about age, age of acquisition of other languages, living abroad experience, and functional knowledge of other languages (see Bonnet, 2002, for evidence that self-evaluations can correlate with L2 proficiency).

3.3.3.2. *Spanish proficiency test (learners only)*

To assess Spanish proficiency, the learners completed an adapted version of the *Diploma de Español como Lengua Extranjera* (DELE, “Diploma of Spanish as a Foreign Language”), utilized in many L2 studies (e.g., Montrul and Slabakova, 2003; Slabakova et al., 2012; Valenzuela, 2005). Following Slabakova et al. (2012), the learners needed to demonstrate advanced L2 proficiency and score between 40 and 47 points out of 50 in order to be included in the sample.

3.3.3.3. *Self-paced reading tasks*

\(^{19}\) In the Results section groups’ accuracy on the acceptability questions is reported. The accuracy on comprehension was reported here in order to show that both groups were homogeneous with regard to comprehension.
Participants completed two segment-by-segment non-cumulative self-paced reading tasks adapted from Just et al. (1982). The task was presented using E-Prime 2.0 on PC computers with 16-font Arial black characters on a white background in a left-to-right display. There were two self-paced reading tasks: one with comprehension questions (Comprehension SPR, henceforth) and one with acceptability questions (Acceptability SPR, henceforth).

3.3.3.1. Comprehension self-paced reading task

In this SPR task there were 100 sentences: 4 practice, 64 filler, and 32 experimental (8 per condition). The filler and experimental sentences were manually distributed in four blocks of sentences, following the standard Latin square design employed in psycholinguistic language processing studies. Each block had 16 filler sentences and 8 experimental sentences, 2 per condition. Finally, both the order of the blocks and the order of the sentences within each block were randomized. This randomization system was implemented to minimize the probabilities that two experimental sentences of the same condition would appear consecutively. In addition to this randomization system, other measures adopted to divert participants from discovering the aim of the study and focusing on the target structure include adding two thirds of the sentences as fillers, using a similar length (8-15 words) and vocabulary for all sentences (fillers and experimental).

The experimental sentences had four conditions based on the relation between the clitic and the CLLD:

(7) Gender, number and case match

El supervisor dice que las máquinas las repararon ayer por la mañana.
‘The supervisor says that the machines_{ACC,FEM,PL} \text{CL}_{ACC,FEM,PL} repaired yesterday morning.’

(8) Gender mismatch

El supervisor dice que las máquinas los repararon ayer por la mañana.

‘The supervisor says that the machines_{ACC,FEM,PL} \text{CL}_{ACC,MASC,PL} repaired yesterday morning.’

(9) Number mismatch

El supervisor dice que las máquinas la repararon ayer por la mañana.

‘The supervisor says that the machines_{ACC,FEM,PL} \text{CL}_{ACC,FEM,SG} repaired yesterday morning.’

(10) Case mismatch

El supervisor dice que las máquinas les repararon ayer por la mañana.

‘The supervisor says that the machines_{ACC,FEM,PL} \text{CL}_{DAT,PL} repaired yesterday morning.’

The case mismatch condition was included in the experiment in order to control for any potential underlying effects resulting from leísmo (i.e., the use of dative object pronouns \textit{le} / \textit{les} instead of their accusative counterparts in some varieties of Spanish) in natives and L2 speakers. Experimental sentences had a 12- to 13-word length, had 2- to 4-syllable accusative inanimate CLLDs with transparent gender and plural number in the embedded clauses. All the matrix sentences were built by utilizing human masculine singular subjects in order to avoid any potential pronoun-antecedent coreference between the clitics and the matrix subjects. Furthermore, report verbs such as ‘decir’ [say] introduced
the embedded clause containing the CLLDs and the clitics. All embedded verbs were 3-to 4-syllable long, were regular and in the third person plural of the preterit tense with null subjects. Furthermore, embedded verbs were followed by adverbs of time like ‘ayer’ [yesterday] and prepositional phrases like ‘por la mañana’ [in the morning]. Finally, all the sentences had questions assessing comprehension in order to make sure that subjects understood the sentences and were paying attention to the task.

Only plural feminine CLLDs were used in the experimental sentences for the following reasons. First, including other variables such as differences in processing masculine gender versus feminine gender goes beyond the relevant goal of this study; namely, whether or not L2 learners are sensitive to gender and number mismatches in the case of structures involving CLLDs and clitics. Moreover, including only plural feminine CLLDs allows us to specifically examine sensitivity to gender and number default errors without losing statistical power, or having an extremely long experiment that may exhaust participants. Second, as shown by previous research (McCarthy, 2008), the persistent difficulty at advanced levels is confined to default errors. In this respect, the feminine form would be the most marked form, as masculine is the default. Third, only plural feminine CLLDs were included in order to avoid parsing misanalysis asymmetries caused by grammatical category differences between the 3rd person masculine singular accusative clitic (lo), and the other 3rd person accusative clitics (los, la, los), which are also articles in Spanish. Hence, using plural feminine CLLDs makes it possible to only include clitics that also are articles. From this, any potential parsing difference cannot be attributed to the grammatical category ambiguity between these clitics and the clitic lo. Instead, it should be attributed to gender and number agreement mismatches per se.
Along these lines, as Rossi, Gugler, Friederici, and Hahne (2006) showed that adult L2 learners treat simultaneous gender and number agreement violations as semantic and not grammatical, no such agreement violations are included in the experimental design.

Both the experimental and filler sentences were preceded by a lead-in sentence, as in (11) so that the introduction of a topicalized constituent was found natural in the experimental context. The lead-in sentences contained impersonal matrix verbs with null expletive subjects (e.g., ‘parece’ [it seems]) and an embedded clause in which the topicalized DPs were introduced.

(11) Parece que las máquinas no fueron reparadas.
    ‘It seems that the machines were not repaired.’

The procedure for the task was the following. Participants read Spanish sentences silently on a computer screen, segment-by-segment as in Hopp (2009, 2010; among others) in order to preserve the prosodic unit between the clitic and the verb, and answered yes-no comprehension (interpretation) questions (please, see Table 1 below in order to see the sentence segments). They were asked to read the sentences at their normal pace. Each sentence began with a 500-ms fixation marker (+) that appeared at the center of the screen, followed by dashes (dashes help make reading more natural). Each dash represented a letter, and words were separated with spaces to present the visible characters normally available during natural reading. The first time participants pressed the space bar key, the first segment of the sentence appeared, replacing the dashes for a segment. From then on, each time they pressed the space bar key, the previous segment
was removed and the subsequent segment was revealed. When they finished reading the last segment and pressed the space bar key, a question appeared about the sentence they had just read, and they responded by pressing a “yes” or a “no” button. Half of the answers were “yes” and half were “no” for both the filler sentences and the experimental sentences.

3.3.3.2. Acceptability self-paced reading task

The acceptability self-paced reading task was designed, developed, and implemented in the same way as the comprehension SPR task, except for the type of questions asked after each sentence, the tokens per condition (6 instead of 8), and the amount of conditions (three instead of four –see sentences (7)-(9), as there was no case mismatch condition)\(^{20}\). As for the type of questions, instead of comprehension questions, yes-no acceptability questions appeared after each sentence (Juffs and Harrington, 1996).

In the acceptability SPR, there were 110 sentences: 2 practice, 54 filler, and 54 experimental (6 per condition). The filler and experimental sentences were manually distributed in three blocks of sentences, following the standard Latin square design. Each block had 18 filler sentences and 18 experimental sentences, 6 per condition. Both the order of the blocks and the order of the sentences within each block were randomized, as with the comprehension SPR. Finally, in every single other aspect of design and procedure, the acceptability SPR was identical to the comprehension SPR, including the use of lead-in sentences.

\(^{20}\) No case mismatch condition was added because it was included in the comprehension SPR to control for leísmo in natives and second language learners.
The acceptability SPR task was administered after the comprehension SPR task in order to avoid practice effects so that subjects who completed the former first would not be biased to explicitly detect morphosyntactic anomalies when completing the latter.

3.3.4. Clitic cluster acceptability test (learners only)

Following the self-paced reading task B, the learners completed a clitic cluster acceptability test (Slabakova et al., 2012) aimed at determining L2 knowledge of the syntax of Spanish clitics. As argued by Slabakova et al. (2012), there is no point in testing knowledge of Spanish CLLDs and its implementation in real time if L2 learners exhibit non-native-knowledge of clitics and their syntax. In this test, the learners chose the right options out of five possibilities in ten forced multiple-choice sentences as in the example below, which is taken from Slabakova et al. (2012, p. 329). From a total of 50 points, all learners had to score more than 35 (70%) in order to be included in the sample.

(12) **Dulce:** ¿Te gustó algo de la tienda?
‘Did you like something from the store?’

**Julia:** Me encanta esa chaqueta, ____ pronto.
‘I love this jacket, ______(I-want to buy it) soon’

- me quiero comprarla
- ☑ me la quiero comprar
- ☑ quiero comprármela
- quiero comprar
- quiero me la comprar

3.3.4. Scoring

Participants received 1 point per correct answer and 0 per incorrect answer for the Spanish proficiency test, and the questions (both interpretation and acceptability) of the self-paced reading tasks. In the case of the clitic cluster acceptability test, there was a total of 50 points as the maximum score, each sentence of the 10 having 5 option from
which choose. In addition to the accuracy data scored at 1 or 0 points, the self-paced reading tasks generated additional scores: residual reading times (RTs) at every single segment of the sentences.

Residual RTs were used instead of raw RTs to eliminate possible biases in reading speed (some participants read faster than others) and word length. Then, a linear regression was carried out on the remaining RTs, and regression residuals were extracted (i.e., how much raw value RTs deviated from the calculated value). This regression was conducted separately for each subject, to compare each person’s RTs to his/her own reading speed (for more information, see Ferreira and Clifton, 1986; Trueswell and Tanenhaus, 1994). Then, because residual RTs are more normally distributed than raw RTs but can still show skewness in lower values, a Gamma distribution was used. According to Anderson, Verkuilen, and Johnson (2013), a Gamma distribution provides a better fit to this kind of data than Normal distribution. However, residual RTs consist of both positive and negative values, and the Gamma distribution does not allow negative values to be included in the data. To address this problem, the residual RTs of each experimental sentence were in turn converted to $T$ scores. $T$ scores consist of standardized scores in which 50 represents the mean and a difference of 10 from the mean indicates a difference of one standard deviation.

3.4. Results

3.4.1. Comprehension SPR
The Comprehension SPR had a mixed design with two independent variables and four dependent variables. The two independent variables were Agreement (within-subjects: gender, number, and case match; gender mismatch; number mismatch; and case mismatch), and Group (between-subjects: Spanish natives, Spanish learners). The four dependent variables were residual RTs at the left-dislocated DP (region 4), the clitic and the verb (region 5), the AdvP (region 6), and the PP (region 7).

These dependent variables generated four Generalized Linear Mixed Models (GLMMs), one per variable. The GLMMs carried out on residual RTs followed a gamma distribution (log link). All GLMMs were conducted on separate data points (not aggregate means), and had Agreement, Group, and all their possible interactions, as fixed factors, and Subject as a random factor. Alpha level was .05, pairwise comparisons were calculated with Fisher’s Least Significant Different (LSD) post-hoc \( t \)-tests, and only significant effects and interactions were reported. Finally, a conservative approach was adopted when building the GLMMs, by selecting the Satterthwaite approximation for \( df \) to handle small groups and possible abnormally distributed data, and the robust estimation for the test of fixed effects and coefficients to control potential violations for model assumptions.

Descriptive statistics for the residual RTs at all the sentence segments can be found in Table 1.
The GLMM conducted on the residual RTs at region 4 (left-dislocated DPs) showed no significant main effects or interactions. However, the GLMM carried out on the residual RTs at the region 5 (clitics and embedded verbs) revealed a significant main effect of Agreement, $F(3, 2616) = 2.762, p = .041$, such that the region was read faster with the gender, number, and case match condition than with the gender mismatch condition, the number mismatch condition, or the case mismatch condition (all, $p < .05$). Furthermore, there were no significant differences between the three mismatch conditions (gender mismatch, number mismatch, case mismatch).

Importantly, there was no significant interaction of Group $\times$ Agreement, $F(3, 2616) = 1.932, p = .122$, which suggests that both groups parsed this region in the same way;
namely, they were slower in all the mismatching conditions than in the matching condition.

The GLMM run on the residual RTs at the region 6 showed a main effect of Agreement, $F(3, 2614) = 3.605, p = .013$, such that the region was read faster with the gender, number, and case match condition than with the gender mismatch condition, the number mismatch condition, and the case mismatch condition (all, $p < .05$). Moreover, there were no significant differences between the three mismatch conditions (gender mismatch, number mismatch, case mismatch).

As in the case of the previous region, in region 6 there was no significant interaction of Group × Agreement, $F(3, 2614) = .641, p = .589$, which reveals that both groups also parsed this segment in the same way.

The GLMM run on the residual RTs at the region 7 revealed a main effect of Agreement, $F(3, 2612) = 4.430, p = .004$, such that the region was read slower with the gender mismatch condition than with the number mismatch condition ($p = .003$), as well as with the case mismatch condition than with the number mismatch condition ($p = .003$). Although marginally significant, the region 7 was also read slower with the gender mismatch condition than with the gender, number, and case match condition ($p = .061$), as well as with the case mismatch condition than with the gender, number, and case match condition ($p = .060$). Importantly, there was no significant interaction of Group × Agreement, $F(3, 2612) = .802, p = .493$, which suggests that both groups parsed this region in the same way.

3.4.2. Acceptability SPR
The acceptability SPR followed the same design and statistical analyses as the comprehension SPR explained above.

Table 2 displays the descriptive statistics for the residual RTs at the critical sentence regions.

Table 2
*Descriptive statistics for RT data*

<table>
<thead>
<tr>
<th>Segment</th>
<th>Gender and Number Match</th>
<th>Gender Mismatch</th>
<th>Number Mismatch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>las máquinas</td>
<td>Natives</td>
<td>46.38</td>
<td>3.59</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>44.20</td>
<td>6.10</td>
</tr>
<tr>
<td>las repararon</td>
<td>Natives</td>
<td>48.85</td>
<td>6.16</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>51.15</td>
<td>13.21</td>
</tr>
<tr>
<td>ayer</td>
<td>Natives</td>
<td>51.84</td>
<td>3.89</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>52.47</td>
<td>8.24</td>
</tr>
<tr>
<td>por la tarde</td>
<td>Natives</td>
<td>53.24</td>
<td>14.03</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>56.80</td>
<td>20.86</td>
</tr>
</tbody>
</table>

The GLMM conducted on the residual RTs at region 4 (left-dislocated DPs) showed no significant main effects or interactions. However, the GLMM carried out on the residual RTs at the region 5 (clitics and embedded verbs) revealed a significant main effect of Agreement, $F(2, 1467) = 4.625, p = .010$, such that this region was read faster with the gender and number match condition than with the gender mismatch condition, and the number mismatch condition (all, $p < .05$). Furthermore, there were no significant differences between the two mismatch conditions (gender mismatch, number mismatch). Importantly, there was no significant interaction of Group × Agreement, $F(2, 1467) = 2.464, p = .085$, which suggests that both groups parsed this region in the same way;
namely, they were slower in all the mismatching conditions than in the matching condition.

The GLMM conducted on the residual RTs at region 6 (AdvPs) showed no significant main effects or interactions. By contrast, the GLMM on the residual RTs at region 7 (PPs) revealed a significant main effect of Agreement, $F(2, 1460) = 18.464, p < .000$, such that this region was read slower with the gender and number match condition than with the gender mismatch condition, and the number mismatch condition (all, $p < .05$); in addition, this region was read slower with the gender mismatch condition than with the number mismatch condition ($p < .05$). Finally, there was no significant interaction of Group $\times$ Agreement, $F(2, 1460) = .863, p = .422$, which also indicates that both groups parsed this region in the same way.

Table 3 displays the descriptive statistics for acceptability.

<table>
<thead>
<tr>
<th></th>
<th>Gender and Number Match</th>
<th>Gender Mismatch</th>
<th>Number Mismatch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>Natives</td>
<td>80.25</td>
<td>38.88</td>
<td>85.80</td>
</tr>
<tr>
<td>Learner</td>
<td>82.14</td>
<td>38.41</td>
<td>82.70</td>
</tr>
</tbody>
</table>

No main effects were found in the acceptability GLLM. That is, all the participants correctly accepted all the grammatical sentences with gender and number match (condition one), and rejected the ungrammatical sentences with either gender mismatches or number mismatches (conditions two and three, respectively). Finally, there was no significant interaction between Group $\times$ Agreement, $F(2, 1470) = .641, p = .527$, which
suggests that both groups accepted the grammatical sentences and rejected the ungrammatical ones in the same way.

3.5. Discussion and conclusion

The present study was conducted to answer the following questions: first, whether L2 inflectional variability concerning grammatical gender and number agreement involving the verbal domain can be overcome; second, whether the absence of a grammatical feature (gender) in the L1 system of the L2 speakers has an impact in the L2 parsing patterns when compared to a grammatical feature (number) that is not absent in their L1; and, third, whether the type of task (asking or not for morphosyntactic detail of the L2 input) affects the native-like performance of L2 learning concerning L2 inflectional variability in the verbal domain. In light of the RT and acceptability data, the answer to the first question is positive, but the answers to the other two ones are negative. This is because L2 systems displayed native-like patterns in all the tasks.

Following previous empirical findings from production and comprehension concerning verb-object agreement relations (Rossi et al., 2014; Shimanskaya and Slabakova, 2014;) and the predictions of the MUH (McCarthy, 2008), according to which L2 systems have impoverished morphological representations consisting in adopting default forms during morphological spell-out computations of agreement relations, non-native online and offline sensitivity to both gender and number agreement mismatches was expected, especially in the case of mismatches involving a grammatical feature absent in the L1 of the acquirers (i.e., gender in the case at hand).
Nevertheless, both online and offline data from this study suggest that L2 systems can overcome inflectional variability in the verbal domain. Specifically, L2 learners seem to develop native-like underlying morphological representations and implement them in real time in such a way that they exhibit gender and number incongruence effects with default errors. These native-like effects are also obtained with the grammatical case mismatch. Taking into account the RT data, these detections take place immediately in the critical region (the region with the clitic and the verb), as well as in the following region containing the AdvP in the first SPR task. Interestingly, no differences between the mismatching conditions were found in these regions, which suggests that default errors involving grammatical gender and number, and feature clash errors involving case (accusative vs. dative in the current study) are parsed in the same way by both natives and L2 speakers.

However, there are some parsing differences between the experimental conditions in the last region (the one with the PP), which deserve to be accounted for. Specifically, the gender mismatch condition and the case mismatch condition showed slower reading times than the number mismatch condition; along these lines, the number mismatch condition was read at the same pace as the gender, number and case condition, suggesting that (in)congruence effects concerning number mismatch are less lasting than the other two mismatch conditions. This pattern is further illuminated by the (marginally) significant differences between the gender mismatch condition and the case mismatch condition with respect to the match condition; namely, the former were read slower than the latter suggesting persistent (in)congruence effects even in the last region of the sentence.
Based on the existing evidence from previous research (e.g., Sagarra and Herschensohn 2010), one way of accounting for those asymmetries is in terms of the processing complexity challenge posed by grammatical gender due to its higher irregularity or lexical nature (Domínguez et al. 1999; Igoa et al. 1999). Another way of accounting for them is in terms of the (un)interpretable nature of the grammatical features at hand. In accordance with current morphosyntactic generative theory, a feature is interpretable if it has discourse-semantic interpretation. Following Carstens (2000), grammatical gender in inanimate nouns has no discourse-semantic interpretation. In this respect, case is a type of formal feature par excellence with no discourse-semantic interpretation at all. This lack of discourse-semantic interpretation with grammatical gender in inanimate nouns and with case contrasts with the nature of grammatical number, which does have that type of interpretation. The fact that the asymmetry emerges in the last segment of the sentence, where semantic interpretation takes place with the integration of different sources of information, also suggests that it may be a concomitant of wrap-up effects (Just and Carpenter 1980). Taking into account that the grammatical gender feature in animate nouns is interpretable, further research that experimentally manipulates animate CLLDeD nouns will make it possible to determine which of those accounts is correct.

Furthermore, observe that in the second self-paced reading task (the one with acceptability judgment questions) the (in)congruence effects related to gender and number mismatch (there was no condition involving case mismatch in this task) only appear in the critical region (the one with the clitic and the verb), and then disappear in the following one (the segment with the AdvP). As in the wrap-up region of
comprehension SPR, in the same segment of the acceptability SPR, the gender mismatch condition is read slower than the number mismatch condition, which is consistent with the aforementioned reference to the interpretability nature of both features. There is, though, a spurious effect consisting in reading the match condition in a slower way than both the mismatch conditions (gender and number). Presumably, this difference between the comprehension SPR and the acceptability SPR may result from what the task requires participants pay attention to. More precisely, the longer reading times in the last region of the acceptability SPR could be an epiphenomenon not related to grammaticality, but with processes of semantic integration when interpreting a grammatical sentence, which contrasts with the sentences with the other conditions. The fact that gender is a central part of the lemma that has to be accessed when the lexical items is retrieved further supports this view.

The acceptability scores reveal that both native and non-natives reject the ungrammatical sentences at the same rate, and that there are no differences between ungrammatical conditions. From this, it is possible to conclude that the L2 underlying morphological representations are fully native-like and that they can be implemented in real time. These findings are consistent with previously explored agreement phenomena in the nominal domain via online and offline (e.g., Sagarra and Herschensohn, 2010, 2011) techniques. Overall, they support hypotheses such as the P-LADH and the MSIH, since the underlying morphosyntactic representation of grammatical gender and number (and case) agreement related to the verbal domain can be native-like, and L2 inflectional variability can be overcome. These findings challenge the MUH, which posits impoverished morphological representations in L2 systems, as well as RDH-type
approaches for which grammatical features that are not instantiated in the L1 cannot be acquired in late L2 acquisition.

Examining the role of the existence of grammatical features in the L1 of the L2 acquirers, L2 learners were expected to show asymmetries in the parsing and acceptability of verb-object agreement phenomena as a function of the availability of grammatical features in their L1. Specifically, L2 learners were predicted to experience more difficulties (less sensitivity, delayed or spill-over effects) with grammatical gender mismatch as a consequence of its absence in the L1 of the L2 Spanish learners. Nevertheless, RT data reveal that L2 learners and native parse all the mismatch conditions in the same by following the congruence effect. That is, L2 learners are not distinguishable from natives in the parsing of all features, regardless of their presence or absence in their L1. In both SPR tasks, the same patterns were found. In the same vein, the results from the acceptability judgments further confirm these claims, as both native and non-natives rejected all the ungrammatical sentences in the same way without differences between conditions, and accepted the grammatical ones as expected.

In this respect, this study shows that full parsing convergence can be attained regardless of the availability of grammatical features in the L1 of the acquirers, L2 inflectional variability being an epiphenomenon of L2 development in an acquisition path driven by the human language parser, as suggested by the P-LADH.

The lack of asymmetries in the parsing and acceptability of grammatical gender and number (and case) agreement mismatches regardless of the availability of grammatical features in the L1 of the acquirers contrasts with what has been reported previously in the literature (e.g., Renaud, 2009; Shimanskaya and Slabakova, 2014). Interestingly, the
findings from the online data show that gender (and case) and number pose different
degrees of processing difficulties, something already pointed out in previous research on
L1 and L2 processing (e.g., Sagarra and Herschensohn, 2010, 2011). Perhaps, the
acquisitional difficulties attributed to grammatical gender in the case of L2 learners
whose L1s are genderless are actually masked by the processing challenge posed by
grammatical gender due to its higher irregularity (Hernández et al., 2007), lexical nature
(Domínguez et al., 1999; Igoa et al., 1999), or the fact of not being interpretable in
semantic-discourse terms (Carstens, 2000). In this respect, the fact that case mismatches
patterned along with gender mismatches is illustrative of the aforementioned masking,
since case is a formal (uninterpretable) feature existing in the L1 of the acquirers but still
somewhat slightly more difficult to parse when compared to grammatical number.

Finally, whether the self-paced reading task required participants to look for
morphosyntactic detail in the L2 input did not seem to have any impact on the native-
likeness of the parsing patterns of gender and number agreement violations in the verbal
domain. In this respect, Roberts’ (2013) predictions about the impact of type of task on
L2 shallow or deep parsing have not been borne out. In the critical region (the segment
with the clitic and the verb) the same native-like parsing patterns displaying congruence
effects were obtained in the comprehension SPR as well as in the acceptability SPR. As
mentioned above, the same native-like patterns were found in the two subsequent regions
(6 and 7) in both tasks, despite the fact that some asymmetries between conditions
emerged in the last region perhaps due to wrap-up effects, as discussed before.

To conclude, these findings contribute to a better understanding of the L2 verb-
object agreement relations, an understudied domain in the field of second language
acquisition. Overall, this study has shown that L2 inflectional variability involving grammatical gender and number agreement in the verbal domain at the representational level can be overcome, the L2 computation and representation patterns being native-like in every single aspect. Importantly, these patterns can be obtained regardless of whether L2 grammatical features are absent in the L1 of the acquirers, and whether the task requires subjects to look for morphosyntactic detail in the L2 input or not. From a theoretical perspective, these data support approaches to L2 inflectional variability such as the MSIH or the P-LADH, *contra* other approaches positing representational issues at either the underlying morphological representation (MUH), or the underlying impaired syntactic representation resulting from the unavailability of grammatical features not instantiated in the L1 of the acquirers due to maturational constraints (e.g., RDH). Finally, this study has provided novel psycholinguistic data on how CLLDs in a Romance language are parsed and mentally represented by both native and non-native speakers.
CHAPTER 4:
L2 ONLINE SENSITIVITY TO SYNTACTIC ISLAND CONSTRAINTS:
EVIDENCE FROM SPANISH CLLD

4.1. Introduction

The extent to which the nature of second language sentence parsing is qualitatively different from its monolingual counterpart is under much debate in the field of second language acquisition. Briefly schematized, this debate revolves around whether or not second language parsing computes linear linguistic input by taking into account abstract hierarchical grammatical information. Specifically, what is under discussion is the type of route (deep or shallow) employed by the human language sentence parser in L2 systems.

Some models advance that there are no qualitative differences between L1 and L2 sentence parsing, both types of parsing being identical in nature (e.g., Dekydstspotter and Renaud, 2014; Dussias and Sagarra, 2007; Hopp, 2007, 2009; Pliatsikas and Marinis, 2013). These researchers propose that any attested divergence in second language human parsing is the result of factors that are external to the human language sentence parser. Some of these factors are argued to be L2 proficiency (Hopp, 2007), exposure to the second language (Dussias and Sagarra, 2007; Pliatsikas and Marinis, 2013), L1-L2 grammatical similarities (Hopp, 2007, 2009), and cognitive resources (Hopp, 2007; Sorace, 2011).

By contrast, other researchers have proposed that there are qualitative differences between L1 and L2 sentence parsing (Clahsen and Felser, 2006a, 2006b, 2006c).
According to the Shallow Structure Hypothesis, or SSH, the L2 sentence parser resorts to lexico-semantic and pragmatic information to assign a representation to the incoming linguistic input when parsing grammatical long-distance dependencies in the target language. For this approach, the L2 parser is unable to employ abstract hierarchical grammatical information with this type of dependencies. This is due to an impaired underlying grammatical representation, which results in no implementation of grammatical constraints when computing second language long-distance grammatical dependencies. External factors to the human language parser (e.g., proficiency, language exposure, grammatical similarities between the first and the second languages, individual cognitive differences, etc.) are hypothesized not to play any role in modulating diverging patterns of L2 parsing (Clahsen and Felser, 2006b, p. 112).

This study explores the predictions made by the Shallow Structure Hypothesis (henceforth, SSH) through a series of experiments in order to empirically examine the underlying grammatical representation and parsing of CLLDs by L1 English advanced learners of L2 Spanish. Specifically, it investigates whether L2 learners can apply a syntactic island constraint, the Relative Clause Island Constraint, or RCIC, (Ross, 1967; among others), in real time when parsing Spanish sentences with CLLDs that violate that constraint. In addition, it examines whether online parsing patterns go hand in hand with offline acceptability judgements of those sentences violating the RCIC. By doing so, it is possible to shed light on current debates on the nature of L2 sentence parsing and its cognitive underpinning.

The chapter is structured as follows: section two includes a review of the main and prior studies conducted on the relation between grammar and parsing in native
systems; then, it introduces some current models of L2 parsing, and the existing evidence on L2 parsing of syntactic island constraints; finally, it describes the linguistic phenomenon explored in this study, CLLDs, from theoretical and psycholinguistic perspectives, as well as a brief review of previous research on the L2 acquisition of CLLDs. Section three contains the research questions of the study, the predictions advanced based on existing evidence, and a detailed description of the study. Section four summarizes the results, and section five discusses the main findings of the study, and section six concludes with final remarks.

4.2. Background

4.2.1. Accounting for L2 parsing differences: Qualitative versus quantitative approaches and the case of syntactic island constraints in L2 systems

4.2.1.1. Linguistic competence and performance: the grammar and the human language parser

Speakers of a language have to apply universal parsing principles to the incoming linguistic input in order to achieve comprehension, in addition to establishing syntactic computations entailing hierarchical configurations between sentence constituents that bear interpretable and uninterpretable features (e.g., adjectives and nouns establishing gender and/or number concord), and spelling out those syntactic relations through morphological computations. These parsing principles operate in real time in accordance
to underlying grammar constraints so that a detailed hierarchical linguistic representation is obtained.

For instance, parsing sentences with wh-operators involves establishing a filler-gap dependency between the wh-operator (the filler), and a verb (the gap). Completing the dependency in real time requires the human language parser to apply an active search for a gap when a filler is found. This active search gives rise to a filled-gap effect (Crain and Fodor, 1985; Stowe, 1986). For instance, in (1) the parser systematically tries to postulate a trace after the verb bring in order to assign a gap to the wh-filler who.

However, as demonstrated by Stowe (1986, p. 234) whereas it is possible to do so in (1a), that is incompatible with the structure in (1b). This is because the position to which the parser tries to assign a trace is already filled with us, resulting in a parsing delay requiring the parser to review the structure that it is building, and assign the trace after the preposition to.

(1)  a. My brother wanted to know who_{i} Ruth will bring &lt;who_{i}&gt; home to Mom at Christmas.

b. My brother wanted to know who_{i} Ruth will bring us home to &lt;who_{i}&gt; at Christmas.

When the location to which the parser tries to assign the trace is already filled, a filled-gap effect takes place. A parsing principle capturing the filled-gap effect has been put forward by Frazier and Clifton (1989), and is known as the Active Filler Strategy (AFS) in (2). According to the AFS, “when a filler of category XP has been identified in a non-argument position, such as COMP, rank the option of assigning its corresponding gap to
the sentence over the option of identifying a lexical phrase of category XP” (Frazier and Clifton, 1989, p. 292).

The AFS accounts for the process through which the parser triggers an active search in which it tries to postulate a gap at a later point in the phrase structure that is building as fast as possible. This process starts when the parser finds a constituent in a non-argument position like who in [Spec, CP]. Importantly, the parser executes this process in compliance with grammatical principles (i.e., no trace is postulated within domains not allowed by the grammar as in the case of wh-islands; see below for further details).

In the case of (1), there is the possibility of postulating the trace after bring or waiting to encounter a DP in the incoming input which might satisfy the thematic and subcategorization requirements of the verb. Between these options, the AFS forces the parser to opt for the first option (postulating a trace as soon as possible). This explains why in (1b) there is a filled-gap effect, but not in (1a).

Further research on L1 parsing provided more evidence for the existence of the active search mechanism and its compliance with the grammar (e.g., Phillips et al. 2005; Traxler and Pickering, 1996). For instance, syntactic domains such as wh-islands (Ross, 1967; among others) in which solving filler-gap dependencies violates grammar constraints are automatically excluded from the active search. That is, the parser complies with grammar constraints such as the Relative Clause Island Constraint, or RCIC, (Ross, 1967) in domains from which wh-operators cannot be extracted such as the relative clause domain in (2).
(2) * What did the policeman arrest the thief [RC who stole <what> from the store].

Existing research on L1 parsing has shown that the parser assigns a representation to the incoming linguistic input in compliance with the RCIC and suppresses the formation of a long-distance dependency within the relative clause island domain (McElree and Griffith, 1998; Stowe, 1986; Traxler and Pickering, 1996; Wagers and Phillips, 2009; Yoshida, 2006). To illustrate this point, studies such as that of Traxler and Pickering (1996) explored whether speakers English applied the RCIC in sentences with relative clauses like (3c-d).

(3)

a. We like the book that the author wrote unceasingly and with great dedication about while waiting for a contract.

b. We like the city that the author wrote unceasingly and with great dedication about while waiting for a contract.

c. We like the book that the author who wrote unceasingly and with great dedication saw while waiting for a contract.

d. We like the city that the author who wrote unceasingly and with great dedication saw while waiting for a contract.

In their study, Traxler and Pickering (1996) found a plausibility effect in sentences with relative clauses in which the RCIC was not operative (3a). However, that was not the case in (3e) and (3d), where the RCIC was operative. The plausibility effect followed
from the parser trying to solve the dependency with *wrote* in (3a) giving rise to a reanalysis effect when reading *about*. This pattern was not found in (3b), due to its semantic incompatibility. These patterns contrasted with those found between sentences (3c) and (3d), in which no plausibility effect was found. This is because no reanalysis was attempted by the parser when reaching *saw* in (3a), giving rise to the same reading patterns in both sentences. This asymmetry was analyzed by Traxler and Pickering (1996) as evidence in favor of the parser employing grammatical information such as the RCIC with dependency formation. More precisely, they proposed that the parser inhibits any active search for dependency formation within syntactic domains that violate grammar principles.

4.2.1.2. Models of L2 parsing and existing evidence on the L2 parsing of syntactic islands

The extent to which L2 systems can parse input in the target language in a native-like fashion by applying the same L1 parsing principles (e.g., the AFS) and complying with grammar constraints such as the RCIC involving hierarchically abstract linguistic representation is currently under much debate (for a review, see Robert, 2013). For instance, some models such as the SSH, (Clahsen and Felser, 2006a, 2006b, 2006c) predict that L2 parsing is qualitatively different from its native counterpart. The SSH characterizes L2 parsing as shallow, because it does not build a grammatically detailed linguistic representation of the incoming linguistic input when parsing long-distance grammatical dependencies. Instead, L2 parsing relies on lexico-semantic and pragmatic cues in order to achieve that representation of the target input. From this, it follows that
L2 parsing does not apply parsing principles in a native-like way since it does not comply with grammar constraints, as L2 grammatical information is not available, presumably, due to maturational constraints. The qualitatively different nature of L2 parsing is not affected by any type of overlap between the L1 and the L2, individual cognitive differences such as working memory, exposure to the L2, or proficiency level.

Recent findings, however, contradict the main tenets of the SSH. For example, it has been shown that long-distance grammatical dependencies (sentences with wh-filler-gap dependencies, relative clause attachment, anaphora-antecedent dependencies) can be parsed in a native-like fashion, and that this process is modulated by exposure to the target language (e.g., Dussias and Sagarra, 2007; Pliatsikas and Marinis, 2013), proficiency (e.g., Hopp, 2007; 2010), L1 transfer (e.g., Hopp, 2007), and individual cognitive differences such as working memory (e.g., Keating, 2010).

All these pieces of evidence suggest that L2 parsing is qualitatively identical, but highly influenced by different factors, as predicted by other models such as Dekydstpotter and Renaud’s (2009, 2014) Parser-as-Language Acquisition Device Hypothesis (P-LADH). For the P-LADH, divergent parsing patterns are an epiphenomenon of interlanguage development. More precisely, different processing patterns emerge as a reflex of the underlying restructuring process that takes place during L2 grammatical development. The P-LADH assumes a universal perspective on human parsing, for which reason L2 parsing necessarily has to be identical to its native counterpart. This is because the human language parser drives the L2 developmental process, which involves structure generation constrained by domain-specific syntactic computations such as *Agree*, as well as licensing by a lexicon structured in terms of
features. As the parser as a language acquisition device instantiates changes to the feature matrices of lexical items in response to L2 input licensing failures, different stages of L2 development occur, giving rise to processing variability. In other words, the parser operates in this way. When the feature matrices of lexical items are unable to assign a representation (license) to the incoming input, the parser reconfigures the features and the matrices that they form with lexical items in an incremental way in order to be able to assign a representation (license) the L2 input. This process of “accommodation” is incremental and gives rise to variability in the processing of the L2. Along these lines, computational issues arise in the form of parsing variability due to difficulties when integrating different sources of information from different linguistic (e.g., the morphology component) and non-linguistic components (e.g., the conceptual-intentional system). However, this variability is overcome with higher L2 proficiency and higher automatization (Hopp, 2010; Segalowitz and Segalowitz, 2003).

Evidence on the extent to which L2 parsing is shallow mostly come from studies on the parsing of relative clause attachment, empty categories, and anaphora-antecedent dependencies (for a review, see Clahsen and Felser, 2006a). By contrast, few studies have examined how adult L2 speakers parse phenomena constrained by island constraints such as the RCIC (Aldwayan, Fiorentino, and Gabriele, 2010; Cunnings et al., 2010; Felser et al., 2012; Kim et al., 2015; Omaki and Schulz, 2011). In a nutshell, the existing studies have tried to find Traxler and Pickering’s (1996) effects concerning the parser’s online compliance with the RCIC in L2 speakers of English, but their findings are mixed.

Whereas two moving-window studies report native-like parsing patterns in L2 speakers of English (Aldwayan, Fiorentino, and Gabriele (2010); Omaki and Schulz
(2011)), other studies find divergent patterns. Thus, Felser et al. (2012) examined the operativeness of the RCIC in sentences like (3) via eye-tracking means in L1 German learners of L2 English, and found that L2 learners presented plausibility effects in sentences in which the RCIC was operative, suggesting that L2 parsing relied primarily on lexico-semantic information when parsing long-distance grammatical dependencies, in consonance with the SSH.

Along these lines, Cunnings et al. (2010) conducted a similar eye-tracking study. Despite the fact that the L2 English learners with different L1s (German, a language with wh-movement, and Chinese, a language with wh-in-situ) did not differ in a reliable way from the natives’ performance, L2 patterns were attributed to an epiphenomenon resulting from processing load effects associated with the edge of relative clauses, not to the deployment of grammar information in real-time.

More recently, Kim et al. (2015) conducted a stop-making-sense task\textsuperscript{21} testing the operativeness of the RCIC in stimuli identical to those of Traxler and Pickering (1996). They found that, whereas the L2 English learners whose L1 has wh-movement (Spanish) performed in a native-like fashion, those whose L1 has wh-in-situ (Korean) did not. However, these online data differed from the offline data elicited through an acceptability judgment task (AJT). In the AJT, both L2 groups performed in a native-like way, which suggests that the online use of grammatical information is influenced by L1 in spite of both groups having an advanced proficiency level. Presumably, lack of native-like performance by the Korean group in the online task might result from non-controlled

\textsuperscript{21} In this task, subjects have to read a sentence segment by segment and press a button once the sentence stopped making sense to them.
factors such as homogeneity in WM, processing efficiency, automatization, among others.

In order to contribute to this debate, this study investigates the online and offline sensitivity of English advanced learners of L2 Spanish to RCIC violations in sentences with CLLDs, a type of linguistic phenomenon that also presents syntactic island domains, and has never been previously explored in the literature. Before providing the details of the study, in the next sections we describe the linguistic phenomenon, and review the existing evidence on its acquisition and parsing.

4.2.2. The linguistic phenomenon: Spanish CLLDs

4.2.2.1. The morphosyntax, semantics, and pragmatics of CLLDs

Following López (2009),22 CLLDs constitute a grammatical dependency between the left-dislocated DP (las camisas) and the clitic as in (4).

(4) El criado dice que las camisas\textsubscript{ACC,FEM,PL} las\textsubscript{ACC,FEM,PL} lavaron ayer por la tarde.

The butler says that the shirts\textsubscript{ACC,FEM,PL} they CL\textsubscript{ACC,FEM,PL} washed yesterday by the afternoon.

‘The butler says that, the shirts, they washed yesterday afternoon.’

---

22 The literature on Topicalization and Left-Dislocation, and CLLDs is vast (e.g., Casielles-Suarez, 2004; Chomsky, 1977; Cinque, 1977; Culicover, 1991; Grohman, 2000, Lasnik and Saito, 1992; Leonetti, 2011, Shaer and Frey, 2004, among others). For the sake of brevity, only a Lopezian approach to this phenomenon is reviewed because it is the theoretical framework assumed in this paper.
In this structure, the clitic is the grammatical spell-out of an agreement relation between the left-dislocated DP and the verb, which involves grammatical gender, person, number, and case (López, 2009). As illustrated in (5), the direct object *las camisas* is first merged in [Comp, VP] and then undergoes successive-cyclic movement to the clause left periphery, [Spec, FinP], via [Spec, vP]. It is in the [Spec, vP] position in which the DP enters into an agreement relation with the verb before continuing its way to the left periphery.

(5) El criado dice que [FinP las camisas [TP las lavaron [vP las camisas,ACC,FEM,PL las,ACC,FEM,PL lavaron [VP lavaron las camisas]]]]].

In addition to landing in the left-periphery of the embedded clause, the left-dislocated DP can do so in the left-periphery of matrix clause as in (6).

(6) Las camisas el criado dice que [FinP las camisas [TP las lavaron [vP las camisas,ACC,FEM,PL las,ACC,FEM,PL lavaron [VP lavaron las camisas]]]]].

Following López (2009), evidence supporting that left-dislocated DPs are first merged within the VP comes from their sensitivity to syntactic island constraints such as the RCIC, (Ross, 1967; Chomsky, 1977) as in (8) (López, 2009).
(7)  * A los empleados el empresario \[_{RC} que los despidió a los empleados\] invierte en la construcción.

To the employees the businessman that CL_{ACC,MASC,PL} fired invests in the construction.

‘To the employees the businessman that fired invests in construction.’

According to the typology of syntactic islands proposed by Ross (1967), the RCIC prevents constituents from within the relative clause like \textit{a los empleados} from undergoing movement outside of that syntactic domain. In other words, the left-dislocated \textit{a los empleados} has no escape hatch from within the relative clause, since there is no \textit{[Spec, CP]} available in which it can stop before undergoing further movement to the left periphery of the sentence.

This syntactic behavior of CLLDs contrasts with that of HTLDs’, which can establish an anaphoric dependency with the clitic within the relative clause, since they are first-merged in the left-periphery of the sentence, and, thus, there is no extraction of \textit{según los empleados} from within the relative clause, as illustrated in (8).

(8)  Según los empleados el banquero \[_{RC} que los despidió\] invierte en la construcción.

According the employees the businessman that CL_{ACC,MASC,PL} fired invests in the construction.

‘According to the employees the banker that fired them invests in construction.’
Another particular characteristic of Spanish CLLDs is the existence of semantic restrictions on the clitic doubling of definite NPs and non-definite (bare) NPs. Whereas definite NPs as *el vino* in (9) have to be doubled by an overt clitic, bare NPs such as *vino* in (9c) have to be doubled by a null clitic (Leonetti, 2007, 2008, 2011; Lopez, 2009). Otherwise, the sequences are anomalous as in (9b) and (9d).

(9)  

a. Los viejitos dicen que *el vino sólo lo toman a la noche con la comida.*  
The old men say that the wine\textsubscript{ACC.MASC.SG} only \textsubscript{ClACC.MASC.SG} drink to the night with the food.  
‘The old men say that, the wine, they just drink at night with the meal.’  
b. * Los viejitos dicen que el vino sólo toman a la noche con la comida.  
c. Los viejitos dicen que *vino sólo toman a la noche con la comida.*  
‘The old men say that, wine, they just drink at night with the meal.’  
d. * Los viejitos dicen que vino sólo lo toman a la noche con la comida.

In addition to these morphosyntactic characteristics, CLLDs are discourse-linked. That is, they mark topicalization: a phrase that has been previously mentioned is reintroduced in the discourse, and occurs in the left periphery of the clause (e.g., Casielles-Suarez, 2004; Cinque, 1977; Grohman, 2000; López, 2009).

4.2.2.2. Native parsing of CLLDs
Psycholinguistic evidence on the parsing of Spanish CLLD has shown that the dependency between the DP and the clitic is parsed in the same way as long-distance grammatical dependencies such as filler-gap dependencies or anaphora-antecedent dependencies (Leal Méndez, Farmer, and Slabakova, 2014; Pablos, 2006). That is, parsing CLLDs consists in conducting an active search for a matching clitic in the sentence input. In order to do so, the process involves maintaining the dislocated constituent in working memory until the parser finds the clitic with which the dependency formation is established. In this respect, the parsing algorithm has such a projection power when generating these structures that it posits a clitic position with its set of grammatical features (i.e., case, number, person, and gender) before encountering the overt realization of the clitic. Overall, these findings are consistent with previous research on the ways in which the parser establishes long-distance dependencies between wh-fillers and gaps (Aoshima, Phillips, and Weinberg, 2004; Crain and Fodor, 1985; Frazier, 1987; Lee, 2004; Stowe, 1986). By contrast to CLLDs, HTLDs do not involve this type of active search between the left-dislocated DP and the clitic, as shown by Pablos (2006). This contrast is crucial to understand the rationale of the current study, since, in the case of CLLDs, it is expected that the parser does not establish an ungrammatical dependency between the CLLDed DP and a clitic that matches its features within a relative clause. Instead, the parser is expected to comply with principles of grammar and inhibit the search for a clitic within a relative clause. By contrast, the parser can establish a dependency between the HTLDed DP and the clitic within a relative clause, since no syntactic constraints ban this possibility.
Leal Méndez et al. (2014), and Pablos’ (2006) findings about CLLDs fit well with fully-incremental models of sentence parsing. These models argue that the parser uses grammatical information as case marking, word order, etc. in order to build phrase structure by identifying arguments and connecting them to the sentence being processed in an anticipatory way before encountering the verbal predicate (Gorrell, 1995; Lombardo and Sturt, 2002; Stabler, 1994; Sturt and Crocker, 1996). Evidence on parsing number agreement in French CLLD is consistent with these claims (Coughlin and Tremblay, 2013). Further evidence obtained via event-related potentials (ERPs) corroborates the grammatical nature of the type of dependency established between these two constituents in native Spanish (Santesteban, Zawiszewski, Erdocia, and Laka, 2016). A biphasic component -LAN and P600- has been obtained on native online sensitivity to grammatical gender and number violations between the CLLD and the clitic in Spanish. To date, no other behavioral or electrophysiological experiments have investigated the parsing of CLLDs.

4.2.2.3. L2 acquisition and parsing of CLLDs

---

The biphasic component has been argued to elicit online morphosyntactic computations between two constituents and their grammatical features. Whereas the LAN index reflects morphosyntactic expectancies violations, the P600 index reflect the integration of the agreeing constituents at the sentence level (Molina, Barber, and Carreiras, 2011; Molinaro, Barber, Caffarra, and Carreiras, 2015; for a criticism to this approach, see Tanner (2015)), Behavioral and electrophysiological data supplement each other. As shown by Foucart and Frenck-Mestre (2012), these two methodologies illuminate each other. This is because some linguistic processes are better captured by ERPs, due to its advantage to capture data in a faster way (there is smaller window between the processing phenomena that happen in the mind/brain of the participant). Along these lines, behavioral data elicited via the moving-window paradigm might reflect more cognitively complex phenomena, since it imposes a more cognitively processing burden due to the fact that participants cannot go back to previous segments of the linguistic stimuli.
Existing evidence on the acquisition and parsing of CLLDs comes mostly from offline studies, which found a persistent difficulty with Spanish CLLDs even at near-native levels of proficiency (e.g., L1 English near-natives of L2 Spanish: Valenzuela, 2005; L1 Brazilian Portuguese advanced speakers of L2 Spanish: Borgonovo et al., 2006; L1 English advanced speakers of L2 Spanish: Parodi, 2010). Specifically, L1 English advanced and near-native speakers of L2 Spanish do not comply with the semantic restrictions constraining the clitic doubling of left-dislocated bare NPs. Instead of employing null object clitics as in (9c), their production and comprehension is characterized by allowing overt object clitics to double left-dislocated bare NPs as in (9d).

Interestingly, in L2 Spanish speakers of object-drop languages such as L1 Chinese, the patterns are the opposite; namely, L1 Chinese low and intermediate learners of L2 Spanish display a systematic overuse of null object clitics, regardless of the aforementioned semantic restrictions (Cuza, Pérez-Leroux, and Sánchez, 2013). This series of difficulties contrasts with the fact that L1 English advanced learners of L2 Spanish can perform in a native-like way in offline tasks eliciting data on overt clitics doubling specific left-dislocated DPs as in (9a) (e.g., Slabakova, Kempchinsky, and Rothman, 2012). Moreover, they display native-like patterns when processing them along the lines of what Pablos (2006) found for Spanish natives (Leal Méndez et al., 2014).

In languages that do not display these restrictions on clitic-doubling (e.g., Bulgarian, French), L1 English speakers of L2 Bulgarian or French perform in a native-like way (e.g., L1 English highly-advanced speakers of L2 Bulgarian: Slabakova and Ivanov, 2011). From these patterns, it seems that the existence of the semantic restrictions
in Spanish CLLDs may cause particular difficulties to L2 learners due to certain degree of optionality attested in the null or overt status of the clitic doubling the left-dislocated DP (for a discussion, see Slabakova and Ivanov, 2011). Finally, the only existing study on online sensitivity to grammatical agreement violations is that of Coughlin and Tremblay (2013), who employed the moving-window paradigm. Their study reports that L1 English advanced speakers of L2 French are sensitive to grammatical number agreement violation, and that this process is modulated by working memory. To date, no research has been conducted on how L2 speakers apply syntactic constraints such as the RCIC when parsing sentences containing CLLDs.

4.3. The study

4.3.1. Research questions

Existing evidence on the extent to which L2 systems apply grammar constraints when parsing sentences with syntactic islands is mixed. Whereas previous research (e.g., Omaki and Schulz, 2012) has shown that L2 speakers employ hierarchically complex grammatical information to build an online representation of L2 input, other studies found a higher reliance on lexico-semantic and pragmatic information to build this type of representation (e.g., Felser et al., 2012). In order to contribute to this debate on the nature of L2 parsing, this study investigates whether L2 learners can apply a syntactic island constraint, the Relative Clause Island Constraint (Ross, 1967; among others), in
real time when parsing Spanish sentences with CLLDs that violate that constraint. In
addition, it examines whether online parsing patterns go hand in hand with offline
acceptability judgements of those sentences violating the RCIC. The study utilizes an
online experimental procedure (the moving window paradigm) with grammatical
acceptability questions to investigate these phenomena.

A moving-window task is chosen because L2 learners perform better on this type
of task than on oral or timed tasks (see Montrul, Foote, and Perpiñán, 2008; Sabourin,
2003; Sagarra and Herschensohn, 2010; among others). Moreover, there is plenty of
evidence suggesting that online and offline data not simultaneously elicited can result in
opposite findings (Montrul et al., 2008). These patterns confirm the need to include both
techniques within the same sample pool. Finally, using this type of methodology makes it
possible to avoid any potential shallow parsing in L2 systems resulting from type of task.
According to Roberts (2013), L2 systems may resort to a shallow parsing route when the
online task eliciting parsing patterns requires subjects to answer comprehension questions
instead of acceptability questions on morphosyntactic detail. The specific research
questions of the study are:

1. Can L2 speakers of Spanish parse CLLD sentences in a native-like fashion by
    applying grammar constraints such as the RCIC?

   The SSH (e.g., Clahsen and Felser, 2006a, 2006b, 2006c) predicts that L2
   speakers will perform in a non-native-like way by showing no sensitivity to
   syntactic island violations. However, the PLAD-H (Dekydtspotters and Renaud,
   2009, 2014) expects L2 speakers to perform in a native-like fashion, since L2
parsing is qualitatively identical to its native counterpart and it drives the L2 acquisition process.

2. In the moving-window task, do the Reading Time (RT) data mirror the acceptability data?

The SSH predicts that the two will go hand in hand, because the underlying L2 grammatical representation is impaired, and, thus, the parsing principles cannot be applied in a native-like fashion. In contrast, the PLAD-H predicts that the two might not go hand in hand, because the language parser drives the L2 acquisition process, and judgments can lag behind parsing routines (e.g., Renaud, 2009, 2011, 2014; Tokowicz and MacWhinney, 2005; a.o.).

4.3.2. Participants

The sample pool consisted of 82 participants: 54 Spanish native speakers (data collected in Spain), and 28 advanced adult English learners of Spanish (data collected in the United States). The Spanish natives were born and raised in Spain, and the English learners in the United States. The Spanish natives had some knowledge of English, and the English learners had no knowledge of other languages. All participants were homogeneous in terms of age (18-40 years old, because WM decays after age 40 (Park et al., 2003)), and education (at least high school degree). Finally, all the learners started learning Spanish after age 11, once their L1 syntax had been established (Herschensohn, 2007).
4.3.3. Materials and procedure

Participants completed a Spanish proficiency test (learners only, 25 minutes), a moving-window task (15 minutes), a clitic cluster test (learners only, 10 minutes), and a language background questionnaire (10 minutes).

4.3.3.1. Spanish proficiency test (learners only)

To assess Spanish proficiency, the learners completed an adapted version of the *Diploma de Español como Lengua Extranjera* (DELE, “Diploma of Spanish as a Foreign Language”), utilized in many L2 studies (e.g., Montrul and Slabakova, 2003; Slabakova et al., 2012; Valenzuela, 2005). Following Slabakova et al. (2012), the learners needed to demonstrate advanced L2 proficiency and score between 40 and 47 points out of 50 in order to be included in the sample.

4.3.3.2. Moving-window task

Participants completed one segment-by-segment non-cumulative self-paced reading task adapted from Just et al. (1982). The task was presented using *E-Prime 2.0* on PC computers with 16-font Arial black characters on a white background in a left-to-right display. There were 110 sentences: 2 practice, 72 filler, and 36 experimental (6 per each of the 2 conditions in each of the 3 blocks). The filler sentences and the experimental
sentences were manually distributed in three blocks of sentences, following a standard Latin square design. Each block had 24 filler sentences and 12 experimental sentences, 6 per condition. Finally, both the order of the blocks and the order of the sentences within each block were randomized. This randomization system was implemented to minimize the probabilities that two experimental sentences of the same condition would appear consecutively. The filler sentences had a similar length (8-15 words) and vocabulary than the experimental sentences.

The experimental sentences had two conditions based on the operativeness of the RCIC:

(10) RCIC Violation

A los empleados el banquero que les prometió beneficios invierte en la construcción.

‘To the employees the banker that promised benefits invests in construction.’

(11) No RCIC Violation

Según los empleados el banquero que les prometió beneficios invierte en la construcción.

‘According to the employees the banker that promised benefits invests in construction.’

The experimental sentences had a 13- to 14-word length, had 2- to 6-syllable animate DPs headed by a preposition (‘a’ [to] in the first condition, and ‘según’ [according to] in the second condition) with masculine and feminine gender and plural number in the matrix clauses. All the matrix sentences contained human singular subjects following the
CLLD to avoid any potential pronoun-antecedent coreference between the dative plural clitic in the embedded clause and the matrix subject. All embedded verbs were 2-to 4-syllable long, ditransitive, and in the third person singular of the preterit tense. The embedded verbs were followed by generic bare noun phrases like ‘beneficios’ [benefits]. Matrix verbs were 2-to 4-syllable long in the third person singular of the present tense, and followed by a PP like ‘en la construcción’ [in construction]. All the dislocated DPs, the subject DPs and the other constituents (matrix and embedded verbs, embedded directs objects and matrix PPs) were built with words with which L2 learners were familiar. Finally, all the sentences had yes-no questions assessing acceptability in order to elicit subjects’ linguistic intuitions about the previously read sentences as in (12).

(12) ¿Esta oración es aceptable?

‘Is this sentence acceptable?’

Both the experimental and filler sentences were preceded by a lead-in sentence, as in (13) so that the introduction of a topicalized constituent was found natural in the experimental context. The lead-in sentences contained impersonal matrix verbs with null expletive subjects (e.g., ‘parece’ [it seems]) and an embedded clause in which the topicalized DPs were introduced.

(13) Parece que un banquero prometió beneficios a unos empleados.

‘It seems that a banker promised benefits to some employees.’
The procedure for the task was the following. Participants read Spanish sentences silently on a computer screen, segment-by-segment as in Hopp (2009, 2010; among others) in order to preserve the prosodic unit between the clitic and the verb, and answered yes-no acceptability questions. They were asked to read the sentences at their normal pace. Each sentence began with a 500-ms fixation marker (+) that appeared at the center of the screen, followed by dashes (dashes help make reading more natural). Each dash represented a letter, and words were separated with spaces to present the visible characters normally available during natural reading. The first time participants pressed the space bar key, the first segment of the sentence appeared, replacing the dashes for a segment. From then on, each time they pressed the space bar key, the previous segment was removed and the subsequent segment was revealed. When they finished reading the last segment and pressed the space bar key, a yes-no acceptability question appeared about the sentence they had just read, and they responded by pressing a “yes” or a “no” button, as in several other studies (e.g., Juffs and Harrington. 1996; among others). Half of the answers were “yes” and half were “no” for both the filler sentences and the experimental sentences.

4.3.3.3. Clitic cluster acceptability test (learners only)

A clitic cluster acceptability test (Slabakova et al., 2012) was included to determine L2 knowledge of the syntax of Spanish clitics. As argued by Slabakova et al. (2012), there is no point in testing knowledge of Spanish CLLDs and its implementation in real time if L2 learners exhibit non-native-knowledge of clitics and their syntax. In this test, the learners chose the right options out of five possible answers in ten forced multiple-choice
sentences. From a total of 50 points, all learners had to score more than 35 (70%) in order to be included in the sample. An example of a trial can be found below (Slabakova et al., 2012, p. 329):

(14)  \textit{Dulce}: ¿Te gustó algo de la tienda?  
      ‘Did you like something from the store?’ \textit{Julia}: Me encanta esa chaqueta,\underline{me} pronto.  
      ‘I love this jacket,\underline{I-want to buy it} soon’

\checkmark me quiero comprarla  
\checkmark me la quiero comprar  
\checkmark quiero comprármela  
quiero comprar  
quiero me la comprar

4.3.3.4. Language background questionnaire

A language background questionnaire was administered to all participants in their L1. This questionnaire asked about age, age of acquisition of other languages, living abroad experience, and functional knowledge of other languages (see Bonnet, 2002, for evidence that self-evaluations can correlate with L2 proficiency).

4.3.4. Scoring

Participants received 1 point per correct answer and 0 per incorrect answer for the Spanish proficiency test, and the questions of the moving-window task. In the case of the clitic cluster acceptability test, there was a total of 50 points as the maximum score, each sentence of the 10 having 5 options from which choose. In addition to the accuracy data
scored at 1 or 0 points, the moving-window task generated additional scores: residual reading times (RTs) per segment.

Residual RTs were used instead of raw RTs to eliminate possible biases in reading speed (some participants read faster than others) and word length. Then, a linear regression was carried out on the remaining RTs, and regression residuals were extracted (i.e., how much raw value RTs deviated from the calculated value). This regression was conducted separately for each subject, to compare each person’s RTs to his/her own reading speed (for more information, see Ferreira and Clifton, 1986; Trueswell and Tanenhaus, 1994). Then, because residual RTs are more normally distributed than raw RTs but can still show skewness in lower values, a Gamma distribution was used. According to Anderson, Verkuilen, and Johnson (2013), a Gamma distribution provides a better fit to this kind of data than Normal distribution. However, residual RTs consist of both positive and negative values, and the Gamma distribution does not allow negative values to be included in the data. To address this problem, the residual RTs of each experimental sentence were in turn converted to $T$ scores. $T$ scores consist of standardized scores in which 50 represents the mean and a difference of 10 from the mean indicates a difference of one standard deviation.

4.4. Results

4.4.1. Moving-Window Task
The task had a mixed design with two independent variables and eight dependent variables. The two independent variables were RCIC (within-subjects: RCIC violation; and no RCIC violation), and Group (between-subjects: Spanish natives, Spanish learners). The eight dependent variables were residual RTs at every single segment of the experimental sentences (segments 1-7), and accuracy on acceptability scores.

These dependent variables generated eight Generalized Linear Mixed Models (GLMMs), one per variable. The GLMMs carried out followed a gamma distribution (log link). All GLMMs were conducted on separate data points (not aggregate means), and had RCIC, Group, and all their possible interactions, as fixed factors, and Subject as a random factor. Alpha level was .05, pairwise comparisons were calculated with Fisher’s Least Significant Different (LSD) post-hoc t-tests, and only significant effects and interactions were reported. Finally, a conservative approach was adopted when building the GLMMs, by selecting the Satterthwaite approximation for \( df \) to handle small groups and possible abnormally distributed data, and the robust estimation for the test of fixed effects and coefficients to control potential violations for model assumptions.

4.4.1.1. Residual RTs

Descriptive statistics for the residual RTs at all the sentence segments can be found in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>RCIC Violation</th>
<th>No RCIC Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Descriptive statistics for RT data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Segment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>A / según los empleados</td>
<td>Natives</td>
<td>50.03</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>46.85</td>
</tr>
<tr>
<td>el banquero (segment 2)</td>
<td>Natives</td>
<td>47.05</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>47.12</td>
</tr>
<tr>
<td>que (segment 3)</td>
<td>Natives</td>
<td>50.47</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>51.31</td>
</tr>
<tr>
<td>les prometió (segment 4)</td>
<td>Natives</td>
<td>47.50</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>50.33</td>
</tr>
<tr>
<td>beneficios (segment 5)</td>
<td>Natives</td>
<td>48.85</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>48.29</td>
</tr>
<tr>
<td>invierte (segment 6)</td>
<td>Natives</td>
<td>49.57</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>50.97</td>
</tr>
<tr>
<td>en la construcción (segment 7)</td>
<td>Natives</td>
<td>56.70</td>
</tr>
<tr>
<td></td>
<td>Learners</td>
<td>59.49</td>
</tr>
</tbody>
</table>

The GLMM conducted on the residual RTs at segment 1 (a / según los empleados) showed no significant main effects or interactions. The GLMM run on the residual RTs at segment 2 (el banquero) only displayed a significant interaction of Group × RCIC, $F(1, 971) = 5.806, p = .016$. However, post-hoc comparisons failed to reach significance. The GLMM carried out on the residual RTs at segment 3 (que) revealed a significant main effect of RCIC, $F(1, 979) = 14.045, p = .000$, such that the segment was read slower in the RCIC violation condition ($p = .001$). Furthermore, a significant interaction of Group × RCIC, $F(1, 979) = 9.694, p = .002$, showed that the L2 learners read the RCIC violation condition slower than the no RCIC violation condition than the natives ($p = .002$) in segment 3 (que).

The GLMM carried out on the residual RTs at segment 4 (les prometió) showed a main effect of Group, $F(1, 979) = 12.854, p = .000$, such that the segment was read faster
by the Spanish natives than the English learners \( (p < .05) \). Moreover, there was a main effect of RCIC, \( F(1, 979) = 13.282, p = .000 \), such that the no RCIC condition was read faster than the RCIC condition \( (p < .05) \). Finally, there was a significant interaction of Group × RCIC, \( F(1, 979) = 9.943, p = .002 \), such that this segment \( (les \ prometió) \) was read faster by the Spanish natives than the L2 learners in the RCIC condition \( (p < .05) \).

The GLMM run on the residual RTs at segment 5 \( (beneficios) \) revealed a main effect of RCIC, \( F(1, 979) = 6.200, p = .013 \). Nevertheless, post-hoc comparisons failed to reach significance. Finally, there was a significant interaction of Group × RCIC, \( F(1, 979) = 5.575, p = .018 \), but post-hoc comparisons failed to reach significance.

The GLLM conducted on the residual RTs at segment 6 \( (invierte) \), the critical segment of the sentence, showed a main effect of RCIC, \( F(1, 979) = 9.085, p = .003 \), such that this segment was read slower with the RCIC violation condition than with the no RCIC violation condition \( (p = .005) \). Importantly, there was no significant interaction Group × RCIC, \( F(1, 979) = .569, p = .451 \), which reveals that both groups read the segment in the same way, the segment with the RCIC violation condition being read slower than with the no RCIC violation condition. Finally, the GLLM run on the residual RTs at segment 7 \( (en \ la \ construcción) \) showed no significant main effects.

### 4.4.1.2. Acceptability Scores

The descriptive statistics for the acceptability scores (Table 2) show that natives tend to reject ungrammatical sentences, whereas L2 learners do not.

Table 2
Descriptive statistics for Acceptability data in percentages

<table>
<thead>
<tr>
<th></th>
<th>RCIC Violation</th>
<th>No RCIC Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natives</td>
<td>60.19</td>
<td>86.73</td>
</tr>
<tr>
<td>Learner</td>
<td>43.45</td>
<td>85.71</td>
</tr>
</tbody>
</table>

A GLLM run on acceptability accuracy showed that a main effect of RCIC, $F(1, 980) = 116.163, p = .000$, such that accuracy was higher with the no RCIC condition than with the RCIC ($p = .013$). In this respect, there was a significant interaction of Group $\times$ RCIC, $F(1, 980) = 6.063, p = .014$). Post hoc comparisons revealed that the L2 learners were less accurate with the RCIC violation condition than with the no RCIC violation ($p = .016$). These patterns show that L2 learners accepted the sentences with the RCIC violation condition at a higher rate, which suggests a strong trend to accept ungrammatical sentences.

4.5. Discussion

The present study examined (1) whether L2 speakers of Spanish parse sentences with CLLDs in a native-like fashion by applying grammar constraints such as the RCIC, and (2) possible differences between the RT data and the acceptability data. In light of the RT and acceptability data, the answers to the two questions are positive. L2 speakers displayed native-like parsing patterns in RT but not with the acceptability data.
For the first research question, RT data reveal that the human language parser tries to solve the dependency between the left-dislocated DP and the clitic by applying universal parsing principles such as the AFS in consonance with grammar constraints that operate in the language such as the RCIC in Spanish CLLDs, as indicated by the parsing patterns reported in this study. The parsing patterns indicate that, once the parser finds the left-dislocated DP, it immediately conducts an active search to solve the dependency. However, the dependency cannot be solved with the only verb having a clitic because the clitic and the verb are within a syntactic island, a domain in which the parser does not search for dependency formation. For this reason, the parser inhibits the search in the relative clause domain and waits until the matrix clause to solve the dependency. Nevertheless, once the parser reaches the clitic-less matrix verb, the dependency cannot be solved, and a parsing reanalysis takes place. As the reanalysis fails, the ungrammaticality is detected in the form of a slowdown in the critical region (the matrix verb).

Crucially, this effect was not found in the condition with no violation of the island constraint, which evinces that no active search is conducted after finding a constituent occurring in the left-periphery of the sentence without having undergone movement (e.g., a hanging topic left-dislocation). For this reason, no reanalysis is conducted by the parser and no slowdown effect is found in the critical segment (the matrix verb). The fact that in the RCIC violation condition the parsing of the segments following and preceding the critical segment did not show any significant difference when compared to the same segments in the no RCIC violation condition further supports these claims.
Along these lines, there were significant RT differences between the two conditions in three segments of the sentence. The first difference occurs in the critical segment, segment 6 (invierte), in which a slowdown associated with the detection of the ungrammaticality was found, and both groups performed in the same way. The other two differences appear in segments 3 (the complementizer que) and 4 (les prometió).

Specifically, the native group read those segments in a faster way that the L2 speakers did in the RCIC violation condition. Whereas the slowdown obtained in the critical segment follows from an explanation as the one advanced in the previous paragraph, the slowdown in the other two segments seems to be spurious effects related to the increased processing load at the edge of relative clauses reported in previous L2 studies (see Cunning et al., 2010; and references therein). Presumably, these patterns suggest that natives were simply faster in a more complex phenomenon from syntactic and processing perspectives. The fact that they are faster with the RCIC condition, which involves syntactic movement and a relative clause, is expected, since L2 speakers can experience those effects in complex areas of sentences during processing.

The fact that no such a slowdown was found in the last region of the relative clause further supports the claim that the spurious effects are an epiphenomenon of that increased processing load that L2 learners experience in that region of the sentence. Observe that if they were violating the RCIC constraint, the effect should have been the opposite. That is, they should have shown a processing facilitation in terms of faster RTs as a result of the dependency resolution with the clitic of the embedded verb. However, the opposite was found. From this, these RT data suggest that L2 speakers applied the RCIC in real-time as they were parsing the long-distance dependency between the left-
dislocated DP and the clitic, a finding that challenges the SSH and is consistent with the PLAD-H.

With regard to the second research question, the acceptability judgments seem to lag behind the parsing procedures implemented by L2 speakers during sentence comprehension. Whereas L2 learners performed in a native-like fashion with grammatical sentences not violating the RCIC constraint, and both natives and non-natives had extremely high percentages of acceptability, that was not the case with the ungrammatical sentences violating the RCIC. Specifically, L2 speakers not only performed in a non-native-like way, but they also exhibited a trend to accept ungrammatical sentences whereas their native counterparts rejected them. Despite the fact that natives showed a lower accuracy acceptability rate (60.19%), the data suggest that the native system has a clear distinction between grammatical and ungrammatical sequences when it comes to distinguishing between sentences violating the RCIC and sentences complying with it. Following a psycholinguistic “above chance” analysis of data (see Sagarra and Herchensohn, 2010), having more than 51% of rejection of ungrammatical sentences points out to a trend in the native grammars, according to which the distinction does exist. By contrast, L2 systems reveal the opposite trend; that is, they seem not to have the distinction, at least when it comes to providing this type of acceptability judgments, an asymmetry between online and offline measures attested in previous research (e.g., Renaud, 2009, 2011, 2014; Tokowicz and MacWhinney, 2005; a.o.). From an SSH perspective, the asymmetries between the parsing patterns and the acceptability judgments seem difficult to be explained, since they should go hand in hand due to the unavailability of an underlying native-like grammar. By contrast, these
asymmetric patterns fit well with the PLAD-H predictions. According to this approach (e.g., Dekydstpotter and Renaud, 2014; Renaud, 2014), parsing patterns and explicit knowledge of form can be decoupled.

A look at the SDs of both natives and non-natives in the acceptability scores reveals that the variability in the responses is equally large in both groups in the case of ungrammatical sentences. This variability can be interpreted as a consequence of the challenges posed by the experimental task *per se*, combined with the type of ungrammatical structure. That is, the fact that participants have to answer a yes-no question about the acceptability of ungrammatical sentences violating the RCIC without being able to read them again may have affected the consistency of linguistic intuitions in both natives and non-natives. In this respect, it is important to take into account that the actual behavior of the speaker results from “the interaction of a variety of factors, of which the underlying competence of the speaker-hearer is only one” (Chomsky, 1965, p.4). Finally, rejecting an ungrammatical sentence is more difficult than accepting a grammatical sentence, a pattern that is observed in the currently reported data.

As pointed out by scholars working in first language acquisition or in SLA (e.g., Grimshaw and Rosen, 1990; White, 2003), the relevant point is whether subjects are making the relevant distinctions, and not whether their responses are categorical. Under the assumption that L2 systems experience more difficulties than natives during performance due to differences in the allocation of cognitive resources, it is not surprising that the verbalization of their intuitions may be affected as a result of task complexities. Factors such as misinterpretation, inattention, and introspection during tasks tapping acceptability judgments may underlie the performance differences in non-natives.
(Hawkins, 2008). Finally, as pointed out by scholars working on experimental linguistics and sentence processing, judging a sentence is not necessarily an indication of the nature of the grammar (Trotzke, Bader, and Frazier, 2013).

4.6. Conclusions

This study examined whether L1 English advanced learners of L2 Spanish employed grammatical information when parsing sentences with Spanish CLLDs that violate a type of syntactic island constraint, the RCIC. In addition, it explored if L2 RT data mirrored L2 acceptability data. Despite the fact that L2 learners exhibited native-like parsing patterns, an asymmetry between RT data and acceptability data was found. This asymmetry consisted in the verbalization of L2 grammatical intuitions lagging behind the L2 parsing mechanisms. Overall, these findings are consistent with L2 parsing models predicting that the nature of L2 parsing is qualitatively identical to its native counterpart such as the PLAD-H, and challenge models such as the SSH for which L2 parsing is fundamentally different, since it does not rely on grammatical information, but lexico-semantic and pragmatic cues.
CHAPTER 5:
SUMMARY OF FINDINGS AND CONCLUDING REMARKS

This dissertation aimed at testing competing generative models on whether adult second language acquirers can acquire L2 grammatical features that are absent in their L1, compute morphosyntactic operations involving these L2 features in real time, and parse linguistic strings in the L2 in a native-like way. Specifically, this dissertation examined the role of L1-L2 overlap, L1 transfer, task effects, and cognitive complexity on the L2 acquisition and parsing of Spanish clitic-doubled left dislocations (CLLDs), a type of verb-object agreement phenomenon. To address these questions, L1 English advanced learners of L2 Spanish completed a series of online (moving-window paradigm) and offline (acceptability judgments) experiments to test their sensitivity to grammatical gender and number violations between left-dislocated DPs and clitics, and the operativeness of the Relative Clause Island Constraint (RCIC) in CLLDs. Results show that L2 learners can overcome L1 transfer and acquire new L2 grammatical features, utilize them in real time to comprehend sentences in the target language, apply grammatical constraints such as the RCIC to build representations of the L2 input in a native-like fashion, regardless of cognitive complexity, potential task effects, and L1-L2 overlap. These findings support current generative models that propose that L2 leaners can acquire and process the target language in native-like way. Moreover, the studies make a significant contribution to the field of second language acquisition by providing new data of an understudied domain in this field: The L2 acquisition and processing of verb-object agreement. Finally, the data reported in this dissertation contributes to the
field of theoretical linguistics by empirically showing the existence of syntactic island effects in CLLDs, a phenomenon that had not been empirically investigated.

5.1. *Summary of findings in the light of previous research on L2 Spanish CLLDs and L2 verb-object agreement*

Previous research had shown mixed findings concerning the acquisition of L2 Spanish CLLDs. On the one hand, some researchers claimed that L2ers were able to develop a native-like representation, but difficulties arose in the form of optionality in the application of semantic constraints on clitic-doubling (e.g., Borgonovo et al., 2006; Valenzuela, 2005). By contrast, other researchers argued that the underlying grammatical representation in L2 systems was not native-like, and, thus, these systems resorted to L1 transfer as a way of compensating for the unavailability of new grammatical features in the L2 (e.g., Parodi, 2010). As it was argued in Chapter Two, the type of phenomenon investigated (the semantic conditions on clitic-doubling on CLLDs) did not make it possible to go beyond these opposite analyses of the findings. Against this background, this dissertation presented novel findings from an innovative study on the operativeness of the RCIC in Spanish CLLDs that allowed us to determine that L2ers were able to develop a native-like representation of CLLDs and employ it in real-time (see 1.1.2. below for further details). Finally, another series of experiments made it possible to determine that L2ers were able to overcome inflectional variability with grammatical gender and number involving verb-object agreement (see below for further details), a domain that has been shown to cause prolonged difficulties in L2 acquisition (e.g.,
Tremblay, 2005), in particular with grammatical gender and number agreement (e.g., McCarthy, 2007, 2008; Rossi et al., 2014). The summary begins with the findings from these experiments on grammatical gender and number agreement in L2 Spanish CLLDs, and continues with the results of the study on the operativeness of the RCIC on the same structure.

Against this background, the experiments on L2 Spanish CLLDs in this dissertation presented an innovative design that allowed us to determine whether L2ers were able to develop a native-like representation of CLLDs and employ it in real time. In addition to shedding light on this debate on L2 Spanish CLLDs, it was possible to test current generative approaches to second language acquisition and parsing, and expand the current empirical findings on the L2 acquisition and parsing of verb-object agreement phenomena and their interfaces with other linguistic (morphosyntax) and non-linguistic (discourse) cognitive modules.

5.1.1. Findings on the sensitivity to grammatical gender and number violations in L2 CLLDs (Chapter Three)

The first series of experiments reported in Chapter Three presented new data on L2 Spanish object-verb agreement. The first experiment explored whether L2ers were able to overcome inflectional variability concerning grammatical gender and number agreement in the verbal domain. Specifically, it addressed the extent to which they displayed native-like online and offline sensitivity to detect gender and number mismatches between a left-dislocated DP and a clitic when reading sentences for
determining acceptability with CLLDs. In order to explore any potential asymmetries between the acquisition and parsing of a grammatical feature that exists in the L1 of the L2ers (e.g., number) and another one that does not (e.g., gender), grammatical gender and number were experimentally manipulated. The mismatches involved the default forms (e.g. singular in number and masculine in gender) to test the Morphological Underspecification Hypothesis (McCarthy, 2007, 2008, 2012). In this study natives and non-natives displayed no statistically significant differences in their performance, and exhibited online and offline sensitivity to both types of mismatches. In addition, no asymmetries were found in the parsing and rejection of grammatical gender and number mismatches.

The second experiment of the series reported in Chapter Three explored the same phenomena, but subjects were asked to read sentences with CLLDs only for comprehension. By doing so, it was possible to explore the potential role of task effects (e.g., reading L2 sentences for comprehension or for detecting grammatical anomalies) in the online detection of grammatical mismatches by L2ers. In addition, another experimental condition was included to explore whether L2ers were also sensitive to case violations; namely, the use of pronouns in dative case instead of accusative case. The rationale for including this new condition was to test any potential underlying effect resulting from leísmo (i.e, the use of dative object pronouns le / les instead of their accusative counterparts in some varieties of Spanish) in L2 systems. As in the first experiment, no statistically significant differences were found between native and non-natives in their performance in any of the conditions. The findings obtained in both experiments suggest that L2ers can acquire, compute, and parse L2 grammatical features
regardless of L1-L2 overlap, and whether the task requires them to read for comprehension or detection of grammatical anomalies. Overall, data from the set of experiments in Chapter Three reveal that L2ers can overcome inflectional variability involving object-verb agreement and employ the expected (native) marked forms instead of the defaults, *contra* what the MUH predicts.

5.1.2. *Findings on the processing of the RCIC in Spanish L2 CLLDs (Chapter Four)*

The second series of experiments reported in Chapter Four showed innovative data on grammatical constraints on L2 object-verb agreement. More precisely, they elicited online and offline data about the operativeness of the Relative Clause Island Constraint (RCIC) in Spanish CLLDs. The RCIC imposes restrictions on the extraction of constituents from a relative clause to other domains in a sentence. In the case of CLLDs, the extraction of DPs from within the relative clause to the left periphery of the sentence causes the derivation to crash. As shown in Chapter Two, the left-dislocated DP and the clitic constitute a grammatical long-distance dependency in which grammar constraints such as the RCIC operate.

Examining the operativeness of the RCIC in L2 Spanish is crucial to shed light on current debates on grammatical representation and parsing in L2 systems. First, previous research on the L2 online operativeness of the RCIC with wh-filler-gap dependencies provided mixed results on the extent to which L2 systems can apply a full-parsing route to the incoming L2 linguistic string. In particular, some of those findings supported the predictions of the Shallow Structure Hypothesis, or SSH, (Clahsen and Felser, 2006a,
2006b, 2006c), according to which grammatical long-distance dependencies are parsed by utilizing lexico-semantic and pragmatic cues, but not grammatical information. Along these lines, the existing evidence on the L2 acquisition of Spanish CLLDs is consistent with what causes L2 systems to resort to shallow parsing; namely, an underlying impaired grammatical representation. As argued by Parodi (2010), L2 systems compensate for this lack of a native-like grammatical representation by resorting to L1 transfer. For instance, in the case of L1 English learners of L2 Spanish, that strategy consists of treating Spanish CLLDs (*mutatis mutandis*, the equivalent of English Topicalization; see Chapter Two for further details) as English Left Dislocations.

Crucially, if Parodi’s (2010) predictions were correct, L1 English learners of L2 Spanish should display a non-native-like online and offline performance with regard to the operativeness of the RCIC in Spanish CLLDs. This is because the RCIC only operates with phenomena like CLLDs and Topicalizations, but not with Hanging Topic Left Dislocations (see Chapter Two for further theoretical details).

*Contra* these predictions and those of the SSH, natives and non-natives displayed no statistically significant differences in their performance, thereby showing sensitivity to the RCIC. From this, it is possible to conclude that the underlying grammatical representation of the L2ers is native-like and they can utilize it in real time to process sentences in the target language as natives do. However, L2ers did exhibit a non-native-like acceptance of sentences violating the RCIC. This asymmetry between online and offline data was accounted for in terms of how the acquisition process is driven by the parser. That is, under the assumption that the parser is the language acquisition device (Dekydstpotter and Renaud, 2009, 2014), the fact that native-likeness emerges first in the
form of parsing patterns follows. In this regard, the verbalization of grammatical intuitions elicited through acceptability judgments can be delayed with respect to the actual grammatical operations that take place in real time, and may reflect an apparent non-native like knowledge of the target language during development. In sum, the findings reported in Chapter Four suggest that L2 systems can develop a native-like representation and parsing of grammatical long-distance dependencies such as CLLDs in L2 Spanish.

To date, no previous psycholinguistic research has been conducted on how grammatical constraints on movement operate in CLLDs in native systems. The importance of the type of innovative research reported in this dissertation lies in that it makes it possible not only to obtain new knowledge on the psychological reality of syntactic islands, but also to contribute to current debates in theoretical linguistics concerning the existence of syntactic islands. There is a long-standing debate in generative grammar with regard to whether or not CLLDs are constrained by syntactic islands (for further details and discussion in this regard, see López, 2009, and Boeckx, 2012). Experimentally showing that Spanish CLLDs are constrained by the RCIC via online (parsing patterns) and offline (acceptability judgments) techniques supports theoretical approaches that argue in favor of movement analyses of CLLDs (e.g., Cinque, 1977; López, 2009), as a type of A-bar movement like wh-movement (e.g., Chomsky, 1977).

5.2. Future directions
With regard to the findings in Chapter Three, it is necessary to further explore the predictions of the MUH in connection with other factors. For instance, existing evidence shows that the L2 acquisition and processing of grammatical gender is affected by factors such as the distance between the agreeing constituents (e.g., Keating, 2010), individual cognitive capacities such as working memory (e.g., Sagarra and Herschensohn, 2010), and saliency of the agreeing morphological cues (e.g., Renaud, 2014). The importance of exploring these factors in connection with the predictions of the MUH lies in obtaining potentially revealing data on the developmental trajectories in the second language acquisition of grammatical features and their implementation in real time.

That is, it would be possible to gain explanatory power on L2 variability by uncovering the underlying factors modulating L2 development. For example, the experimental design in McCarthy’s (2007, 2008) studies, which were offline and untimed, (both in comprehension and production) only included cases of intersentential gender and number agreement involving object clitics, which contrasts with the type of experimental design of the studies reported in this dissertation, namely, cases of adjacent intrasentential agreement in sentences with CLLDs. This difference –for which the MUH in its current formulation has no predictions to make– could explain why L2ers in McCarthy’s (2007, 2008) studies systematically resorted to non-native default forms in their comprehension and production performance.

Under a heavy cognitive burden (e.g., the more distant the agreeing constituents, the higher the demands on working memory involved in processing –see Keating (2009, 2010) for details in this respect), L2 systems may override the Subset Principle that operates in the morphology component and resort to default forms in comprehension,
which is a less demanding option in linguistic and cognitive terms (defaults are simpler forms) and frequency (defaults are more frequent than marked forms) – see Chapter Three for details in this respect. This is an empirical question that deserves to be experimentally addressed in a systematic way, and for which the generalizations made by the MUH concerning the adoption of defaults in L2 morphology are very relevant.

With regard to the findings in Chapter Four, further research with different methodologies (e.g. eye tracking) should be conducted to better understand the operativeness of syntactic islands with CLLDs in L1 and L2 systems. As discussed in Chapter Four, Spanish natives correctly rejected sentences violating the RCIC, but they did so with a lower degree of expected accuracy. This fact was analyzed as being a potential task effect, which was intensified in the case of L2ers. Presumably, this happened because subjects had to read the sentences in a segment-by-segment fashion and provide yes-no answers to acceptability questions once the sentences had disappeared, a technique extensively used in the moving-window paradigm (e.g., Juffs and Harrington, 1995). Processing and providing acceptability judgments about this phenomenon are by no means a simple task, a fact pointed out, among others, by Pickering, Barton, and Shillcock (1994, p. 221) about the sentence processing of syntactic islands in L1 English: “[…] there is the worry that it may be impossible to construct relevant experimental materials that do not stretch the boundaries of normal processing. It will be necessary to run many related studies if we are to make to make close investigation of the relationship between linguistic theory and sentence processing.”

---

24 Inserting the vocabulary items for grammatical gender and number during Lexical Insertion in the morphology component predicts a lighter cognitive load for the defaults since they do not have to be inhibited during competition with the non-default forms in accordance with the Subset Principle. As argued and demonstrated by Renaud (2009, 2010, 2014), this is the case with, for instance, grammatical gender.
short, complex grammatical phenomena like syntactic islands require the employment of multiple and diverse experimental methodologies that combine different studies to shed light on the psychological basis of linguistic knowledge.

In this respect, recording eye movements during the reading of sentences displayed in a cumulative fashion to elicit data on the online operativeness of syntactic constraints (Felser et al., 2012), in conjunction with the possibility of answering acceptability questions about those sentences as they are still available for rereading, provides a richer source of information of this complex phenomena. This is because data on processing patterns of several critical sentence loci will be obtained before and after the acceptability question appears in the task. In addition, when non-natives are given the possibility of rereading the critical sentences with syntactic island violations that they have to judge, there is a significant improvement in their performance and they can reach nativelikeness (e.g., Comínguez and Sagarra, 2015). From this, it will be important to conduct a future experiment on the processing of syntactic island constraints on CLLDs that utilizes the eye-tracking technique and has an improved design (i.e., subjects can reread the experimental sentences before making an acceptability judgment). By doing so, it will be possible to comply with the goal of having experimental materials that elicit data on the operativeness of syntactic constraints and do not stretch the limits of normal processing.

5.3. Final remarks
Taken together, the findings reported in Chapters Three and Four of this dissertation support theoretical models according to which L2ers can acquire and employ in real time grammatical features in a native-like fashion regardless of L1-L2 overlap, task demands, cognitive complexity, and type of grammatical dependency (e.g., long vs. short). The predictions of hypotheses such as the Feature Reassembly Approach (Lardiere, 2009), and the Parser as Language Acquisition Device Hypothesis (Dekydstspotter and Renaud, 2009, 2014) were borne out. By contrast, other hypotheses such as the Representational Deficit Hypothesis (Hawkins, 2009), the Shallow Structure Hypothesis (Clahsen and Felser, 2006a, 2006b, 2006c), and the Morphological Underspecification Hypothesis (McCarthy, 2007, 2008, 2012) were not supported. Along these lines, the data reported in this dissertation are consistent with the Missing Surface Inflection Hypothesis (Prévost and White, 2000), since morphological underspecification at the representational level can be overcome, variability being reduced to production. Finally, despite the fact that the set of experiments were not designed to test the predictions of the Interface Hypothesis, or IH, (Sorace and Filiaci, 2006; Sorace 2011), the findings reported in this dissertation are informative in this respect. This is because the IH predicts that linguistic phenomena involving the interface of syntax with pragmatic cause insurmountable difficulties for L2ers. These difficulties consist in never attaining a native-like performance with linguistic phenomena of this sort, due to the level of cognitive complexity that they involve (Sorace, 2011). Contrary to these predictions, the data from the set of experiments reported in this dissertation show that linguistic phenomena involving this type of interfaces do not constitute insuperable difficulties for L2ers at either the
representational or performance levels, at least in what concerns the phenomena investigated in this dissertation.

In addition to the future directions mentioned above with regard to the studies on grammatical gender and number agreement, and the RCIC with Spanish CLLDs, further research should explore the extent to which L2 convergence can be attained concerning the semantic constraints operating on the clitic doubling of left-dislocated DPs and NPs. That is, as shown in Chapter Two, L2ers systematically fail to acquire these constraints, their performance being characterized by the adoption of a default strategy consisting in either resorting to overextending the use of the clitic (e.g., L1 English and L1 Brazilian Portuguese learners of L2 Spanish) or not using anything at all (e.g., L1 Chinese learners of L2 Spanish). By assuming that linguistic phenomena that involve the interface of syntax with pragmatics like CLLDs are more cognitively taxing (e.g., Sorace, 2011), it would be possible to entertain the hypothesis that semantic constraints on clitic doubling are overridden by adopting such a default strategy, as a way of dealing with the cognitive burden. Presumably, the fact that natives tend to clitic-double left-dislocated DPs and bare NPs (see in Chapter Two the review of Leonetti’s (2011) analysis) provides some input that consolidates that strategy in L2 systems. If that was the case, further experiments utilizing online and offline techniques and taking into account individual cognitive differences (e.g., global sentence processing speed, working memory) in L2ers would make it possible to shed new light on the underlying factors modulating the strong variability patterns on L2 Spanish CLLDs that were found in previous research. This future avenue of research along with the series of studies reported in this dissertation will provide a better understanding of an understudied phenomenon in the field of second
language acquisition; namely, the syntax, morphology, semantics, and pragmatics of verb-object agreement and its parsing.
BIBLIOGRAPHY


Slabakova, R., Kempchinsky, P., & Rothman, J. (2012). Clitic-doubled left dislocation and focus fronting in L2 Spanish: A case of successful acquisition at the syntax-


APPENDIX A

Stimuli for the Comprehension Self-paced Reading Task (Chapter Three)

1. a. El controlador sostiene que las máquinas las repararon hoy por la mañana.
   b. El controlador sostiene que las máquinas los repararon hoy por la mañana.
   c. El controlador sostiene que las máquinas la repararon hoy por la mañana.
   d. El controlador sostiene que las máquinas les repararon hoy por la mañana.

2. El diseñador demuestra que las sillas las fabricaron ayer por la tarde.

3. El cajero asegura que las mesas las usaron hoy en la madrugada.

4. El carnicero cuenta que las bolsas las reciclaron ayer al mediodía.

5. El director dice que las revistas las editaron hoy por la tarde.

6. El decorador aclara que las casas las diseñaron ayer por la mañana.

7. El coronel considera que las bombas las lanzaron hoy al mediodía.

8. El vigilante nota que las bicicletas las arreglaron ayer en la madrugada.

9. El procurador asume que las ventanas las cerraron hoy por la mañana.

10. El supervisor asume que las verduras las transportaron ayer por la tarde.

11. El general dice que las granadas las tiraron hoy en la madrugada.

12. El distribuidor observa que las botellas las sacaron ayer al mediodía.

13. El arquitecto describe que las escuelas las evacuaron hoy por la tarde.
14. El ayudante sostiene que las películas las proyectaron ayer por la mañana.
15. El chef cuenta que las tortillas las cocinaron hoy al mediodía.
16. El prisionero nota que las camisetas las lavaron ayer en la madrugada.
17. El conductor argumenta que las camionetas las aprocaron hoy por la mañana.
18. El promotor describe que las impresoras las instalaron ayer por la tarde.
19. El dueño sugiere que las escaleras las pintaron hoy en la madrugada.
20. El chófer reporta que las ruedas las cambiaron ayer al mediodía.
21. El criado argumenta que las camas las limpiaron hoy por la tarde.
22. El encargado señala que las zapatillas las pagaron ayer por la mañana.
23. El granjero reporta que las cajas las llevaron hoy al mediodía.
24. El pintor observa que las salas las decoraron ayer en la madrugada.
25. El asistente sugiere que las faldas las secaron hoy por la mañana.
26. El ministro demuestra que las avenidas asfaltaron ayer por la tarde.
27. El inspector aclara que las estatuas las restauraron hoy en la madrugada.
28. El secretario señala que las plantas las regaron ayer al mediodía.
29. El responsable declara que las lámparas las colgaron hoy por la tarde.
30. El camarero asegura que las empanadas las prepararon ayer por la mañana.
31. El portero declara que las esculturas las dañaron hoy al mediodía.

32. El sastre considera que las corbatas las plancharon ayer en la madrugada.
APPENDIX B

Stimuli for the Acceptability Self-paced Reading Task (Chapter Three)

1. a. El asistente asegura que las faldas las plancharon hoy por la mañana.
   
   b. El asistente asegura que las faldas los plancharon hoy por la mañana.
   
   c. El asistente asegura que las faldas la plancharon hoy por la mañana.

2. El camarero señala que las plantas las colgaron ayer por la tarde.

3. El carnicero dice que las sillas las fabricaron hoy en la madrugada.

4. El vigilante argumenta que las impresoras las sacaron ayer al mediodía.

5. El conductor nota que las salas las evacuaron hoy por la tarde.

6. El controlador demuestra que las bolsas las usaron ayer por la mañana.

7. El criado nota que las cajas las decoraron hoy al mediodía.

8. El director asegura que las casas las pintaron ayer en la madrugada.

9. El diseñador sostiene que las mesas las repararon hoy por la mañana.

10. El entrenador reporta que las camas las cambiaron ayer por la tarde.

11. El cajero describe que las ruedas las pagaron hoy en la madrugada.

12. El ayudante señala que las tortillas las prepararon ayer al mediodía.

13. El ministro aclara que las esculturas las restauraron hoy por la tarde.

14. El portero considera que las avenidas las limpiaron ayer por la mañana.
15. El procurador dice que las clínicas las cerraron hoy al mediodía.

16. El chef observa que las estatuas las dañaron ayer en la madrugada.

17. El secretario demuestra que las camisetas las lavaron hoy por la mañana.

18. El supervisor argumenta que las bicicletas las diseñaron hoy por la mañana.
APPENDIX C

Stimuli for the Self-paced Reading Task (Chapter Four)

1. a. A los desempleados el banquero que les prometió beneficios invierte en la construcción.

   b. Según los desempleados el banquero que les prometió beneficios invierte en la construcción.

2. A los vecinos el dibujante que les mostró pinturas triunfa en el extranjero.

3. A las pasajeras la secretaria que les hizo ofertas trabaja en la aerolínea.

4. A las celebridades la modista que les regaló vestidos se retira de la profesión.

5. A los científicos el emprendedor que les ofreció trabajos se interesa en la tecnología.

6. A los millonarios el economista que les reveló datos pertenece al gobierno.

7. A las chicas el filántropo que les prometió regalos colabora con la comunidad.

8. A las artistas el experto que les mostró cuadros enseña en la universidad.

9. A las enfermas la psicóloga que les proporcionó tratamientos atiende con dedicación.

10. A las discapacitadas el benefactor que les regaló libros contribuye con la biblioteca.

11. A las abuelas la doctora que les ofreció alimentos vive en el barrio.

12. A los investigadores el militar que les reveló secretos escapa de la justicia.

13. A las empresarias la inversora que les facilitó fondos participa en el negocio.
14. A las actrices el estilista que les recomendó peinados se caracteriza por la innovación.

15. A los necesitados el alcalde que les garantizó ayudas cumple con las promesas.

16. A los detectives el abogado que les facilitó información coopera con la investigación.

17. A los músicos el especialista que les recomendó instrumentos se destaca por la experiencia.

18. A los ciudadanos el fiscal que les garantizó seguridad lucha contra el crimen.