How far can they go?: Non-native speakers of Spanish and wh- questions

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How far can they go?: Non-native speakers of Spanish and *wh*- questions

A Dissertation Presented

by

MARIA TURRERO-GARCIA

Submitted to the Graduate School of the University of Massachusetts Amherst in partial fulfilment of the requirements of the degree of

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Hispanic Literatures, Cultures and Linguistics
How far can they go?: Non-native speakers of Spanish and *wh*-questions

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To Eva and Juan, who taught me to learn
ACKNOWLEDGMENTS

This work would have never been possible without the inestimable help, guidance and counsel of my advisor and thesis director, Professor Luiz Amaral. He has helped me grow as a scholar and as a researcher, and I could never thank him enough for all his support.

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Eva, Juan, Pablo, Miguel, Aida: you have no idea how important you are. Without your unconditional love and support I would not have succeeded in half of half of the things I have done in life. Every laugh that we have ever shared (and there have been many) has turned me into the woman I am today; and if I am proud of that woman, it is only because she is your daughter and your sister. I love you beyond words and kilometers.

I survived!
ABSTRACT
HOW FAR CAN THEY GO? NON-NATIVE SPEAKERS OF SPANISH AND WH-QUESTIONS
FEBRUARY 2016

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The wh- island is a syntactic phenomenon that constitutes a constraint on wh- movement with implications for interpretation (the speaker must be aware of the distinction between arguments and adjuncts, and of the effects of the [-QU] feature on the middle wh- word against extraction) and for production (the speaker needs to know the limited, short-distance scope of the fronted wh- word in adjunct questions). In Spanish, each wh- word carries a referential value that affects its classification as an adjunct or an argument, hence affecting the extractability of each wh- word from a complex question containing a wh- island. The aim of this dissertation is to analyze how both the interpretation and production of questions that contain a wh- island are played out in the interlanguage of Second Language speakers of Spanish at the intermediate and near-native level. Through the inclusion of a control group of native speakers, it also looks into how current syntactic descriptions of the adult grammar of Spanish can accommodate experimental data. The interpretation experiment consisted of nine situations followed by a question containing a wh- island that subjects had to respond to. The results obtained suggest that non-native speakers of Spanish, although never fully converging, come closer to native-like results as their proficiency advances. As for native speakers, the results show a need for the reinterpretation of the wh- island and of the adjunct/argument asymmetry based on the properties of each wh- word individually as well as on verb subcategorization effects. The production experiment consisted of a game-based elicited imitation task. In line with the results found for interpretation, there is a clear proficiency-related improvement among the non-native groups. What the production task shows, above all, is a much larger use of creativity in the question-forming strategies used by near-native and native speakers, whereas the intermediate group shows a significantly higher use of avoidance strategies that allow them to form the shortest, most semantically and syntactically simple questions possible. The combination of both experiments across all three language groups gives a detailed account of wh- islands and how typically disregarded lexical factors affect them.
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CHAPTER 1
INTRODUCTION

The current work focuses on the acquisition of questions that contain a *wh-* island (questions such as “Where did you think when you would find the animal”, where the fronted *wh-* word is meant to be answered in relation to the higher verb –i.e. locally- and other potential responses are traditionally considered ungrammatical) by native and non-native speakers of Spanish. It looks into this structure both from an interpretive and a productive perspective, through the data obtained from two experiments. The aim is manifold: first, it seeks to offer empirical support to theoretical claims on *wh*- movement that have been put forward in the literature and that have not received empirical data to back them up. Secondly, this research was developed to advance the field of Second Language Acquisition (henceforth SLA) by contributing to several ongoing discussions (among which there are the current gaps on SLA knowledge of *wh*- movement and the debate on the asymmetry of production and interpretation). Thirdly, this thesis puts forth innovative experimental techniques that can contribute to the aspect of data-gathering methods in the field of Language Acquisition.

In order to fully understand what this dissertation proposes, there are certain key concepts that the reader must be acquainted with. First among them is what SLA refers to: it is the sequential acquisition of a Second Language (in this case, Spanish) by adult speakers of a different language (in this case, English) (Klein, 1986; Ellis, 1994; Gass and Mackey, 2012). This concept carries two important properties: sequentiality and adulthood. The former refers to the acquisition of a second language (henceforth L2) only after the first language (L1) has already been established in the speaker’s grammar. This
is essential to the nature of the discussion as well as to the data presented because simultaneous acquisition of two languages implies different linguistic and cognitive abilities and properties from those at use in sequential acquisition, the focus of this study (Abrahamsson & Hyltenstam, 2009; Jia, 1998; Johnson & Newport, 1989). The concept of adulthood is equally important in this definition for similar reasons: the linguistic and cognitive abilities and resources that intervene in the acquisition of an L2 are different if the speaker has reached adulthood before the onset of SLA, according to some theories of L2 acquisition. The debate on Critical Periods for Language Acquisition (Birdsong 1999, Snow & Hoefnagel-Höhle 1978, De Keyser 2000, Hakuta et al. 2003) is not the aim of this dissertation; for this reason the data gathered only includes learners whose L2 onset was after 18 years of age.

*Wh*-movement refers to a property of (some) natural languages\(^1\) according to generative theories of grammar (Chomsky 1966, 1977, 1981, 1986; Takahashi 1993; Rizzi 1990; Demonte 1988). It refers to an element that is originally created in a low position in the syntactic structure moving up to a fronted position during spellout. Although *wh*-movement has many possible outcomes and different characteristics, Spanish and English, the two languages involved in this project, have similar characteristics with regards to it.

*Wh*-movement, and particularly the concept of a *wh*-island, is deeply connected with the concept of long-distance movement. This refers to the movement of elements in the sentence that cross entire CPs and complex phrases. Long-distance movement is possible in most languages that have movement, but it is also heavily constrained and

\(^1\) Some authors claim that *wh*-movement is a property of all languages, with parametric variation depending on which copy is pronounced (Baltin 1987, Fox 1999, Merchant 2000, Tiedeman 1995).
therefore limited to specific contexts. This creates an acquisitional difficulty, inasmuch as the speaker has to master a wide set of very specific rules that limit movement. This interaction between long-distance movement in general and the \textit{wh}- island in particular becomes relevant when looking into the existing literature. Most studies, both for L1 and L2 acquisition, that have focused on long-distance \textit{wh}- movement have done so from a naturalistic perspective in which many questions with two \textit{wh}- words are found, in which only one of them is meant to be responded (Perez-Leroux 1993, de Villiers et al. 1991, Gutierrez 2005). However, these are not questions that contain \textit{wh}- islands. Rather, they are scope-marking and \textit{wh}- copying strategies that have a similar structure to that of a question containing a \textit{wh}- island, but they have different origins and they disappear completely in the adult grammar in most languages (with the exception of languages such as German or Hindi, which have \textit{wh}- scope marking also in the adult grammar) (Lutz et al. 2000, Brandner 2000). No studies have been found that study the production of questions containing the \textit{wh}- island specifically.

As a secondary objective this dissertation seeks to contribute to the existing debate on the alleged asymmetry between interpretation and production that has been the center of much research in the recent past (Pickering and Garrod 2013). This is a phenomenon that has been found both in L1 and L2 acquisition, and researchers to date have not yet come to an agreement on exactly what it implies and how it is manifested in acquisition. Currently, the most common tendency is to analyze this asymmetry on a structure-by-structure basis: certain linguistic structures seem to be more problematic from an interpretive perspective whereas in other cases, it is production that poses larger difficulty. In the case of this research, the aim is to determine what happens with the
specific *wh*- island under study in the case of L2 speakers. The working hypothesis is that production will be more problematic for non-native speakers but this will not be reflected solely in the amount of non-target forms obtained in the production experiment: rather, it will stem from a large tendency in non-native speakers to avoid producing the target structure altogether. This is hypothesized for a variety of reasons, among which is the fact that in the interpretation task, there is a finite amount of possible responses, whereas in the production experiment there are no such limitations. The openness of the task is expected to result in avoidance, unlike in the interpretation task where avoidance is difficult to use as an active strategy.

Research on *wh*- movement in L2 has focused mainly on the differences between speakers of a non-movement L1 learning a movement L2, such as L1 Japanese speakers acquiring English or Spanish as an L2 (Schulz 2006, Yusa 1995), or on the differences between two movement languages as L1 and L2, such as the differences in *wh*-movement in L1 English speakers acquiring Spanish as an L2 (Montrul et al 2008). However, very few studies to date (Liceras et al. 2011, Slavkov 2008) have focused on parallel L1 and L2 structures with respect to *wh*- movement. This dissertation seeks to provide data-driven evidence for how a complex L1 structure with an equivalent L2 structure is accommodated into the interlanguage grammar at different stages of L2 acquisition. In particular, one of the main aims of this dissertation is to analyze the effect of overall proficiency increase in L2 speakers with regards to the *wh*- island, which is a structure that remains untaught at the two levels of language competence under analysis in the present work.
When it comes to long-distance *wh*-acquisition, a distinction between interpretation and production must be made. Interpretation studies have been carried out with diverse methodologies and yielded different results. Many L1 studies (Perez-Leroux 1993, de Villiers et al. 1991, Roeper et al. 2007) have carried out situation interpretation tasks in different languages, with an overall common result of finding medial responses in questions with *wh*-islands but no long-distance responses (responses in which the *wh*-word that creates the barrier is disregarded, and the fronted *wh*-word is interpreted in relation to the lower verb). In the field of L2 acquisition, the few studies that have tackled long-distance movement and the *wh*-island have done so through Grammaticality or Acceptability Judgment Tests (henceforth GJT or AJT) (Liceras et al. 2011). While these techniques can be useful in some studies of SLA as a complementary source of information on certain structures, in general they lack explanatory force in the analysis of L2 data. Unless they contain follow-up questions as to the nature of the judgment, GJTs and AJTs can be misleading (a speaker could be focusing on a part of the sentence that is not the aim of the study and therefore judge a structure as ungrammatical or inadequate for reasons that have nothing to do with the actual matter under study). Hence, this dissertation has as one of its main points to carry out an interpretation task that provides actual responses to questions containing a *wh*-island, therefore obtaining actual interpretive data instead of judgments on the acceptability of the structure. This goes in line with the methodologies that have been used in the study of L1 acquisition of *wh*-movement.

A different approach must be taken in the study of production. As already mentioned, most studies in the fields of both L1 and L2 have focused mainly on the
production of ungrammatical scope-marking and copying structures that eventually disappear as language proficiency advances. An exception is the study by Van der Lely et al. (2003), who study the production of long-distance *wh*-movement in children with SLI through a game. This game served as the basis for the experiment used in this dissertation, with the adequate modifications that allowed the researcher to specifically test the production of questions containing the *wh*-island. This is an innovation that was created specifically to gather L2 data, but it can be extended to apply to L1 acquisition studies and also to data gathering in adult L1.

There are, to the author’s knowledge, no Spanish L2 studies that focus on the production of questions that contain *wh*-islands (or, more generally, on long-distance *wh*-movement production). Hence, this dissertation is novel in offering an experimental account of both native and non-native speakers of Spanish in their production of questions that contain *wh*-islands. Besides providing a data analysis to account for a complex, understudied theoretical issue, the methodological innovation presented here can be extended to studies in other syntactic movement phenomena.

Claims of an existing asymmetry between interpretation and production must be grounded on dual studies that include both the interpretation and the production task, rather than use data gathered from separate studies. Therefore, this dissertation aims to analyze the proposed asymmetry with regards to *wh*-islands in L2 Spanish with the perspective of having the same subjects and similar experimental items in interpretation and production, in order to make the data interpretation comparable. The design of the study itself stems partially from the desire to make such comparison, therefore giving consistency to the experimental methods and subject selection.
Although this is a dissertation that focuses on the L2 acquisition of Spanish, it also raises some questions on how adult L1 Spanish speakers interpret and produce questions that contain *wh*-islands. The L2 data lacks explanatory force unless it is contrasted against adult L1 Spanish. This contrast, however, cannot be based on previous theoretical claims of the long-distance movement of Spanish, but rather it must be obtained from actual data gathered with the same experimental techniques that the L2 speakers are subject to. This serves a twofold purpose: first, it guarantees consistency in the way the data are gathered and analyzed. Second, and most importantly, it also provides the grounds for a discussion of Spanish syntax that is based on adult L1 speaker performance. Through the experimental mechanisms used in this work, the author proposes a re-evaluation of certain aspects of Spanish syntax as it has been described until recently. The adult input obtained in this research serves as evidence for claims of syntactic movement based on lexical properties of both verbs and *wh*-words considered individually, instead of as a homogeneous lexical category.

The response to the theoretical and methodological questions addressed in this dissertation will be established through consistent data gathering, as well as through careful examination and comparison of the results. This examination is threefold: the results of each experiment are contrasted against the other experiment in order to determine the potential presence of an asymmetry based on the linguistic module (interpretation or production). The results obtained are also contrasted against previous research, in order to determine whether there is a general tendency in L2 acquisition of Spanish that has been shown consistently across different studies throughout the years. And lastly, the obtained data are compared with the proposed hypothesis in order to
confirm or deny them, and in order to carry out an adequate analysis of what the linguistic properties of L2 Spanish are with respect to *wh* islands.

This dissertation is organized as follows: in the second chapter, the author offers a syntactic description of the phenomenon under study and of other related structures that can be of relevance in order to better understand what the *wh* island is and how it functions. Chapter 3 concentrates on previous studies on the acquisition of interrogatives both from an L1 and from an L2 perspective, with a main focus on studies that tackle long-distance *wh* movement acquisition in Spanish. The methodology used in this research is presented in detail in Chapter 4, which presents the groups under study, the experimental methods and the coding criteria for the obtained data. Chapter 5 presents the results of both experiments and proposes an analysis for the outcome of all groups in each experiment. Lastly, Chapter 6 is a discussion of the results exposed on Chapter 5 and it presents the conclusions drawn from the work carried out in this dissertation.
2.1. Wh- movement

Within generative theories of language, there is a general consensus that question formation in different languages undergoes parametric variation with respect to what is known as wh- movement (Chomsky 1966, 1977, 1981, 1986). World languages can be classified as being either wh- movement or wh- in situ. The difference lies on whether the interrogative (wh-) words undergo some type of movement in the derivation or they remain in the site where they are originated.

An example of this would be a question such as “When did you arrive?” in English, or “¿Cuándo llegaste?” in Spanish. Examples 1 and 2 show the syntactic representations of these questions, in which we see that the fronted wh- word has been extracted from a lower adjunct position in the sentence, as a right-branch modifier of the verb:

![Figure 1: Syntactic representation of English wh- movement](image)

Figure 1: Syntactic representation of English wh- movement
Figure 2: Syntactic representation of Spanish *wh*-movement

Japanese is traditionally considered a *wh*-in situ language\(^2\). This means that the *wh*-words do not undergo movement in the derivation from LF to PF. Wh-words are originated in LF, and feature checking takes place in situ, so that movement of the interrogative particles is not necessary. The following example from Japanese shows the *wh*-particle in a non-fronted position and the interrogative particle in the final position of the question.

Example 1: Japanese *wh*-question:

John-wa nani-o kaimasita ka
John-Topic marker what-ACC bought Question particle

*What did John buy?*

An example of a *wh*-movement language, as mentioned above, would be Spanish, where the *wh*-word is originated in an argument or adjunct position at the right of the derivation, and it is moved to Spec, CP in order to check the feature [+Q]. Example

---

\(^2\) Some syntactic proposals have been put forward that suggest that Japanese has wh-movement to a certain extent (Superiority effects can be found in long-distance wh-phrase scrambling); however, the existence of certain instances of movement does not mean that Japanese is a wh-movement language *per se*(Takahashi 1993).
2 shows that the fronted *wh*- word in a Spanish question is extracted from a lower position, leaving a trace in its original place. A more detailed account of *wh*- movement in Spanish is provided below.

Example 2: Spanish *wh*- question:

¿Cuándo llegaste [hi]?  
When you-arrive?  
*When did you arrive?*

However, the Copy Theory of movement (Baltin 1987, Fox 1999, Merchant 2000, Tiedeman 1995) states that *wh*- movement applies to all languages, and *wh*- in situ is derived from movement. The idea behind this is that movement leaves a copy of the displaced *wh*- phrase, and parametric variation lies on which copy is pronounced. In languages such as English and Spanish, typically it is the highest copy of the *wh*- place that is pronounced, and lower copies are deleted. Failure to delete a lower copy results in ungrammaticality.

### 2.1.1. Long-distance *wh*- movement

In languages with *wh*- movement, it is necessary to differentiate between long- and short- distance movement (LD and SD hereafter).

The contrast between LD and SD refers to whether a moved element in the sentence has the capacity of being extracted from the CP in which it is originated or not. In the case of *wh*-questions, it refers to whether it can be extracted from the lower CP in a two-CP clause, as in the case of “Who did you say came to the party?” where “who” would be extracted from the lower clause (“Who came to the party”). In this case there is long-distance movement. Short-distance movement refers to the reading of the *wh*- word
within the clause in which it originates, as in “Who came to the party?” where the wh-word “who” undergoes movement within its own CP.

The LD reading would be available if the wh-word was interpreted to be extracted from CP2, whereas the SD would imply the extraction of the wh- from CP1.

![Syntactic representation of English long-distance movement](image)

**Figure 3: Syntactic representation of English long-distance movement**

In the following example, (3A) would account for the LD reading and (3B) would reflect the SD reading:

(3) A. ¿Dónde pensaste que encontrarías al animal t? 
   Where, thought₂nd sg that would-find₂nd sg DOM+the animal t?
   *Where, did you think (that) you would find the animal t?*

   B. Dónde pensaste t, que encontrarías al animal?
Where, thought$_{2nd\, sg}\, t$, that would-find$_{2nd\, sg}$ DOM+the animal?
Where, did you think $t_1$(that) you would find the animal?

The syntactic representation of these sentences, found below, shows the ambiguity in the interpretation of this question: the fronted wh- word can be interpreted as being extracted from either the higher or the lower CP. For an interpretation such as 3A., the wh- word would be extracted from the lower AdvP position to the right of the lower VP phrase. The short-distance reading 3B., on the other hand, implies extraction of the fronted Dónde ‘When’ from the highest AdvP position.

Figure 4: Syntactic representation of Spanish long-distance movement

The contrast between LD and SD movement does not apply exclusively to wh-
movement, but that is the main focus of this research. Other instances of the contrast between long and short distance movement can be seen in relative clauses (Gallego 2006), focus constructions (Wold 1996), or anaphora resolution (Hyams and Sigurjónsdóttir, 1990), to mention a few.

2.1.2. Constraints on wh- movement

Within two-clause wh- questions, a number of restrictions and constraints have been found in different languages. The most common set of constraints that apply to LD wh- movement is what are known as “islands”, which are:

2. Examples of island constraints:

1. Subject Island Constraint: An element cannot be extracted from within a subject clause:
   *Who is that she hired inexplicable? (extracted from Alfandre 2004)

2. Adjunct Island Constraint: Extraction of a wh- word from within an adjunct is not possible:
   *Who was Jill angry because someone hired? (Alfandre 2004)

3. Coordination Structure Constraint: movement out of coordination structures is impossible:
   *Who does Bill like and live in a VW van? (Alfandre 2004)

4. Complex NP Constraint: A wh- word cannot be extracted from a complex NP:
   *What did you make the claim that Joe bought? (from Sprouse et al. 2011)

5. Relative Clause Island Constraint: Extraction out of a relative clause results in ungrammaticality:
*What did the reporter meet the politician who supported __ at the congress?
(from Omaki and Schulz 2011)

6. Wh- Island Constraint: A wh- element cannot be extracted from a CP that contains another wh- element in SpecCP:

*What do you wonder who fixed? (Alfandre 2004)

In the study of islands, an important distinction has been made between weak and strong islands. Weak islands, according to Boeckx (2007), are domains that prohibit the extraction of certain elements (namely, adjuncts) but not of others (arguments). The selectiveness of weak islands is characterizable in terms of Rizzi’s “relativized minimality” (Rizzi 1990): In a situation like $\alpha > \beta > \gamma$ (where $>$ indicates c-command), $\beta$ acts as an intervener (that is, it creates an island), blocking any relation between $\alpha$ and $\gamma$ unless $\beta$ and $(\alpha, \gamma)$ are of distinct types.

According to Boeckx, the domains out of which extraction is barred emerge derivationally, from computational dynamics and resources of narrow syntax.

Boeckx (2007) describes three distinct approaches to the issue of why islands exist:

1. Islands can be seen as by-products of the principles that guarantee the computational efficiency of grammatical operations.

2. Another view posits that islands identify conditions on the output(s) of the computational system. Hence, the difference between the first take and this one is that whereas the first approach views islands as reflecting limitations on syntactic processes (rule application), this one views islands as affecting the products of
these applications.

3. The third account views islands as a result of processing/memory factors that constrain how linguistic knowledge is put to use.

The first two approaches are clearly distinct from the processing account of islands, since they consider islands to be conditions of the faculty of language in the narrow sense: islands are conditions imposed either on the workings of the syntactic components (narrow syntax) or on how the mapping from syntax onto the external systems works. Therefore from the perspective of the first account of islands, these are conditions on narrow syntax, whereas for the second account they are interface conditions. We will return to the issue of islands as interface conditions further down.

Boeckx’ work discusses the possibility of islands being a processing/memory-related condition, proposing that certain cross-linguistic phenomena argue against this. An example of this would be the existence of certain island effects on some wh-in-situ constructions (such as why constructions in certain languages), which would be problematic for a processing view.

2.1.3. Partial Movement, Two-clause Wh questions, and the wh-island constraint

Wh-island constraints have been defined as prohibiting the movement of wh-elements out of an embedded clause introduced by another wh-phrase (Alfandre 2004, Hofmeister and Sag 2009). Therefore, from a syntactic point of view, in questions such as Example (3) below, the only available option to the adult native speaker would be to carry out an operation of local movement, hence interpreting the initial wh-word as to have undergone short distance (SD) movement from within its CP. The intermediate wh-word (which is an indirect question, with the feature [-qu] keeping it from requiring a
response) would also have to be interpreted as having undergone local movement within its own clause.

Example 3: Wh-island:

(3). “*Where did you think when you would find the animal t_i?”

Figure 5: Syntactic representation of English Wh-island

In a structure like the one presented above, the higher wh-word cannot be extracted from any position in the lower CP (long-distance movement is disallowed) due to the presence of a wh-word in the lower SpecCP position. That wh-word in the lower SpecCP would block extraction of a wh-word originated below it, since the absence of a
resting site prohibits that movement, and since wh- movement needs to be cyclic\(^3\) (Chomsky 1973, Chung 1982). Processing-based and cognitive-based accounts of islands, however, sometimes question the ungrammaticality of these structures (Kluender 1998, Hofmeister 2007, Hofmeister and Sag 2010).

The main argument to question the ungrammaticality of the constraint presented above is that proposed by Hofmeister et al. (2007). Their Wh- Processing Hypothesis departs from the idea that factors that burden processing in referential filler-gap dependencies burden the processing of all filler-gap dependencies, including that of wh-phrases. According to the authors, many filler-gap sentences standardly analyzed as ungrammatical (that is, as violating island constraints) are actually grammatical, but judged less acceptable because they are harder to process. For Hofmeister and Sag (2010), variation in acceptability judgments related to island phenomena is better explained by cognitive constraints on language processing rather than by syntactic theory.

When looking into cross-linguistic data, however, the issue of structures with two COMPs filled with a wh- word becomes more complex. It is necessary to take into account languages that allow for Partial Movement (Brandner 2000, Lutz et al. 2000). These grammars show that the distinction between long and short distance movement in the context of wh- movement is in fact a complex one that requires the integration of different cross-linguistic evidence in order to be complete.

Example 4: Partial Movement in German and Hindi

(4). a. Example from German (from Brandner 2000)

Was glaubst du wen Maria zur Party einladen wird?

---

\(^3\) Cyclic movement requires that the wh-word pass through every intermediate SpecCP.
What believe you whom Maria to-the party invite will?
‘Who do you think Maria will invite to the party?’

(4). b. Example from Hindi (Lutz et al. 2000)

Raam-ne kyaa kahaa thaa kis-ne kis-ko maaraa?
Raam-erg WH said who whom hit
‘Who did Ram say hit whom?’

Partial Movement grammars are grammars such as that of German or of Hindi, that allow for scope markers in sentence-initial position that indicate the presence of a medial wh- word that is the target interrogative word. However, neither English nor Spanish, the two languages studied here (one as the L1 that could be source of transfer, the other as the target language being acquired) have partial movement available in the adult grammar (however, it is found in child grammar of both English –Thornton 1990 and Spanish –Gutiérrez 2005-).

Authors such as Chomsky (1990), Johnson (2002), Truswell (2007) have claimed that there is an asymmetry between argument and adjunct extraction, the latter being more restrictive than the former, both for the English and for the Spanish grammar.

The distinction between argument and adjunct distinctions is made clearer in Example 5, illustrated below with its syntactic representation.

Example 5: argument-adjunct asymmetry

(5). a. Who did she ask how to help?

a.i. Who_i did she ask (t_i) how to help?

a.ii. Who_i did she ask how to help (t_i)?
(5). b. How did she ask who to help?

b.i. How did she ask (t) who to help?

b.ii. *How did she ask who to help (t)?

This distinction can be seen clearly in the following syntactic trees. In Figure 6, the fronted “who” can be interpreted as being extracted from the higher clause as a complement to the verb “ask” or from the lower clause, as a complement to “help”. In Figure 7, however, the only possible extraction site for the fronted wh-word “how” is the higher AdvP that modifies the verb “ask”; extraction from the lower clause is not allowed. Therefore, extractability is not a common property of all wh-expressions in the case of two-clause wh-questions containing a medial wh-word. In this dissertation, the focus is on the theoretically non-extractable constructions, i.e. questions in which adjunct extraction is blocked by the presence of a medial wh-word forming a wh-island.

Figure 6: Syntactic representation for Example (5a.): argument extraction
The argument/adjunct asymmetry shows, therefore, that long-distance extraction is not banned in all structures with a filled medial COMP. There are contexts in which said extraction is possible, both in English and in Spanish, and it is necessary to consider the nature both of the extracted element (whether it is an argument or an adjunct) and of the medial wh-word.

Within argument extraction in these island contexts, there is also an asymmetry between the extraction of an object and the extraction of a subject. It has been proposed by various authors that this asymmetry is due to wh-subjects remaining in situ (Chomsky 1986, Chung and McCloskey 1983, Gazdar 1981, Radford 1994), but other authors claim that the difference resides in government: government of subject traces is less local and direct than government of object traces. According to Lasnik and Saito (1984),

**Figure 7: Syntactic representation for Example (5b.): adjunct extraction**

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complement (object) and non-complement (subject and adjunct) traces are governed in different ways (Antecedent Government Hypothesis).

Stromswold (1995) presents the debate between the proponents of the Antecedent Government Hypothesis and the Rizzi-Manzini Hypothesis, which proposes that subject and object traces, because they are arguments, must be governed in the same way and differently from adjuncts. The difference between subjects and objects would therefore be explained by something other than government (for a more detailed explanation, v. Manzini 1992 and Rizzi 1990).

It is beyond the scope of this work to determine what the nature of both these distinctions is, but we must keep in mind that they can have an impact on the experimental design as well as on the results obtained from our subjects.


She analyzes multiple questions (of the type “Who do you believe visited whom?”) and medial wh- movement constructions as having in common that both contain more than one overt wh- phrase; but in the case of multiple wh- questions only one wh- phrase moves to the interrogative CP while all other wh- phrases must stay in-situ.

Schippers assumes that every intermediate CP in long-distance wh- dependencies has a feature checking requirement. She therefore regards long-distance movement as the result of a wh-phrase being able to enter into multiple feature checking relations: long-distance movement is built up through a succession of local movement chains rather than one long movement chain with intermediate stops. The importance of this resides in that
if intermediate SpecCPs in long-distance movement are potential terminal landing sites and form the head of a chain, it follows that a wh-phrase may get spelled out in this position, since heads of a chain are usually spelled out, and tails deleted. Intermediate SpecCPs in long-distance movement can thus be viewed as being both the head of one chain and the tail of the next. This entails the existence of conflicting requirements: the deletion of the tail in one chain results in the deletion of the head of another chain. If the requirement to delete the tail of the chain is met, the result is long-distance movement. However, if the requirement to retain the head of the chain is fulfilled, wh-copying ensues.

Nunes and Uriagereka (2000) propose a minimalist account of CED effects based on the Multiple Spell-Out perspective. This perspective allows the authors to explain the asymmetry between the extraction of complements and that of subjects and adjuncts in LD wh- movement: Under the Multiple Spell-Out analysis, elements in subject and adjunct position can be linearized with the rest of the structure in the following way:

1. DP and PP are spelled out separately and in the phonological component, their lexical items are linearized internal to them
2. DP and PP are later “plugged in” [sic] where they belong in the whole structure.

The label of a given structure provides the “address” for the appropriate plugging in, in both the phonological and the interpretive components.

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4 Condition on Extraction Domain (Huang 1982): “Extraction out of domain D is only possible if D is properly governed”.
5 Linearization: operation that maps a phrase structure into a linear order of terminals in accordance with the Linear Correspondence Axiom (Kayne 1994), which states that a lexical item α precedes a lexical item β if α asymmetrically c-commands β.
When Spell-Out applies to subject DP and adjunct PP, the computational system no longer has access to its constituents and therefore no element can be extracted out of it. Briefly, extraction out of a subject is prohibited because at the relevant point in the derivation, “there is no syntactic object within the subject that could be copied” (Nunes and Uriagereka 2000: 25). Similarly, the Spell-Out characteristics of adjuncts imply that, for the correct linearization of the elements to happen, extraction out of an adjunct is impossible.

Gallego (2011) analyzes the interaction between phases, successive cyclicity, and Huang’s (1982) ECD. Gallego’s work focuses mainly on the extraction of wh-PPs from within a subject which appears to be blocked; and through a Minimalist perspective, he argues that all types of movement (a and A’) proceed by small local steps through all the specifiers available. This view of successive cyclic movement “opens the door for intermediate steps to temporarily eliminate islandhood, under the assumption that those intermediate positions trigger no freezing effect” (Gallego 2011: 64). To arrive at this conclusion, he first presents a discussion led by authors such as Chomsky (2000, 2001, 2004, 2008), Boeckx (2007) or Fortuny (2008), all of who discuss the way in which movement through phases is operationalized. The concept of successive cyclicity that Gallego adopts comes from Chomsky (2000): derivations are chunked in small pieces (phases) and then sent to the interfaces by means of a transfer operation. For optimal computation, once a phase is completed it must be handed over to the interface levels, which connect Narrow Syntax with the sensorimotor and conceptual-intentional systems. The Phase Impenetrability Condition (Chomsky 2000) states that the domain of Ph- is not
accessible to operations outside PhP; only the edge\(^6\) of PhP is. This requires that A’ movement target the edge of every phase, CP and vP. There is evidence from reconstruction effects and parasitic gap constructions\(^7\) that this may be true.

The following graph represents the bigger changes proposed by Chomsky’s phase cycle model, as opposed to the previous EST/T-model (Chomsky and Lasnik 1977):

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\(^6\) The edge includes the phase head and all its specifiers. It is what remains of a phase after transfer, whatever is visible at subsequent derivational stages, all the rest being “forgotten” (sic: Gallego 2011: 65)

\(^7\) Parasitic gap constructions: “we can define a parasitic gap as a gap that is dependent on the existence of another gap […] a parasitic gap will only occur if there is a filler-gap dependency elsewhere in the sentence and the parasitic gap is interpreted as controlled by that filler” (Engdahl 1983:5)
dedicated landing sites –the so-called hatches or edges–); he reaches the conclusion that movement is always local and through all available specifiers.

2.1.3.1. Escape out of islands

Authors such as Merchant (2007), Lasnik and Fox (2003), Boeckx and Lasnik (2006) have focused on the possible strategies to escape island constraints that seem to be available in the syntax. Through an analysis of sluicing\(^8\), ellipsis, and other repair strategies, these authors come to different conclusions about the nature of islands. Merchant (2007) defends that islands are essentially PF phenomena. This would explain why certain constructions (such as focus) do not result in island violations, if they have no PF consequences. Boeckx and Lasnik (2006) propose that extraction out of islands is not impossible so long as the appropriate repair strategies apply to save the illicit outputs at the interfaces.

Based on Sluicing, Boeckx and Lasnik establish a distinction between Superiority effects and wh- islands. Departing from the concept of (Relativized) Minimality Violations\(^9\) and from the difference between active and inactive interveners\(^10\), they show that Superiority effects happen in sluicing contexts whereas wh- island effects disappear. This leads them to claim that

“Repair strategies like sluicing and resumption indeed strongly suggest that wh- island and Superiority effects should not be unified [...]. One possible approach may consist in (a) analyzing Superiority as a derivational condition

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\(^8\) Sluicing is the ellipsis of the sentential complement to an interrogative complementizer hosting of a wh-phrase (Merchant 2007)

\(^9\) Situations where the head and the tail of a chain are separated by an element that could have potentially become the head of the chain.

\(^10\) Chomsky (2000): inactive or defective interveners are elements that only block chain formation of the relevant type across them; they themselves cannot take part in an alternative chain formation.
[...], and (b) analyzing the Wh- Island Constraint as a representational interface condition” (Boeckx and Lasnik 2006: 153)

2.1.3.2. Islands as interface phenomena:

Boeck and Lasnik (2006) claim that the Wh-Island Constraint is “a representational, interface condition, focusing on chains once they are formed and subject to repair at the interfaces” (Boeck and Lasnik 2006: 153). They base their analysis on intervention effects, which show to be different for Superiority effects and for wh-islands: islands seem to disappear under sluicing and resumption, whereas Superiority effects are still present in these contexts. The authors explain this by claiming that Superiority is a “derivational condition, reflecting how narrow syntax works (roughly, ‘Form the shortest chain possible’”), immune to interface operations such as ellipsis” (Boeck and Lasnik 2006: 153).

One of the most important pieces of work on wh-movement as an interface phenomenon is that of Comorovski (1996), where she analyzes different aspects of wh-movement as residing in the interface between syntax and semantics.

Cinque (1990) argues that certain syntactic constructions are islands only for a restricted class of wh-phrase (namely, non-D-linked wh-phrases): the wh- island, the

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11 Superiority effects: “in a language like English, where only one wh-phrase is fronted in a multiple question, it is the ‘superior’ wh-phrase (i.e. the one that asymmetrically c-commands other wh-phrases) that is fronted.” (Grebenyova 2004:1)
12 Sluicing is a type of ellipsis by which an interrogative element is interpreted as a full question (for a more extended discussion, v. Ross 1969)
13 Haddad (2012): “Resumption is a relation of obligatory coreferentiality between a pronominal element [...] and an antecedent in a given structure. The pronominal element occupies a position that would normally be filled with a gap.”
14 Non-D-linked wh-phrases are what Cinque defines as “non-referential”. Their traces cannot be identified by binding, hence the empty categories created by their movement need government by their antecedent. This process is considered to be more local than binding
factive island\textsuperscript{15} and the negative island\textsuperscript{16}. The present work will focus solely on the wh-island.

The main difference between D-linked and non-D-linked wh-phrases is that in the case of non-D-linked phrases, the identification requirement of their traces impose the creation of a chain of government relations, so that government obtains between the traces and their A’-antecedents. D-linked wh-phrases, on the other hand, do not need this requirement because their traces can be identified by binding; thus they are able to move out of weak islands.

Cinque’s theory, therefore, builds the semantic feature of referentiality into syntax, making the interface properties of wh-islands gain relevance in the explanation of why some extractions are acceptable.

Comorovski (1989, 1996) proposes a cross-linguistic generalization that states that only D-linked wh-phrases can be questioned out of indirect questions: “Thus, long-distance movement of non-D-linked wh-phrases may at first sight appear to be constrained by a syntactic condition operating in addition to Subjacency. Such a conclusion is, however, hardly tenable, given the fact that there is not one distinction in the internal structure or the distribution of D-link versus non-D-linked wh-phrases that would justify their being subject to different syntactic conditions” (Comorovski 1996:164).

Another argument presented by Comorovski for an interface account of island phenomena is that the nature of the matrix verb makes a difference in the acceptability of

\textsuperscript{15} “The complement clause of a factive predicate (e.g., know, regret) serves as an island environment […] for certain kinds of wh-phrases.” (Oshima 2007)

\textsuperscript{16} “While negation does not interfere with the extraction of arguments, the extraction of adjuncts over negation renders sentences unacceptable” (Gieselman et al. 2011)
a question resulting from the extraction out of a wh- complement. According to her, the verbs that allow quantificational variability\textsuperscript{17} in their wh- complements (verbs like know, tell) allow questioning out of wh- complements; intensional question-embedding verbs (wonder), however, do not.

2. 2. Wh- movement in Spanish

*Wh-* movement in Spanish is, overall, quite similar to *wh-* movement in English, albeit with some exceptions such as the absence of *that-* trace effects and differences in subject-verb inversion. But Spanish shows many traits that coincide with English, such as the argument-adjunct asymmetry in long-distance extraction.

Crucially for the present work, Baauw (1998) discusses the extended idea that the differences between argument and adjunct wh- words are based solely on the syntactic properties of constituents. Following Moro’s (1997) Dynamic Antisymmetry\textsuperscript{18}, he proposes an explanation for the asymmetry in subject-verb inversion with wh- questions in Spanish. According to him, Rizzi’s (1990) proposal that wh- elements should be distinguished on the basis of their referentiality can explain this asymmetry in inversion, as well as the argument-adjunct asymmetry in LD movement.

Rizzi (1990) uses data from long-distance movement across wh- islands in Italian to justify the distinction between referential and non-referential wh- words: he establishes that there is a difference between non-selected wh- instrumentals and locatives, on the one hand; and non-selected wh- elements of manner or reason. The former are extractable at essentially the same level as selected wh- arguments (they cause

\textsuperscript{17} In Quantificational Variability structures, an adverb quantifies over a semantic question (v. Sharvit and Beck 2001 for a more detailed explanation)

\textsuperscript{18} “Movement is a symmetry-breaking phenomenon, i.e. it is triggered by purely geometrical factors as opposed to morphological ones.” (Moro 1997: 50)
at most a Subjacency violation), whereas the latter have an intermediate status that causes a string form of ungrammaticality when moved across a wh-island. Rizzi’s explanation for this is that wh-argument and instrumental and locative wh-adjuncts are more referential in nature; and referential variables can satisfy the identificational part of the ECP\textsuperscript{19} by establishing a relation with the operator. This process is only sensitive to strong islands. Nonreferential variables, on the other hand, must be connected to their operators by antecedent government, which is strictly local.

Baauw therefore claims that non-selected (adjunct) instrumental and locative wh-words (cuándo “when” and dónde “where”) pattern with wh-arguments, whereas por qué “why” and one of the two possible uses of cómo “how” have a different status. He divides the meaning of cómo in two: a referential one, in which there is obligatory subject-verb inversion, and a non-referential, “propositional” one that patterns with por qué, where inversion would not be mandatory.

Goodall (2004) gives a similar explanation of the difference between individual wh-words, albeit coming from a different perspective. He claims that locative and temporal adjuncts are often taken to be arguments of a higher functional head such as Event, and the verb is the main overt indicator of the clause’s event structure. His account of wh-questions and inversion is related to processing: he claims that the Spanish subject-verb inversion in wh-questions is an effect of working memory constraints. Based on evidence from different aspects of wh-movement in Spanish (intervening DPs,

\textsuperscript{19} Empty Category Principle (Rizzi 1990):
\begin{itemize}
  \item a. A trace of movement must be properly governed.
  \item b. A trace of movement is properly governed iff
    \begin{itemize}
      \item i. it is antecedent-governed, or
      \item ii. it is lexically governed.
    \end{itemize}
\end{itemize}
D-linked wh-phrases, relative clauses, main verbs vs. auxiliaries…), his proposal is the following:

“The syntax of Spanish wh-questions could be reduced to its bare essentials: raising of V to T, possible raising of the subject to SPEC of T (or to a higher position, as many have proposed), and wh-movement to SPEC of C. The syntax would then not need to say anything about the constraints on the interaction of the wh-phrase and the preverbal subject; these would be handled by the independently needed constraints on working memory.” (Goodall 2004: 112-113)

Suñer (1994) proposes a language-specific constraint to movement of wh-arguments called the Argumental Agreement Licensing, which according to her explains the variation existing in Spanish in relation with the argument/adjunct asymmetry in wh-movement already mentioned. In line with the distinction proposed by Rizzi (1990), Baauw (1998) and Goodall (2004), she groups certain adjunct wh-phrases with selected argumental phrases: “even though some predicates select constituents which they do not theta-mark, subject-verb inversion is as obligatory as it is with thematic elements” (Suñer 1994: 354). Therefore, in her work, “argumental” refers to both subtypes of lexically selected wh-phrases: “real arguments” and the aforementioned selected adjuncts.

The Argument Agreement Licensing is a locality condition:

(6). Argument Agreement Licensing (Suñer 1994):

a. Argument wh-phrases must be licensed through symmetric Arg-agreement between α (=SpecC) and β (=C)

b. β Arg-agrees with γ (=V) only if β and γ are Arg-marked and no other Arg-marked
element is closer to $\gamma$.

2.2.1. Wh- islands in Spanish

In Spanish, wh- island constraints apply in the same way as they do in English in the case of sentences with subject inversion. According to Torrego (1984), verb preposing (i.e. subject-verb inversion) becomes a key factor in the (un)grammaticality of certain structures: in non-inverted sentences, wh- island constraints do not necessarily apply (see Example 6a.), whereas verb preposing results in island environments (see Example 6b.)

Example 6: Verb-Preposing vs. no preposing (from Torrego 1984)

(6) a. ¿A quién dices que no te acuerdas qué le has dicho?
   To who say$_{2sg}$ that not CLIT$_{REF}$ remember what CLIT$_{IO}$ have$_{2sg}$ said?
   'To whom do you say that you don’t remember what you have said?'

   b. *Qué dices que no te acuerdas a quién le has dicho?
   What say$_{2sg}$ that not CLIT$_{ref}$ remember to whom CLIT$_{IO}$ have$_{2sg}$ said?
   'What do you say that you don’t remember to whom you have said?'

The current study, however, will be focusing only in adjunct extractions where verb preposing is present, thus analyzing structures with the same syntactic description both in English and Spanish where the wh- word in the intermediate SpecCP represents an island that forces the initial wh- word to be interpreted locally.

An example of the type of structure that will be analyzed in the present work can be seen in (7):

(7). ¿Dónde pensaste cuándo encontrarías al animal?
   Where thought when would-find the animal?
   'Where did you think when you would find the animal?'

As can be seen, the question itself is not ungrammatical per se; it is its interpretation as a LD question (“dónde” being interpreted as being extracted from the...
lower CP “when you would find the animal”) or the answering of the medial wh-word that results in ungrammaticality.

The following syntactic tree shows how the intermediate CP theoretically constitutes a barrier for extraction of the lower wh-word. This implies that only the short-distance interpretation of the question is felicitous. The island effect, therefore, is created by the intermediate wh-word, marked as [-direct].

Figure 9: Syntactic representation of a Spanish question containing a wh-island

Demonte (1988) follows Lasnik and Saito (1984) in explaining why extractions from adjunct wh-islands should not be possible: non-lexically governed constituents are
not antecedent-governed, and therefore in the configuration in (8), the ungrammaticality would be explained by the incapacity of t₁’ to govern t₁.

(8). *¿Cómo_i te preguntas [COMP [t₁’ quien]INFL [compró el coche t₁]]?
   How_i CLIT_ref wonder₂sg t₁’ who_2sg bought the car t₁?
   *How do you wonder who bought the car?

Hence, from a generative perspective of Spanish syntax, there are restrictions on the possible interpretation and production of questions containing a wh-island. Adjuncts in the fronted CP position are only allowed a short-distance reading by which they are bounded to the higher, local verb; their interpretation as being extracted from the lower CP is forbidden by the presence of a medial wh-question. The same applies to production: no question containing a wh-island should seek for information about the lower clause. The present work focuses on these structures that contain a wh-island, and analyzes how non-native speakers of Spanish acquire them and whether they respect the necessary constraints in their interpretation and production. Simultaneously, through the use of native data as a control group, it analyzes to what degree native speakers of Spanish follow the restrictions traditionally considered in the syntactic literature; and whether referentiality (as proposed by Baauw 1998) and other aspects of syntax that are not movement-based have an effect on these constructions.
CHAPTER 3

ACQUISITION OF WH-MOVEMENT: FIRST AND SECOND LANGUAGE

Island constraints on wh-movement have become a very productive area of research in the fields of both First and Second Language Acquisition, as will be discussed in his chapter. For this reason, after presenting the theoretical basis for the experiments carried out in this work, Chapter 3 will focus on laying out the empirical ground on which the current study is based.

3.1. The production/comprehension asymmetry

The following sections are divided in production and comprehension studies of island constraints in L1 and L2 acquisition. This decision was made on the basis of an observed asymmetry between comprehension and production in both fields that will be briefly explained in the next pages.

In the past decades, research both in L1 and L2 acquisition has reported an asymmetry between how language is produced and how it is comprehended, both for native and non-native learners (Snyder 2007, Conroy and Lidz 2007, Tasseva-Kurktchieva 2008, Pickering and Garrod 2013).

Snyder (2007) postulates that certain options in language are banned by the speaker’s grammar in one language module but not in others. Different linguists studying different aspects of acquisition have noted this asymmetry, but there is also research that goes against this idea.

Conroy and Lidz (2007) carry out a study that tackles the asymmetry in production and comprehension by native learners of English with respect to Why
questions, finding that said asymmetry does exist, but it is not a reflection of grammatical differences: children’s grammar does not differ from that of adults, according to the authors; what children do is overgenerate in possible sites of generation of the wh-word, but their mental representation of these questions is target-like, as shown by comprehension studies.

There are also L2 studies that analyze the production/comprehension asymmetry. One example would be that of Tasseva-Kurkchieva (2008), who proposes a distinction of features in intrinsic and extrinsic and analyzes the acquisition of L2 Bulgarian learners (L1 English) from this perspective. According to her, intrinsic and extrinsic features interact in different ways with different language modules of grammar and therefore they play different roles in the production and comprehension modes, explaining the asymmetry between them. She analyzes her results on a study of Bulgarian DPs as showing that extrinsic features are comprehended at a higher rate than intrinsic ones, but the opposite scenario applies to production (intrinsic features are produced more than extrinsic ones).

Although most researchers accept the existence of the aforementioned asymmetry between comprehension and production, this discussion is still an open one (v. Pickering and Garrod 2013 for a unified account of production and comprehension). Therefore, the current work seeks to contribute to this discussion by presenting data from both comprehension and production experiments that will be contrasted in order to analyze whether such asymmetry is present in this L2 context. In order to do this, however, we need a comprehensive examination of previous work.
3.2. The acquirability of untaught structures

There have been different, sometimes conflicting factors on the role of instruction in L2 acquisition. Most authors seem to agree that instruction helps, but it is not necessary: there is plenty of evidence that acquisition does not mandatorily require instruction (Rothman 2010, Perez-Leroux 2014, Dąmbrowska and Street 2006, Slabakova 2009, 2010, Dekydtspotter and Sprouse (2001 et al.). However, studies in the field are mainly either theoretical SLA that does not contemplate whether/how a structure is (or is not) taught in a language learning context or studies on Applied Linguistics that focus on implicit/input-based vs. explicit instruction, not on total absence of instruction of the structure under study.

Rothman (2010) points out the existence of a lack of connection between linguistic theory, empirical acquisition research, and pedagogical practice. This raises a number of problems that cannot be fully covered in this dissertation, but there is a particular aspect of this disconnection that is relevant to the current work: in his article, Rothman presents data on Spanish overt subject use and how its properties as an untaught interface phenomenon make it particularly challenging for L2 speakers at all levels. The aim of Rothman’s work is to provide evidence for the need of further communication between theoretical SLA and teaching pedagogies, as he believes it is possible to better language instruction and learning through incorporating a more detailed account of theoretical aspects of the target language to the classroom. He points out three suggested properties that a structure should possess in order to be considered relevant for the study of Theoretical SLA-Language Teaching Pedagogy interactions:
1. The linguistic phenomenon under study should be one with which L2 learners are known to struggle (i.e. they make constant errors).

2. There should be little to no focus on the phenomenon in the classroom (be that via the classroom materials or via the instructor), independently of the type of instruction under study (formal grammar teaching, focus on form/(s), or interactive communication).

3. The instructor should have little to no conscious knowledge of the phenomenon in question. This would imply a linguistic property at the interface between syntax and semantics.

Although he acknowledges the fact that adult L2 learners have been proven to efficiently acquire L2 properties that are neither transferred from the L1, nor directly available from the received input, nor, more importantly to the current discussion, taught to them (see Rothman 2008, Rothman and Iverson 2008, Slabakova 2008, Dussias 2003, Sorace and Filiaci 2006), he also strongly suggests the importance of incorporating certain theoretical notions into the L2 classroom in order to help the performance of L2 learners and also to affect the quality of the input that L2 learners receive from their instructors.

Slabakova (2009) analyzes what structures are easy or hard to acquire in a L2. One of her main findings is that native speakers do not display uniformity in their performance in experimental studies, and therefore, the structures that are difficult for non-native speakers are not necessarily easy for all native speakers. In her view, level of education is at the base of native speakers’ performance, therefore adding an extra layer to the difference between native and non-native speakers. She quotes work by Chipere
(2003) in which highly-educated native and non-native speakers perform at similar rates of accuracy, whereas low-educated native speakers display a rate error higher than 90% (in a complex NP comprehension task). Slabakova claims that processing complex syntax, such as multiple embeddings or long-distance *wh*-movement, may be affected by a lack of experience with specific constructions as well as working memory or processing limitations.

Dąmbrowska and Street (2006) claim that L2 speakers sometimes process sentences non-syntactically, relying on simple processing heuristics such as an Agent-Verb-Patient template. Speakers may also try to make sense of sentences using their knowledge of the world. Dąmbrowska (1997) affirms that input or exposure to a particular construction is not a completely decisive factor in comprehension.

There are recent studies on SLA (Dekydtspotter, Sprouse and Anderson 1997, Dekydtspotter and Sprouse 2001, Dekydtspotter, Sprouse and Thyre 1999/2000, Unsworth 2005, Hopp 2007) that study complex syntax and sentences with infrequent constructions that would typically be considered poverty-of-the-stimulus situations, as no (or very little) positive evidence exists for them in the input. However, these structures (French doublé genitives, French discontinuous *wh*-phrases, French quantifiers at a distance, Dutch and German scrambling) are acquirable according to the data. Slabakova (2010) suggests that all semantic effects of learning a ‘trigger’ and a ‘related property’ appear to be engaged at the same time, and even untaught syntax-semantics mismatches are learnable to a nativelike level in a simple syntax-complex semantics situation.

Spada and Lightbown (1999) claim that instructed learners exhibit developmental orders that are not different from those of uninstructed learners. In an analysis of relative
clauses, they claim that L2 learners acquire them in the sequence of their accessibility and can fill in the gap on the less marked position without ever receiving explicit instruction to do so (Doughty 1991, Hamilton 1994, Ammar 1996, Gass 1982, Eckman et al. 1988). On the other hand, they also present evidence that learners who receive explicit form-focused instruction20 and corrective feedback21 outperform the control group in their study with regards to knowledge and production of L2 English question forms in written tasks. However, there is a great difference between written and oral tasks in language comprehension and production, as the cognitive mechanisms involved in resolving one or the other type are different. Pienemann (1989), for example, suggests that success on formal tasks does not necessarily imply success in spontaneous speech production.

Robinson (2001), in the Fundamental Similarity Hypothesis, argues that “in adulthood there is no evidence for a dissociation between dual systems of 'unconscious' implicit learning […] and conscious explicit 'learning'. The general cognitive abilities contributing to focal attention allocation, 'noticing' […], and rehearsal in memory […] are argued to be implicated in the learning that results from exposure to L2 input in any condition” (Robinson 2001:379). However, it must be noted that this work makes no reference to structures for which no input has been received, and that are presumed to be acquirable nonetheless.

Perez-Leroux (2014) claims that “adult learners have implicit, untaught knowledge of many subtle and obscure properties of a second language (L2) grammar” (Perez-Leroux 2014:59). This knowledge, according to the author, cannot be based on

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20 Focus on Form is a pedagogical strategy in which the focus in the L2 classroom is momentarily diverted from meaning to a specific form in the L2 through different strategies (Williams 2005).
21 Corrective Feedback consists of strategies through which L2 instructors aim at pointing out an error to an L2 learner (Lyster and Ranta 1997).
purely statistical learning, as this would not explain systematic structural biases that characterize transfer: “Nothing inherent in a statistical learner defines what counts as relevant input for learning a given construction” (Perez-Leroux 2014:60)

Dekydtspotter and Sprouse (2001) present the Universal Deductive Procedure, which is an attempt to explain how L2 learners can correctly interpret structures that they have received no instruction for and which, in addition, do not appear in the input enough to consider that learners have had “robust exposure” (Dekydtspotter and Sprouse 2001:7) to them. Their study analyzes French discontinuous and continuous interrogatives as interpreted by L2 speakers of French whose L1 is English. The authors expose that these interrogative types are not discussed in pedagogical grammars of French or in classroom presentations; and they are problematic even for native speakers of French. Their work casts doubts on the plausibility of accounting for this untaught, absent from input knowledge on the basis of induction. Rather, they claim that this interpretation of French interrogatives is deductively determined by a French-dependent function lexicon and a universal deductive procedure ($C_{HL}$): if asymmetries arise in the interlanguage, it must be as deductive consequences of a French-like interlanguage functional lexicon in the human-language computational system, as only domain-specific deduction seems to guarantee acquisition across all levels of exposure. Otherwise, D&S claim, in the absence of input there should be no skewing of responses or apparent growth that they find in the L2 speakers’ performance (advanced learners of French are more accurate than their intermediate counterparts). The explanation for their data, in their words, is that

“on current Minimalist understanding of grammar, there is no principle of computation relevant to the TL, but not to the L1, because the grammar of
any natural language is the result of a language-dependent parametrized lexicon, universal principles of grammar allowing just certain representations, and a universal syntax-semantics interface determined (in part) by syntactic and semantic principles. There is no sense in which the grammar of English lacks the universal principles with which the French-like parametrization interacts” (D&S 2001:21-22)

The issue of whether instruction makes a difference or not in speakers’ performance is, therefore, a complex one; but as already mentioned, many generative studies of SLA support the claim that untaught, complex structures of the L2 are indeed acquirable for non-native speakers, regardless of whether the same structure can be found in the L1 or not. This provides evidence for a theory of Second Language Acquisition based on cognitive processes that are universal and independent of, on one hand, potential transfer and, on the other hand, input frequency and exposure to the L2 structure under study.

3.3. L1 acquisition

In the field of L1 acquisition, many studies have been carried out in a number of different languages to determine not only the stages of acquisition, but also the correlation between the interpretation and production of this long distance movement and other syntactic phenomena that can help better understand the process of acquisition in a \textit{wh}-movement L1. We will start with a summary of the studies carried out on the acquisition of Spanish as an L1, in order to gain a better understanding of the language
under study and what its acquisition process is; and then we will move on to a more
general overview of linguistic studies that tackle \textit{wh}- movement in different L1 contexts.

\textbf{3.3.1. L1 Acquisition of Spanish}

As can be seen in the syntactic description in the previous chapter, Spanish \textit{wh}-
movement has received much attention from scholars in Linguistics. This is true not only
regarding syntax, but also in the field of L1 acquisition, as we will see in the present
section.

In her dissertation, Pérez-Leroux (1993) analyzes the initial representation of
long-distance dependencies and its development into the adult grammar in Spanish,
proposing a developmental path for children acquiring Spanish that consists of the
following steps:

1. Children initially hold the assumption that there is no \textit{wh}- movement, and the
   only empty category in their grammar is pro.
2. Traces enter children’s grammar and chain formation becomes possible. At
   this stage, children assume the broadest definition of chain possible: well formed
   chains contain \textit{wh}- expletives (scope markers), \textit{wh}- phrases and traces, in that
   order. In this intermediate stage, there would be two possible derivations for
   interrogatives: full movement (LD movement of arguments over medial \textit{wh} -
   phrases) and partial movement. Adult native speakers of Spanish have been tested
   for acceptability of medial answers like the ones produced by children at this
   stage and they seem to universally reject them.
3. Children learn that Spanish does not contain \textit{wh}- expletives and restrict their
   grammar to overt movement.
In her work, she finds that children tend to give an answer to the medial *wh-* word in questions like (9) and (10).

(9) A. ¿A quiénes les contó cómo los había agarrado?
   To whom them -CL told how them-CL had caught
   ‘To whom did she tell how she had caught them?’

   B. Al grande con un sombrero y al chiquito con la tapa
      To-the big with a hat and to -the small with the lid
      de una olla
      of a pot
      ‘The big one with a hat and the small one with the lid of a pot’

(10). ¿Cómo decidió el niño qué comer?
   How decided the boy what eat?
   ‘How did the boy decide what to eat?’

Her results also exhibit a difference in children’s interpretation of argument vs. adjunct *wh-* islands: in adjunct cases, children respect the island and hardly ever allow an adjunct to be interpreted as being extracted from the embedded clause, independently of whether it jumps over an argument or an adjunct. However, they do allow for argument extraction out of islands. As she notes, this is exactly the same pattern followed by adult native speakers of Spanish, who do allow extraction out of argument islands but not out of adjunct ones.

The following figure, from Perez-Leroux (1993), shows the percentage of LD responses given by the children tested in her dissertation in questions that contained a Medial *wh-* word. From it, the conclusion that arises is that children make a clear distinction between argument and adjunct extraction: independently of the type of clause (whether it the lower clause is tensed or infinitival), children only allow LD extraction of
the *wh*-word in cases where the fronted *wh*-word is an argument, as is expected in the current general description of the adult grammar of Spanish.

<table>
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<th>Table 3.2</th>
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<tbody>
<tr>
<td>Sentence Type</td>
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<tr>
<td>Tensed</td>
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<tr>
<td>Arg/Adj</td>
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<tr>
<td>Adj/Arg</td>
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<tr>
<td>Adj/Adj</td>
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<tr>
<td>Infinitival</td>
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<tr>
<td>Arg/Adj</td>
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<tr>
<td>Adj/Arg</td>
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<td>Adj/Adj</td>
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**Figure 10: Results for *wh*-island experiment (Perez-Leroux 1993)**

These results, according to the author, are comparable to cross-linguistic results for: English (de Villiers, Roeper and Vainikka 1991), German and French (Weissenborn, Roeper and de Villiers 1991), Greek (Leftheri 1991) and Mauritian Creole (Adone and Vainikka 1990).

According to her, there is a strictly syntactic account for these responses. She follows McDaniel (1989) in proposing that these data on interpretation are the reflection of a Partial Movement grammar, by which children would be taking one *wh*-word to act as the scope marker for the other, as in the partial and copying *wh*-movement constructions described earlier.

“A possibility that comes to mind immediately is that children are only listening to the second half of the sentence, the embedded clause initiated by the medial *wh*-phrase. This hypothesis would attribute the medial response to some sort of processing difficulty by the child. (…) I will
present data from two experiments which supported a rejection of this hypothesis.” (Pérez-Leroux 1993: 93)

Her claim that processing cannot be at the root of these interpretation patterns in children is based on two main facts:

1. Medial responses obey barrier conditions
2. Medial responses do not happen with yes/no questions where there is a medial wh-

A more recent study that tackles the issue of L1 wh- acquisition is that of Gutiérrez (2005). In it, the author analyzes the production of non-adult wh- long-distance dependencies by a bilingual Spanish-Basque child (whose dominant language is Spanish). Through a longitudinal study based on an elicitation task for long-distance wh-questions, she finds that this Spanish-speaking child produces Partial Movement wh-copying, as reported by Thornton for English and by van Kampen for Dutch. Her findings seem to support the idea that PM precedes copying in the path of acquisition of long-distance dependencies. These errors, according to Gutiérrez (following Thornton and van Kampen), are not performance errors but fully UG-constrained options.

In her study, she finds an important difference between finite and non-finite clauses. Her data show that production errors involving scope-marking and wh-copying are restricted to finite embedded questions, and they do not occur in infinitival clauses (all questions extracting from infinitival clauses in her study were adult-like). She suggests that this contrast may be related to the nature of indicative complements, which have been argued to constitute islands for extraction (Uriagereka 1988).
Hence, from these studies we can see that the L1 acquisition of long-distance *wh*-movement and island constraints in Spanish happens relatively early in the process, and it is UG-constrained. We now turn to other languages to get a broader, cross-linguistic view on the issue.

### 3.3.2. L1 Acquisition of other languages

In this section, the focus will be on languages that have been shown to have *wh*-movement, with a main emphasis on English and Romance languages. There will also be a mention to other languages that provide insight into a variety of UG-constrained options on *wh*-movement that may be found in the acquisition process.

When it comes to cross-linguistic L1 acquisition of these questions, it is necessary to make a distinction between production data and interpretation data. This section will begin looking into production studies, moving then into work on interpretation to get a full grasp of the issue at hand.

#### 3.3.2.1. Production data

A similar pattern of acquisition can be found across different languages whose adult grammars do not accept *wh*-scope marking or *wh*-copying. Research by Thornton (1990), Oiry (2002), Pérez-Leroux (1993), Gutiérrez (2005), *et al.* has shown that child L1 speakers of English, French, Spanish (among others) produce ungrammatical scope marking and *wh*-copying approximately until the age of 5 (Thornton 1990). Therefore, it is shown that children undergo a stage in which they produce non-adult LD *wh*-questions,
involving two related wh-phrases that can be explained either by copying or by scope marking. Examples of these sentences in different languages would be:

(11). L1 English (examples from Thornton 1990)

1. *What* do you think *who* jumped over the can? (scope marking)

2. *Who* do you think *who* is in the box? (copying)

(12). L1 Dutch (examples from van Kampen 1997)

1. *Wat* denk je *bij de* hoeveelste ik ben?
   
   *What* think you at which number I am?
   
   TARGET: At which number do you think I am? (scope marking)

2. *Warom* denk je *waarom* ik op *swemles* zit?
   
   *Why* think you why I on swimming lessons am?
   
   TARGET: Why do you think I take swimming lessons? (copying)

(13). L1 French (examples from Oiry 2002)

1. *Tu* crois *quoi* qui est caché dans le *sac*?
   
   *You* think *what* who is hidden in the bag?
   
   TARGET: What do you think is hidden in the bag? (scope marking)

(14). L1 Spanish (examples from Gutiérrez 2006)

1. ¿*Tú* qué crees *cómo* ha hecho el castillo?
   
   *You* what think-2sg how has made the castle?
   
   TARGET: How do you think he made the castle? (scope marking)

Different analyses have been put forward to account for these types of sentences:

*Scope marking*

The first *wh-*, under the Indirect Dependency (ID) account (McDaniel 1990), is a scope marker not semantically empty. This would imply that the first *wh-* phrase would be indicating the presence of a medial *wh-* phrase that must be responded. A grammatical example of this in an adult language would be the case of adult Hindi:

(15). Example from Hindi (Lutz et al. 2000)

48
Raam-ne kyaa kahaa thaa kis-ne kis-ko maaraa?
Raam-erg WH said who whom hit
‘Who did Ram say hit whom?’

Neither English, French or Spanish allow for this scope marking option in the adult grammar; a fronted wh- phrase always has the [+direct] feature and is meant to be responded. However, scope marking is an option in production in child language, as seen in the examples in (11a), (12a), (13a) and (14a).

*Wh-copying*

Thornton (1990) terms wh-copying in production data ‘medial wh-questions’. Examples of wh-copying would be those in sentences (11b) and (12b), and they would be, according to Thornton, a reflection of the Spec-head agreement\(^\text{22}\). She adopts Rizzi’s proposal (1990) that says that subject traces must be properly governed; and states that as the wh-phrase passes through the intermediate CP (CP\(_2\)), it establishes an agreement relationship with the complementizer, which is realized as a complementizer identical to the fronted wh- phrase. According to Thornton, then, the production of wh-copying in child language is an attempt to fulfill the ECP\(^\text{23}\). Therefore, the wh- word in the intermediate SpecCP in these structures would be a copy left by the movement of said wh- word to the fronted position in which it ends in the derivation. This is not an option in adult English or in Romance languages, although it is an option in other wh- movement languages such as German. From the child data presented above, however, we can

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\(^{\text{22}}\) Spec-head agreement refers to a local relation between a lexical head and its specifier that is reflected syntactically through agreement.

\(^{\text{23}}\) ECP= Empty Category Principle. This concept was introduced in the field of syntax by Chomsky in 1981 and it states that “A nonpronominal empty category must be properly governed” (extracted from Johnson 1988)
conclude that this option, similarly to *wh*-scope marking, is available in the initial stages of acquisition of the aforementioned languages.

Van Kampen (2009) carries out a longitudinal study of Dutch L1 acquisition in which she analyzes the acquisition of long-distance *wh*-questions. Departing from the idea that grammar is acquired from the most local steps possible, her main claim is that the acquisition of long-distance *wh*-movement comes from previous, local acquisition steps, each of which defines a local relation (and therefore a local domain) that is present in the next acquisition step: long-distance movement follows from short steps and the fortuitous overlap of initial localities. Therefore according to her, islands need not be learnt, as they follow from the fortuitous non-overlap of such localities. Hence, all contributing factors in the reapplication of *wh*-movement have already been acquired by the child from more elementary constructions, namely: a) accessibility of information at the left edge; b) movement up to the first A-bar position; c) ± pied-piping factor; and d) A-bar agreement from the relative paradigm of Dutch.

Lohndal (2004) analyzes medial *wh*-phenomena contrasting English-speaking children and German-speaking adults, and reaches the conclusion that their performance is not based on the same principles. Children acquiring non-partial-movement grammars “are overgeneralizing the licensing requirement on null complementizer affixes, and that this is different from what adults are doing in languages that have medial-whs. In the latter case, [...] medial-whs are derived through parallel movements combined with the assumption that only one element per chain is spelled out” (Lohndal 2004: 36)

The production data, therefore, show that there is a generalized stage in which children acquiring various *wh*-movement languages make a common set of mistakes
related to scope marking and copying strategies before arriving at the grammatical LD questions in their target-like grammars. The fact that these strategies are available in other movement languages could be related to so-called Initial State Options (Oiry and Roeper, 2009), defined in the field of First Language Acquisition as default operations that the child can use without any guiding input. These options appear spontaneously in the acquisition process, and they are strategies used by children to avoid the crashing of a structure: if the child cannot accommodate a sentence to his grammar, then s/he will select a ‘default’ from UG to prevent the crash. As the authors point out, children may pass through grammars that may reflect other non-target languages. It is also probable, according to the authors, that children “will pass through grammars that have not been revealed in other grammars, but are within the bounds of UG” (Oiry and Roeper 2009:13). Applying this to the Partial Movement grammar stage found in English L1 acquisition, they claim that until the child realizes the [Indirect Question] feature that applies to long-distance wh- movement, s/he will assume that the medial wh- word is direct and hence it must be answered. The initial wh- word in these constructions can rescue the derivation by applying a default scope marker rule. According to the authors, “the transfer hypothesis reinforces the view that children avoid long distance cyclic constructions if there is an option that preserves locality” (Oiry and Roeper 2009:14); therefore to arrive at an adult-like grammar, the child must:

1. Identify the content of wh- words (which does not exclude them from still functioning as expletives)
2. Realize that some verbs project indirect questions
3. Realize the semantic force of said indirect questions
Stromswold (1995) carries out a corpus study based on CHILDES data in which she addresses the order of acquisition of subject vs. object wh- phrases in native English-speaking children. Her analysis compares three hypotheses that generate three very distinct predictions:

1. The Wh- Subject In Situ Prediction: children acquire subject questions before they acquire object questions (Chomsky 1986, Gazdar 1981).

Through her study of the production of 12 children (aged between 1;2 and 2;6 on the first observation and between 2;3 and 6;00 on the last one) in the CHILDES corpus, she observes that children acquire object questions before subject questions, which is consistent with the Government Antecedent Hypothesis.

These structures seen in production, albeit not the specific target of this study, are relevant to data obtained from L2 speakers, as similar constructions may be present in their interlanguage that would provide empirical evidence for the representational analysis that L2 speakers are giving to these constructions. The knowledge of how these structures appear in child L1 language, then, constitutes a ground for comparison with L2 speakers that adult L1 data cannot provide.
3.3.2.2. Interpretation data

The production data presented above reflect in some aspects what can be found in interpretation experiments, although different constraints and restrictions come into play in interpretation data.

Although there are more studies on the production of scope-marking and copying medial \textit{wh}-words, there are also a number of studies that analyze interpretation data of \textit{wh}-islands. These studies focus mainly on the type of mistakes that children make when acquiring \textit{wh}-movement, shedding light on the restrictions that need to be acquired during the course of L1 acquisition in relation with these structures.

In the next sub-sections, a summary will be provided of the type of responses that are commonly found in L1 interpretation of \textit{wh}-islands.

3.3.2.2.1. Medial responses

Studies on L1 have shown that children have a tendency to answer the medial \textit{wh}-in questions containing a \textit{wh}-island constraint instead of the fronted one (see example 16, extracted from De Villiers et al. 2008).

(16). When did she say how she ripped her dress?

“With the wire on the fence”

The work by de Villiers et al. analyzes the acquisition of \textit{wh}-movement in detail by examining two-clause \textit{wh}-questions in the interpretation of 1,000 children of different linguistic profiles (AAE speakers, MAE speakers, children with SLI\textsuperscript{24}) in different syntactic environments (barrier effects in \textit{wh}-complements, relative clauses, adjunct “in

\textsuperscript{24} (African-American English, Mainstream American English, Specific Language Impediment)
order to” clauses\(^\text{25}\) and adjunct “empty operator” clauses\(^\text{26}\). Their initial claim is that if children are able to respect so-called universal syntactic principles in their earliest experience with embedded clauses, this would constitute evidence for UG accounts of language acquisition. Taking into account that there are two aspects to \(wh\)-words, the syntactic and the lexical one, their data suggest that children as young as four years of age not only can give long-distance interpretations, but they are also sensitive to barrier effects. To the authors, this is taken to prove that children are not just using cognitive interfaces to arrive at suitable answers to the questions tested; their answers are linguistically constrained.

However, children are also found to respond to the medial \(wh\)-word in these two-clause questions. According to these authors, one possible explanation for this would be that children would mark the lower CP as [+Question] instead of [+Indirect Question] and in that case, their grammar would require that the question be answered. Another option is that “the child’s lexicon might “underspecify” a position under a particular verb and so the child would not immediately see the [+Indirect] property.”

\(^{25}\) Where did the boy get the money to fly?” (De Villiers et al. 2008)
\(^{26}\) “Where did Jim get one [OP] to put on his head ?” (De Villiers et al. 2008)
The authors also suggest that, from a Minimalist Program perspective, children’s interpretation of medial $wh$- words as targets would conform to the locality principle\(^{27}\). The adherence to the locality principle is considered one of the universals of grammar, hence from a Transfer/Access debate perspective (view section 2.2), if L2 speakers behave in a similar way to children acquiring English (or Spanish) as an L1 with respect to the locality principle, that could be considered yet another piece of evidence to support UG-based theories of SLA.

The ungrammatical cases of scope marking and $wh$-copying above mentioned do not account for the fact that children respond to the medial $wh$-phrase in grammatical sentences that target a response to the fronted $wh$-phrase. They do, however, as de Villiers et al. (2008) point out, suggest that “direct questions are not possible in the

\(^{27}\) “A local relation is one which must be satisfied in the smallest environment in which it can be satisfied” (Rizzi 2004)
medial position, but it is not unreasonable that children should entertain the possibility for them to exist”. Under the light of the production of medial \(wh\)-phrases due to scope marking and to \(wh\)-copying, the interpretation data suggest a coexistence of the stage where children respond to medial \(wh\)-questions and the stage where they produce the ungrammatical medial \(wh\). Both the use and interpretation of the medial \(wh\) as a real question alternative allows children to handle the \(wh\)-movement “one phase at a time” (de Villiers et al. 2008), that is, within the lower phase, hence fulfilling the idealization of locality that children are supposed to be driven by during the early stages of acquisition. If locality is the key factor to explain the behavior of children across languages when it comes to the acquisition of island constraints and, more generally, long-distance movement, a common explanation is available to account for the interpretation and production data.

Experimental data on interpretation (de Villiers et al. 1990, Perez-Leroux 1993, McDaniel 1989) show that there is a co-relation between the ages in which children’s production of ungrammatical \(wh\)-constructions and a stage in which they misinterpret \(wh\)-island constraints. During this stage, when presented with a question containing a \(wh\)-island, they take the fronted, target \(wh\)-word to be a scope-marker and they respond to the medial \(wh\)-word, giving it a [+direct] feature instead of the [-indirect] feature that allows it to be unanswered in the adult grammar (de Villiers et al 2008). However, children acquiring their L1 seem to respect the barrier created by the medial \(wh\)-word, not allowing the fronted \(wh\)-word to take scope over it (de Villiers 1995).

According to McDaniel (1989), there is a possibility that medial answers are the result of a Partial Movement grammar. Children would be taking one \(wh\)-word to act as
the scope marker for the other, as in the partial and copying \textit{wh}- movement constructions described in German.

In a later study (McDaniel, Chiu and Maxfield 1995), this idea is further developed through a grammaticality judgment task in which children (ages 2;11 to 5;7) were tested on their acceptance of different structures involving Partial Movement (both scope-marking and \textit{wh}- copying) as well as multiple \textit{wh}- movement and \textit{that}-trace effects. The authors claim that their results support the idea that English-speaking children initially have a PC Grammar (\textit{Partial/Copying Grammar}), just like adult speakers of German or Romani; and after the triggering of the [\textit{pred}] feature\textsuperscript{28} (possibly caused, according to the authors, by \textit{tough}-movement constructions), they abandon said grammar for an adult-like English grammar with no scope-marking or \textit{wh}-copying structures.

3.3.2.2.2. Other responses

From the existing literature, children only seem to make one type of mistake in the \textit{interpretation} of \textit{wh}- islands, that is, responding to the medial \textit{wh}- word. This has been shown by researchers like De Villiers 1990, De Villiers et al. 1991, De Villiers et al. 2008, who find only grammatical or medial responses for these questions. No evidence for a violation of the island in which the barrier is crossed has been reported by the aforementioned researchers (in adjunct \textit{wh}-) cases. This has, however, been reported for non-native speakers of English acquiring this language, as will be discussed in section 3.4.1.

\textsuperscript{28} Rizzi’s (1990) feature system includes the [predicate] feature, which distinguishes relative clause Cs from declarative and question Cs, and the feature [Wh]. According to McDaniel et al. (1995), PC grammars do not have this [\textit{pred}] feature.
3.4. L2 acquisition

Most research on movement carried out in the field of SLA has focused on the acquisition of a \textit{wh}-movement language by native speakers of a \textit{wh-in situ} language. The studies that analyze how native speakers of a language with movement acquire movement in their L2 focus mainly on the differences between the languages involved, whereas few studies have focused on how a structure that has the same underlying representation in both languages is acquired in the L2.

Schulz (2006) addresses a very important issue in the field of Second Language Acquisition that is of much relevance to the current study: Why would non-native speakers of a language produce and/or interpret structures that are not present either in their L1s nor in the adult grammar of the target language?

“It seems somewhat counterintuitive that a learner of a language should systematically use and produce a syntactic construction that is ungrammatical in the target language as well as his/her native language but is grammatical in a language that he or she has not been exposed to […] we do have to face the question of why learners adopt this type of complex question formation despite the fact that they do not get any evidence for it, neither via input nor via transfer” (Schulz 2006:39)

3.4.1. L2 interpretation

There are a plethora of studies on \textit{wh}-movement interpretation in the field of SLA, but not so many that focus specifically on the \textit{wh}-island constraint. The following
section will summarize the most important findings regarding the acquisition of different constraints on *wh*-movement that are of relevance to the current subject matter.

Uziel (1993) compares the acquisition of L1 Hebrew and L1 Italian speakers acquiring English as an L2. She focuses on different aspects of *wh*-movement, namely extraction out of an adjunct clause, extraction out of a relative clause, CNP violations\(^{29}\), extractions out of *wh*-islands (and the difference between subject and object extractions within this category), and *that*-t effects. Adopting a UG approach to L2 acquisition, she predicts that parameter values that match in the native language (NL) and in the target language (TL) should be easier to acquire (and take less time) than the ones that do not match, since the L1 values would facilitate the acquisition process\(^{30}\). She considers different factors to be at play in the acquisition of the *wh*-structures that she studies:

a. The Type-of-violation factor: government violations are expected to be more strongly rejected by L2 speakers than movement violations, because government “defines a stricter and a ‘more local’ relation between constituents than movement” (Uziel 1993: 65).

b. The Cumulative Effect Hypothesis: the combination of ECP and Subjacency violations should have a higher rejection rate than each of these violations separately.

c. The Relative Acceptability Factor: the author predicts a higher rate of rejection for adjunct and relative clauses than for Complex NP and *wh*-islands, because of the type of barriers that each of them implies (Complex NPs and *wh*-islands

\(^{29}\)Complex Noun Phrase islands: a *wh*-word cannot be extracted out of a DP

\(^{30}\)This would constitute positive transfer, which occurs when knowledge of a native language facilitates the learning of a target language; past knowledge is accurately applied to present subject matter. (Brown 2007)
involve variant barriers\textsuperscript{31}, whereas adjunct and relative clauses involve invariant barriers).

d. That-\textit{t} effects: Uziel expects a weak rejection of \textit{that-\textit{t}} effects because they are dependent on the need to reassign a new parameter value in the TL, which according to her theory should take longer to acquire.

Uziel’s study is based on a grammaticality judgment task, and her results show similar response patterns for both groups of L2 learners. She interprets this as evidence that L2 learners resort to UG in the L2 acquisition process.

Tayyebi (2012) also analyzes the interpretation of different syntactic islands on wh- movement for L1 Persian speakers acquiring English as an L2. He carries out an AJT in order to test whether native speakers of Persian (which is a wh- in situ language) are able to correctly reject ungrammatical island violations, finding that they are. He takes his results to mean that “adult L2 learners' mental representation surpasses the input they are exposed to; hence UG principles guide their interlanguage competence” (Tayyebi 2012:42).

Schachter (1990) contributes to the debate on the extent to which UG is available to the L2 speaker through a study on Subjacency on native speakers of Dutch, Korean, Chinese and Indonesian learning English as an L2. These languages have different degrees of adherence to the Subjacency Principle, ranging from full adherence (English and Dutch) to inexistence of it in the language (Korean), and thus a difference in the learners’ performance is expected with relation to their L1s. Through a Grammaticality Judgment Task, she finds that Dutch speakers, as expected by the Incompleteness

\textsuperscript{31} Barriers that are subject to parametric variation.
Hypothesis that she supports, perform the best among the 4 groups; and Korean speakers perform most poorly. According to the author, this proves that the learner has only L2 input and knowledge of his/her native language “as guides in figuring out the structure of the target language” (Schachter 1990:116).

Schachter proposes that there is a difference between the setting of principles and the setting of parameters, and she claims that most research has focused on parameter setting and not on principle setting. As an example, she mentions the difference in extraction site for Subjacency between English and some Romance languages like Italian or Spanish in child L1 acquisition:

“The default setting for the S/S’ parameter must be S; and since the English-learning child never hears violations, the child sets the S/S’ parameter to the default setting. The Spanish or Italian child, on the other hand, hears extraction from a wider variety of embedded clauses, wh- islands, for example, and so does not accept the default setting S, resetting the parameter to S’ ” (Schachter 1990: 97).

Among the studies on SLA that tackle these constructions, Liceras et al. (2011) looks into data from Spanish and German L2 speakers (whose L1s are English and French) to determine

a. whether input plays a role in the acceptance of scope-marking and wh- copying complex wh- questions for L2 speakers (if this were the case, German speakers would accept these constructions more often than Spanish speakers would, since this kind of questions exist in the former but not in the latter language).
b. whether there is a universal hierarchy in the acceptance of these questions. If there is, the hierarchy proposed is the following:

Long-distance $wh$->scope-marking->$wh$-copying

If this hierarchy exists, all L2 speakers should pattern in a similar way, accepting the different question types in a corresponding hierarchical manner.

They determine in their work that direct transfer should not be a factor in the performance of L2 speakers when it comes to these constructions because adult L1 patterns do not exhibit the presence of either scope-marking or copying. However, they mention the possibility that the occurrence of these constructions could be triggered by transfer of abstract morpho-syntactic features or related constructions from the L1 into the L2, although as they point out, more data is necessary to support or disconfirm this claim.

There are a variety of studies on SLA in which the authors report the presence of $wh$-copy constructions in L2 production of English as an L2: Okawara (2000), Wakabayashi and Okawara (2003), Yamane (2003) and Schulz (2006) report them for L1 Japanese learners of English; Gutiérrez (2006) reports them for bilingual Spanish-Basque L1 speakers of English; and Slavkov also finds them in L1 French-L2 English speakers.

Through a Grammaticality Judgment Task (GJT), Liceras et al. test both subject and adjunct (only “where”) interrogatives and find results that confirm their hypotheses only partially:

1. Both L1 and L2 speakers of Spanish marginally accept both scope- and copy-type complex $wh$-questions with no significant difference of acceptance rate between the two kinds of constructions. The authors argue that these results could
be triggered by the specific task, since although the L2 data could be accommodated by different theoretical options, the L1 data does not match any previous studies on adult L1 Spanish complex \textit{wh}-questions.

2. L2 German results, however, do show a significantly higher rate of acceptance for scope-marking than for \textit{wh}-copying, which seems to support the hypothesis that input plays a role in the acquisition of complex \textit{wh}-questions for non-native speakers. However, they do point out that with respect to copy, L1 and L2 German differ.

3. Long-distance questions were preferred by all groups, which is in fact not surprising, as this is the only option that is grammatical in both the L1 and the L2 of all groups tested.

Liceras \textit{et al}. indicate that the reason behind their task choice is that \textit{wh}-scope and copying have been elicited in the English L2 grammar of L1 Japanese, bilingual Basque/Spanish and French speakers, but neither option has been reported in spontaneous speech in second language acquisition, and they mention that there are no studies that deal with the role of direct input on these constructions. It would seem, then, that rather than being default options, they may be triggered under specific experimental conditions.

Slavkov (2008) carries out a study that focuses on the production of ungrammatical medial \textit{wh}-questions by non-native speakers of English. His study is based on data from 47 native speakers of Canadian French acquiring English as an L2. As he points out, “the literature on medial \textit{wh}-phenomena in L2 acquisition is […] recent and still relatively limited” (Slavkov 2008: 221); hence his interest in this construction.

Through his 4 research questions (namely, whether native speakers of French acquiring
English show production of medial wh-, and if so, whether this medial wh- is a direct or indirect dependency; a scope-marker or a wh-copying strategy; and whether it can co-exist with the overt complementizer “that”), he wants to test what he calls an “acquisition paradox”: L2 learners show grammatical traits that do not exist neither in their L1 nor in the L2, but that is typologically attested in other languages (such as, in his study, scope-marking and wh-copying medial wh-). He tests this acquisition paradox through a written multiple-choice grammaticality judgment test, finding that 14% of the responses obtained represented medial wh- questions, and that they are instances of a direct dependency and therefore represent an acquisition paradox.

According to Slavkov, there are three potential explanations of his results:

1. Transfer. It could potentially be argued that transfer from L1 French is affecting the speakers’ L2 performance if they are transferring a French complementizer (homophonous with the wh- words who ‘qui’ and what ‘que’); however, the fact that adjunct wh- words (where ‘où’ and when ‘quand’) that are not homophonous are accepted in medial wh- utterances goes again a transfer account.

2. Processing. The preference for undeleted intermediate copies could be argued to be a strategy to shorten the long-distance wh- dependency in complex questions to alleviate the processing burden. However, as Slavkov points out, the experimental design per se and also the low percentage of direct dependency responses (which would be the preferred option if shortening the long-distance dependency was the main cause to choose medial wh- words) go strongly against a processing account.
3. Access to UG. This is, in Slavkov’s account, the only plausible explanation to the response patterns shown by the speakers he studied. He claims that “during the earlier stages of acquisition, the learners’ grammar consists of a wide variety of competing representations which may not necessarily be part of the native or target language, but are licensed in other natural languages. As acquisition progresses, the L2 grammar becomes more restrictive and closer to the target. Learners with enough exposure to the L2 eventually start to exclude the non-target representations from their interlanguage and can identify the target ones with high accuracy” (Slavkov 2008: 231).

White (1992) analyzes how native speakers of Spanish, Dutch and French detect Subjacency violations in English as an L2 as opposed to how native speakers of Chinese, Korean and Japanese do. She finds that speakers whose L1 has Subjacency effects are more accurate than speakers of languages that do not have this property. However, she claims that the Subjacency violations committed by the latter are not really such, “because their representation of these sentences is quite different” (White 1992:458). The importance of these studies on Subjacency is interpreted by White as follows: “The L2 input (both in the classroom and in more naturalistic contexts) underdetermines restrictions on wh- movement. While L2 learners will presumably hear wh- structures in naturalistic input, and in some cases be taught certain aspects of question formation, it seems highly unlike that they are taught the differences between grammatical and ungrammatical cases of extraction from embedded clauses” (White 1992:448)
In a study with Belikova (Belikova and White 2009), the authors study wh- island constraints from a minimalist point of view. The departing point is quite different from that of White (1992):

“Under Minimalism (Chomsky, 1995), computational principles such as Move and Merge are assumed to be invariant (therefore, universal) and locality phenomena are exemplified in all languages, making it difficult – if not impossible- to disentangle L1 effects from UG effects” (Belikova an White 2009:201)

Therefore if UG is still active, the authors argue, once learners realize that the L2 has wh- movement, they should be able to reject Subjacency violations. If the Fundamental Difference Hypothesis applies, however, those L2 learners whose native language lacks wh- movement will not have access to UG anymore and they would fail to observe the constraints under study.

Schulz’s (2006) dissertation focuses on the interpretation and processing of (ungrammatical) scope-marking constructions in L2 learners of English whose L1s either have this construction in the adult language (German) or does not have this possibility at all (Japanese). She carries out three different tasks: an elicited production task, an off-line acceptability judgment task (henceforth, AJT) and an on-line AJT. Her results show different patterns of response for the control group (22 native speakers of English) and both experimental groups, consisting of native speakers of German (n=59) and Japanese (n=54). English native speakers are shown to establish a second wh-

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32 Bley-Vroman (1989) proposes that child L1 acquisition and adult L2 acquisition are fundamentally different because adults have access to (and rely on) general cognitive problem-solving skills to infer the grammatical structure of the L2.

33 “What do you think where Kermit hid the ball” (Schulz 2006:85)
dependency in the on-line AJT: they do not consider the possibility that said wh- phrase could be part of the longer wh- dependency (hence, they reject a scope-marking interpretation of it). None of the L2 groups seem to consider the embedded wh- word as a full-fledged wh- word (they do not seem to attempt to open a second wh- dependency).

Native German L2 speakers of English accept wh- scope marking across all tasks. Their parser seems to interpret the embedded wh- phrase as not introducing a new dependency. The Japanese speakers, on the other hand, subdivide into two sub-groups: some speakers consistently allow scope marking across tasks, and some others consistently disallow it. However, as Schulz points out, the reading times of all members of this group have a processing profile that suggests that wh- scope marking is parsed as long-distance wh-movement (i.e. they parse these construction as constituting instances of scope marking).

Schulz proposes different possible explanations for the L2 data. The L1 German data, according to her, clearly constitutes an instance of transfer from the L1 into the interlanguage. For Japanese, on the other hand, two possible interpretations are available:

1. The emergence of scope-marking strategies can be interpreted as evidence that L2 learners start out the acquisition process by entertaining all typologically possible options.

2. If we adopt Cheng’s (2000) proposal that the availability of scope-marking results from being able to separate the wh- phrase from the wh- feature\(^\text{34}\), then the Japanese data could also be explained as transfer: It is possible, in Japanese, to dissociate the wh- phrase and the wh- feature; therefore this group of L2 speakers

\(^\text{34}\) Cheng (2000): The wh-phrase does not bear its “interrogativity-marker” (i.e. wh-feature); rather, it serves as a quantifier (over all possible answers to a given question)
of English might be transferring this property of their L1 syntax into their interlanguage.

However, the transfer account, as Schulz notes, is not a plausible explanation for all cases of scope-marking that exist in the L2 literature: transfer is not a suitable interpretation for Gutierrez’s (2005) bilingual data, or for the available data on child L1 acquisition of English.

As to how learners overcome the scope-marking stage in their interlanguage, Schulz proposes that they might be using indirect negative evidence, which would separate them from children acquiring English as an L1. In light of her data, she proposes that in order for said indirect negative evidence to be a reliable source of information, learners must have been exposed to enough relevant input to have derived clear intuitions about whether a form is target-like or not.

A very revealing study that tackles the interpretation of wh- constraints in SLA is that of Yusa (1998). He proposes an analysis of the acquisition of wh- islands by which L2 speakers are said to project multiple specifiers on CP, with a tendency to move all wh-phrases to a clause-initial position. His study analyzes a number of wh- phenomena (it includes 7 tasks that tackle CP-projection, null pronominals, crossover effects, interpretation of wh- islands, and production of indirect and multiple questions) as realized by native speakers of Japanese acquiring English as a second language. The results from his experiments lead him to conclude that Japanese-speaking L2 learners analyze English as a CP-absorption language through transfer of a [+multiple] feature

Absorption is a process that applies at LF and that implies the absorption of the features of distinct wh-phrases into a single “super feature matrix” (McDaniel et al. 1995). An abstract operator dominates the wh-phrases combining all of their indexes.
on T in Japanese to C in English. According to him, this would entail evidence to support
the Functional Parametrization Hypothesis, and the locus of apparent violations of
Universal Grammar principles would be located in functional categories of the L2ers’
lexicon. Yusa suggests that the reason English-speaking children do not produce or
interpret questions the way Japanese-speaking L2 learners do is because there is no
evidence in the overt syntax of English to show that functional categories are specified as
[+multiple].

Taking that last statement into account, it would be unclear then, if we assume
Yusa’s analysis, why L2 speakers of Spanish whose native language is English would
show patterns of response that are similar to those of Japanese native speakers acquiring
English. Spanish, like English, shows no evidence in overt syntax that functional
categories are specified as [+multiple], hence transfer as Yusa interprets it should be
discarded for these speakers. However, their interpretation of adjunct wh- islands shows
violations of barriers. A different explanation, then, is necessary for these speakers’
performance.

3.4.2. Acquisition of wh- movement in L2 Spanish

Because this work is based on the acquisition of Spanish by non-native speakers
of English, the next section will focus on summarizing the main research on wh-
movement that focuses on the population under study. It is important to bear in mind,
however, that most research carried out to date in wh- movement in L2 speakers of

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36 The Functional Parametrization Hypothesis states that functional categories are the special locus of the
parameters that distinguish the grammars of different languages (Atkinson 1994, Smith and Tsimpli 1995,
Ouhalla 1994)
Spanish whose L1 is English has focused on the main differences between English and Spanish.

Montrul et al. (2008) focus on the major differences between English and Spanish. Their study analyzes whether transfer occurs for heritage speakers of Spanish who may be influenced by their English in their performance with respect to \textit{wh}-movement. They focus specifically on whether bilinguals accept sentences with no complementizer, as it is possible to do in English, and reject sentences with subject extraction due to the obligatory presence of the complementizer in Spanish, and they find that early and late bilinguals (L2 learners and heritage speakers of Spanish) know the constraints on \textit{wh}-movement; possibly because “both Spanish and English behave linguistically alike in this respect, with a few exceptions” (Montrul et al. 2008:104). In the cases that differ (omission of complementizers in Spanish and not allowing subject extractions from embedded clauses –which is grammatical in Spanish–) they find some evidence of language contact (transfer from English to Spanish).

The studies summarized in this section have provided an insight on a number of aspects of the acquisition of \textit{wh}-movement in Spanish, both as an L1 and as an L2. They have shown that interrogative constructions are a complex matter that, for L1 speakers, follow certain cross-linguistic patterns that put Spanish in the same linguistic space as English with regards to the acquisition of \textit{wh}-movement: the interpretation of questions containing \textit{wh}-islands follows the same patterns of response, consisting of either fully grammatical responses or responses to the medial \textit{wh}-word by age 6-7 approximately. Adults are not expected to make errors regarding these constructions in either language. With respect to L2 Spanish, cross-linguistic studies on L2 acquisition of islands and
studies on L2 acquisition of Spanish interrogatives present an intricate space for hypotheses: island constraints cross-linguistically show a variety of possible interpretations that are not present in L1 data, but mainly in the case of L2 learners whose L1 is non-movement. Nonetheless, some work has shown non-target, unexpected patterns of response in learners whose L1 was a wh-movement language as well. On the other hand, analyses of the acquisition of interrogatives in Spanish by non-native speakers have shown that these constructions do not pose a particularly problematic challenge for students, except in the cases in which structures differ between the L1 and L2 Spanish.
CHAPTER 4
METHODOLOGY

4.1. Gaps in previous research

As seen in the previous chapter, there is a large number of scholarly works on both First and Second Language Acquisition that focus on different aspects of \textit{wh}-movement. However, there are certain limitations to the current literature of L2 acquisition of Spanish that need to be addressed.

As stated in the literature review, most studies in SLA that discuss island constraints are centered in groups of native speakers of a non-wh-movement language acquiring a wh-movement language. Those that center on how native speakers of a wh-movement language acquire another wh-movement language tend to focus on the differences between those languages, but there are no studies that look at parallel structures regarding \textit{wh} -movement and whether/how they are transferred from the L1 to the L2. The current literature lacks an analysis of whether there are differences in the interpretation/production of these structures despite their common syntactic representation in the grammar of each language; this is essential to gain a better understanding of L2 acquisition in general. If L2 speakers were making mistakes not foreseen by the grammar of their L1 nor by the grammar of the target language, a different explanation is needed to explain what is happening, and why.

There is also an imbalance in studies of L2 acquisition that study island constraints, as opposed to studies in L1 acquisition. The \textit{wh}-island has received much attention in L1 literature, but studies of it are scarce in SLA, independently of the combination of languages analyzed or the syntactic representation of each with respect to
this phenomenon. Specifically for Spanish, there is an overall shortage of studies that address island constraints, both from an interpretation and from a production perspective.

When it comes to experimental work in production, there is only one study within the Spanish/English language pair that analyzes bilinguals’ performance with respect to long-distance wh- movement (Gutierrez Mangado and Garcia Mayo 2008). However, this study does not focus on how grammatical constraints are acquired in Spanish by non-native speakers, but rather on the production of a typical developmental error (wh-copying and scope-marking, as seen in the literature review). They also focus on the opposite combination of languages: native speakers of Spanish (and Basque) learning English as an L2. It should also be noted that this study focuses on child bilingualism; no studies focus on whether adults learning Spanish as an L2 produce the same type of developmental mistake. There are also no studies that focus on the production of wh-islands by non-native speakers of Spanish.

Hence, the present work addresses those issues that have thus far been understudied in the existing literature on wh- movement acquisition.

4.2. Research questions and hypotheses

Research Question 1: How do non-native speakers of Spanish interpret questions that contain wh- islands? Are they capable of responding to them in a native-like way?

Hypothesis 1: Yes, they are capable of interpreting and responding to questions that contain a wh- island, but they will make mistakes that adult native speakers do not make: they will respond to the medial wh- word (like children do when acquiring Spanish as their L1) as a developmental error in their interlanguage. This error will be overcome
as their level of Spanish advances. This is expected to happen if subjects comply with UG and acquire Spanish as an L2 with a pattern that mirrors that of children acquiring Spanish as their native language.

Research Question 2: Can non-native speakers of Spanish produce questions containing *wh-* islands when prompted to do so?

Hypothesis 2: Yes, non-native speakers of Spanish can produce questions containing *wh-* islands when these are elicited. Both their L1 and UG allow for questions containing *wh-* islands, so whether they transfer the properties of their L1 (English) to their L2 (Spanish) or they follow UG rules, they will be able to create these questions.

Research Question 3: Is level of competence in Spanish a determining factor for non-native’s performance in this type of questions?

Hypothesis 3: Yes. Speakers with a higher level of Spanish (high-advanced) will be closer to a native-like performance (although they are still not expected to pattern with native speakers completely) than speakers with a high-intermediate level of Spanish. This is expected to be the case since with a higher command of overall Spanish comes a higher command of question-forming strategies as well.

Research Question 4: Is there an asymmetry between interpretation and production that will cause speakers to be more target-like when interpreting or when producing these structures?
Hypothesis 4: Yes. Non-native participants are expected to be more conservative in production\(^{37}\) than in interpretation. This is expected to translate in overall avoidance of *wh*-islands in the production task, and also in less overall accuracy (as compared to native speakers’ performance) than in the interpretation task. However, there are conflicting data in the literature of L2 acquisition regarding this asymmetry between comprehension and production. Although most authors agree that this asymmetry exists, some claim that interpretation is more problematic than production, whereas others claim the opposite.

4.3. Experimental methods

4.3.1. Pilot study

Preliminary experiments by Turrero-Garcíá (2013a., 2013b.) have shown that the performance with respect to *wh*-island constraints varies from native to non-native speakers of Spanish. Up to date, a study on native speakers of English and a study on heritage speakers of Spanish whose dominant language is English have revealed that, despite the fact that English has the same underlying structure as Spanish for *wh*-island constraints (with subject inversion, as stated in the previous chapter), these are nonetheless problematic from an interpretation point of view in the L2. The results of the experiments previously mentioned point to a tendency by non-native speakers of Spanish and by heritage speakers to, on the one hand, pattern with what children do in the path of acquisition of these structures in their native language (i.e., answering the medial *wh-*

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\(^{37}\) The term “conservative” in this context refers to a restriction in the speaker’s grammatical performance with respect to a specific phenomenon, by which certain options are banned by the speaker’s grammar in one language module but not in others (Snyder 2007)
word, despite the clear impossibility to do this in the adult grammar of both Spanish and English): they choose this medial answer on a 15% of occasions (L2 speakers) and on a 16% of occasions (heritage speakers). But on the other hand, adults learning a second language or adults whose L1 has undergone attrition also display a pattern that differs both from the adult grammar and from the grammar of the child acquiring Spanish as an L1: they give a long-distance scope to the initial wh- word in 30% of cases for non-native speakers of Spanish (intermediate level) and in 21% of cases for heritage speakers.

The following graphs show the results obtained on a situation interpretation experiment in which adult speakers of L2 (n=16) and Heritage Spanish (n=18) read a series of stories on a projector screen and then had to write down their responses to a question presented orally to them. The target questions included a wh- island, and the responses were compared to those of a group of native speakers of Spanish (n=10).

![L2 responses graph](image)

*Figure 12: Non-native responses to questions containing wh- islands (Turrero-Garcia 2013a.)*
Figure 13: Heritage speaker responses to questions containing *wh-* islands (Turrero-Garcia 2013b.)

These studies motivated the experimental improvements designed in the current work. The written text was removed and substituted with images and the responses were collected orally. Besides, the data obtained from these pilot studies also motivated the inclusion of a production experiment, as the researcher found it necessary to include production in order to better understand how *wh-* islands are managed by speakers overall.

4.3.2. Research subject groups and grouping criteria

The current work relies on the linguistic performance of three different groups of speakers of Spanish, whose language proficiency varies among groups but is kept as constant as possible within groups. Each group consists of 30 speakers. All speakers are above 18 years of age.
4.3.2.1. Control group

The control group consists of thirty (n=30) native speakers of Spanish, aged between 18 and 55 (average 29.2), both female (n=19) and male (n=11). They are all self-proclaimed native speakers of the language, and they all speak it on a daily basis with their family and friends. Although some of them live in an English-speaking country, their arrival in the country was well after puberty (hence after the end of the critical period38).

The control group was selected by choosing native speakers of Spanish who had not been living in an English-speaking country for more than 5 years, and (if they had ever lived in an English-speaking country) who had arrived at said country in their adulthood (minimum age for native speakers is 20 years old).

4.3.2.2. Experimental groups

Intermediate group

The intermediate group consists of thirty (n=30) non-native speakers of Spanish, aged between 18 and 25 (average 21), both female (n=19) and male (n=11). They are all native speakers of Mainstream American English, and none of them report to speak another language natively. The group has an average of years of studying Spanish of 3;5, and none of them have lived in a Spanish-speaking country for more than 3 months. They live in a monolingual English context, and they attend Spanish classes in a University

38 The critical period is a theoretical concept in the fields of both First and Second Language Acquisition that has been discussed by many authors (Lennenberg 1967, Long 1990, Birdsong 1999). It refers to whether or not there is an age after which the acquisition of a first language becomes impossible, or the acquisition of a second language becomes severely more difficult and necessarily non-native-like. It is commonly assumed that, although different syntactic phenomena are acquired at different stages, the L1 acquisition process can be considered complete after puberty.
setting no more than 12 hours per week. At the time of the experiments, they were all enrolled in an Advanced Grammar course (pre-major, fifth-semester course in the language sequel at the University where they were tested).

The intermediate group was chosen from the institution’s course in Spanish Advanced Grammar. This course follows the 4-semester sequence of beginner Spanish, and it is a requisite for Spanish majors and minors at this University. It covers basic Spanish grammatical concepts from a descriptive point of view.

**Near-native group**

The near-native group consists of thirty (n=30) non-native speakers of Spanish, aged between 18 and 40 (average 28), both female (n= 20) and male (n= 10). They all have advanced studies in Spanish (they are last year Spanish Majors or are pursuing graduate studies in Spanish), meaning that they have enough command of Spanish to attend advanced courses on specific topics taught in the language, and to write academic work in Spanish. They have all lived in a Spanish-speaking country for at least 3 months. They self-report their knowledge of Spanish as being “excellent” or “almost native”.

The advanced group was selected among graduate students of Spanish in different institutions in the United States. All of the subjects had obtained a college degree in Spanish as a major, and had been studying Spanish for a minimum of 10 years. They all took courses in Spanish in their field of specialty for graduate school (literature or linguistics).

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39 For a description of the linguistic contents covered in this course, go to Appendix 4.
4.3.3. Experiments

In order to test the speakers’ performance with regards to *wh*- islands, two different experiments were designed. The experiments were carried out on separate sessions, to minimize priming effects\(^\text{40}\) from one task to the next and also to avoid tiredness in the speakers\(^\text{41}\).

4.3.3.1. Interpretation experiment

The first experiment is a situation interpretation experiment. It is set up as a video in which the subjects hear a number of stories that are narrated in the past. Each story is played twice, and after the second time speakers hear the story, they hear a question. There are eight target questions (containing *wh*- islands), two multiple *wh*- questions, and seven fillers that are both long and short-distance *wh*- questions.

Example 17. Situation and target question:

Eres un explorador que está buscando un animal exótico en la selva del Amazonas. Tras semanas sin encontrarlo, una noche mientras estabas en el campamento pensaste que sería más fácil encontrar al animal en el río por la mañana, porque el animal iría a beber.

\(^{40}\) Priming effects: “Processing a particular syntactic structure within a sentence affects the processing of the same (or a related) syntactic structure within a subsequently presented sentence”. (Bramigan *et al.* 1995).

\(^{41}\) Level of tiredness and other personal factors are considered a factor that may affect subjects’ performance (Cook 2003).
You are an explorer searching for an exotic animal in the Amazon rainforest. After weeks of not finding it, one night while at camp you thought it would be easier to find the animal in the river in the morning, since the animal would go there to drink.

QUESTION:

¿Dónde pensaste cuándo encontrarías al animal?
Where thought_{2ndsg} when would-find_{2ndsg} to-the animal?
Where did you think when you would find the animal?

Figure 14: Presentation images for Situation 1

Each image is introduced the first time the vocabulary item it refers to is heard in the voice recording. The images then remain for the entirety of the recording. The same
procedure applies the second time participants hear the situation. The images are introduced in linear order, from left to right and from the top to the bottom of the screen:

![Image](image1.png)

**Figure 15: Order of presentation of images in interpretation experiment**

All target *wh*- questions contain adjunct *wh*- words in both the fronted and the medial positions. The *wh*- words in fronted position (hence target from an adult native perspective) are: *dónde* (where), *cuándo* (when), *por qué* (why) and *cómo* (how).

Both multiple *wh*- questions have a single-pair reading, and in both cases the fronted *wh*- word is an adjunct (*cuándo* –when- and *dónde* –where-) and the in-situ one is an argument (*a quién* –whom- and *qué* –what-).

The fillers are in their majority simple *wh*- questions introduced by an adjunct *wh*-word, with the exception of two *yes/no* questions

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42 For a complete list of experimental items and fillers go to Appendices 1 and 2.
The test was administered using a MacBook® in a lab environment to minimize distractions for the subjects. The video lasts 12 minutes, but there is a brief pause after every question to give the subject time to answer. The responses were written down for further coding and analysis.

4.3.3.2. Production experiment

The production experiment was a game based on the experiment carried out by van der Lely and Battell (2003). It was a deduction game based on a scenario in which subjects had to solve a mystery theft. The game consisted of a board, suspect cards, event cards, and question word cards. The experimenter had the event cards, and the subject had access to the suspect cards, the question word cards, and the board. The instructions given to subjects were the following\(^\text{43}\):

“Mrs Mateo organized a dinner party in her house and she invited [suspect characters]. The party took place between 6 and 10 PM, and when it was over, Mrs Mateo discovered that someone had stolen her jewels! She called the police, and they sent their best detective over: you! However, when you get to the scene of the crime, you see that there is already another agent in the house: me! Because you are the best agent in town, I am very jealous of you, so I am trying to not be very helpful. I already have all the information necessary to solve the theft, but I will not give it to you. I cannot lie to you, but I will make you ask me every question; some of the information I give you will be useful to you, but some will not. These are the event cards. They refer to all the things that happened at the party. These are question words. You will have to pick one for each

\(^{43}\) For the Spanish version of the instructions, go to Appendix 5.
event, and ask me a question about each of them with that word. After you have asked a question about each event, you will have to guess who stole the jewels, and how.”

The aim of the game was to elicit wh-islands from subjects. In order to do that, some of the event cards contained an embedded wh-question such as “Mr Gonzalez knew where the security cameras were.” Some events focused on the time at which things happened, some on the place, and some on the manner. The question words were “cuándo” [when], “dónde” [where], “cómo” [how] and “por qué” [why]. The question words were picked at random by the subjects, so the questions were sometimes pragmatically odd, but the aim was for their syntax to be as accurate as possible.

The experiment took place in the experimenter’s office, and it was recorded for further coding and analysis.

4.4. Coding

4.4.1. Interpretation experiment

The interpretation experiment was coded by analyzing the type of response given by the subjects to the questions presented. The responses were classified in five possible ways:

a. Grammatical: responses that comply with the adult Spanish grammar with respect to this type of questions are coded as grammatical. This implies that subjects respond to the fronted wh-word in a short-distance manner; interpreting the wh-word within the higher clause and taking it to refer to the higher verb.

44 For a complete list of the target and filler situation cards, go to Appendix 3
Example:

Question: “Where did you think when you would find the animal?”
Answer: “At the campsite”

b. Medial: This kind of response is typical in development. Children acquiring Spanish as their L1 will respond to the medial wh-word in these questions until up to age 5-6 (Perez-Leroux 1993). Responses were coded as medial whenever subjects replied to the lower half of the question: they gave a short-distance reading to the medial wh-word. The first half of the question was, therefore, ignored.

Question: “Where did you think when you would find the animal?”
Answer: “The following day”

c. Long-distance: this was the coding given to responses in which subjects gave a long-distance reading to the initial wh-word. This means that the fronted wh-word was interpreted as referring to the lower part of the clause exclusively. Therefore, the subject was answering to the fronted wh-word in relation to the lower verb of the question, and ignoring the higher verb and the medial wh-word.

Question: “Where did you think when you would find the animal?”
Answer: “In the river”

d. Reverse medial: this is predicted to be the rarest response, but it is nonetheless a possibility that needs to be taken into account. A reverse medial response is one in which the medial wh-word is interpreted as referring to the higher part of the

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45 All coding examples based on Example 17: Situation and target question.
clause. Therefore, it is not a standard medial response, but one in which there is a sort of “retracing” of the verb modified by the medial wh- word back to the higher clause.

Question: “Where did you think when you would find the animal?”

Answer: “The previous night” / “At night”

e. Multiple wh-: responses in which speakers give a response to both wh- words in the question. This response implies that subjects fail to mark the lower wh- word as [-direct], and therefore the island is interpreted as a multiple wh- question (this is ungrammatical in Spanish, where for multiple wh- questions, the lower [+direct] wh- word must be in situ, unlike in the questions presented in these target situations).

Question: “Where did you think when you would find the animal?”

Answer: “At the campsite the previous night” / “In the river the following day”

f. Other: any response that is not a response to one of the two wh- words present, or that does not make any sense within the context, is considered to be an “other” response.

Question: “Where did you think when you would find the animal?”

Answer: “No sé…” ‘I don’t know’

4.4.2. Production experiment

The coding system for the production experiment is more data-driven than it is in an interpretation task, where the possible outcomes are more restricted and hence more predictable than in a production task. In the latter, subjects have the freedom to create
almost any type of construction without the experimenter being able to control their performance.

For this reason, the initial coding for the production experiment is divided in two categories: target and non-target production.

1. Target production: A well-formed question that reproduces the elicited structure (“When did Mrs. Garcia ask where the dogs were?”) is considered to be a target question. The instructions of the game and the practice items shown before beginning the game are considered to be a good prompt for subjects to be able to grasp how questions are expected to be asked; therefore they should be able to produce the target structures.

2. Non-target production: Any question that does not qualify as target (i.e. a question containing a \textit{wh}-island) will be initially coded as non-target. Within the non-target responses, different types of questions can be expected to be produced; but because of the nature of the task, the coding within this category is necessarily data-driven and qualitative. There are two sub-classifications in this non-target category. The first one refers to whether the questions produced are ungrammatical, non-sensical (the responses are completely unrelated to the story being told in the experiment) and grammatical. Within the grammatical target responses, there is another sub-classification that consists of:

1. Change of \textit{wh}- word for another \textit{wh}- word: the middle \textit{wh}- word (provided in the situation card) is swapped for a different \textit{wh}- word. Example: “Cómo preguntó dónde estaban, eh, descansaban los guardas?” ‘How did he ask
where the guards rested?’ (Intermediate Speaker 01). TARGET: ‘How did she ask when the guards rested’

2. Change of wh-word for a complementizer: the middle wh-word is substituted by a complementizer ‘que’ (‘that’) or ‘si’ (‘if’). Example: ‘Dónde estaba Sr Rodriguez cuando dijo que los guardas descansaban?’ ‘Where was Mr Rodriguez when he said that the guards rested?’ (Intermediate Speaker 16). TARGET: ‘Where was he when he said when the guards rested?’

3. Omission of middle wh-word/omission of higher verb: In this case, speakers entirely omit the middle part of the question and they use only the given wh-word and the lowest part of the clause (the information provided by the event card minus the wh-word). Example: ‘Cómo Sr Martinez descubre las joyas?’ ‘How did Mr Martinez discover the jewels?’ (Intermediate Speaker 18). TARGET: How did he discover where the jewels were?

4. Omission of lower clause: this response type entails that speakers only take the initial wh-word and the first verb in the event card. Most often this is accomplished through the substitution of the entire lower clause with a pronoun. Example: ‘Cómo lo descubrió?’ ‘How did [he] discover it?’ (Near-native speaker 04). TARGET: ‘How did [he] discover where the jewels were?’

5. Other: these responses can come from different linguistic strategies for each group of speakers, therefore there is great variation. They can be any grammatical question that makes sense within the context, but that does not fall into any of the previous categories. Example: ‘Cuando pensaban el Sr Rodriguez y el Sr Gonzalez ir a coger el tren?’ ‘When were Mr. Rodriguez and Mr. Gonzalez
thinking of going to catch the train?’ (Native Speaker 22). TARGET: ‘When did they ask how to get to the train station?’
CHAPTER 5
RESULTS AND ANALYSIS

The findings from the two experiments described in the previous section reveal both native and non-native trends in interpretation and production that shed light on certain aspects of SLA and Spanish syntax. The hypotheses stated in Chapter 4 were partially confirmed by the results. Besides, the analysis of the results has shown the need to account for certain unexpected patterns of response.

5.1. Experiment 1

5.1.1. Results

The goal of the interpretation task was to determine whether non-native speakers of Spanish would be capable of accurately interpreting questions that contain a wh-question, and whether there is improvement in said interpretation as level of competence in Spanish augments. In so doing, there was also the aim to determine the types of non-target responses provided by speakers and to analyze how those can be explained in terms of the speakers’ linguistic knowledge and ability at each stage of interlanguage.

This discussion of the results will initially provide a general overview of the performance of all three groups, and then it will break down the results by type of responses, by individual wh- words, and by group. There will also be a data-driven analysis of the claims by Baauw (1998) and Rizzi (1990) that consider the referentiality of each individual wh- word as a key part of its interpretation (see Chapter 2.2 for detailed discussion).
In Figure 16, the overall results of all three groups (control, intermediate, and near-native) are originally divided in grammatical vs. ungrammatical responses. Grammatical responses correspond to interpretations in which the fronted wh-word is associated with short-distance movement and with extraction from the higher clause (see Chapter 4.4.1). Any other type of response was initially considered ungrammatical.

![Bar chart showing overall accuracy rates per group](chart.png)

**Figure 16: Overall accuracy rates per group**

The results show that among non-native speakers there is a tendency to improve interpretations of wh-islands as proficiency improves. All speakers are above chance (which is set at 16%, considering all possible outcomes in this task), but all three groups behave differently: Intermediate speakers of Spanish are at a rate of inaccuracy of over 50% (52.92%). Near-native speakers' error rate lowers by almost 20%, and at a rate of 34.58% they are significantly more accurate than their lower-level counterparts. Native speakers have the highest score of accuracy, but at 83.75% of correct interpretation of
wh- islands, their linguistic behavior in regards of this structure is still far from what would typically be dubbed native-like.

A one-way ANOVA showed that these results are statistically significant (p<0.001). The results of a post-hoc Tukey HSD reveals that this significance holds across all group comparisons (p<0.001) for all three possible combinations: native vs. near-native, native vs. intermediate, near-native vs. intermediate).

When analyzing the error types across groups, it is palpable not only that there are major differences regarding the kind of error that the different groups make, but also the relevance that the distinction between the experimental items (and more specifically, between each individual wh- word) gains in light of the results. Figure 17 displays the percentage of each type of response given by each experimental group.

![Figure 17: Type of answers per group](image-url)
The intermediate speakers, as predicted, yield the most ungrammatical responses to the questions given. Their errors are divided in 5 categories: long-distance, medial, reverse medial, multiple wh-, and other. An example of each of this can be found in the following table:

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>NON-TARGET RESPONSE TYPE</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where did you think when you would find the animal?</td>
<td>Long-distance (LD)</td>
<td>In the river</td>
</tr>
<tr>
<td></td>
<td>Medial (M)</td>
<td>The following day</td>
</tr>
<tr>
<td></td>
<td>Reverse Medial (RM)</td>
<td>At night</td>
</tr>
<tr>
<td></td>
<td>Multiple Wh- (MW)</td>
<td>At the campsite the night before</td>
</tr>
<tr>
<td></td>
<td>Other (O)</td>
<td>I don’t know</td>
</tr>
</tbody>
</table>

Table 1: Non-target response examples

Out of these possible responses, the long-distance reading, such as “In the river” is the most prominent one (28.30% of the total of responses, representing 53% of the errors committed, are of this type). Aside from responses categorized as “Other” such as “I don’t know”, which represent a 17% of the total of items analyzed (32% of the total of errors), the second most common mistake is the medial response (“The following day”). They present a total of 6.6% of medial responses, which means 12.5% of total responses. The remaining 0.83% of responses (and 1.5% of errors) are the reverse medial responses, such as “The previous night/At night”).

Near-native speakers show a similar trend in their results. Their overall level of accuracy, as stated above, is higher than that of intermediate speakers, but their error rate shows a somewhat similar pattern. As with the intermediate speakers, the most common error within the near-native group is the “in the river”-type LD, with 20.83% of total responses falling into this category (this represents a 60% of their total number of errors
in this task). In the case of near-native speakers, the rate of “other” responses decreases greatly in relation to the intermediate speakers' rate: only 5.83% of their responses fall into this category, making a total of 16.8% of errors. This category is very closely followed by that of medial responses (“the following day”), which occurred on 5.42% of this group's responses (15% of the total of mistakes). The remaining 2.4% of their responses is divided between the “the previous night”-type RM (1.6% of total responses, representing 4.8% of the total of errors) and the MW responses, such as “At the campsite the night before” (0.83% and 2.4%, respectively).

The control group has the highest rate of grammatical responses, with an 83.75% of the total of their production being on target. These speakers have a profile that mainly differs from the previous two groups, although a common pattern can be found: the highest rate of non-target responses is that of LD responses, which take an 8.75% of the total of this group's answers. This 8.75% translates to a 53.8% of the total of native errors. The second most common type of mistake is the RM one. We find a 3.75% of these responses (23% of the total of errors). Only two instances of medial responses were found in this group, amounting to a mere 0.83% of the total (5.12% of their error rate). On the other hand, this is the group with the highest rate of MW responses, 1.60% of the total (10% of the total of errors). The remaining 1.25% of their total of responses (accounting for 7.7% of all of their non-target responses) falls within the “other” category.

A series of different statistical analyses was carried out to determine the significance of this data. These are split in inter-group and intra-group, as will be seen below. Both inter- and intra-group comparisons yield striking differences in both the
overall accuracy rates and specially in the distinctive types of off-target answers that all groups provided.

A battery of Kruskal-Wallis tests were completed for the inter-group analysis, examining each non-target response type per group. The results of these tests are displayed in Table 1, in which we see what combinations of response type + group combination yield a significant effect. The three possible group combinations (intermediate vs. near-native; intermediate vs. control and near-native vs. control) are contrasted with each possible non-target response (LD, Medial, RM, Multiple and Other).

<table>
<thead>
<tr>
<th></th>
<th>Intermediate vs. near-native</th>
<th>Intermediate vs. control</th>
<th>Near-native vs. control</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD P&lt;0.001</td>
<td>*Significant</td>
<td>*Significant</td>
<td>*Significant</td>
</tr>
<tr>
<td>MEDIAL P&lt;0.01</td>
<td>Non-significant</td>
<td>*Significant</td>
<td>*Significant</td>
</tr>
<tr>
<td>RM P&lt;0.05</td>
<td>Non-significant</td>
<td>*Significant</td>
<td>*Significant</td>
</tr>
<tr>
<td>MULTIPLE p&gt;0.05</td>
<td>Non-significant</td>
<td>Non-significant</td>
<td>*Significant</td>
</tr>
<tr>
<td>OTHER p&lt;0.001</td>
<td>*Significant</td>
<td>*Significant:</td>
<td>*Significant</td>
</tr>
</tbody>
</table>

Table 2: Inter-group statistical analysis (Kruskal-Wallis tests per mistake type)

As seen in table 7, the two mistake types where the differences between groups are most significant are the LD and the “other” responses. In these cases, all three possible group combinations (intermediate speakers contrasted with their near-native counterparts and with the control group; near-native speakers contrasted with the intermediate and control groups; native speakers contrasted with both non-native groups) yield significance. It is notable that what is found in both cases, when looking at raw numbers of the speakers' performances, is a reduction of the overall number of non-target
responses on both type of mistakes that goes on a clear scale from the intermediate to the native speakers. Medial and RM responses show a similar pattern of significance, but for different reasons: in the case of medial responses, the results of the Kruskal-Wallis analysis is significant for the comparison between both non-native groups against the control group, but not for the comparison between the two non-native groups against each other. This is so because there is a clearly higher tendency to provide a medial response for these two groups than there is for native speakers, whom, as shown above, only provided this response in two instances. The RM responses are also significant when comparing both groups of non-native speakers against the control group (and not when contrasted against each other), but for the opposite reason: native speakers provide this response at a much higher rate than their non-native counterparts. Lastly, the multiple response, unsurprisingly, only offers one significant comparison: that of intermediate speakers when contrasted with the control group. Because this response type has such few instances, however, it is essential to keep in mind the limitations in the statistical analysis.

The inter-group analysis confirms the previously stated hypothesis that the speakers' proficiency has an impact on how the different groups interpret and produce questions containing *wh-* islands. There is a clear-cut curve of evolution when contrasting the amount of target responses given by the intermediate, near-native and native speakers, by which it is apparent that non-native speakers, at least at this level, do not reach fully native performance, but they evidently profit from their repeated exposure to and use of Spanish in a way that intermediate speakers have not reached yet.
An intra-group analysis, on the other hand, gives us the key to understanding deeper issues of what the non-native speakers' interlanguage looks like, and also to learning more about the strategies used by native speakers to approach barriers to movement and long-distance dependencies:

In the first place, it should be noted that, according to the data obtained from this study, the long-distance interpretation of questions containing $wh$- islands is prevalent in all three groups (within the non-target responses), which reflects a property of the grammar that had previously been reported in non-native speakers of non-movement languages (see Yusa 1998), but it had never been shown to appear in the data of L1 speakers of a $wh$-movement language acquiring another $wh$- movement language.

Another crucial aspect of this particular trend in the results is the fact that, for L1 speakers of Spanish, this long-distance response had been categorized as theoretically plausible: (Baauw 1998), but no actual speaker data had been presented to account for this. However, referentiality of both each individual $wh$- word and subcategorization frameworks of each verb needs to be taken into account when explaining the reasons why a LD interpretation is possible for all groups of speakers. Below, an analysis of islands will be put forward in which the referential value of each $wh$- word and the semantic/pragmatic relevance of the verbs they occur with gain weight as an explanatory force for the variation shown by the subjects in the current study.

As explained before, answering the medial $wh$- word in these questions is a typical, well-attested error in child L1 acquisition, not only of Spanish but of multiple languages (see 3.1.2.). It is not therefore not surprising to find it in the interpretation patterns of non-native speakers, both at the intermediate and at the more advanced stages.
of acquisition. Native speakers, however, do not produce medial responses, which is also expected considering these speakers are adults whose Spanish is fully developed at the point of testing. This specific point of the data, therefore, serves as support for the claim that UG-driven developmental errors occur in the interlanguages of L2 speakers.

There is one response in the data set that needs careful examination: RM responses are found more often in native speakers than in the non-native groups. Although this is initially considered an error because it is not a target-like production, the reason why these responses occur and why the control group is on the lead for these answers has to be analyzed carefully. It seems to be a strategy available only to native speakers, since the L2 groups both have a very marginal rate of this type of response. Therefore an analysis of the type of strategy that this might constitute is necessary from a general syntactic viewpoint, and not as an interlanguage phenomenon.

The RM response is seemingly not the only response that is mainly restricted to native speakers. Although the rate of occurrence is very low for all groups, multiple wh-responses (in which the speaker answers both wh- words simultaneously, such as “At the campsite the night before” for the question “Where did you think when you would find the animal?”) arise in the control data and marginally on the near-native group as well. Intermediate speakers do not seem to have the multiple wh- reading of islands available to them at all. Multiple wh- is a different type of wh- movement that is available in Spanish, albeit not for questions containing island constraints. This is an unfrequent kind of structure that is achieved rather late in the acquisition process, which can explain why intermediate speakers of Spanish do not yet possess this option as part of their L2 grammar. As for the near-native and control data, it is conceivable that the multiple wh-
option arises to deal with the complex syntactic intricacies of island constraints. Speakers assume that the presence of two \textit{wh}- words implies double [\(+\text{WH}\)] and [\(+\text{QU}\)] features; this implies a mandatory response for both interrogative particles.

\textbf{5.1.1.1. Responses per \textit{wh}- word}

An examination of the different response patterns per \textit{wh}- word per group is necessary to understand the full spectrum of phenomena that are intertwined in the speakers' performance. In the following graph (Figure 18), there is an overview of how the three different groups' responses vary depending on the individual \textit{wh}- word. The chart shows a clear difference between the native and non-native groups. Although all groups struggle with \textit{where} most, in the experimental groups there is a bigger distribution of mistakes across all \textit{wh}- words, especially for the intermediate speakers. The near-native speakers, although slightly closer to the control group, still show non-target patterns with all four tested \textit{wh}- words; and their inaccuracy rates with 'cuándo' and 'cómo' are higher than those of the control group. Native speakers are the only ones who do not commit errors with 'por qué' ('why'); this is also the only \textit{wh}- word with which they show no mistakes whatsoever. This fact is in agreement with Baauw/Rizzi's (1990/1998) referentiality hypothesis.
Figure 18: Non-target responses per *wh*-word per group

These percentages are better understood when looking into the exact amount of non-target responses provided for each *wh*-word by each group. Table 3 shows the actual number of non-target responses provided by each speaker population:

<table>
<thead>
<tr>
<th></th>
<th>INTERMEDIATE</th>
<th>NEAR-NATIVE</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHERE (total=60)</td>
<td>49</td>
<td>40</td>
<td>24</td>
</tr>
<tr>
<td>WHEN (total=90)</td>
<td>21</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>HOW (total=60)</td>
<td>31</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>WHY (total=30)</td>
<td>19</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 3: Total number of non-target responses per *wh*-word

The intermediate speaker data displays major differences in accuracy per *wh*-word. While none of the words are at perfect accuracy rates, it is obvious that 'dónde' is by far the most problematic one, whereas 'cuándo' ('where') receives the highest native-like behavior. It should be noted that 'dónde' exhibits the highest level of long-distance responses, but it does not present a high rate of other types of errors (a total of 20% of
responses to 'where' were medial and “other” responses, compared to 15% grammatical responses and 65% of LD responses). As recently mentioned, with 'cuándo' the pattern seems to be reversed (contra Baauw/Rizzi46): close to 75% of responses are accurate with regards to 'cuándo', with LD being the second closest response pattern (11%). The remaining wh- words, 'cómo' and 'por qué', reveal a somewhat even distribution: all types of responses are below 50%, although with a higher rate of grammaticality in 'cómo' and the highest rate of “other” responses on 'por qué' (this can be considered an avoidance, since why can be interpreted more freely than the other wh- words, and therefore its response is more open than the accurate response for the other wh- words. However, this pattern is not found on the native group, and at a much lower rate on the near-native group. Avoidance, arguably, is a strategy most used in the lowest level of language proficiency). The somewhat high number of LD responses for why reveals a relevant difference between this group of speakers and the most advanced group, as well as the native speakers. A discussion of the near-native and control data will be offered next, showing how those two groups of speakers hardly ever misinterpret this wh- word, and when they do, it is not through a LD interpretation. Therefore, it is plausible to argue that the LD response pattern, although it is common to all three groups, stems from different sources.

The following graph displays the responses provided by the intermediate group for each individual wh- word. The percentages show the preference speakers show for each possible response (grammatical, long-distance, medial, reverse medial, or other –no
instances of multiple *wh*- answers were found in this group-) in relation to the four *wh*-words included in this study.

![Intermediate speakers chart](image)

**Figure 19: Intermediate speakers' type of response per *wh*- word**

<table>
<thead>
<tr>
<th></th>
<th>G</th>
<th>LD</th>
<th>M</th>
<th>RM</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WHERE</strong> (total=60)</td>
<td>8</td>
<td>37</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td><strong>WHEN</strong> (total=90)</td>
<td>60</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td><strong>HOW</strong> (total=60)</td>
<td>23</td>
<td>9</td>
<td>7</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td><strong>WHY</strong> (total=30)</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
</tbody>
</table>

**Table 4: Total response type per *wh*- word**

The data obtained from the intermediate speakers, therefore, showcases the importance of a word-by-word analysis, as not all *wh*- words show the same tendencies for all experimental groups.
Figure 20 examines the near-native performance by *wh*- word:

![Near-native speakers chart](image)

**Figure 20: Near-native speakers' type of response per *wh*- word**

<table>
<thead>
<tr>
<th></th>
<th>G</th>
<th>LD</th>
<th>M</th>
<th>RM</th>
<th>O</th>
<th>Mult.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHERE (total=60)</td>
<td>20</td>
<td>29</td>
<td>6</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>WHEN (total=90)</td>
<td>72</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>HOW (total=60)</td>
<td>40</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>WHY (total=30)</td>
<td>25</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table 5: Total response type per *wh*-**

Predictably, the accuracy rates for the most advanced L2 speakers increase for all *wh*- words, but major differences are found that need to be accounted for. Starting with *where*, it is remarkable that the pattern is very similar to the one found in the intermediate group. A slight improvement in accuracy translates into a lower ratio of LD responses, but this difference is scarcely visible. However, when looking into the three remaining
wh- words, sizable disparities are present. Most noticeable is the fact that accuracy increases largely across all wh- words, especially in the case of why, which suggests an acquisitional step towards native-like behavior with regards to wh- questions in these speakers as compared with the lower-level group.

The native group's behavior is, as expected, very different from its two non-native counterparts, as can be seen in Figure 21:

![Native speakers chart](chart.png)

**Figure 21: Native speakers' type of response per wh- word**

<table>
<thead>
<tr>
<th></th>
<th>G</th>
<th>LD</th>
<th>M</th>
<th>RM</th>
<th>O</th>
<th>Mult.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WHERE</strong> (total=60)</td>
<td>36</td>
<td>12</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>WHEN</strong> (total=90)</td>
<td>82</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>HOW</strong> (total=60)</td>
<td>53</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>WHY</strong> (total=30)</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 6: Total response type per wh-word

In the figure presented above, it is clear that most of the native non-target responses occur with where, therefore justifying a separate analysis of this wh-word that will be described below. The other three wh-words exhibit a contrasting, more canonical behavior, with why receiving 100% accuracy and how and when being on target around 90% of the time. Although there is a low amount of LD responses for how and when, these are not significant; and neither are any of the other types of responses. The only wh-word that triggers an atypical performance by the control group, therefore, is where; and as has been mentioned above and will be explained further below, said performance is far from atypical once we consider certain factors to explain it.

5. 1.1.2. Dónde's special status

Rizzi's Minimality Theory and Baauw's adaptation of it to Spanish were presented in detail in Chapter 2. The syntactic/semantic analysis proposed in this line of work becomes especially relevant when looking into the data from all three groups in the current interpretation experiment. The overall analysis of the results gives us a puzzling fact that needs to be accounted for: the fact that not only the L2 speakers, but also native speakers of Spanish (who should be performing at ceiling in interpreting these structures), are giving non-target responses at a rate of more than 15%. Although this difference is statistically significant from the performance of both intermediate and near-native speakers, it is still an unpredicted result and it must therefore be explained.

As shown above, the data, when analyzed on an item-by-item basis, reveal a clear differentiation between the individual wh-words. Dónde ('where') is the interrogative word with the highest rate of LD and RM responses in all groups. As previously seen,
Rizzi and Baauw (1990, 1998) claim that 'where' has a special status related to its referentiality, that makes it more easily extractable from a *wh* island than its less referential counterparts (‘how’, ‘why’ and, to a certain extent, ‘when’). If this is true and it is a general property of *wh* movement in Spanish, the LD responses to this *wh* word are to be considered grammatical and therefore, target-like in this experiment. Hence, it is necessary to carry out a re-analysis in which LD and RM responses to *dónde* are incorporated as grammatical responses.

When so doing, a similar curve is found from the intermediate to the control group, but some relevant differences can be found. Figure 22 represents the percentages of response types per group when considering LD and RM responses to *dónde* as grammatical. The graph clearly shows a higher pattern of accurate responses across all groups.

![Figure 22: Response types - LD and RM to where considered target](image)

The intermediate group displays a 16.22% higher rate of accuracy when counting LD responses of *dónde* as grammatical, whereas for the advanced group the increase is of 12.08%, and native speakers improve their performance by 7.05%. Hence, all groups
are benefited from this new classification, but the difference grows smaller as the level of proficiency increases. This, however, should be considered a co-relation of the number of total errors. The crucial result is that of native speakers: the inclusion of 'dónde' as a complement (hence making its extraction grammatical) implies that their performance is now considered to be almost at ceiling. This seems to support Rizzi and Baauw's claim that the referentiality of the wh-word is relevant from a syntactic point of view when analyzing island constraints.

It is also noteworthy that, when setting where aside for analysis, native speakers are close to ceiling in their responses: their interpretation of all other wh-words is as predicted by previous research, by syntactic descriptions of Spanish, and by the hypotheses in this current work. Non-native speakers at both levels under study, however, differ from this and provide off-target responses with other wh-words, making a separate analysis necessary both for the native vs. the non-native data, and also for each error type and its relationship with the individual wh-words.

Aside from Rizzi's (1990) and Baauw's (1998) claim that the wh-word itself carries a referential meaning that needs to be taken into account, and that changes its syntactic properties with regards to islands, it is necessary to take the subcategorization frame of both the higher and the lower verbs into account for each test item, as their semantic properties might contribute to override the need to respect the barrier in the wh-island.

The analysis, therefore, must now turn to the specific items with dónde and look into the verb subcategorization and whether there is an element in any of these questions
that would trigger the interpretation of the fronted wh- word to be argument-like rather than adjunct-like:

In “Donde pensaste cuando encontrarias al animal?” (‘where did you think when you would find the animal’) we find that, although dónde is syntactically in the higher clause and therefore modifying the verb “pensar” ‘to think’, which in no way requires a locative complement, there is however a lower verb, “encontrar” ‘to find’, that strongly calls for a locative complement. In this particular example, the lower clause does not have said locative complement; it does contain, instead, a temporal adjunct “cuándo” ’when’ that does not satisfy the valence of the verb “to find”. It is not completely surprising, then, that speakers will interpret dónde as an argument of “find”. Since the extraction of arguments from the lower CP is possible in these constructions, it is in reality not a violation of a grammatical rule, but merely a choice to interpret this question as a long-distance rather than a short-distance one.

A similar scenario is present in the other test item containing dónde: “Donde le dijiste al medico cuando se habia extendido el dolor?” (‘Where did you tell the doctor when the pain had spread’). While the verb “decir” ‘to say’ does not require a locative complement, the embedded verb “extenderse” ‘to spread’ does, and since this requirement is not satisfied locally (as there is no locative complement in the lower clause of the question), it is not surprising that subjects in this experiment would choose to fulfill the valence of the lower verb by allowing dónde to be interpreted as being a complement extracted from the lower clause.

This subcategorization frame analysis is coherent with the data from native speakers for the remaining wh- words: there is no context in which why, how or when can
be considered arguments for any verb in the situations presented (see Annex 1). On the other hand, non-native speaker data, as mentioned above, cannot be considered at the same level of syntactic analysis of errors: questions in which the extracted *wh*-word is clearly, by all possible syntactic accounts, an adjunct of the highest verb are still being misinterpreted by non-native speakers, suggesting a stage in the interlanguage in which the intricacies of *wh*-movement, verb subcategorization and referentiality have not been fully mastered yet.

5.2. Experiment 2

5.2.1. Results

Experiment 2, as explained in Chapter 4, consisted of an elicited imitation task that was disguised as a game. In it, speakers had to construct questions that contained *wh*-islands by turning a statement with an embedded *wh*-question into a question, after being given a *wh*-word card.

As mentioned in the previous chapter, the coding for this experiment stems from the data itself rather than being planned beforehand, due to the open-ended, spontaneous nature of the task. After a careful examination of the outcomes, it is clear that there are certain tendencies that allow for a comparison of the performance of all three groups.

Figure 23 consists of an extensive presentation of the global production performance per group, expressed in percentages of target vs. non-target utterances.
Figure 23: Target vs. non-target production

This general overview of the results shows that, in the production experiment, the differences in performance between all three groups diminish considerably in comparison with the interpretation one. The native speakers group has the highest rate of target-like responses, but their precision only reaches 64% of their total responses. Surprisingly, the next group in order are the intermediate speakers, who reach 54% of target responses, whereas the near-native group shows a 51% of these responses. A series of t-tests and a Two-way ANOVA revealed that the differences are not significant for the overall results (p<0.5 for the ANOVA; p<0.05 for the intermediate vs. near-native; p>0.05 for the intermediate vs. control group; p<0.05 for the near-native vs. control group).

However, when analyzing these responses in more detail, some major differences can be seen across the three groups. These divergences call for a comprehensive breakdown that sheds light not only on the performance of each of the groups and on their contrast, but also on certain aspects of the task itself.
The first step in the exhaustive evaluation of the results is to compartmentalize the non-target responses into three distinct categories: the grammatical non-target utterances, the ungrammatical ones, and the non-sensical outcomes. This division can be seen in Figure 24, which shows the percentages for each group on all of these subcategories of non-target responses.

![Figure 24: Overall type of non-target response](image)

It is not striking to see that native speakers never produce any ungrammatical or non-sensical questions: their performance, whether target or off-target, is 100% grammatical. Near-native speakers, true to their more advanced level, do not produce any ungrammatical questions, and only 2.2% of their utterances can be considered non-sensical. In line with this co-relation between performance in this task and language proficiency, intermediate speakers are found to be the least linguistically accurate of all: 9% of their total non-target responses are non-sensical, and 8.5% are ungrammatical, showing that they are lagging behind compared to their near-native and control counterparts. A series of t-tests show that the differences between the intermediate group
and both the near-native and control groups are statistically significant (p<0.01). As for the non-sensical responses, the difference between intermediate and near-native speakers is not statistically significant (p>0.05), and neither is the difference between near-native and control speakers (p>0.05); but there is significance in the comparison of the intermediate group with the native speakers (p<0.01).

After this classification has been made, the critical breakdown comes from the observation of the type of changes that the different profiles of speakers make to the expected target questions. These changes reflect what the subjects' internal grammar is like and how it is manifested through their choices in production.

In Figure 25, each group’s percentage of every type of grammatical non-target responses is presented. The non-target, grammatical utterances were divided into five separate categories that will be explained thoroughly below.

![Figure 25: Type of grammatical non-target response](chart)

1. Wh > different wh: This category refers to the substitution of the middle *wh*-word (provided in the event card) for a different *wh*- word. An example can be
seen in Chapter 4.4.2, repeated here for convenience: ‘How did he ask where the guards rested?’ (Intermediate 01), for a target form with ‘when’ as the medial wh-word: ‘How did she ask when the guards rested’. This type of response can be attributed to working memory constraints that prevent the speaker from selecting the appropriate wh-word because there is a large amount of information to which they need to hold on. The group of speakers that produce this sort of non-target question the most are the intermediate ones, at a 16.15% rate of the total of responses that fall within this category. This is not completely unexpected, since they have the lowest proficiency level and therefore they are more vulnerable to working memory limitations in their L2 (for a detailed discussion on Working Memory in SLA, see Harrington 1992, Juffs and Harrington 2011, Miyake and Friedman 2014, Linck et al. 2013). The control group has the second highest percentage of this type of response, at a 9.38% of the total of their errors, while near-native speakers seem to hardly ever make this mistake (only 3.40% of their non-target forms involve the swapping of wh-words). A Kruskal-Wallis analysis gives statistical significance to the contrast between the intermediate and near-native groups only (p<0.05), with no significant differences for the contrast of the control group with either of the non-native categories.

2. Wh > complementizer: This category can refer to two separate outcomes, both of which entail a substitution of the middle wh-word for a complementizer in Spanish. One is “que” (‘that’), the Spanish complementizer on subordinate noun and adjective (such as in ‘Where was Mr Rodriguez when he said that the guards rested?’ [Intermediate 16] instead of the target ‘Where was he when he said when
the guards rested?’); the other one is “si” (‘if’), the conditional complementizer (such as ‘Where did [s/he] ask if/whether there were dogs’ for the target ‘Where did [s/he] ask where the dogs were’ [Intermediate 21]). This type of non-target production implies a shift in the syntactic position occupied by the element in the middle, but both are possible options in Spanish: whereas the wh-word is located in SpecCP, both complementizers are in a lower branch, SpecC’. This strategy is exploited most by the native group, who in 20% of occasions deviate from the target outcome in this manner. Non-native speakers seem to disprefer this option, choosing it only 5.8% of the time in the near-native case and 9% of the time in the intermediate group. The results from a Kruskal-Wallis analysis reveal that the native group’s behavior is statistically different from the non-native speakers (p<0.05), whereas there is no statistically significant improvement from the intermediate to the near-native stage of L2 acquisition. This suggests a difference in the internal grammar of speakers, by which native speakers have a preference to keep a medial element in LD questions, whether it be a SpecCP wh-word or a different type of complementizer; whereas non-native speakers favor different question-forming strategies that do not involve a complementizer.

3. Omission of middle wh-word/higher verb: this question type is the most preferred in all three groups, therefore it is necessary to discuss it in detail. The omission of the middle wh-word and/or of the higher verb refer to a question where the island is transformed into a single, short-distance wh-question in which the given wh-word is used to refer only to the lower clause (an example of this, as seen in Chapter 4.4.2, is repeated here for convenience: ‘How did Mr Martinez discover
the jewels?” [Intermediate 18], instead of the target ‘How did he discover where the jewels were?’): the higher verb and the middle wh-word are omitted, and only the lower clause is considered in relation with the randomly chosen wh-word. It must be noted that this procedure is not discouraged by the task, and from an Economy of Language perspective, it is the most logical option: it creates the shortest question that is felicitous in its context. Near-native speakers chose this option a 57% of the time, intermediate speakers did so a 44.11% of the time and even for native speakers this was the preferred option: 45% of their responses omitted the higher verb and the middle wh-. Statistically, the near-native speakers' data is significantly higher from the other two groups (p<0.05). As already mentioned, by the way the task was set up this is a perfectly logical type of question, so it is not shocking that all three groups would prefer it over its more complex competitors.

4. Omission of lower clause. The example provided in Chapter 4.4.2., ‘How did [he] discover it?’ [Near-native 04], shows the exclusion of the lower CP that should be present in the target structure. This refers to the complete omission of the second, lower part of the entire targeted question. The most common procedure to arrive at this result is through the substitution of the entire lower clause for a direct object pronoun that complements the higher verb. Non-target forms in this class offer a great amount of variation between the three groups under study. The most notable feature of this category is that it is the most dispreferred by both near-native and native speakers, who only opt for this response 1.15 and 2% of the time, respectively. Intermediate speakers, on the other hand, display a different
attitude towards it: they choose this alternative on 14.7% of occasions. These results are statistically significant: while there is no significant difference between the native and the near-native speakers, the intermediate groups' results are significantly higher (Kruskal-Wallis p<0.001). As this strategy is the one that most clearly represents avoidance of the target structure, since it reduces the entire embedded question to a single pronoun, it is not entirely unforeseen that the lower-leveled group should take advantage of it to such an extent.

5. Other: The “other” category is a complex one, since these responses can come from different linguistic strategies for each group of speakers. The following are some of the responses that were obtained for this experiment: “How was Mr Gonzalez?” (for the target: How did he know where the cameras were?) (Int. 03); “When did Mr Gonzalez and Mr Rodriguez leave?” (target: When did they ask how to arrive to the train station?) (Int. 08); “Where was Mr Gonzalez while Mr Rodriguez was awake and everyone else was sleeping?” (target: Where did they ask how to arrive to the train station?) (NN 27); “And how did he feel in front of the cameras?” (target: How did he know where the cameras were?) (NN 26); “When she asked how many exits there were, had she already taken a nap?” (target: When did she ask how many exits there were?) (Control 16); “Where did Gonzalez and Rodriguez want to go from the station?” (target: Where did they ask how to arrive to the train station?) (Control 20). The variation in the choice of this response pattern already speaks for itself: this strategy is rather dispreferred by the intermediate speakers, who do not yet possess the creative ability in Spanish that this choice requires. Although 16.15% of their responses fall within the “other”
category, when looking into the actual data it is visible that the “other” questions produced by intermediate speakers are always somewhat related to the information provided by the situation (an example of this would be a question such as “When did they arrive from the train?” for a target “When did they ask how to arrive to the train station?”). Near-native and native speakers, on the other hand, produce questions categorized as “other” with much more freedom and creativity. The graph below presents a 33% of “other” productions for near-native speakers, and 23.40% for native speakers. Although a Kruskal-Wallis test revealed no significant effects for the interaction of the intermediate and the native speakers’ data, the contrast between the near-native speakers and the other two groups is statistically significant (p<0.01). Anyhow, in this particular question-forming option it is most crucial to contemplate the qualitative description of the data, rather than the quantity: the type of questions provided by the different groups gain relevance over the number of “other” questions produced. As previously stated, speakers from the highest L2 level and native speakers both display a more creative use of the task instructions in order to form questions that will give them what they consider to be the maximum amount of relevant information in order to solve the mystery that is presented as the ultimate goal of the game. They are more focused on successfully deciphering the crime presented to them, and therefore they are less attentive to following the rules stated during the description of the game. This stems from their superior confidence in their linguistic abilities: they can aim their focus away from the linguistic challenge and into the logical-deductive challenge of the task.
Consequently, there are responses that deviate completely from the expected, but observe the general rule of the game to use the given wh- word to find information about each clue given (examples of this would be: “¿Cómo podría el Sr. Rodriguez inventar una justificación para sus acciones durante la fiesta?” 'How could Mr. Rodriguez make up a justification for his actions during the party?' instead of the expected 'How did he say when the guards took a break?' [near-native speaker 7] or “Cuando pregunto cuantas salidas hay, ¿ya había echado la siesta?” 'When she asked how many exits there are, had she already taken a nap?' [native speaker 16]).

5.3. Analysis of results

The data presented above respond the research questions and shed light on the hypotheses presented at the beginning of the study, repeated here for convenience:

**Question 1:** How do non-native speakers of Spanish interpret questions that contain wh- islands? Are they capable of responding to them in a native-like way?

**Hypothesis 1:** Yes, they are capable of interpreting and responding to wh- islands, but they will make mistakes that adult native speakers do not make: they will respond to the medial wh- word (like children do when acquiring Spanish as their L1) as a developmental error in their interlanguage. This error will be overcome as their level of Spanish advances. This is expected to happen if subjects comply with UG and acquire Spanish as an L2 with a pattern that mirrors that of children acquiring Spanish as their native language.
As predicted in the hypotheses, non-native speakers have shown to be capable of interpreting and responding to questions containing \textit{wh}- islands. Both non-native groups, as seen above, gave grammatical responses at a rate of above of 45\% in the preliminary analysis (over 60\% if \textit{dónde} is analyzed as an argument). The current data present evidence that non-native speakers do make errors that native speakers do not, specifically with regards to the availability of the medial response for these questions; and it is also apparent from the data that this error can be overcome as proficiency increases, as shown by the fact that near-native speakers display a lower amount of medial responses than intermediate speakers do. Native speakers, as expected, do not use the medial response as an active strategy to interpret these questions. As far as mirroring the pattern of children acquiring Spanish as an L1 goes, this hypothesis is considered only to be partially correct, in view of the high number of responses given by L2 learners that the acquisitional path of Spanish as an L1 does not observe. These were predominantly LD responses, which can partially be explained by Rizzi and Baauw's claim that certain adjunct \textit{wh}- words act rather like arguments due to their referentiality, and also by considering verb subcategorization. However, these affirmations are more apt to explain the control data than the experimental, since non-native speakers are shown to make these mistakes throughout all test items independently of the \textit{wh}- word. A different hypothesis must therefore be put forward to explain why non-native speakers provide this response regardless of the item, as opposed to native speakers. The most logical explanation is that because it is a strategy that is indeed available in the grammar of Spanish, non-native speakers simply overuse it in contexts where native Spanish grammar blocks this use.

\textbf{Question 2:} Can non-native speakers of Spanish produce questions
containing *wh-* islands when prompted to do so?

**Hypothesis 2:** Yes, non-native speakers of Spanish can produce questions containing *wh-* islands when these are elicited. Both their L1 and UG allow for questions containing *wh-* islands, so whether they transfer the properties of their L1 (English) to their L2 (Spanish) or they follow UG rules, they will be able to create these questions.

The second hypothesis predicted that non-native speakers of Spanish would be capable of producing questions containing *wh-* islands under elicitation, and this proved to be true. Because of the openness of the task, the target accuracy of the different levels of speakers is not as high as in the interpretation task; but all groups have definitely proven to have internalized the formation of this type of question.

**Question 3:** Is level of competence in Spanish a determining factor for non-native’s performance in this type of questions?

**Hypothesis 3:** Yes. Speakers with a higher level of Spanish (high-advanced) will be closer to a native-like performance (although they are still not expected to pattern with native speakers completely) than speakers with a high-intermediate level of Spanish. This is expected to be the case since with a higher command of overall Spanish comes a higher command of question-forming strategies as well.
Level of competence in Spanish is a relevant factor in these two groups' performance, but a distinction must be made between the interpretation and the production task (the analysis of the next hypothesis will look into that distinction in more depth). When it comes to interpretation, there is a definite improvement related to level of competence in the language by which near-native speakers outperform the intermediate group not only in their overall scores, but also by approaching the native data with regards to the type of mistakes they make per *wh*-word. This is predictable, since their higher command of Spanish allows them to better interpret all aspects of questions in their L2, bringing their interlanguage closer to the target grammar of Spanish. With regards to production, there is a more complex situation to explain: levels of target-like responses do not fully demonstrate proficiency-related improvement. This is shown in the fact that, although intermediate speakers provide more target-like questions than their near-native counterparts, among their non-target productions there are ungrammatical and nonsensical questions, which near-native speakers never provide. On the other hand, it has been shown that the type of non-target forms generated by the near-native speakers align more with the control group than the questions provided by the intermediate group. This hypothesis, therefore, is confirmed by the data provided in the current study.

**Question 4:** Is there an asymmetry between interpretation and production that will cause speakers to be more target-like when interpreting or when producing these structures?

**Hypothesis 4:** Yes. Non-native participants are expected to be more conservative in production than in interpretation. This is expected to translate in overall avoidance of *wh*-islands in the production task,
and also in less overall accuracy (as compared to native speakers’ performance) than in the interpretation task. However, there are conflicting data in the literature of L2 acquisition regarding this asymmetry between comprehension and production. Although most authors agree that this asymmetry exists, some claim that interpretation is more problematic than production, whereas others claim just the opposite.

To answer this question, it is essential to make a distinction between the two experimental groups under study. Although there is a common lower accuracy in the production task than in the interpretation task, this cannot be attributed solely to their proficiency in the language, as native speakers also display lower accuracy in this task. Intermediate and near-native speakers both show less accuracy in the production task, but the types of non-target forms provided are of a different nature for each of the groups. Intermediate speakers show the highest number of omission of the second clause, showing a predilection for avoidance in the forming of these questions. This confirms the hypothesis that production is more conservative than interpretation at this level of competence. Near-native speakers, on the other hand, are closer to the control group's pattern of question creation. This is not to say that there is no asymmetry, but the gap is not as large as the one found in the intermediate speakers. Their accuracy is lower in the production than in the interpretation of wh-islands, but they are also more creative than their intermediate correlatives, and their non-target performances are not avoidance strategies but different strategies that are in tune with those used by native speakers of Spanish. Hence, this hypothesis is confirmed in the intermediate level of L2 Spanish, but
more data and experiments focused on this asymmetry are necessary to corroborate it for
the highest level of proficiency.
CHAPTER 6
DISCUSSION AND CONCLUSIONS

The work carried out in this dissertation sheds light on some open debates in the field of Second Language Acquisition, as well as on issues on Spanish syntax. Although there are still many aspects of wh- movement that remain to be studied both from the SLA perspective and from the Spanish syntax perspective, this dissertation elucidates important issues regarding wh- islands through the analysis of their production and interpretation by native, near-native and intermediate speakers of Spanish. In this chapter, some of the questions that have been answered by the present work will be presented and discussed.

6.1. Contrast with previous studies

6.1.1. Wh- movement to wh- movement language: similar structures

This dissertation looks into an aspect of L2 acquisition that had received little attention in the previous literature on L2 wh- movement: an aspect where the L1 and the L2 have the same structure and where the same grammatical rules apply. Previous work had focused mainly on two different profiles: speakers of a non-movement language learning a wh- movement language or native speakers of a wh- movement language acquiring wh- traits in their L2 that their L1 does not have.

This work on structures with the same rules in L1 and L2 needs to be done in order to gain a better understanding of the whole of L2 acquisition. Narrowing research only to the dissimilarities between L1 and L2 excludes a large range of phenomena that

47 However, see Chapter 3 for an analysis of work that tackled parallel L1 and L2 phenomena
can undoubtedly be affected by many factors. It can shed light on aspects of L1 transfer, on UG factors, and on the grammars of whatever L1 and L2 are under study themselves.

As the present work has shown, a structure having the same characteristics in the L1 and the L2 is in no way a guarantee that acquisition will be made smoothly or that a matching transfer from the L1 into the L2 will happen. Intermediate and near-native speakers of Spanish have been shown to interpret and produce wh- islands in ways that do not come from their L1 English. On the one hand, as previously discussed, one of their go-to patterns of response does comply with the peculiarities of child L1 acquisition of English and Spanish (namely, non-native speakers of Spanish interpret the medial wh-word as being [+QU], just like children acquiring both English and Spanish as their L1 do). But on the other hand, they also fall into patterns that are not expected either from an L1 transfer perspective or from a developmental perspective. However, as stated in Chapter 5, a proposal for a re-analysis of long-distance dependencies and wh- islands must be put forward that considers factors typically excluded from the discussion, such as referentiality and verb subcategorization.

This dissertation has shown that, in the realm of the wh- island constraint and of long-distance movement, many factors come into play. When studying a structure that is seemingly the same in the L1 and L2, a careful, detailed account of the differences between the L1 and L2 speakers is crucial to understand the phenomenon. Through a thorough analysis of the data, an approach in which both typical developmental errors48 and errors of a different nature are included has been put forward. This analysis claims, in

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48 Whether this developmental error comes from the L1 or the L2 is open for debate: both English and Spanish-speaking children go through a stage of L1 acquisition in which they provide medial responses to wh-islands.
the first place, that errors in L2 speakers can come from different sources. Also, L2 speakers' convergence with control speakers is not necessarily a reflection of their proficiency in the L2: the nature of their non-target productions and those of native speakers may be divergent. This was best shown through the production data of this dissertation, where the questions marked as “other” demonstrate the native creativity, as opposed to the lack of linguistic resources shown by the intermediate speakers of Spanish.

Hence, some of the responses provided by the non-native speakers demonstrate that there is an inherent difficulty on the comprehension and production of questions containing a wh-island. This difficulty is independent from the L1 spoken by the L2 speakers, as their L1 English does not facilitate their performance in any way. Therefore, studies focused on structures that coincide in the L1 and L2 grammatical representations give us a new perspective to work with in the field of SLA. The proposal put forward by the present work consists of four main arguments:

1. L1 transfer does not influence the way L2 speakers of Spanish interpret or produce wh-questions. This argument can be unfolded into two sub-explanations: on the one hand, it is not possible to claim that there is any negative transfer\(^3\) from the L1 into the L2: since the structures are representationally similar in English and in Spanish, negative transfer cannot occur. On the other hand, because of the exact same reason, it could be claimed that positive transfer\(^4\) is at play in these experiments. However, the mere fact that L2 speakers are providing erroneous responses is already an argument against the presence of positive transfer. If the
L1 was aiding speakers’ performance on wh-islands, it should do so consistently, which has been shown not to be the case.

2. Despite the fact that this structure is never explicitly taught to L2 learners, there is a learning curve in their performance when comparing the intermediate and the near-native speakers. This means that with time and a longer, more intense exposure to the L2, wh-islands are acquired in a more consistent manner. However, because of the lack of explicit instruction, this can be considered a reflection of overall proficiency levels. Therefore, it is crucial to consider what an overall increase in the proficiency of the L2 does in the case of newly encountered linguistic structures. From the data obtained in this study, it is obvious that despite the lack of explicit instruction on this particular structure, adult L2 speakers go through an increase in accuracy, especially in comprehension but also in production (although this argument is based on a qualitative analysis rather than a quantitative one). Therefore, it can be argued that an increase in their L2 proficiency brings along a better understanding of the language as a whole, and not only of the structures that have been studied and/or explicitly learned in the course of acquisition. Near-native speakers comprehend and produce very complex linguistic structures with an almost native intuition. For this reason, the nature of this effect of overall proficiency on newly-encountered structures needs to be explored further.

3. Optionality in L2 speakers of Spanish has been found to occur both in production and interpretation at both proficiency levels under study. The responses provided to the questions containing wh-islands and the questions
provided in the game task were not consistent when analyzed from multiple perspectives: there was no item consistency (as found with native speakers, whose non-target-like utterances were restricted to cases in which subcategorization of the lower verb comes into play), no individual consistencies (no speakers in the intermediate group proved to have a stable pattern of response similar to that of the control group, while this situation increased in the near-native group but with no complete attainment of the native-like behavior), and there was also no consistency between tasks (in a speaker-by-speaker analysis, there is no correlation between a high degree of accuracy in the interpretation and in the production task). This optionality found in non-native speakers of Spanish is of a different nature from the optionality encountered in the native responses, where only a specific type of question triggered a response where speakers could opt for different outcomes. L2 optionality is not motivated exclusively by subcategorization and referentiality, but it is rather an across-the-board strategy to deal with L2 information.

4. This dissertation’s main aim is to determine how second language speakers of Spanish interpret and produce *wh*- questions, but a secondary aim of this work is to reflect on *wh*- movement itself and on how constituent movement functions in *wh*- movement languages. The fact that the presence of two *wh*- words in the same structure is problematic to L2 speakers gives researchers a new angle from which to analyze movement constructions. It must be noted, however, that there is something unique about island constraints that makes them complex for both native and non-native speakers independently of the number of *wh*- clauses.
involved: other structures involving two wh- words in the same question, such as multiple wh- constructions, are not problematic for native speakers (Dumitrescu 1992, Vicente 2013—who claims that there is a distinction depending on the nature of the fronted wh- word-, Lu 2006). Hence, the logical conclusion is that the most burdensome aspect of interpreting questions containing a wh- island is not the cognitive pressure of having multiple wh- elements in the same utterance, but something about the wh- island itself and the need to mark one wh- element as [+QU] and the other as [-QU], as well as finding the right extraction site for the correct [+QU] wh- word. This difficulty explains the profusion of possible answers provided by the non-native speakers, and also the variation in the native speakers’ responses when there is ambiguity in the potential extraction site of the fronted wh- word because of semantic properties of the most crucial elements of the sentence for wh- question interpretation (namely, the wh- words themselves and the verbs in the question).

Therefore, this dissertation has provided an explanation for the interpretation and production of wh-islands in Spanish that implies the acquirability of this structure and the possibility of improvement as overall level of proficiency in Spanish augments. This means that L2 speakers of Spanish are capable of developing complex linguistic structures that they are barely ever exposed to as long as their overall exposure and use of the L2 is maintained and it continues to develop over time.
6.1.2. Native speaker data: confirmation for Baauw-Rizzi

One of the key findings of the present work, albeit originally unexpected, is the contribution made to the field of Spanish syntax through the analysis of the control data, that has become experimental data in itself with regards to the theory of referentiality of individual *wh-* words. This is important for a number of reasons, the first and foremost being that *wh-* movement tends to be considered as a chunk, and *wh-* words are typically divided in a simplistic manner, in argument and adjunct words. This distinction has historically been the one most used and studied by scholars in the field, dismissing the very important individual properties of each *wh-* word within those two big subgroups.

Baauw (1998) and Rizzi's (1990) proposals for Spanish and Italian, respectively, have been discussed by a series of scholars (Kroch 1998, Kiss 1993, Chung 1994, Adli 2011), but this dissertation is innovative in providing actual data from adult native speakers of Spanish that confirm the hypotheses presented by B&R. The claim for an analysis of *wh-* words considered individually and for their semantic properties as well as the syntactic ones gains strength through the addition of actual speaker data to support it.

However, it must also be considered that it is not only the properties of the *wh-* words themselves that come into play in the results obtained in this experiment: verb subcategorization of both verbs in these phrases must be considered a main influence on the speakers’ performance. Because the experiments were not designed specifically for this purpose, it is necessary to develop tasks that tackle this dichotomy between the semantics of the *wh-* words and the semantics of the verbs involved in the sentence specifically in order to be able to make more concrete claims about which factor has a more prominent role in L1 speakers’ responses.
Nonetheless, the data show a clear-cut distinction between *donde* and all other *wh*-words in the native speaker data. This has two possible explanations: First, it can be claimed that locative arguments are more common and salient than temporal or manner arguments. All three types of constituents are more commonly categorized as adjuncts, but locative arguments are fairly common as well with verbs that imply a necessary spatial reference (verbs such as *find, place, spread,* et al.). Temporal and manner constituents, however, are most typically adjuncts. Therefore, it is possible that verb subcategorization is the driving force for native speakers’ responses in that the lower verb in the clauses under analysis can be considered a locative verb, and hence it requires that its subcategorization be fulfilled with a locative argument. However, if this is indeed the case, it would be necessary to come up with an explanation for the cases in which *donde* is interpreted locally (as was initially considered the target-like response). If the lower verb requires a mandatory locative argument, the semantics of the target-like response would be unfulfilled and the local resolution of the *wh*-gap would be incorrect. This is clearly not the case, as seen both in the data and in the literature. As a second explanation for this phenomenon, we have the Rizzi-Baauw categorization of the locative *wh*-word as being most referential and therefore functioning as an argument. This is a more fit explanation for the optionality in native speakers’ responses: the referentiality of *donde* is not considered an absolute trait of this word, and its status can vary according to other aspects of the utterance (subcategorization being an essential one). Therefore, both an interpretation of *donde* as an argument (and therefore relating to the lower verb and being capable of jumping the barrier established by the lower *wh*-word, which an adjunct *wh*-word cannot trespass) and as an adjunct are correct, native-like and target-like options in
these questions. Ultimately, because the referential interpretation of *donde* also depends on the subcategorization frame of both verbs in the question containing the island, the most comprehensive explanation for the native speaker data is that Baauw and Rizzi’s ideas on the referentiality of the *wh-* words interact with the subcategorization frames of individual verbs, providing the optionality displayed in the control group’s responses.

As mentioned above, L1 speakers show optionality in their interpretation of these questions that contain *donde* in the highest SpecCP. It is not the case, therefore, that this reading of the word always implies a link between the higher SpecCP and the lower clause: the referential status of *donde* in combination with the subcategorization of the lower verbs in the experimental items (see Annex X) is only one of the available options for native speakers, which explains why a high number of the responses obtained for these items still fall within the target-like category. Therefore, in this case, the native response is a choice that depends on the native speakers’ perception of the link between the fronted *wh-* word and the rest of the elements in the question; particularly between the *wh-* word’s semantic content and the relationship it has with the semantic content of the verbs potentially modified by the word. Because there are two possible sources of optionality (*wh-* word properties and verb subcategorization properties), the responses from native speakers have a complex, manifold origin in the case of *donde*.

The fact that a choice exists for L1 speakers makes this an interesting situation for L2 speakers: on the one hand, they have more than one possibility to provide the right, native-like response, hence having more probabilities of getting the question right; on the other hand, as there is no right and wrong response (or rather said, there is more than one
right response but also multiple wrong ones), determining all possible interpretations of this particular type of *wh*-question becomes more complex, as it is not a binary decision.

### 6.1.3 Production-comprehension asymmetry

In chapter 3.1., a brief overview of the production-comprehension asymmetry debate on SLA was presented. From this overview, it is clear that there is no current agreement on the terms of the discussion: there is great variation on an author-to-author basis on how to interpret the asymmetry (most SLA researchers do agree on the existence of this asymmetry; just not on its implications).

The results from this work provide support to the claim that production is more conservative than interpretation. It has been shown through the production data that learners tend to avoid the target structure and provide minimal responses that convey as little grammatical content as possible, especially in the lower level tested in this study (intermediate speakers of Spanish as an L2). As the level of proficiency increases, so does the amount of risk-taking that L2 speakers are willing to make in their production.

When it comes to interpretation, however, very few avoidance strategies are used (although they are technically possible in the context of the task used).

In explaining why this asymmetry presents itself in this way, it is crucial to bear in mind the task format *per se*. When tackling the interpretation experiment, speakers have only a finite set of possible answers to choose from. Because of the way the task is set up, creativity in their responses is not required: they have a limited set of possible answers in their interlanguage (not necessarily the native-like response, but a small set of responses that are constrained by the grammar corresponding to their current proficiency level).
interlanguage) that they need to choose from. Therefore, it could be claimed that the challenge is smaller than in the production task, where creativity is crucial. Although the task encourages a specific type of target question to be provided by speakers, it does not require it: it is up to the speaker to decide what type of question to produce, and whether they want to follow the instructions strictly or only loosely. Therefore, the speaker has a much larger set of decisions to make in the production experiment, ranging from whether to produce the elicited question or a freer, more elaborate question that provides them with more (or simply different) information than they would obtain by asking the target question, to how to phrase the question, what structure to use, where to place the wh-words, etc.

It could be argued, then, that the asymmetry is based not so much on an intrinsic property of comprehension or production that makes one more challenging than the other but on the tasks chosen for this study. However, one must keep in mind that the higher degree of creativity is always present in production tasks with respect to comprehension and interpretation tasks. Independently of the format, a production experiment (unless it is a repetition task, in which case it can be questionable whether it really is a production experiment or more of a comprehension task) is in nature more creative than a comprehension one, and it requires a greater amount of decision-making. Avoidance is therefore more common in production; however, it must also be noted that non-target forms in production tasks do not necessarily reflect more difficulty for the speaker: they can be a reflection of a more advanced, creative grammar instead. Hence, in this debate, specific task and speaker population characteristics must always be taken into account.
With all of the above considered, from both the production and the interpretation data gathered in this experiment it is clear that the comprehension task is less problematic for speakers at the intermediate level. The production task, at this level, involves great amount of avoidance on the non-native speakers’ part, and therefore it can be claimed to be more difficult for them. The asymmetry, however, seems to fade as the level of proficiency augments: near-native speakers do not struggle with creativity in their formulation of questions containing a wh-island. Their responses match their performance in the interpretation task in the degree of knowledge of the language that they display (although not in accuracy: as previously discussed, accuracy –interpreted as number of target responses- is low in the production data but this is not due to lack of competence in Spanish but rather to a freer use of the linguistic structures available to them as a result of the openness of the task).

6.2. What still remains to be done

As a result of the analyses that stem from the data obtained in the present work, this dissertation raises some issues that need to be undertaken in different aspects of research in Linguistics.

6.2.1. Experimental changes

The first observation when suggesting experimental changes for future research is that this work would benefit enormously from scrutinizing a larger subject pool. Due to the nature of the experiments, data collection is a lengthy task and therefore, time constraints became one of the main limitations of this dissertation. However, a larger sample of participants would result in more generalizability of the study.
Certain details of the experimental techniques should be improved in future research, such as the pictures involved in the interpretation experiment. Said experiment would benefit from creating a short film that visually narrates the story, rather than having pictures. However, because each story has many different complements and adjuncts (necessary to give the background story the complexity and potential ambiguity that it needs), this is a difficult matter to overcome. A different, more plausible option, is to take pictures ad hoc to fit the stories, with the same characters and locations in order to make the agents and different complements and adjuncts of the situations consistent across the images, making it easier for speakers to make the right associations.

Another option for the interpretation experiment that could be explored would be the inclusion of all experimental items in one single story, instead of multiple separate situations. The advantages of this system would be that speakers would then become more involved in the story. This may result in them disregarding the fact that they are being recorded and analyzed for an experiment, hence making their responses more natural and encouraging speech that is a genuine response to a question that will help resolve a story rather than answering questions to a variety of different situations. It would also aid their working memory capacity, as they would have the same characters in similar scenarios from taking part of one single story. This would mean that they have to memorize fewer details for each individual question, hence removing a load off their memory.
6.2.2. Processing

To complement the information obtained from these two experiments, a series of experiments on processing would aid linguists gain a deeper understanding of the whole picture regarding islands and *wh*-movement. Different experimental methods can yield results on different aspects of *wh*-processing, hence completing the knowledge obtained in previous studies (representational and processing-based) and in this dissertation. Of all possible experimental tasks that may be carried out to analyze the processing of *wh*-movement, there are two that stand out particularly, as they seem to have the potential to confer the most relevant information on the matter.

*Self-paced listening task:*

A self-paced task in an experiment involving *wh*-questions is a challenging task, and it is essential to consider what the information is that can be extracted from this task. That being said, this experimental design is ideal to measure what are the exact breaking points in the structure in a question that contains a *wh*-island. This information would then serve the purpose of being complementary to posterior experiments (such as an eye-tracking one) that would be designed taking this information into account. The longer reading times in different parts of the structure would indicate where the gap is being filed, and this already would contribute to the discussion on *wh*-movement when more than one possible filler is at play.

*Eye-tracking experiment:*

The use of an eye tracker in an experiment on *wh*-islands would be beneficial because it would help researchers understand how L1 and L2 speakers are reacting to the introduction of potential fillers for the *wh*-gap, and whether there are differences
between them. By using an eye tracker in a situation experiment with a picture in which all potential arguments and adjuncts are depicted, it would be possible to follow the speakers' gaze at each point in the story and during the question. This would provide a clear indication of whether speakers are indeed paying more attention to the syntactic cues or to semantic (referential, subcategorization) prompts instead, as their gaze would be controlled at all times, hence giving the experimenter knowledge not only of with which element in the story they fill the wh- gap, but also of at which point that element comes into play and for how long they entertain that possibility vs. all other possibilities for filling the gap.

6.2.3. New production experiments

To improve the project started in this dissertation, the development of a new battery of experiments that tackle production is fundamental. The current study is a completely open task that, for this precise reason, suffers from certain limitations in generating the targeted structure. Hence, it seems convenient to design a task in which the structure under study is elicited in a more controlled way.

A controlled study in production can be carried out through a task such as an elicited imitation one, where subjects hear a series of questions containing the targeted structure and they have to repeat them. This is useful to see where (and whether) the structure breaks down in the speakers' grammar, as there are a number of potential changes that subjects could make to the sentence that would indicate a variety of issues with island constraints. However, despite the fact that it is based on speakers providing oral utterances, it is problematic to consider this a production task: it is very strongly
dependent on factors such as working memory, length of each utterance, and parsing constraints that bring it closer to a processing experiment than to a production one. In this type of experiment, there is no creativity and active use of the interlanguage foreseen; although the results may show some creativity and innovation from the subjects' side, this is not what the task requires.

A semi-controlled experiment, on the other hand, can exert the desired effect: it allows for a better restriction of the speakers' responses than a completely open-ended task, but it taps into the speakers' internal grammar and it forces them to use their grammatical knowledge in order to complete the exercise. Some suggested future experiments include:

1. Word re-arranging: The speaker is presented with a number of cards, each with a word written on it. Then the experimenter gives a statement that is supposed to be a response to a question (tailored to fit a question containing a $wh$-island), and the subject has to re-arrange the words in order to construct a felicitous question. In order to make this more creative, there should be a larger number of cards than those necessary to form the question, and the subjects should be warned that they will not need use all the cards provided.

2. Picture matching: In this task, subjects would be presented with three photos or drawings that are very similar. The only change from one another would be something that would need to be expressed with an adjunct in an utterance. They would then be provided a background story for the pictures and the only factor that could determine which picture is being described would be the information that could be drawn from asking a question with a $wh$-island. Accordingly,
subjects would then be told to ask a question that can help them guess which is
the picture that describes the situation presented to them. This task is only semi-
open-ended, as all the arguments and adjuncts are provided either in words
(through the story) or in images (through the picture); but it still taps into the
speakers’ grammar and creativity.

6.2.4. Experiments that specifically tackle asymmetry

The present research has made claims about the asymmetry between interpretation
and production in L2 acquisition. While the data seem to support the claim that
production is more problematic than interpretation for L2 speakers, especially at the
intermediate level, the experiments carried out were not specifically designed to test this
hypothesis. Hence, future research should affront the issue in a direct manner, through the
design of experiments that are designed expressly to investigate this asymmetry.

6.2.5. Experiments based on explicit instruction of the structure

As discussed previously in this work, L2 speakers of Spanish are never explicitly
taught to interpret or formulate complex wh- questions. Although data on other languages
and structures seems to suggest that untaught structures are acquirable and L2 speakers
arrive at interpreting and producing them accurately, there is still much work to be done
in this area, especially studies aimed directly at comparing the effect of teaching these
complex structures. Therefore, it would be of great interest to carry out an experiment
combining Applied Linguistics and SLA, based on the instruction of questions containing
wh- islands and a follow-up acquisition experiment in which the effect of instruction
could be measured in comparison to the current experiment. This would give
experimenters a deeper understanding of the extent to which the acquisition of these structures happens naturally in the course of interlanguage development or whether instruction can aid improve non-native speakers’ interpretation and production of this structure.

6.2.6. Experiments that tackle transfer

A term that intersects with certain aspects of this dissertation, although it is not the aim of the current research, is that of linguistic transfer. This is a complex concept that has been largely problematized in the field of SLA (Andersen 1983, MacWhinney 1992, Odlin 2003, White 2000). There is no consensus as to what it means exactly and what its implications are, but in the current work, the most extensive definition is adopted: transfer is the influence of the L1 in the L2, in any way and to any extent. Transfer has been divided in positive (that is, the transfer of an L1 structure into the L2 resulting in accuracy) and negative (the transfer of an L1 structure into the L2 resulting in an ungrammatical or inaccurate form). This becomes relevant because English and Spanish have matching underlying structures and movement constraints with respect to the wh-island. Therefore, there is potential for positive transfer but not for negative transfer: while there is room for the underlying English structure to aid learners in their interpretation and production of the L2 wh-islands, their L1 will not interfere in a negative way, as there are no mismatches that could potentially influence the non-native speakers’ responses and questions. Be that as it may, showing the presence of positive transfer is a challenging task, as a positive outcome in L2 interpretation/production can potentially stem from many different factors that are almost impossible to strip from one another (general accuracy and proficiency level, positive transfer, or chance, among
others). For this reason, transfer is not the main aim of this research. A claim that transfer is (or is not) present in the data obtained in this study would be incomplete without further investigations into the topic that involved a learner group whose L1 were a source for potential negative transfer. Only after such a comparison could transfer be corroborated or denied in the case of this Spanish L2-English L1 language pair. Therefore, this work would benefit from carrying out the same experiments (for the sake of consistency) on L2 speakers of the same level of proficiency whose L1 does not have *wh*-movement or whose *wh*-movement differs from that of Spanish. An example would be native speakers of Japanese at the intermediate and near-native level of Spanish competence.

6.3. Conclusions

*Wh*-movement is a complex phenomenon (or rather, a cluster of phenomena) that branches out into a large amount of sub-phenomena and that can be (and has been) analyzed from within many sub-fields of linguistics, ranging from Syntax and Semantics to First, Second, or Third Language Acquisition. Because of the great variation that exists cross-linguistically, the fruitfulness of this topic is incontestable.

Narrowing down a specific area within studies on *wh*-movement can therefore be challenging. As shown in this thesis, a part of *wh*-movement that has been portrayed as relatively simple and straightforward in principle, such as that of the *wh*-island constraint, becomes intertwined with other topics that obscure the scenario: it is necessary to include a semantic-pragmatic component to the analysis of *wh*-islands; multiple *wh*-questions must be taken into account to define the limits of islands; L1 performance with regards to *wh*-islands must be redefined in order to analyze L2 data.
All of this factors have been combined in the present work to show that L2 speakers of Spanish show an improvement in their interpretation of questions containing \textit{wh}-islands, augmenting their accuracy from the intermediate to the near-native, although they do not manage to reach a completely native-like performance. However, it must be kept in mind that, up to a certain point, neither do native speakers: their interpretation of these questions would be considered non-native like (or not grammatical-like for Spanish) if only the traditional division argument-adjunct had been considered as the basis for the present analysis. It is only through a careful examination of item-to-item distinctions, and through a separate analysis of the referentiality of each \textit{wh}-word individually, that it is possible to arrive to a satisfactory analysis of the L1 data collected for control purposes. But the original hypothesis that non-native speakers' performance would improve from the lower to the higher-leveled group holds even after excluding \textit{dónde} from the analysis (considering it an argument instead of an adjunct, as it has traditionally been classified): there is an effect of level of Spanish on how accurately speakers of each groups respond to these questions.

Transfer from English, therefore, does not seem to be present with respect to this structure (although a test in the speakers' L1 English would be convenient in order to make such claim). If transfer from L1 existed, speakers would perform at ceiling and not make errors when responding to these questions, which is clearly not the case.

All responses, when considering certain \textit{wh}-elements as arguments because of their referentiality and also the subcategorization of all verbs in the target questions, fall within Universal Grammar boundaries: they all respect the restrictions imposed on \textit{wh}-movement for languages that have this property. The data does not show any response
pattern that has not been observed in \textit{wh}- movement languages before. Therefore, this dissertation provides support for theories of Second Language Acquisition that claim that Universal Grammar is available and present in the L2 speaker's interlanguage.

Production data, although more open to different interpretations, confirms the main ideas supported in this research: the presence of an evolution in speakers' performance related to level of Spanish can be argued by the use of more innovative, creative structures in the near-native speakers' data than in the intermediate. Although their target-like response rates are lower than those of intermediate speakers, near-natives' type of responses are closer to those of native speakers when it comes to the type of questions they create, structurally and in the clause types they produce. None of the questions produced in any of the speaker groups can be considered to be outside the constraints imposed by Universal Grammar.

As to whether transfer happens on the production data or not, the answer is not clear-cut: because of the nature of the experiment, subjects had (and used) the possibility of creating questions in which they avoided using the \textit{wh}- island constraint, hence making it difficult to judge if they are drawing information from their L1 English in order to construct the sentences. Because \textit{wh}- island constraints and most \textit{wh}- questions have the same underlying structure in English and Spanish (and the data reflects this fact), and because there are very few ungrammatical responses due to the possibility of using avoidance as a strategy, the analysis of the possible occurrence of English transfer in this particular task must remain neutral and further specific testing is necessary with tasks specifically designed to answer this question.
APPENDIX A

ITEMS FOR INTERPETATION EXPERIMENT WITH ENGLISH

TRANSLATION

1. Quieres ir a visitar a tu hermano en Nueva York durante al menos dos meses, pero sabes que tu hermano está muy ocupado, así que tienes que encontrar una buena fecha. Pensabas que Noviembre y Diciembre eran buenos meses, así que en Julio llamaste a tu hermano para que tuviera tiempo de organizarse, y estuvisteis hablando sobre los detalles casi media hora.

You want to visit your brother in New York for at least two months, but you know your brother is very busy, so you need to find a good time. You thought November and December were good months, so in July you called your brother so he would have time to get organized, and you were talking about the details for almost half an hour.

PREGUNTA: ¿Cuándo informaste a tu hermano de cuánto tiempo ibas a quedarte con él?

QUESTION: When did you inform your brother of how long you were going to stay with him?
2. Tu madre estaba muy ocupada y no tenía tiempo para hacer nada, así que el martes decidiste sorprenderla llevándole la cena de su restaurante favorito cuando la visitarás ese fin de semana. Tu padre le había contado la sorpresa esa mañana, así que cuando llegaste a casa el sábado por la noche, tu madre estaba esperando la cena.

*Your mother was very busy and she did not have time to do anything, so on Tuesday you decided to surprise her bringing her dinner from her favorite restaurant when you visited her that weekend. Your father had told her the surprise that morning, so when you arrived home on Saturday night, your mother was expecting dinner.*

PREGUNTA: ¿Por qué sabía tu madre cuándo le ibas a llevar la cena?  

*QUESTION: Why did your mother know when you were going to bring her dinner?*
3. La semana pasada estabas muy enfermo, te dolía mucho la cabeza y no sabías por qué, así que fuiste al hospital. Te hicieron unos análisis y te dijeron que volvieras el día siguiente a por los resultados. Al día siguiente, en el hospital, le dijiste al médico que el dolor se había extendido al pecho la noche anterior.

PREGUNTA: ¿Dónde le dijiste al médico cuándo se había extendido el dolor?

QUESTION: Where did you tell the doctor when the pain had spread?
4. Eres el nuevo presidente de Estados Unidos, y tienes que escoger un nuevo Secretario de Defensa. Dudabas entre dos nombres, así que decidiste preguntar a los miembros del Congreso, que inmediatamente escogieron al candidato con más experiencia. Después de eso, diste una rueda de prensa para anunciar el nombre del nuevo Secretario de defensa.

You are the new President of the United States, and you have to choose a new Secretary of Defense. You were doubting between two names, so you decided to ask the member of Congress, who immediately chose the most experienced candidate. After this, you gave a press conference to announce the name of the new Secretary of Defense.

PREGUNTA: ¿Cómo dijiste a quién decidiste elegir?

QUESTION: How did you say who you decided to choose?
5. Esta mañana tus hijos se fueron de excursión con su escuela y se perdieron. Nadie sabía dónde estaban, así que organizaste un grupo de rescate con la policía. Finalmente, esa noche la policía te llamó cuando estabas en la estación para decirte que habían encontrado a tus hijos perdidos en el bosque.

This morning, your children went on a school field trip and they got lost. Nobody knew where they were, so you organized a search group with the police. Finally, that night the police called you when you were at the station to tell you that they had found your children lost in the forest.

PREGUNTA: ¿Cuándo te dijeron dónde se habían perdido los niños?

QUESTION: When did they tell you where the children had gotten lost?
6. El otro día en el trabajo, leiste en las noticias que había habido un accidente por una explosión nuclear cerca de la casa de tus padres, así que les llamaste para asegurarte de que estuvieran bien. Por suerte, ellos te dijeron que no les había pasado nada.

*The other day at work, you read in the newspaper that there had been an accident because of a nuclear explosion close to your parents’ house, so you called them to make sure they were alright. Luckily, they told you nothing had happened to them.*

PREGUNTA: ¿Cómo supiste dónde había sido el accidente?

*QUESTION: How did you know where the accident had happened?*
7. Tienes un problema con el juego, y siempre se lo habías ocultado a tu esposa. Ayer, tu esposa te dio un dinero para ingresar en el banco, pero fuiste al casino y perdiste todo el dinero jugando a la ruleta. Hoy, cuando volviste a casa del trabajo, tuviste que confesar a tu esposa que habías perdido todo el dinero ayer en el casino.

You have a gambling problem, and you had always hidden it from your wife. Yesterday, your wife gave you some money to deposit in the bank, but you went to the casino and lost all the money playing roulette. Today, when you returned home from work, you had to confess to your wife that you had lost all the money yesterday at the casino.

PREGUNTA: ¿Cuándo confesaste dónde habías perdido el dinero?

QUESTION: When did you confess where you had lost the money?
8. Eres un explorador que está buscando un animal exótico en la selva del Amazonas. Tras semanas sin encontrarlo, una noche mientras estabas en el campamento pensaste que sería más fácil encontrar al animal en el río por la mañana, porque el animal iría a beber.

You are an explorer searching for an exotic animal in the Amazon rainforest. After weeks of not finding it, one night while at camp you thought it would be easier to find the animal in the river in the morning, since the animal would go there to drink.

PREGUNTA: ¿Dónde pensaste cuándo encontrarías al animal?

QUESTION: Where did you think when you would find the animal?
APPENDIX B

FILLERS FOR INTERPRETATION EXPERIMENT

1. Ayer era Halloween, y unos niños vinieron a tu casa a pedirte caramelos. Uno de ellos iba disfrazado de alien, otro de gato, y una niña pequeña iba vestida de Supergirl. Todos ellos eran muy simpáticos, así que les diste muchos caramelos.

Yesterday was Halloween, and some children came to your house to ask you for candy. One of them was dressed as an alien, another as a cat, and a small girl was dressed as Supergirl. They were all very nice, so you gave them a lot of candy.

PREGUNTA: ¿Cómo eran los niños que te pidieron caramelos?

QUESTION: How were the children that asked you for candy?
2. Hace mucho tiempo que no ves a tu amigo Juan, así que quieres ir a visitarlo por Acción de Gracias. El vive en Seattle así que no quieres hacer ese viaje tan largo solo para un par de días. Por eso, piensas quedarte por lo menos una semana con él.

You have not seen your friend Juan in a long time, so you want to go visit him on Thanksgiving. He lives in Seattle so you don’t want to make such a long trip only for a couple of days. For that reason, you want to stay with him at least for a week.

PREGUNTA: ¿Cuánto tiempo te ibas a quedar en la casa de tu amigo?

QUESTION: How long were you going to stay in your friend’s house?
3. La Universidad en la que estudias está organizando un congreso, y tú eres la encargada de recibir a la gente que viene de fuera. El Profesor Gómez llega más tarde que los demás, así que el jueves te avisaron de que tenías que ir a buscarle el sábado por la mañana. Eso no te hace ninguna gracia, porque querías dormir hasta tarde el sábado.

The University where you study is organizing a conference, and you are in charge of receiving outsiders. Professor Gomez arrives later than the rest, so on Thursday they let you know that you had to pick him up on Saturday morning. This does not amuse you, because you wanted to sleep in on Saturday.

PREGUNTA: ¿Cuándo te dijeron que tenías que ir a buscar a quién?

QUESTION: When did they tell you you had to pick up whom?
4. Tu amigo consiguió entradas para un concierto de tu grupo favorito, pero era en otro pueblo un jueves y tu tienes que trabajar el viernes muy temprano. Como esa semana no había mucho que hacer en el trabajo, el martes le preguntaste a tu jefe si podías tomar el viernes libre, pero para que no se enfadara contigo, le dijiste que era para ir al médico.

Your friend got tickets for your favorite band’s concert, but it was in a different town on a Thursday and you have to work very early on Friday. Since there was not much to do at work that week, on Tuesday you asked your boss if you could take Friday off, but to make sure he did not get mad at you, you told him it was to go to the doctor.

PREGUNTA: ¿Cuándo le dijiste a tu jefe que necesitabas el día libre?

QUESTION: When did you tell your boss that you needed the day off?
5. Hace muchos años fuiste a vivir a Francia durante un semestre, e hiciste muchos amigos ahí. Os echáis mucho de menos, así que ellos decidieron que este año te van a venir a visitar desde Francia para las Navidades.

Years ago, you lived in France for a semester, and you made many friends there. You miss each other a lot, so they decided that this year, they are going to come visit you from France on Christmas.

PREGUNTA: ¿De dónde son los amigos que te vienen a visitar?

QUESTION: Where are the friends that are coming to visit you from?
6. Esta semana estás muy ocupada. Tienes muchas cosas que hacer en el trabajo, y además tienes que ir a la fiesta de unos amigos, y a una boda. La semana que viene será un poco más tranquila, porque tienes menos trabajo y además sólo tienes un evento social, que es la fiesta de cumpleaños de tu hermana.

You are very busy this week. You have many things to do at work, and besides you have to go to some friends’ party, and to a wedding. Next week will be a little calmer, because you have less work and besides you only have one social event, which is your sister’s birthday party.

PREGUNTA: ¿Tienes que ir a la fiesta de tu hermana esta semana?

QUESTION: Do you have to go to your sister’s party this week?
7. Tu pareja quería cocinar para ti, y pensaba hacer una tortilla, pero para eso necesitaba una sartén especial. Después de buscarla por todos los armarios de la casa sin encontrarla, decidió cambiar de idea y cocinar puré de patatas.

Your partner wanted to cook for you, and s/he was going to make an omelet, but for that s/he needed a special pan. After searching for it in every cabinet in the house without finding it, s/he changed her/his mind and cook mashed potatoes instead.

PREGUNTA: ¿Encontró tu pareja la sartén que estaba buscando?

QUESTION: Did you partner find the pan s/he was looking for?
8. Fuiste a ver a tu profesor a su despacho y al llegar te diste cuenta de que había un libro debajo de la mesa, porque se veía desde fuera de la puerta. Tu profesor te dijo que llevaba una hora buscando un libro que necesitaba darte, pero no lo encontraba por ningún sitio, y tú le dijiste que estaba debajo de la mesa. Tu profesor miró debajo de la mesa y al verlo, dijo que se habría caído ahí.

You went to see your Professor at her/his office and when you arrived, you realized there was a book under the table, because you could see it from the door. Your professor told you that s/he had been looking for a book s/he needed to give you for an hour, but s/he could not find it anywhere, and you told her/him that it was underneath the table. Your professor looked underneath the table and when s/he saw it, s/he said it must have fallen there.

PREGUNTA: ¿Por qué sabías que el libro estaba debajo de la mesa?

QUESTION: Why did you know that the book was under the table?
9. A tu madre le encanta cantar, pero es demasiado tímida para hacerlo en público. El día de su cumpleaños, unos cuantos amigos la sacaron a cenar, y a pesar de su timidez, consiguieron convencerla para que cantara en un karaoke en el bar en el que estaban.

Your mother loves to sing, but she is too shy to do it in public. On her birthday, some friends took her out to dinner, and despite her shyness, they managed to convince her to sing at karaoke in the bar they were in.

PREGUNTA: ¿Dónde convencieron a tu madre de que hiciera qué?

QUESTION: Where did they convince your mother to do what?
APPENDIX C

STATEMENTS ON EVENT CARDS AND ENGLISH TRANSLATION

a. Target
1. La Señora Sánchez quería saber dónde estaban los perros
   Mrs. Sanchez wanted to know where the dogs were
2. El Señor Rodríguez dijo cuándo descansaban los guardas
   Mr. Rodriguez said when the guards rested
3. El Señor Martínez descubrió dónde estaban las joyas
   Mr. Martinez discovered where the jewels were
4. La Señora Fernández preguntó cuántas salidas había
   Mrs. Fernandez asked how many exits there were
5. El Señor González sabía dónde había cámaras de seguridad
   Mr. Gonzalez knew where there were security cameras
6. Los Señores Rodríguez y González preguntaron cómo llegar a la estación de tren
   Mr. Rodriguez and Mr. Gonzalez asked how to arrive to the train station

b. Non-target
1. La Señora Sánchez escondió sus cosas en el salon
   Mrs. Sanchez hid her things in the living room
2. La Señora Fernández caminó sola durante media hora
   Mrs. Fernandez walked alone for half an hour
3. La Señora García encontró una pala en la cocina
   Mrs. Garcia found a shovel in the kitchen
4. La Señora Sánchez y la Señora Fernández preguntaron si había taxis cerca
   Mrs. Sanchez and Mrs. Fernandez asked whether there were cabs nearby
5. El Señor González preguntó el tamaño de la casa
   Mr. Gonzalez asked about the size of the house
6. La Señora García preguntó si había policía cerca
   Mrs. Garcia asked if there was police nearby
7. El Señor Rodriguez desapareció durante una hora
   Mr. Rodriguez disappeared for an hour
APPENDIX D

GRAMMATICAL CONTENT COVERED IN SPANISH ADVANCED GRAMMAR

● Present indicative and infinitive
● Noun, adjective and article inflexion
● Copulative verbs
● Conjunction, negation, location and questions
● Subjects, direct objects and reflexives
● Personal pronouns
● Indirect objects
● Present subjunctive and commands
● Indirect speech
● Preterite and imperfect: forms
● Preterite and imperfect: functions
● Past subjunctive
● Manner and time adverbials
● Past participle and perfect tenses
● Future and conditional
● Adverbial and conditional clauses
● Gerund and progressive forms
● Relative clauses

APPENDIX E

SPANISH INSTRUCTIONS FOR PRODUCTION EXPERIMENT

“La señora Mateo organizó una cena en su casa e invitó a [personajes]. La fiesta tuvo lugar entre las 6 y las 10 de la noche, y cuando terminó, la Señora Mateo se dio cuenta de que alguien le había robado sus joyas. Así que llamó a la policía y le mandaron al mejor detective - ¡tú! Pero cuando llegas a la escena del crimen, ves que ya hay otra policía - ¡yo!. Y como eres el mejor policía de toda la ciudad, yo te tengo muchos celos así que no te quiero ayudar. Yo ya sé todo lo que hay que saber para resolver el crimen, pero como no te quiero ayudar, voy a hacer que me pregunes todo. Algunas de las respuestas que te voy a dar te van a ser útiles y otras no, pero tú tienes que preguntarme todo si quieres resolver el misterio. Mira, estas tarjetas son eventos, cosas que pasaron esa noche. Y esto de aquí son palabras de pregunta. Yo te voy a ir leyendo la información de las tarjetas de eventos, y tú me vas a tener que hacer una pregunta sobre cada evento con la palabra que te salga en la tarjeta de preguntas. Yo no te puedo mentir, así que todo lo que te diga va a ser verdad, pero sí puedo complicarte un poco la vida contándote cosas un poco raras. Cuando hayamos acabado las tarjetas de eventos, tendrás que decir quién robó las joyas, y cómo.”
BIBLIOGRAPHY


