Presentational Focus in Heritage and Monolingual Spanish

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THESIS

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<tr>
<td>#P</td>
<td>Number Phrase</td>
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<tr>
<td>C</td>
<td>Complementizer</td>
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<td>DP</td>
<td>Determiner Phrase</td>
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<td>FP</td>
<td>Focus Phrase</td>
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<td>FPR</td>
<td>Focus Prominence Rule</td>
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<td>IH</td>
<td>Interface Hypothesis</td>
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<td>IP</td>
<td>Inflection Phrase</td>
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<td>iP</td>
<td>Intonational Phrase</td>
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<td>L1</td>
<td>First Language</td>
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<td>L2</td>
<td>Second Language</td>
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<td>LF</td>
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<td>M</td>
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<td>NP</td>
<td>Noun Phrase</td>
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<td>NSR</td>
<td>Nuclear Stress Rule</td>
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<td>O</td>
<td>Object</td>
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<td>OT</td>
<td>Optimality Theory</td>
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<tr>
<td>PF</td>
<td>Phonological Form</td>
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<tr>
<td>PP</td>
<td>Prepositional Phrase</td>
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<tr>
<td>pP</td>
<td>Phonological Phrase</td>
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<td>PWd</td>
<td>Prosodic Word</td>
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<td>S</td>
<td>Subject</td>
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<td>TP</td>
<td>Tense Phrase</td>
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<td>VM</td>
<td>Verbal Modifier</td>
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SUMMARY

In Spanish, it is most commonly claimed (e.g. by Zubizarreta 1998) that constituents in narrow presentational focus appear rightmost, where they also get main stress (1a), while stress in situ (1b) is infelicitous.

(1)   [Context: Who bought a car?]

      bought a car my mom

   b. Mi [mamá]$_F$ compró un carro.

However, some recent evidence (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2009) challenges this view, claiming that stress in situ (1b) is a possible strategy for marking focus in Spanish. This dissertation contributes new experimental evidence to this debate.

Additionally, because focus involves the complex interplay of prosody, syntax, and discourse context, it is especially of interest when considering bilingual individuals. The grammars of heritage speakers of Spanish (that is, U.S.-born English-dominant bilinguals) are significantly different in a number of ways from those of Spanish monolinguals. One way they have been shown to differ (e.g. by Montrul 2004) is in phenomena regulated by the interfaces of syntax with other linguistic systems, i.e., precisely phenomena like presentational focus. We might thus expect that monolinguals and bilinguals would realize focus differently, as with other interface phenomena, and this dissertation brings experimental evidence to bear on this question as well.

This dissertation thus has the dual motivation of investigating both presentational focus in Spanish and heritage grammars. It proposes an analysis of focus in Spanish in terms of
conflicting constraints on well-formedness, using Optimality Theory (Prince & Smolensky 1993/2004), and then tests this analysis experimentally.

The experiment consists of a contextualized aural acceptability judgment task, in which both monolinguals and heritage speakers listened to sentences in context and judged their discourse appropriateness.

The main findings of the experiment were (i) both heritage speakers and monolinguals use stress shift (1b) to realize presentational focus, and (ii) monolinguals and heritage speakers did not differ from one another. The first finding runs contra the consensus in the literature and thus contributes to the growing challenge to this view. Further, it indicates that some common approaches to focus in Spanish may need to be rethought. The second finding was also counter expectations, and thus contributes evidence toward a more fine-grained understanding of heritage grammars with regard to interface phenomena.

The results of this study are relevant to future studies of focus and other information-structural phenomena, as well as to future studies of heritage grammars and language contact, and it contributes new experimental data to both fields.
1. INTRODUCTION

This study has a dual motivation. First, I am interested in better understanding the realization of presentational focus in Spanish, and the implications this has for theories of the prosody/syntax and syntax/discourse interfaces. Second, I am interested in better understanding the structure of, and processes affecting the development of, heritage speaker grammars, which are different than those of monolinguals. Bringing these motivations together, this project investigates presentational focus in heritage speakers of Spanish and in monolingual Spanish speakers, using an experiment to bring new data to bear on questions of theoretical import regarding both focus and heritage grammars.

This chapter serves as an introduction to the issues at hand. It begins with a brief explanation of presentational focus in section 1.1, presenting the central problem and how this study contributes. It then moves on in section 1.2 to the second motivation, discussing heritage speakers and explaining why presentational focus is particularly interesting to study with this population. Having thus presented the main issues, section 1.3 states the research questions that guide the project, and section 1.4 presents an outline and a preview of the rest of the thesis.

1.1. Presentational focus

Consider (1) and (2).\(^1\)

(1) Kalyani bought a platypus.

(2) Kalyani bought a platypus.

These two sentences express the same proposition, and have the same syntactic structure, but differ with regard to main sentence stress. With the shift in stress from the object platypus to the

\(^1\) Here, and throughout, boldface indicates main sentence stress, while the hash mark ‘#’ indicates infelicitousness.
subject Kalyani, the set of possible discourses into which the sentence can fit changes. For example, (1), with main stress on the object, could be a felicitous answer to any of the questions in (3).

(3)   a. What happened?
   b. What did Kalyani do?
   c. What did Kalyani buy?

On the other hand, (2), with main stress on the subject, can fit into a more restricted set of contexts, such as (4).

(4)    Who bought a platypus?

The reason that (1) can fit into the contexts in (3), while (2) can fit into the context in (4), is that shifting the main stress also shifts the possible focus of the sentence. The focus of a sentence often corresponds roughly to the new or non-presupposed information of the sentence (though not always), and one common diagnostic for determining an utterance’s focus is by using wh-questions, in which case it is common to regard the constituent which corresponds to the wh-word in the question as the focus in the answer. The stress pattern in (1) could correspond to broad/sentence focus, where the whole sentence is new or “out of the blue,” as in (5a); VP focus, where the information in the VP answers the wh-question, as in (5b); or narrow object focus, where only the direct object corresponds with the wh-word in the question, as in (5c). On the other hand, main stress on the subject as in (2) can only correspond to narrow focus on the subject, as in (5d), where the subject is the new information.
(5) a. [Kalyani bought a \textit{platypus}].
   b. Kalyani [bought a \textit{platypus}].
   c. Kalyani bought [a \textit{platypus}].
   d. [Kalyani] bought a platypus.

A mismatch between the stressed constituent and the constituent which should be in focus based on the context is infelicitous. In (6), the question creates a context in which the focus in the answer is on the subject. As such, (6a), with main stress on the subject, is a felicitous answer, while (6b) and (6c), with other main stress patterns, are not.

(6) [Context: Who bought a platypus?]
   a. [Kalyani] bought a platypus.
   b. # [Kalyani] bought a platypus.
   c. # [Kalyani] bought a \textit{platypus}.

Narrow focus on other constituents behaves similarly to (6) in English. Consider, for example, (7), where main stress on the verb \textit{bought} corresponds to narrow focus on the verb, which fits felicitously into the context, while main stress on a different constituent does not.

(7) [Context: What did Kalyani do with a platypus?]
   a. Kalyani [\textit{bought}] a platypus.
   b. # Kalyani [\textit{bought}] a \textit{platypus}.
   c. # Kalyani [\textit{bought}] a \textit{platypus}.
   d. * Kalyani a platypus [\textit{bought}].

In this example we can see that the narrow focus on the verb called for by the context provokes stress shift to the focused constituent, since the canonical stress pattern (7b) is infelicitous, and we can see that stress on the wrong constituent, as in (7c), is also infelicitous. (7d) uses syntactic
movement to bring the verb to the end of the sentence, where main stress is canonically assigned. This strategy is also unacceptable.

From this data, we can make two main generalizations:

(8) **Generalizations on focus realization in English**

a. Changing the main stress of a sentence changes the possible contexts into which it can fit.

b. The main stress of a sentence must correspond with the focus of the sentence, determined by the context in which it appears.

These generalizations are each the flipside of the other. A sentence’s main stress pattern determines what context it can be inserted into, and the context into which it is inserted determines what main stress patterns are possible. This basic fact has been the starting point for significant research (discussed in Chapter 2), and it gives rise to one of the central questions in the literature on focus realization (9).

(9) **First central question about focus realization**

What is the nature of the relationship between focus (contextual appropriateness) and prosody (main stress)?

This question will be explored in Chapter 2, where I discuss previous approaches in the literature, and in Chapter 3, where I present an Optimality-Theoretic model of this relationship.

Having identified one of the main questions in the literature, now let us consider similar data from Spanish.

(10) Kalyani compró un *ornitorrinco*.

Kalyani bought a platypus

‘Kalyani bought a platypus.’
(11) Compró un ornitorrinco Kalyani.
    bought a platypus Kalyani
    ‘Kalyani bought a platypus.’

As before, these two sentences may be felicitously inserted into different contexts. Like in the English data, (10) can correspond to broad/sentence focus (12a), VP focus (12b), or narrow object focus (12c), while (11), with subject-final order, can only correspond to narrow focus on the subject (12d).

(12) a. [Context: What happened?]
    [Kalyani compró un ornitorrinco]F.

    b. [Context: What did Kalyani do?]
    Kalyani [compró un ornitorrinco]F.

    c. [Context: What did Kalyani buy?]
    Kalyani compró [un ornitorrinco]F.

    d. [Context: Who bought a platypus?]
    Compró un ornitorrinco [Kalyani]F.

Here, again, we see that, in order to fit felicitously into a particular context, a given sentence must have the appropriate constituent in focus. However, unlike the English data, Spanish has another strategy available for marking this focus. Syntactic rearrangement can be employed, as seen above in (12d), which is impossible in English (cf. 7d).

Indeed, it has been widely assumed in the literature on focus in Spanish that Spanish marks focus via syntactic movement, putting the focused constituent rightmost (see, inter alia, Bolinger 1954-1955; Büring & Gutiérrez-Bravo 2001; Casielles 2004; Contreras 1978; Costa 2001; Domínguez 2004a, 2004b; Gutiérrez-Bravo 2002, 2008; Zubizarreta 1998). English, in
contrast, marks focus via stress shift, stressing the focused constituent in situ, as we’ve already seen. The consensus in the field is generally that stress shift is not used to mark presentational focus (13a), but rather that the focused constituent ends up rightmost. It is important to note, though, that rightmost position is also where Spanish assigns main stress, so stress still plays a role here. In fact, stress and focus must still correspond, as demonstrated by the infelicity of (13b) and (13c).

(13) [Context: Who bought a platypus?]

a. # [Kalyani]$_F$ compró un ornitorrinco.

Kalyani bought a platypus

‘Kalyani bought a platypus.’

b. # [Kalyani]$_F$ compró un ornitorrinco.

c. # Compró un ornitorrinco [Kalyani]$_F$.

bought a platypus Kalyani

This pattern, using movement to put an element in focus by putting it in a sentence-final position where it can be stressed, holds for other constituents in focus in Spanish, according to the most common view. Take, for example, a context like that in (14), which demands focus on the object, since the object in the reply answers the wh-question. The canonical word order and stress pattern in (14b), which results in stress-focus mismatch, is infelicitous, as is stress shift in (14c), while using syntactic movement as in (14a) fits felicitously.

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2 Contrastive focus can be marked with stress shift in Spanish, but here I am only considering presentational or information focus. This is more explicitly delineated in section 2.1.
This common view, that Spanish uses syntactic resources to mark focus by moving the focused element rightmost where it also gets main stress, has been challenged in recent years by work claiming that Spanish speakers also have recourse to stress shift, as in English (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2009). These studies have found that Spanish speakers do produce utterances like (15), where the subject is in focus and is also stressed in pre-verbal position, rather than the subject being rightmost.

(15) [Context: Who bought a platypus?]

[Kalyani] compró un ornitorrinco.

‘Kalyani bought a platypus.’

The present study will come to a similar conclusion about the data in Spanish. Namely, the results of the experiment will show that (15) is a possibility for marking subject focus for the speakers studied here, contrary to the most common view. Nonetheless, in the discussion that follows, I take as a starting point the consensus that Spanish uses syntactic movement to mark focus, due precisely to the fact that it is the most widely held view.

Having seen a brief overview of the data, we can now make generalizations about focus realization in Spanish.
Generalizations on focus realization in Spanish

a. Changing the word order of a sentence changes the possible contexts into which it can fit.

b. The main stress of a sentence must still correspond with the focus of the sentence, determined by the context in which it appears (as before with English), and the main stress occurs sentence-finally.

c. Though the consensus view is that Spanish uses word order alterations to realize focus, some recent data challenges this idea.

These generalizations can again lead us to one of the major questions investigated in the literature on focus in Spanish. In particular, the fact that Spanish can employ syntactic movement to mark focus has been the subject of significant work (discussed in Chapter 2). More generally, facts from many languages, such as Catalan, Hungarian, Czech, and Greek, which use word order to realize discourse features like focus has led to one of the other major questions in the literature on focus crosslinguistically, which is (17).

Second central question about focus realization

What is the nature of the relationship between focus and syntactic movement? Put another way: What motivates or explains syntactic movement that realizes focus?

Research on this question has been principally concerned with explaining the motivation of discourse-related movement, debating whether it is motivated within the narrow syntax or due to interface conditions imposed by the semantic or phonological components. Despite the fact that I will eventually conclude that the Spanish speakers in the present study do not employ movement (at least in the cases I examine here), questions surrounding discourse-related syntactic movement are a major part of the literature on focus, especially for Spanish, and thus I
discuss this work at length in Chapter 2 and incorporate it into the theoretical model in Chapter 3, which takes as its starting point the consensus in the literature.

The two central questions in the literature that I have outlined so far, (9) and (17), are among the major issues guiding research on focus crosslinguistically, and, as such, they form part of the motivation of this study and will be discussed in more detail in the next chapter. Importantly, the answers to these questions are not settled, and the present work aims to contribute to these debates. Thus, one of the major goals of this thesis is to elucidate these issues related to focus realization (in particular, in Spanish), and thus contribute to our understanding of the interfaces between syntax, prosody, and discourse context.

We’ve also seen that some questions have been raised about the data on focus in Spanish. Most research on focus in Spanish has been concerned with explaining how discourse-related syntactic movement works, with data taken primarily from the authors’ intuitions. While this method has made valuable contributions to the field, experimental data on focus is somewhat scarce. Further, some recent work has challenged the view that Spanish principally uses syntactic movement to mark focus. This thesis also contributes on this front by providing new experimental findings and thus expanding the database on focus in Spanish. Bringing new experimental data to bear on focus in Spanish is thus another part of the motivation for this study.

The goals outlined above (adding new experimental evidence to the database on focus in Spanish, exploring the roles of both syntax and prosody in focus realization) lead to some general research questions (to be made more specific shortly):
(18) **Research questions about focus (preliminary)**

a. How is focus realized in Spanish?

b. What is the role of syntactic movement in realizing focus?

c. What is the role of prosody in realizing focus?

Having established a basic idea of one of the purposes of this study as expressed by some of the research questions it proposes to answer, let us now turn to the second main component of the project: heritage speaker grammars.

### 1.2. Heritage speakers

Bilingual individuals are not simply two monolinguals rolled up into one, as is well known. In fact, bilingual grammatical systems can be different from those of monolinguals in a variety of ways. This is particularly true in the case of heritage speakers of a language. A heritage speaker is someone “who is raised in a home where a non-English language is spoken, who speaks or merely understands the heritage language, and who is to some degree bilingual in English and the heritage language” (Valdés 2000:1). An abundance of research has shown that the grammars of heritage speakers differ from those of monolinguals in phonology, syntax, and pragmatics (see, *inter alia*, Silva-Corvalán 1991; Montrul 2002, 2004, 2005a, 2007; Zentella 1997). These differences may be the result of incomplete acquisition of the heritage language, attrition, influence from the dominant language, contact-induced language change, or some combination of these.

One area in which heritage speakers of Spanish have been shown to differ from monolinguals is in structures regulated by the interface of syntax with other linguistic systems, particularly in structures regulated by discourse factors. The idea that interface phenomena may
be more likely to be lost or to be incompletely acquired by heritage speakers is an extension of the Interface Hypothesis (IH) to heritage speakers.

The Interface Hypothesis was first proposed by Sorace and Filiaci (2006) for second language (L2) learners, and they proposed that “language structures involving an interface between syntax and other cognitive domains are less likely to be acquired completely than structures that do not involve this interface” (Sorace 2011:1). This hypothesis has been extended to heritage speakers by Montrul and others, who further argue that, “heritage speakers are … an important testing ground for it” (Montrul & Polinsky 2011:60). In fact, Montrul and Polinsky (p. 59) note that “several studies have shown that null/overt subjects, the phenomenon on which the IH has mainly focused, are also highly affected in heritage language speakers of Spanish (Montrul 2004, 2006) and other languages (Polinsky 1997) in ways that are consistent with the IH.” Especially relevant for our purposes here, Montrul (2004) found that heritage speakers display robust knowledge of features regulated only by the syntax but are different from monolinguals when it comes to interface phenomena, in line with the IH. Previous research on heritage grammars, then, indicates that they may be especially different than those of monolinguals when it comes to structures regulated by the interfaces.

Apart from this, it has been argued by other researchers (e.g. Silva-Corvalán 1994) that interface phenomena are especially susceptible to contact-induced change. That is, in situations of language contact, structures involving the interfaces are more likely to be affected by said contact than structures that are purely syntactic. Clearly, the case of heritage speakers of Spanish in the United States is such a situation of language contact, and we might thus expect the interface phenomena in their grammars to have undergone change due to language contact.
These hypotheses about interface phenomena are relevant because presentational focus is an interface phenomenon. As we have seen, the realization of presentational focus involves the interfaces of syntax, prosody, and discourse. Presentational focus is thus a perfect case with which to provide an additional test of the Interface Hypothesis as applied to heritage speakers. By examining this particular interface structure in both heritage speakers and monolinguals, we can determine to what extent these two groups differ, and can thus provide evidence for or against (particular formulations of) the Interface Hypothesis. In this way, the present study contributes to one of the major debates in the field. Furthermore, this project brings additional evidence to bear on claims that interface phenomena are especially susceptible to contact-induced change by investigating just such a phenomenon in a situation of language contact. In this way, the present study also contributes to research on the processes of language contact. These contributions reveal another part of the motivation of this study: to provide new experimental evidence regarding the structure of heritage speaker grammars and the processes affecting them.

This project also contributes to another issue in the literature on heritage speakers. There is some debate about the extent to which heritage speakers resemble first language (L1) speakers of their heritage language or L2 learners of that language. It appears that in some ways heritage speakers of Spanish look like L1 Spanish speakers and in other ways they look like L2 Spanish learners. Further, we know that L2 learners have difficulties with interface phenomena, like focus (Hertel 2003; Lozano 2003, 2006a, 2006b; Lozano & Mendikoetxea 2009). The obvious question then arises: Will heritage speakers of Spanish look more like L2 learners or like L1 speakers when it comes to marking focus? That is, will they resemble monolinguals or will they
also have difficulties with focus realization, like the learners? Again, by gathering experimental
data from both monolinguals and heritage speakers, this project weighs in on this debate.

Finally, but not least, this project contributes to the literature on heritage Spanish in that it
collects data that has not, to my knowledge, been collected before. That is, I am aware of no
study like the present one on presentational focus in heritage Spanish. This study thus expands
our empirical knowledge of heritage speaker grammars.

In sum, then, the second motivation for this study is to increase our understanding of
heritage grammars and the processes affecting them. Not only will studying presentational focus
add to the database on heritage speaker grammars descriptively, but it is an ideal phenomenon to
test with heritage speakers of Spanish because it allows us to put to the test theories about what
affects the development of heritage grammars generally. In particular, by examining
presentational focus in heritage speakers and monolinguals, this project tests the Interface
Hypothesis as applied to heritage speakers, the claim that interface phenomena are especially
vulnerable to contact-induced change, and the extent to which heritage speakers are more like L1
or L2 speakers. Testing this hinges on testing the realization of focus in both heritage speakers
and monolinguals, which brings us to the research questions that this project proposes to answer.

(19) Research questions about heritage grammars (preliminary)

a. Do heritage speakers and monolinguals differ in how they realize
   presentational focus?

b. If so, what are these differences?

c. If so or if not, what are the implications for theories of heritage grammars
   and language contact?
For the reasons outlined above, the expectation was that heritage speakers and monolinguals would differ. A more thorough discussion of why this was expected is presented in Chapter 2, and the results are discussed in Chapter 5. Now, though, having presented the dual motivations for this project and having sketched out some preliminary research questions based on the main issues in the literature, let us turn to finalizing the research questions.

1.3. Research questions

As we have seen, this project has two main motivations: to contribute to research on focus realization and to contribute to research on heritage grammars. These two goals intersect in the examination of presentational focus in heritage and monolingual Spanish, and they are expressed more explicitly in the research questions the study proposes to answer. Some preliminary research questions were laid out above in (18) and (19), but they need to be made more specific. This section revises the preliminary research questions and presents the four main research questions this thesis seeks to answer.

As seen in (18a), one of the central questions guiding this project is how focus is realized, in particular, in both heritage Spanish and monolingual Spanish. We also saw that focus realization involves both main stress and word order. In order to operationalize the overarching question of focus realization in these two types of Spanish, the question should be put in terms of what word orders and stress patterns are possible (that is, judged to be most acceptable) in particular contexts.
(20) **Research question 1**

Regarding presentational focus, what combinations of main sentence stress and word order are most acceptable in what contexts for monolinguals and heritage speakers?

Furthermore, I am interested in what the results of this study can contribute to theories of focus realization, in particular when it comes to the role of prosody and syntax (18b-c). The second research question thus becomes (21).

(21) **Research question 2**

What do the patterns of acceptability of different structures (combinations of main sentence stress and word order) in different contexts indicate about the roles of prosody and syntax in the realization of presentational focus in heritage and monolingual Spanish?

As we’ve seen, the other main motivation of this study is to investigate differences between monolinguals and heritage speakers and the implications of these differences. In line with the previous reformulations, we can operationalize (19a-b) as (22).

(22) **Research question 3**

Do heritage speakers of Spanish and Spanish monolinguals accept different structures (combinations of main sentence stress and word order) in a particular context, and, if so, what are these differences?

Finally, I am interested in what the potential differences between the two groups can tell us about the structure of, and the processes affecting, heritage grammars. In order to make this question more specific, we can reformulate it in terms of asking with what theories our results are consistent, which can be stated as (23).
(23) **Research question 4**

With what theories of heritage grammars and language contact are the patterns of acceptability of different structures (combinations of main sentence stress and word order) in context by the two groups consistent?

These research questions guide the present work, and we will return to them in later chapters. In the last section of this chapter, I present an outline of the thesis and a preview of what follows.

1.4. **Overview of thesis and preview of results**

Chapter 2 presents the background necessary to contextualize the thesis and to understand the issues involved in focus realization and heritage grammars more fully. It also presents the background needed to understand the theoretical proposal made in Chapter 3. In particular, it gives a primer on prosody, discusses the relationship of prosody to discourse status, and examines the main accounts of the motivation of discourse-related syntactic movement. Further, it presents previous work done on focus using Optimality Theory (Prince & Smolensky 1993/2004) and a more thorough overview of the literature on heritage speaker grammars.

Chapter 3 presents a new theoretical proposal to account for focus realization in Spanish and English using Optimality Theory (OT). I argue that OT is particularly well-suited to accounting for presentational focus, and I build on previous research using this theory, giving a more complete account than has been made previously and incorporating new data. The theoretical proposal includes constraints on prosody, contextual appropriateness, prosody-syntax mapping, syntax, and stress-focus correspondence, and a subset of these constraints then serve to inform the experimental design.
In particular, I argue, following Büring and Gutiérrez-Bravo (2001) and Samek-Lodovici (2005) that sentence-final word orders in Spanish arise due to a conflict between constraints on syntax and constraints on prosody. The argument is that Spanish requires rightmost stress and requires that stress and focus correspond, so syntactic well-formedness is sacrificed in order to satisfy these two requirements. That is, requirements on stress and stress-focus correspondence outrank constraints on syntax, so syntactic well-formedness is violated in order to allow stress to both be rightmost and on the focused constituent. The focused constituent thus occurs sentence-finally, where it is also stressed. This argument is not novel; the contributions of my theoretical proposal are that it is contained within a model that covers all the diverse components involved in focus realization, that it proposes a novel analysis of phonological phrasing in Spanish, and that I include some new data, specifically data from focus on pre-nominal modifiers, such as numbers, as in (24), which have not, to my knowledge, been examined before in Spanish.

(24)  [Context: How many police officers arrested the suspect?]

[Three]₀ police officers arrested the suspect.

The theoretical proposal informs the experiment design, which is discussed in Chapter 4. The experiment is designed both to answer the research questions and to test the theoretical proposal. It tests specific constraints from the theoretical proposal: two constraints on syntax, a constraint on main stress, and a constraint on stress-focus correspondence.

The experiment designed to test the theory is a contextualized aural acceptability judgment task. Participants listened to short stories which ended in wh-questions and then to several possible answers to the question, each of which had a different combination of main sentence stress and word order (and thus violated different constraints). Participants judged each
structure on a five-point Likert scale, and mean scores for each group on each structure were compared. Participants judged structures with three types of focus:

(25) Experiment conditions

a. Subject focus condition
   Ex.: Who bought a car?

b. Object focus condition
   Ex.: What did your uncle give to your sister?

c. Modifier focus condition
   Ex.: How many boys took a book?

In each condition, participants were presented with answers to the question that had different structures, each of which incurred specific constraint violations. As an example, take the three structures participants might be presented with as answers to the question in (25a).

(26) Example stimuli

a. Mi tío compró un carro. (Violates constraint on prosody by not having rightmost stress)
   ‘My uncle bought a car.’

b. Mi tío compró un carro. (Violates constraint on stress-focus correspondence by stressing non-focused constituent)

   my uncle bought a car

   ‘My uncle bought a car.’

c. Compró un carro mi tío. (Violates constraint on syntax by not having pre-verbal subject)
   bought a car my uncle

Sixty-six people participated in the study: 22 Spanish monolinguals, 22 high proficiency heritage speakers, and 22 low proficiency heritage speakers.
The main findings of the experiment, presented in Chapter 5, were (i) both heritage speakers and monolinguals use stress shift (like in English) to realize presentational focus and (ii) monolinguals and heritage speakers did not differ from one another. Regarding the first finding, in both the subject focus condition and the modifier focus condition, all groups rated the stress shift option (26a) significantly better than any other option, indicating that stress shift is the preferred strategy for marking presentational focus in these contexts. In the object focus condition (25b), all participants equally preferred both stress shift (26a) and movement (26c), indicating that stress shift is one available strategy for realizing focus. These results indicate that the most important factor in marking focus in Spanish, both for monolinguals and heritage speakers, is stress, and that these speakers’ grammars admit violations to prosodic well-formedness but resist alterations to canonical word orders in transitive sentences. This finding runs contra the majority of the literature on focus in Spanish since Zubizarreta (1998), which claims that constituents in focus appear sentence-finally, where they also get main stress. It is in line with some recent studies (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2009) which argue that in fact stress shift is an option for marking focus in Spanish, and I conclude that future work needs to take these findings into account. I further conclude that prosody plays the most important role in realizing focus in Spanish, and that this means that common approaches to focus in Spanish which motivate sentence-final orders based on the need to have main sentence stress rightmost need to be rethought.

Regarding the second finding, that the groups did not differ, I conclude that this study does not show support for the view that interface phenomena like focus are especially susceptible to contact-induced change, in that the heritage speakers, who acquired Spanish in a situation of language contact, performed the same as the monolinguals. Further, this study does not find
support for the Interface Hypothesis as applied to heritage speakers, since, again, this particular interface phenomenon does not show variability or instability for these heritage speaker participants when compared to monolinguals (though neither is this lack of difference taken to falsify the IH; it merely fails to provide additional support for it). This also indicates that these heritage speakers more resemble L1 Spanish speakers (the monolingual group) than they do L2 Spanish learners, who have been shown to have trouble with presentational focus.

The results of this study are relevant to future studies of focus and other information-structural phenomena, as well as to future studies of heritage grammars and language contact, and it contributes new experimental data to both fields. A full summary of the conclusions with specific reference to the research questions is presented in section 5.8.1.
2. BACKGROUND AND MOTIVATION

2.0. Introduction

The purpose of this chapter is to present background information necessary to contextualize and understand the present study. First, in section 2.1, I delimit the aims of the project explicitly, putting the research here in context of information structure more broadly. Second, I turn to the main questions in the literature on focus that were laid out in Chapter 1, discussing the relationship between prosody and discourse status in section 2.2 and discourse-related syntactic movement in section 2.3. I then turn to Optimality-Theoretic approaches to focus in section 2.4, which are especially pertinent to the theoretical model developed in the next chapter. Section 2.5 covers the second main motivation of the study, discussing previous research on heritage speaker grammars. Finally, section 2.6 discusses some previous experimental work on information structure which informs the present study.

2.1. Delimiting the present study

Before discussing the relevant literature in more detail, it is necessary to make clear some of the terms involved and to make explicit the limits of the present study.

I am concerned primarily with what is often called presentational or information focus, which I refer to as presentational focus or simply focus. This term refers to that part of the sentence which is often corresponds to the new information, as compared to information that is given. The focus of a sentence receives prominence in some fashion. How exactly this is done
varies between languages, but does not in general alter the sentence’s truth conditions\(^3\) (Vallduví 1992). It is common to assume that an accurate way to identify this type of focus is via the wh-question test; that is, the focus is the part of the sentence that corresponds to the wh-word in a question in the context. As pointed out by Kahnemuyipour (2009), this test is limited in that it cannot always stand in for a larger or more realistic discourse context, but it is a useful shorthand for identifying the focus of an utterance. More formally, I will follow López (2009), who in turn is following Jackendoff (1972) in defining focus as that element that “provide[s] a resolution for a variable left open in the previous discourse,” as exemplified in (1) (López 2009:23).

\[(1) \quad \text{- What did John bring?} \quad [\lambda x \text{ John brought } x] \]
\[\quad \text{- John brought the wine.} \quad [x=\text{the wine, } \text{‘the wine’ is focus}]\]

Presentational or information focus stands in contrast to what is often called contrastive or correction focus. In Lopez’s (2009) terms, contrastive focus both opens and closes a variable, rather than simply closing a variable left open in the discourse. More generally, contrastive focus expresses just what its name implies: contrast. For example, consider (2), where the subject Kalyani doesn’t simply bring new information to the discourse, but rather contradicts the information in the previous utterance.

\[(2) \quad \text{A: Meghanne bought a platypus.} \]
\[\quad \text{B: No, } \textbf{Kalyani} \text{ bought a platypus (not Meghanne).} \]

I will not concentrate on contrastive focus in what follows. There are two reasons for this. First, it is necessary to limit the scope of the investigation for practical reasons. Second, it seems clear that contrastive focus is a separate, though obviously related, phenomenon from presentational focus. While both involve meaning, prominence, and discourse appropriateness,\(^3\)

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\(^3\) Contrastive focus, which is not the type of focus investigated in this project, can indeed alter truth conditions. Further, Szabolcsi (1981) argues that exhaustive focus can also alter truth conditions. Nonetheless, in the types of focus and languages under consideration here, focus does not alter truth conditions.
contrastive focus certainly functions with a different set of rules. In fact, though it evidences some systematicity, it defies many of the generalizations that can be made about presentational focus. Further, though the evidence is not entirely conclusive, there is some evidence that the accent that marks information focus and the accent that marks contrastive focus are different (Belletti 2002, Selkirk 2002). Contrastive focus can thus fairly be said to be a different, though related, phenomenon. For this reason, I exclude it from the present research.

Another common information structural notion that I will not be investigating but which deserves mention due to its ubiquity in the literature is the notion of topic. Briefly, a topic is sometimes thought of as whatever part of the sentence is not in focus, though this conceptualization varies greatly. Often, the topic is not just the non-focused part of the sentence, but rather the part of the sentence that specifies what the sentence is “about,” or the part that connects the sentence to the previous discourse by mentioning old information or setting the frame of the discussion. It should be noted that there is some terminological confusion here, as Krifka (2007) points out, namely that the term topic has been used to discuss the psychological construct of what the sentence is about as well as the actual structure that realizes it. Topics have their own properties and are quite separate from foci. In Rizzi’s (1997) model, for example, Topics are in the left periphery in a dedicated Topic Phrase. Further, they have their own accentual patterns (Jackendoﬀ 1972, Frascarelli 2000, Casielles 2004, Feldhausen 2008). As with contrastive focus, though I recognize that they are an important part of the puzzle, I will not be considering topics here.

Both topic and focus are notions that are part of the more general study of information structure. The term information structure was first used by Halliday (1967) to describe the mapping of what he called ‘information units’ to constituent structure, realized phonologically
via what he called ‘tonality.’ Since then, the term information structure has come to encompass a broad range of phenomena related to the partitioning of sentences into more or less informative parts, the realization of this partitioning, and the adaptations sentences make to fit into particular discourse or informational contexts. A wide variety of perspectives exist: some scholars focus on the pragmatic or semantic aspects of information structure, others locate it in the narrow syntax, and many find its realization via prosodic prominence to be the driving force. Furthermore, there are approaches within a variety of theoretical frameworks. Within information structure, there are many other phenomena that I must also leave out of the present study: focus fronting, topicalization, nested foci, clitic-left dislocation and clitic-right dislocation in Spanish (and other Romance languages), languages that use radically different systems to mark focus (e.g. morphology, focus particles), tone languages, and more. The information structure research is vast, and in order to produce a practical study, it is necessary to concentrate on a single phenomenon.

In addition to limiting the present study by considering only presentational focus, of the many issues related to information structure, I also limit the study by only considering its realization via prosody and syntax, rather than considering its role in constructing meaning. Studies in pragmatics have focused on the discourse functions and the meanings of different configurations of constituents. Many of these treatments focus on the dichotomy between ‘old information’ and ‘new information.’ Prince (1992) and Ward and Birner (2001), for example, identify three notions of old vs. new information: focus-presupposition models, old/new with respect to the hearer’s mind, and old/new in the discourse. The present study assumes something like a focus-presupposition model, in that it takes focus to be the resolution of a variable, as noted above, rather than considering notions of old or new information. I am primarily concerned
with how sentences fit into discourses and how information focus is realized via word order and main stress, and I disregard notions of speaker intention, shared presuppositions, and the ‘meaning’ of focus or non-canonical word order. This is not to say that these issues are not an important part of the puzzle; they are, but they fall outside the scope of the present study.


2.2. Relating discourse status to prominence

As we saw in Chapter 1, one of the main issues involved in realizing presentational focus is prosody. Indeed, we saw that one of the central questions in the literature is (3).

(3) First central question about focus realization

What is the nature of the relationship between focus (contextual appropriateness) and prosody (main stress)?

In this section, I discuss some relevant research touching on this question. First, though, in order to discuss the relationship between focus and prosody, it is necessary to give a primer on prosody.

2.2.1. Primer on prosody

“The term sentence prosody encompasses three distinct aspects of the phonological representation of the sentence: intonation, phrasal rhythmic patterning, and prosodic phrasing” (Selkirk 1995:550). All three aspects, though distinct, are interrelated, and the study of each
aspect as well as the relationship between them is the subject of significant research in phonology. A full review of the literature on prosody is far beyond the scope of this thesis, but this section will serve to introduce the reader to some of the main concepts that will be relevant to us here.

2.2.1.1. Intonation

Intonation refers to the contour of an utterance’s fundamental frequency, the rises and falls of the pitch of the utterance. One of the most common ways to represent the intonation contour is with the Tone and Break Indices (ToBI) framework (Beckman 2002), in which intonational contours are represented by a series of relatively low (L) and high (H) tones. Pitch accents are tones that are usually (but not always) associated with the stressed syllable in a word, and may be of many different types. For instance, there may be monotonal pitch accents, where a single tone is associated with the stressed syllable, such as H* and L* (where the star indicates association with the stressed syllable), or there may be bitonal pitch accents, such as L*+H, where there is a rise in tone from a low tone to a high tone, with the low tone occurring on the stressed syllable and the high tone occurring after, or L+H*, where there is again a rise from low to high but the peak is associated with the stressed syllable, among many other possibilities.

As an example of an L*+H pitch accent, see Figure 1, which shows the pitch contour for the DP mi abuelo ‘my grandfather.’ A low tone is associated with the onset of the stressed syllable bue, and the pitch rises through that syllable, reaching its peak after the stressed syllable.
As an example of an L+H* pitch accent, consider Figure 2, which shows a different pitch contour for the same DP. A low tone is again associated with the onset of the stressed syllable *bue*, and the pitch rises through that syllable, but in this case the pitch reaches its peak within the stressed syllable, not after.
In Spanish, it has been argued that every prosodic word has its own pitch accent (Büring & Gutiérrez-Bravo 2001, citing Fant 1984; Sosa 1991, 1999; and Face 2000). Further, for non-focal words in prenuclear position, Spanish often realizes this pitch accent as a high tone after the stressed syllable (L*+H). That is, words that are not in narrow focus and that do not occur in rightmost position often (but not always) have an L*+H pitch accent (Prieto, van Santen, & Hirschberg 1995). On the other hand, sentence final constituents and constituents with main sentence stress usually get a pitch accent that associates a high tone with the stressed syllable. Face (2003) finds this for Peninsular Spanish, and Kim and Avelino (2003) discuss it in Mexican Spanish. Kim and Avelino note that all the pitch accents they investigate occur in broad focus, narrow focus, and contrastive focus contexts alike, and thus conclude that this constitutes evidence against the idea that there is one pitch accent associated with a particular focus structure. Nonetheless, they also find that by far the most common pitch accent on constituents in narrow focus is one which has the high tone associated with the stressed syllable in that word.
(what they call H* and ^H*, but which could be labeled L+H*). This preference is even more pronounced when the focused constituent appears sentence-finally. Finally, of particular relevance to the present study, Henriksen (2011) investigated intonation in both native speakers of Mexican Spanish and in heritage speakers of Mexican Spanish living in Chicago. He found that, though there was variation between speakers in realizing pitch accents on constituents in narrow focus, the most common pattern for both groups was L+H*.

2.2.1.2. Main stress

Related to intonation is phrasal rhythmic patterning, or main sentence stress. Stress is a perceptual phenomenon of relative rhythmic prominence within an utterance. Stress within an utterance generally alternates, with stressed syllables separated by one or more unstressed syllables, and one syllable in particular is generally perceived to be most prominent. This most prominent syllable can be called the main sentence stress, and I will take the word containing said syllable to be the word with main stress.

Main stress is largely a perceptual phenomenon; as Zubizarreta and Vergnaud (2005) note, there is no direct acoustic equivalent of nuclear stress. Indeed, nuclear stress can involve a particular pitch accent, increased vowel length, increased amplitude, or a combination of these, yet there is “no unique correlate” (ibid.:522). Gussenhoven (2004) notes that stressed elements tend to be longer and have fairly even distributions across the frequency spectrum, and claims that “the most powerful cue for the perception of stress is F0” (p. 17), but admits that “there is no single F0 feature that can be associated with stress” (p. 18). So, main stress is related to pitch accent, in that particular pitch accents can be among the signals of main stress, but there is not a one-to-one correspondence between particular pitch accents and stress. However, as seen above,
there are some pitch accents in Spanish that are often correlated with main stress, in particular the L+H* pattern.

The rhythmic pattern of a sentence can be represented with a metrical grid⁴ (Halle & Vergnaud 1987, expanding on Liberman’s 1979 account of word-level stress). At each level of the grid, constituents are formed, and within each constituent, one syllable is more prominent than others. That syllable is the head of that constituent, which projects to the next line of the grid. This repeats at each level, and the final representation shows both the main and secondary stresses of the sentence. As a simplified example, consider (4), which shows how this representation works.

(4) Metrical grid prosody

```
(      *     ) line 4
(      * )(    *     ) line 3
(      * )(      *    *    ) line 2
(      * )(      * )(    *     ) line 1
(      * *)(      * )(    *    *    ) line 0
Lori   bought   a book.
```

Each syllable that can get an accent is marked with an asterisk on line 0. The most prominent within each word projects to line 1. On line 2, bought and a book form a single constituent, and the heads from line 1 project. The most prominent syllable from line 2 projects to line 3, and then the most prominent syllable from line 3 projects to line 4. We correctly end up with book receiving main stress as the word containing the most prominent syllable and Lori receiving secondary stress as the word containing the next most prominent syllable. A metrical

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⁴ Another way to represent the same facts is via a tree rather than a grid. Metrical tree notation (based on Liberman & Prince 1977 and Liberman 1979) represents stress via labels on the nodes of a tree. At each step up the tree, one node receives the label S(trong), and its sister therefore receives the label W(ek). The element dominated by only S labels receives main stress; secondary stress goes to the element dominated by only S labels except for one W label which is immediately dominated by the root node (usually the subject, in neutral contexts). In what follows, though, I will use the metrical grid notation because it seems to be the more commonly used notation in the literature.
grid is a way of representing the rhythmic pattern of a sentence, and it is compatible with different theoretical proposals on how this pattern is derived.

One of the first and most influential accounts of how to derive main sentence stress is the Nuclear Stress Rule (NSR) of Chomsky and Halle (1968). The NSR is a rhythmic rule that is responsible for specifying the main stress of a sentence. The NSR proposed for English by Chomsky and Halle was extended by Cinque (1993), who put forth a version of the NSR that was not language-specific, arguing that main stress falls on the most embedded constituent cross-linguistically. This rule is sensitive to c-command relationships, that is, it derives main stress based on syntactic relationships. In other words, it is “an algorithm that yields a prosodic interpretation of asymmetric c-command” (Zubizarreta 1998:40). When reference is made to the NSR in what follows, then, it should be understood to mean the rule proposed by Chomsky and Halle and extended by Cinque which derives nuclear stress on the most embedded constituent in the sentence, i.e. the lowest constituent according to asymmetric c-command. This rule has received many (re)formulations, and it has been very influential in work on sentence stress.

An alternative to a syntax-based rule like the NSR is to derive main stress as a consequence of prosodic phrasing (which is itself sensitive to syntax, see section 2.2.1.3). This is the approach taken by many working in Optimality Theory, including Büring and Gutiérrez-Bravo (2001), Féry and Samek-Lodovici (2006), Samek-Lodovici (2005), and Truckenbrodt (1995, 1999, 2007), among others, and it is the approach I will adopt in Chapter 3. This sort of approach relies on constraints that govern the formation of prosodic phrasing and their relationship to syntax as well as constraints on the alignment of stress within each level of such phrases (for example, constraints on which asterisk projects to the next line in (4)). That is, rather than deriving nuclear stress based on a syntactic relationship like c-command, a prosodic
structure is built (and related to syntactic constituents), and then the stress is determined within this structure (for example, by aligning the stress with the right or left edge of a phonological phrase). The relationship between syntax and stress is thus indirect under this type of approach. This sort of proposal is developed in sections 3.3 and 3.4, and so I leave a more detailed discussion aside for now.

2.2.1.3. Prosodic phrasing

The final issue in sentence prosody is prosodic phrasing. It is well known that certain phonological processes (e.g. French liaison, Italian raddoppiamento sintattico) are restricted in their application to certain domains. These domains can be thought of as hierarchical levels of prosodic structure, and certain processes can only apply within certain levels. One of the most prevalent ways of representing this structure is the prosodic hierarchy (Truckenbrodt 2007, Selkirk 2011). Much like words are composed of morae, feet, and syllables, the sentence can be thought of as composed of a hierarchy of prosodic domains. The lowest level is the prosodic word (PWd). The next highest level is the phonological phrase (pP), composed of PWds. Above and composed of pPs is the intonation phrase (iP).

We have, then, a hierarchical structure: iPs contain pPs, which in turn contain PWds. Using the notation of the metrical grid outlined above, each level of the hierarchy can be represented with a line on the grid, and the boundaries of these constituents are represented with parentheses. As we saw before, at each level, every prosodic constituent has a head, which is where stress falls in that constituent. These heads can project, and at each level only the heads of

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5 It should be noted that this terminology varies from author to author. Selkirk, for example, discusses Major Phrases and Minor Phrases, which usually correspond roughly to my iP and pP. Further, the definition (and number) of intermediate levels like the pP are sometimes different. The phonological phrase is also often called the ΦP and the intonation phrase is sometimes called the ιP.
the level below it are available to become the head of the current level. These heads are represented in the metrical grid with stars. Let us consider an example.

(5) The prosodic hierarchy

\[
\begin{align*}
& ( \star ) ( \star ) ( \star ) & \text{iP level} \\
& ( \star ) & \text{pP level} \\
& ( \star ) & \text{PWd level}
\end{align*}
\]

Kalyani bought a platypus for Lori.

The prosodic representation in (5) is the structure I will adopt in Chapter 3. How this structure is created, what constraints regulate its form, how it is related to syntax, and how stress is determined within it are all topics of significant research in phonological theory, and I will return to them as I develop the theoretical proposal in the next chapter.

The purpose of this section was to acquaint the reader with the basics of intonation, main sentence stress, and representations of prosody. I now turn to accounts relating prosody to information structure.

### 2.2.2. Focus and prosody

As we saw in Chapter 1, the main generalization that can be made about discourse status and prosody is that the main stress must correspond to the focus of the sentence. Principles equating prosodic prominence and focus are ubiquitous in the literature. Chomsky (1971) and Jackendoff (1972) proposed the Focus Prosody Correspondence Principle, which states that “the focused constituent (or F-marked constituent) of a phrase must contain the intonational nucleus of that phrase” (Zubizarreta 1998:38). Zubizarreta (1998) builds on this in her more recent analysis, proposing a Focus Prominence Rule, which requires an F-marked constituent to be more prominent than one that is not F-marked (see section 2.3.2). A similar idea is adopted by Szendrői (2001, citing Reinhart 1995): the Stress-Focus Correspondence Principle, stating that
“the focus of a clause is a(ny) constituent containing the main stress of the intonational phrase, as determined by the stress rule” (Szendrői 2001:50). Furthermore, Optimality-Theoretic analyses all include some constraint that require stress-focus correspondence, such as Schwarzschild (1999)’s FOC constraint, Büring and Gutiérrez-Bravo (2001)’s FOCUSPROMINENCE, or Samek-Lodovici (2005)’s STRESSFOCUS (see section 2.4). Clearly, the idea that focus (or F-marking) corresponds to the main stress of the sentence is firmly established in the literature on focus, and we will see examples of such principles repeatedly in the discussion that follows.

The prosodic prominence that is associated with focus is not always main stress. For instance, Selkirk (1995) argues that pitch accent, not rhythmic prominence, is the important factor, and Truckenbrodt (1999) provides an analysis of Chichewa where focus is associated with particular prosodic phrasing rather than main stress directly. However, by far the most common assertion is that it is main stress that must correspond to the focus of the sentence.

Because it is most common to think primarily in terms of stress, though pitch accent is also important, I am going to conflate main stress and pitch accent, treating them together. As pointed out in section 2.2.1, I recognize that these are different phenomena, but they are also related. In particular, main stress is associated in Spanish with particular pitch accent patterns, most commonly the L+H* pitch accent. Further, in the relatively simple examples I consider here, rhythmic prominence and intonational prominence occur on the same constituent, so distinguishing between them is not important for the present work (and furthermore, the experiment presented in Chapter 4 controls for both pitch accent and stress). This is a simplification of the prosodic facts, but it is a necessary one. As such, in what follows, assertions about main stress should be understood to be assertions about prosodic prominence that
combines main stress and particular intonational patterns, but I will focus primarily on main stress.

That said, how can we characterize the relationship between main stress and discourse status, aside from the generalization already made that they usually correspond? Three main approaches can be identified: (i) focus is derived from prosody; (ii) focus is derived from semantics; (iii) focus and prosody are derived separately and then must correspond.

2.2.2.1. **Focus is derived from prosody**

Perhaps the constituent in focus is derived from the main stress (or other prosodic prominence, such as pitch accent). This is the approach taken by Reinhart (2006) and Selkirk (1999).

For Reinhart, main stress is derived with a variant of the traditional NSR, and then the stress assigned in this way determines the focus set, which is composed of all constituents containing main stress. Thus, main stress on the object, as in (6), creates a focus set consisting of the object DP, the VP, and the IP, while main stress on the subject, as in (7), creates a focus set consisting of the subject DP and the IP.

(6) Kalyani bought a **platypus**.

Focus set: \{DP, VP, IP\}

(7) **Kalyani** bought a platypus.

Focus set: \{DP, IP\}

Main stress is determined at the PF interface and serves only to make a focus set available to the interpretive component, which then chooses the appropriate focus for the context.
For Selkirk, as already mentioned, the important prosodic property is pitch accent rather than main stress, but the idea is similar, in that focus (via F-marking) is derived from the prosodic properties of the sentence. Selkirk proposes the rule in (10).

(8) Basic Focus Rule (Selkirk 1995, 1984)

An accented word is F-marked.

So, a pitch accent on *platypus* in (9) licenses its F-marking, as does a pitch accent on *Kalyani* in (10). Selkirk further proposes “that the Focus of a sentence (FOC) is defined as an F-marked constituent not dominated by any other F-marked constituent” (Selkirk 1995:555). F-marking is thus a formal mechanism for deriving the focus of the sentence.

(9) Kalyani bought a [*platypus*].

(10) [*Kalyani*] F bought a platypus.

Because they are F-marked and not dominated by another F-marked constituent, the F-marked elements in (9) and (10) are also the foci of their respective sentences.

Both these proposals in fact go far beyond what I’ve presented here, but since the details will not figure prominently in what follows, I have presented them here only briefly, in order to give the reader an idea of what how focus could be determined by prosodic prominence.

2.2.2.2. **Focus is derived from semantics**

An alternative account of the relationship between focus and prosodic prominence is given by Schwarzschild (1999). Like Selkirk and others, this approach associates focus and prominence indirectly via F-marking. Unlike Selkirk, Schwarzschild derives F-marking based on

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6 In particular, Selkirk (1995) is well known for proposing a system of F-projection that explains how accent on the object can in fact result in many different F-marking patterns, and for arguing that her system, based on pitch accents, can account for data that cannot be covered in stress-based systems. Because F-projection does not figure prominently in my model, though, as I eventually adopt Schwarzschild (1999)’s proposal, I omit it here.
the semantics and then requires that the focus so derived correspond with prominence.\footnote{In fact, it might be more appropriate to include Schwarzschild in the next section, since he does in fact derive stress and focus separately and then require them to correspond, just like the approaches outlined in section 2.2.2.3. However, I have separated Schwarzschild out for ease of exposition, due to the emphasis his work places on the semantics of F-marking, whereas the works discussed later focus more on the prosodic and syntactic mechanisms of its realization.} Instead of approaching it from the perspective that prominence relates to focus/newness, he approaches it from the perspective that lack of prominence relates to givenness.

Suppose that, instead of prominence licensing F-marking, F-marking is essentially free. Anything, including non-constituents, can be F-marked. However, this F-marking is subject to a few constraints. First, suppose an economy constraint that penalizes F-marking. Thus a sentence with less F-marking is preferred to one with more. Call this constraint AVOIDF. Second, F-marking has an impact on interpretation. Instead of saying that F-marking corresponds to focus, though, assume that not being F-marked indicates givenness. That is, anything that is not F-marked must be interpreted as given. Call this constraint GIVEN.

The next step is to define givenness. Schwarzschild defines given as follows:

(11) Definition of GIVEN (informal version)

An utterance U counts as GIVEN iff it has a salient antecedent A and
a. if U is type e, then A and U corefer;

b. otherwise: modulo $\exists$-type shifting, A entails the Existential F-Closure of U.

In plainer language, an utterance counts as given if it is entailed by an antecedent in the discourse (with the F-marked parts of the utterance replaced by variables).\footnote{For a more complete explanation of the semantics, as well as a formal semantic definition of given, see Schwarzschild (1999).} For example, in (12), both Kalyani and bought are given because the context entails that there is some X such that Kalyani bought X.
(12) [Context: What did Kalyani buy?]

Kalyani bought \([a \text{ platypus}]_F\).

For our purposes, it is enough to say that something is given if it is entailed by an antecedent in the context.

Constituents that are not F-marked must be interpreted as given. So, an alternative to (12) with less F-marking (13) would be ruled out, since, without an F-mark, \textit{platypus} would need to be interpreted as given, but it does not meet the definition in this context.

(13) [Context: What did Kalyani buy?]

\# Kalyani bought a \textit{platypus}.

On the other hand, too much F-marking (14) is disallowed by the constraint AVOIDF.

(14) [Context: What did Kalyani buy?]

\# \{Kalyani\}_F bought \{a \text{ platypus}\}_F.

In this way, this system generates just the right F-marking—just enough to satisfy the constraint that anything not F-marked be interpreted as given.

F-marking is thus constrained by semantic conditions. The other half of the analysis is to associate a particular F-marked constituent with prosodic prominence as follows: The highest F-marked node not immediately dominated by another F-marked node (Selkirk’s FOC) contains an accent (the constraint Foc). So, returning to the correct F-marking in (12), the object is the highest F-marked node not immediately dominated by another F-marked node, and it thus contains an accent (15).

(15) [Context: What did Kalyani buy?]

Kalyani bought \([a \text{ platypus}]_F\).
The main insights of Schwarzschild’s approach are that (i) F-marking (and thus the focus) is determined by semantic constraints, (ii) F-marking is derived by focusing on givenness rather than on notions of focus or on prosodic prominence, and (iii) prominence is associated with the F-marking determined by semantic constraints. Schwarzschild argues that this approach is superior to previous approaches, in particular Selkirk’s, and presents several examples he claims cannot be captured in other systems, though for the sake of ease of explanation I’ve only introduced simple examples here. I will return to Schwarzschild’s approach in Chapter 3, as it will form one part of the theoretical model.

2.2.2.3. Stress and focus are derived separately

A third option for relating stress and focus is to derive them separately and then require that they correspond. There are two ways to do this, which differ mainly in their treatment of prosody.

The first, which is the proposal made by Zubizarreta (1998), derives stress in the syntax via the NSR. The focus of the sentence is determined separately in what Zubizarreta calls Assertion Structure (the details of which are not relevant here). They are then made to correspond via a Focus Prominence Rule, which says that the focused constituent must receive main stress. Because Zubizarreta is primarily concerned with explaining movement facts, I return to this proposal in more detail in section 2.3.2, but the basic approach to the relationship between stress and focus should be clear: derive the stress via the NSR in the syntax, derive the focus in Assertion Structure, and then they must match up.

The second approach to take the same basic tack derives the stress based on prosodic phrasing, determines the focus separately elsewhere, and then requires they correspond. The main difference from Zubizarreta’s proposal is in how the main stress is derived, and this is the
approach taken by some work in Optimality Theory, including Büring and Gutiérrez-Bravo (2001) and Samek-Lodovici (2005).9 Because I draw heavily from these proposals in what follows, I discuss them in greater detail in section 2.4, but I give a sketch of their approach to stress and focus here.

In each of these works, the focus is determined independently from stress. Though neither work is very specific about how this happens, each candidate in the OT computation is marked for focus based on the context in which the sentence occurs. Stress is then determined via constraints on prosodic structure. A prosodic hierarchy similar to the one in (5) in section 2.2.1.3 is constructed, and there are constraints on how this structure is built and on how the head of each level projects to the next one. Main stress is thus derived based entirely on constraints on prosodic structure, providing what Büring and Gutiérrez-Bravo call a “genuinely prosodic account of stress” (Büring & Gutiérrez-Bravo 2001:44). The final piece of the puzzle is some constraint requiring that stress and focus correspond. These approaches are in a way fundamentally similar to Zubizarreta’s: stress and focus are determined independently, and then must correspond. The difference is that main stress is determined based on prosodic phrasing rather than in the syntax via the NSR. I will argue in sections 2.3 and 2.4 that this represents an advantage for the OT approaches.

2.2.2.4. Conclusions

This section has presented three main approaches to the relationship between prosodic prominence and focus: (i) focus is derived from prosody, (ii) focus is derived from semantics, and (iii) focus and prosody are derived separately. In Chapter 3, I will draw on the latter two types of proposals to build my own theoretical model. In particular, I will incorporate

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9 Szendrői (2001), discussed in more detail in section 2.3.2, takes a somewhat similar view, though it is different in that it also draws on the idea of a focus set as in Reinhart (2006).
Schwarzschild’s approach to F-marking as well as Büring and Gutiérrez-Bravo and Samek-Lodovici’s approaches to prosodic structuring. This is one way in which my theoretical proposal contributes to the literature on focus. Schwarzschild’s model is successful in deriving the focus of the sentence based on its semantics, but it lacks a complete account of main stress, while Büring and Gutiérrez-Bravo and Samek-Lodovici do not provide a full explanation of F-marking, but they do successfully model stress derived via prosodic phrasing. My own model brings these two approaches together to create a more comprehensive model of focus.

Having discussed one of the major questions in the literature on information structure, the relationship between focus and prosody, I now turn to the other major question, movement.

2.3. **Movement**

As we saw in Chapter 1, another major question in the literature on the realization of focus has to do with syntactic movement. This question is repeated in (16).

(16) **Second central question about focus realization**

What is the nature of the relationship between focus and syntactic movement? Put another way: What motivates or explains syntactic movement that realizes focus?

The relationship between focus and syntactic movement was noticed as far back as Bolinger (1954-1955) for Spanish, when he observed that the ‘point’ of a sentence tends to be last-most and stressed, while given items tend to be fronted. Indeed, we saw in chapter one that the consensus in the literature is that narrow focus on a subject in Spanish, for example, is realized primarily via syntactic movement: the focused subject appears in final position.
(17) [Context: Who bought a platypus?]

Compró un ornitorrinco [Kalyani]f.

Bought a platypus Kalyani

This type of movement that creates structures that felicitously fit in the discourse is not by any means the only type: Germanic Scrambling, Scandinavian Object Shift, Spanish p-movement, Romance clitic dislocation and focus fronting, English topicalization, Hungarian focus movement, and many others are all examples of discourse-related movement.

Accounts of discourse-related movement fall into three camps, according to the motivation of the movement. Some approaches locate movement within the narrow syntax and motivate it with formal features (López 2009) or criteria (Rizzi 1997), and others claim that its motivation is primarily prosodic (Zubizarreta 1998, Szendrői 2001). Still others claim its motivation is semantic (Diesing 1992, 1996; de Hoop 1996; Kučerová 2007); however, since semantic approaches are not very prominent in the literature on Spanish and since they do not figure prominently in what follows, I do not concentrate on them here. Instead, this section reviews those accounts that are most relevant: movement in syntax (section 2.3.1) and movement motivated by prosody (section 2.3.2).

2.3.1. Movement in syntax

Rizzi’s (1997) influential proposal regarding the structure of the left periphery has become the default analysis of information structure in the syntax, at least in Romance, spawning many subsequent studies that assume his architecture. Rizzi’s main goal is to give an account of the dislocation of topics and the fronting of contrastive focus, drawing mainly on data from Italian. In his system, interpretation is a direct result of syntactic position. Rizzi proposes an
extended C system, expanding what is usually thought of as the Complementizer Phrase into four functional heads and their phrases: a Finiteness Phrase, a Focus Phrase, a Topic Phrase, and a Force Phrase. The functional heads Foc(us) and Top(ic) play an important role in interpretation. Specifically, constituents found in the specifiers of these functional heads are given particular interpretations. Elements interpreted as topics are found in Spec, Top, and elements interpreted as (contrastively) focused are found in Spec, Foc. In this way, interpretation is determined entirely within the narrow syntax, which then feeds the phonological and conceptual systems.

Unfortunately, Rizzi’s approach is of limited utility to us here, as he is primarily interested in explaining dislocation. In fact, all the cases of focus that he considers are cases of contrastive focus, rather than “regular” presentational/information focus, which is the kind of focus that is of interest to me in this work. He does speculate (p. 287) that presentational focus may perhaps involve movement of the focused element at LF, but he does not develop this proposal. I nonetheless have included a description of his theory here due to its ubiquity; it is often considered the ‘standard’ description of information structure in Romance.

In contrast to Rizzi, López (2009) does away with the idea of fixed Topic and Focus phrases, instead opting to derive information structure in Romance using two features, [±a] and [±c], the interactions of which can derive a variety of possible interpretations. López’s analysis is similar to Rizzi’s, though, in that he also locates all movement for discourse reasons within the narrow syntax, and in that, though he denies the existence of TopP and FocP, particular interpretations (as mediated by the formal features [±a] and [±c]) are still tied to particular positions in the syntax.

Basing his analysis primarily on Catalan, a language that has been argued to reflect discourse roles transparently in the syntax, López gives an account of four basic structures (18),
differentiated by the distribution of two features: discourse anaphoricity \([±a]\) and contrast \([±c]\). An element is \([+a]\) if it is a strong anaphor, defined as having three properties: “(i) it obligatorily takes an antecedent that (ii) is the subject matter of the previous discourse and (iii) there is a discourse structural asymmetry between antecedent and dependent” (López 2009:15). An element is \([+c]\) if it opens up a variable (López 2009:9). The four structures in question and their feature specifications appear in the examples in Catalan in (18) (López 2009:15).

(18) a. Regular focus – \([-a, -c]\)

Trobo molt maca aquesta samarreta.

\textit{find.1}\textsuperscript{st} very pretty this T-shirt

‘I find this T-shirt very pretty.’

b. Focus Fronting – \([-a, +c]\)

AQUESTA SAMARRETA trobo molt maca.

this T-shirt \textit{find.1}\textsuperscript{st} very pretty

c. Clitic Left Dislocation – \([+a, +c]\)

Aquesta samarreta la trobo molt maca.

this T-shirt Cl.acc \textit{find.1}\textsuperscript{st} very pretty

d. Clitic Right Dislocation – \([+a, -c]\)

La trobo molt maca, aquesta samarreta.

Cl.acc \textit{find.1}\textsuperscript{st} very pretty this T-shirt

In this system, regular focus on a constituent (18a) is a result of that constituent being neither discourse anaphoric nor contrastive. Focus fronting (18b) (which for Rizzi is movement to Spec,Foc) is a result of a constituent being contrastive but not anaphoric. Clitic left dislocation (18c) occurs when the constituent is both anaphoric and contrastive, and clitic right dislocation...
(18d) occurs when the constituent is anaphoric but not contrastive. In this system, then, anything dislocated is anaphoric (18c and d), and anything contrastive is in the left periphery (18b and c). Further, presentational focus is obligatorily in situ, while contrastive focus only appears in the left periphery, and never in situ.

The relevant features are a byproduct of syntactic position. The feature [+c] is assigned to Spec,Fin (where Fin is a functional head directly above TP, as in Rizzi 1997), while the complement of Fin is assigned [-c]. The feature [+a] is assigned to Spec,v, while the complement of little v is assigned [-a]. A consequence of this is that elements that are [+a] must occupy Spec,v. This consequence is of interest to us here because López analyzes Zubizarreta’s (1998) p-movement in Spanish (see section 3.2) in the same way as Clitic Right Dislocation, that is, as [+a, -c]. This means that any p-moved constituent moves to Spec,v, and López provides evidence that this is in fact the case. This is of interest to us here because any attempt to give an account of information structure in Spanish must consider the p-movement facts. I return to this point below.

The two analyses presented in this section locate discourse related movement in the narrow syntax, motivating it by formal features or criteria rather than by another component of the grammar, such as semantics or phonology. Further, in both, particular interpretations are byproducts of syntactic position. One problem that both face is that they do not account directly for the fact that focus and prosodic prominence are related in non-trivial ways (although, (a) they could claim that this is not their problem but rather an issue for theories of prosody, and (b) López does deal with this question briefly, claiming that the relationship is not as direct as is usually assumed). Another issue is that it is not clear how to extend these analyses to English, which makes scant use of movement in its realization of discourse appropriateness and which
relies heavily on stress. Though these approaches provide elegant accounts for Romance, what most concerns us here is the development of a theory that can explain both Spanish and English, as the central goal is to develop a testable system for use with Spanish/English bilinguals.

Having illustrated two methods of accounting for discourse-related movement in the narrow syntax, I now turn to approaches that motivate movement based on the needs of the phonology.

2.3.2. Movement motivated by phonology

In this section, I consider two approaches to discourse-related movement that motivate said movement due to phonological considerations. The first is perhaps the most well-known analysis of information structural word order in Spanish, Zubizarreta’s (1998) monograph, and the second is Szendröi’s (2001) analysis of focus movement in Hungarian, English, and Romance.

In her 1998 monograph, Zubizarreta proposes to explain movement facts from Spanish via a mechanism she calls $p$-movement, for prosodically motivated movement. The central idea is that the requirement that nuclear stress correspond to the most embedded element (the Nuclear Stress Rule) and the requirement that nuclear stress correspond to the focused element (the Focus Prominence Rule) sometimes conflict, in which case, the system resorts to movement to resolve the conflict. Let us examine how this works in detail.

Central to the idea of p-movement is Zubizarreta’s conceptualization of the NSR. Based on data from German and English, Zubizarreta contends that the NSR in fact consists of two parts: the S-NSR and the C-NSR. The S-NSR “establishes prominence in terms of selectional
ordering”, while the C-NSR “establishes prominence in terms of asymmetric c-command” (Zubizarreta 1998:56). She thus formulates the NSR as in (19).

(19) NSR (Zubizarreta 1998:19, ex. 45)

S-NSR: Given two sister categories \( C_i \) and \( C_j \), if \( C_i \) and \( C_j \) are selectionally ordered, the one lower in the selectional ordering is more prominent.

C-NSR: Given two sister categories \( C_i \) and \( C_j \), the one lower in the asymmetric c-command ordering is more prominent.

With this two-part NSR in place, Zubizarreta argues that languages differ with regard to how the NSR applies. Specifically, she says that in German and English, the S-NSR takes precedence, with the C-NSR only applying if the S-NSR cannot, while in French and Spanish, only the C-NSR applies. She further claims that defocalized or anaphoric elements in German, English, and French are metrically invisible, and thus not subject to the NSR, while in Spanish all prosodically realized elements are metrically visible.

The other essential component for the motivation of p-movement is the Focus Prominence Rule (FPR). Building on the Focus Prosody Correspondence Principle proposed by Chomsky (1971) and Jackendoff (1972), Zubizarreta proposes the formulation of the FPR presented in (20).

(20) FPR (Zubizarreta 1998:88, ex. 159)

Given two sister nodes \( C_i \) (marked [+F]) and \( C_j \) (marked [-F]), \( C_i \) is more prominent than \( C_j \).

The consequence of the FPR is that the focused constituent (the constituent marked [+F]), must receive main stress.
Thus, we have two constraints on main stress. The NSR assigns main stress to the constituent lowest in the chain of asymmetric c-command, while the FPR requires that main stress be on the focused constituent. A sentence like (21), then, is well formed, in that the main stress is on the focused constituent and on the lowest constituent according to asymmetric c-command.

(21) [Context: What did Kalyani buy?]

Kalyani compró un [ornitorrinco]$_F$.

Kalyani bought a platypus

However, this need not necessarily be the case. The two rules may conflict. In (22), the NSR assigns main stress to the object, as before, because it is lowest in the tree, but the FPR requires the focused constituent, here the subject, to be most prominent.

(22) [Context: Who bought a platypus?]

# [Kalyani]$_F$ compró un ornitorrinco.

Kalyani bought a platypus

The mechanism proposed to resolve this conflict is p-movement. Zubizarreta formalizes p-movement as follows:

(23) P-movement (Zubizarreta 1998:140, ex. 125)

Affect the nodes $\alpha$ and $\beta$ iff these nodes have contradictory prosodic properties.

She defines contradictory prosodic properties as follows:

(24) Contradictory prosodic properties (Zubizarreta 1998:139)

The nodes $\alpha$ and $\beta$ are analyzed as having prosodically contradictory properties iff two conditions are met: (a) $\alpha$ and $\beta$ are [metrical] sisters and (b) the FPR
assigns main prominence to one node (say, to \( \alpha \)) and the NSR assigns main prominence to the other node (say, to \( \beta \)).

In this formulation “affect” is interpreted as changing the c-command relation, that is, as movement. Thus, when a conflict arises between the NSR and the FPR, the system resorts to movement to resolve it. Specifically, the defocalized constituent is moved immediately over the focused constituent so that the focused constituent is in position to receive stress from both the FPR and NSR. Therefore, the conflict in (22) is resolved by moving the object over the subject,\(^{10}\) resulting in a construction where both the NSR and the FPR assign main prominence to the subject, as in (25).

\[
\text{(25) [Context: Who bought a platypus?]} \\
\text{Compró un ornitorrinco [Kalyani].} \\
\text{Bought a platypus Kalyani}
\]

In this way, p-movement derives VOS order, with main stress on the subject, which is felicitous in this context.

P-movement does not only occur in the case of a focused subject, though. It can also take place, for example, when the object is in focus. In broad focus, the neutral SVOPP order is felicitous while SVPPO is not, as in (26). Yet when the focus is narrow on the object, as in (27), the neutral SVOPP word order (27a) results in a conflict between the NSR and FPR, as before. This is resolved via p-movement, resulting in SVPPO order (27b).

\(^{10}\) Actually, Zubizarreta explains the specifics of this movement slightly differently, but it is not relevant to the present discussion.
(26) [Context: What happened?]
   a. [Ana escondió la muñeca debajo de la cama].
      Ana hid the doll under the bed.
   b. # [Ana escondió debajo de la cama la muñeca].

(27) [Context: What did Ana hide under the bed?]
   a. # Ana escondió [la muñeca] debajo de la cama.
      Ana hid the doll under the bed.
   b. Ana escondió debajo de la cama [la muñeca].

Regarding the question of where p-movement applies, Zubizarreta concludes that it applies in the syntax, before Spell-Out. P-movement feeds the NSR, which applies at the end of the syntactic derivation. She explains it thusly: “P-movement … applies in structures where the NSR and the FPR give rise to prosodically contradictory output. P-movement undoes such structures, after which the NSR and the FPR may apply again, this time giving a felicitous result” (Zubizarreta 1998:145).

The formulation of p-movement does suffer from some problems, though. One conceptual critique of the formulation of p-movement is that it exhibits look ahead. As pointed out by López, p-movement “must take place in narrow syntax, even though its motivation involves only the syntax-phonology interface – it is therefore a syntactic operation that presupposes a computational system with considerable look ahead” (López 2009:140), a problem which Zubizarreta acknowledges. There are also some empirical questions. López (2009) shows that Zubizarreta’s analysis of p-movement taking place in order to resolve a conflict between the NSR and FPR cannot explain complex examples like (28), reproduced from López (2009:140, ex. 25).
(28) a. Le di a mi hermana dos pimientos para mi madre.

Cl.dat gave.1st.sg DAT my sister two peppers for my mother

‘I gave my sister two peppers for my mother.’

b. Le di dos pimientos a mi hermana para mi madre.

(28a) would be a felicitous answer to the question “For whom did you give your sister two peppers?” Here, the NSR and the FPR both place stress on madre ‘mother’. In (28b), which could be an answer to “What did you do with the two peppers?”, the same is true – madre is selected to receive main stress by both rules. Yet in (28b) there is movement, which cannot be explained in terms of p-movement, as it is obviously not the result of an NSR/FPR clash.

Turning now to another analysis that bases movement on prosodic needs, I examine Szendrói’s (2001) account of movement in Hungarian. Like Zubizarreta, Szendrói proposes that movement takes place motivated by prosody and that, crosslinguistically, focus is always marked by main stress. Unlike p-movement, which moves a given element out of a position of main stress to resolve a conflict between the NSR and FPR, Szendrói proposes that movement takes place in order to move the appropriate constituent to the spot where it can get main stress.

In Hungarian, focus has traditionally been analyzed as being marked by word order variation, but Szendrói argues that Hungarian in fact marks focus prosodically, and that the need for the focused constituent to receive main stress motivates the movement that derives the correct word order. She goes on to argue that crosslinguistic variation in focus marking can be explained by an Optimality Theoretic approach of violable ranked constraints with the aim of establishing a unified explanation of focus in Hungarian, English, and Italian.

Szendrói claims that sentences with focus in Hungarian have a unique focus position, in Spec,F (as in Rizzi 1997), and that main stress in Hungarian is leftmost in the iP (which
corresponds to the extended verbal projection). She further assumes, citing Reinhart (1995), that the Stress-Focus Correspondence Principle, which states that “the focus of a clause is a(ny) constituent containing the main stress of the intonational phrase, as determined by the stress rule” (Szendrői 2001:50), applies.

Szendrői’s analysis is that this principle is satisfied in Hungarian by moving a focused constituent so that it is in position to get main stress. Example (29) represents unmarked word order, and stress falls on the verb, which is leftmost in the iP (both the subject and the object are extrametrical topics, and do not receive stress). When the object a kalapját ‘her cap’ is in focus, though, it moves to Spec,F, as in (30). We can tell that it moved because the verb has also moved over the verbal modifier le, indicating that the verb has moved to F to project Spec,F, where the object then moves. In this position, the object is in the extended verbal projection, so it is leftmost in the iP, so it receives main stress (the subject is still an extrametrical topic). In this way, Szendrői claims, focused elements move to positions where they will get main stress.

(29)  A nő  a kalapját le vette az előszobában.

the woman her cap.acc off took the hall-in

(30)  A nő  a kalapját vette le az előszobában.

the woman her cap.acc took off the hall-in

The structure Szendrői assumes for cases of focus movement like (30) is the tree in (31). In this tree, VM stands for verbal modifier, and topics are left-adjoined to VP or FP and are extrametrical.
Szendrői claims that this movement is a Last Resort movement and that it is allowed only to make available otherwise unavailable interpretations. Szendrői claims that prosody affecting syntax in this way is possible because the architecture of the grammar is such that these two components can interact, mediated by mapping rules, *contra* the Principle of Phonology-Free Syntax (Miller et al. 1997).

After presenting her account of Hungarian, Szendrői goes on to discuss crosslinguistic variation. She claims that a language is a set of well-formed expressions consisting of pairs of syntactic and prosodic representations. These pairs can be evaluated on three axes: syntactic well-formedness, prosodic well-formedness, and the mapping between syntax and prosody. An utterance can satisfy all three, or there can be a mismatch at some point. When there is a mismatch, languages differ regarding how it is resolved, and these differences can be resolved by an Optimality Theoretic ranking of constraints. Szendrői groups the constraints of each type into blocs, i.e., SYNTAX, PROSODY, and MAPPING. She argues that English ranks SYNTAX and MAP equally high, above PROSODY, while Hungarian has the ranking MAP >> PROSODY >> SYNTAX, and Italian has PROSODY >> SYNTAX >> MAP. This captures the intuition that English sacrifices canonical prosody for focus but keeps canonical word order, while Romance sacrifices canonical...
word order but keeps canonical prosody. Szendrői’s OT proposal is more limited than others (see below), though, in that she takes the Stress-Focus Correspondence Principle, and some other similar principles of interpretation and well-formedness, to be universal, and does not account for them within her model of constraint conflict. Also, Samek-Lodovici (2005) presents evidence from French that constraints related to different modules can and do intermingle, as opposed to Szendrői’s approach of keeping them in separate blocs.

2.4. Optimality Theoretic Approaches

The last category of approaches to information structure that need to be examined are those developed using Optimality Theory (Prince & Smolensky 1993/2004). These theories could be plausibly placed in the previous section, since each takes a prosody-centered view of focus realization, but I have separated them out due to their use of the particular theoretical paradigm (OT) on which I base the model developed in the next section. These approaches are further distinguished in that they attempt to account for movement and prosodic structure in one system, as opposed to, e.g. Szendrői, who argues for prosodically-motivated movement under a Reinhartian system of reference sets to explain movement facts in Hungarian and then turns to a more limited OT explanation of crosslinguistic variation.

Büring and Gutiérrez-Bravo (2001), Gutiérrez-Bravo (2002), and Samek-Lodovici (2005) present prosody-based OT analyses of focus realization in various languages. In each case, they begin by noting how syntactic and prosodic constraints on well-formedness come into conflict when realizing focus in contexts other than broad focus. They claim that different languages

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11 Though there is some evidence that they are not universal, as in (i), where the focus and stress do not correspond. I will argue in Chapter 3 that focus-stress correspondence is in fact a violable constraint for some speakers.

(i) [Context: My office is on the fourth floor. Which floor is your office on?]  
Mi oficina está en la [primera] planta.  
My office is on the first floor.
resolve this conflict differently, Spanish sacrificing canonical word order and English sacrificing canonical prosody. Clearly, though, each of these languages (and others) are subject to the same constraints; that is, both languages share the need to be prosodically and syntactically well-formed, and the difference is in the relative ranking of the constraints. This theme of conflict between constraints (or interfaces or reference sets) has surfaced repeatedly in the survey of different theories laid out above. Obviously, Zubizarreta’s p-movement, caused by a conflict between the FPR and the NSR is such a case; Szendrői also proposes movement that arises due to conflict. Over and over, analyses of information structure return to a conflict model. A principled theory of conflict resolution such as Optimality Theory seems, then, particularly well suited to analyzing information structure.

Another advantage of using OT to analyze focus realization is that it eliminates the question of the motivation of movement, as well as the Look Ahead problems of those theories that motivate syntactic movement due to requirements of the interfaces. Much of the research on information structure has focused on the interfaces within the Y-model of the grammar as a computational system that builds derivations via Merge and delivers them to the interfaces. However, a phenomenon such as focus seemingly constantly requires the derivation to double back on itself, start over, or know what’s coming ahead and adjust accordingly. This is problematic. Further, focus seems to involve all the components of the grammar in some way in its realization, which is again problematic for the standard Y-model. OT analyses avoid these problems, employing a principled system for evaluating structures based on ranked constraints, which may be drawn from any component.

In OT, a generator (GEN) produces all possible derivations from some input, and an evaluator (EVAL) compares them using ranked, violable, universal constraints on well-
formedness and faithfulness to determine the optimal candidate. The optimal candidate is the one which violates fewer or lower-ranked constraints when compared to the other candidates, and which is thus determined to be grammatical (or felicitous) while the others are ungrammatical (or infelicitous). Crosslinguistic variation is accounted for by different constraint rankings, thus eliminating the need for language-specific parameters.

A further advantage of OT analyses is that they can provide a unified analysis of information-structural phenomena. One potential criticism of theories that motivate discourse-related movement in the narrow syntax, such as López (2009) and Rizzi (1997), is that they do not account for the relation between focus and main stress, and one problem with theories that seek only to relate prominence to discourse status, such as Selkirk (1995) and Reinhart (2006), is that they do not account for movement facts; OT analyses, by referencing syntactic, prosodic, and semantic constraints, can present a unified account of the issue. Additionally, such formulations allow for a “genuinely prosodic account of stress” (Büring & Gutiérrez-Bravo 2001:44), thus avoiding the problem of “a radical dissociation of main stress from prosodic structuring, against a wealth of well-established studies tying stress to prosodic constituency” (Samek-Lodovici 2005:690), which arises when the position of main stress is derived from the syntax, while still retaining the insight that focus, main stress, and syntax are connected, and that the position of main stress is involved in determining the syntactic structures that felicitously realize particular types of focus.

In sum, then, there are several arguments for modeling focus realization using Optimality Theory. OT approaches avoid many of the problems that plague other approaches, while accounting for the complex nature of focus realization and providing a principled account of crosslinguistic variation. Of course, such approaches are not without their criticisms, but I would
argue that OT analyses have a number of advantages in explanatory adequacy and empirical coverage.

Having commented on some general aspects of OT approaches to focus realization, I now turn to an overview of two particular approaches that will be relied on heavily in creating my own OT model in Chapter 3: Büring and Gutiérrez-Bravo (2001) and Samek-Lodovici (2005). These studies share several features, and so I will cover them together. Büring and Gutiérrez-Bravo examine broad focus and narrow subject focus in Spanish, English, and German. Samek-Lodovici covers Italian, English, French, and Chichewa. Gutiérrez-Bravo (2002) also looks at Spanish and English, but his work with Büring is more articulated, and so I omit this particular study from in-depth coverage.

Both Büring and Gutiérrez-Bravo (2001) and Samek-Lodovici (2005) approach focus realization in an OT framework from a perspective that emphasizes the role of prosody. In line with a long tradition, they contend that “focus marking … is inevitably realized by prosodic prominence, in particular stress” (Büring & Gutiérrez-Bravo 2001:44). Thus, “[t]he difference between focus marking between, say, English and Spanish is not ‘prosodic prominence versus syntactic position’, but rather ‘prosodic prominence in situ versus prosodic prominence in a specific position’” (Büring & Gutiérrez-Bravo 2001:44, emphasis in original). Both studies thus adopt a constraint, which is undominated, requiring that focus and main stress coincide, which Büring and Gutiérrez-Bravo call FOCUSPROMINENCE and Samek-Lodovici calls STRESS-FOCUS, which is in line with the many principles calling for stress-focus correspondence, as mentioned in section 2.2.2.

Syntactic structure must be accounted for as well, and thus both studies adopt constraints that require sentences to have subjects, and Samek-Lodovici also adopts a constraint penalizing
movement (STAY). These syntactic well-formedness constraints come into conflict with well-formedness constraints on prosodic structure.

The prosodic constraints come in two types: those that govern the mapping of syntactic structure to prosodic structure, and those that govern the placement of stress. Regarding the mapping constraints, Samek-Lodovici uses the independently motivated constraints from Truckenbrodt (1995), \textsc{Wrap}, which requires all lexical XPs to be contained in a pP, and \textsc{StressXP}, which requires all lexical XPs to contain the head of a pP. These constraints work together to limit the size of pPs, as well as to provide for the fact that internal arguments are (at least in English and Italian) in the same pP as the verb. Büring and Gutiérrez-Bravo go a slightly different route, introducing new constraints with similar effects, but the overall idea is the same. They provide for the correspondences between syntactic and prosodic structures, correctly deriving the observed prosodic phrasing.

The second type of prosodic constraint governs stress placement. In essence, both papers present similar constraints requiring stress to be rightmost at the iP level. At the pP level, Büring and Gutiérrez-Bravo make reference to syntactic structure, with a constraint requiring that arguments be more prosodically prominent than their predicates (necessary for their analysis of German), while Samek-Lodovici just requires pP stress to be rightmost as well (a constraint he calls H-P). Another difference here is that Samek-Lodovici’s constraints are violated once for each step the head of a prosodic phrase is away from the phrase’s right edge, while Büring and Gutiérrez-Bravo’s are violated categorically. This formulation of main stress is important for Samek-Lodovici’s analysis of rightward, but not rightmost, stress on Italian focused quantifiers.

In analyzing focused quantifiers in Italian, Samek-Lodovici also introduces a constraint called T-Gov, which requires that all traces be properly governed and has the effect of not
allowing a pre-nominal modifier to move rightmost to receive main stress. This will be discussed more in the next chapter, but it is worth mention in that this syntactic constraint must outrank some prosodic constraints, which in turn outrank other syntactic constraints, which causes Samek-Lodovici to conclude, contra Szendrői, that prosodic and syntactic constraints can intermingle, as mentioned previously. He further augments this idea with his analysis of French, where the constraints of the different components of the grammar mix as well.

Of the two, Samek-Lodovici’s analysis has greater empirical coverage, in terms of both the languages and the discourse contexts he considers, yet he does not examine Spanish. One additional wrinkle when accounting for Spanish is that, according to Büring and Gutiérrez-Bravo, in Spanish, each prosodic word corresponds to its own phonological phrase, as mentioned in section 2.2.1.1. They state that evidence for this position can be found in that “in Spanish every prosodic word receives an accent (Fant 1984; Sosa 1991, 1999; Face 2000)” (Büring & Gutiérrez-Bravo 2001:53). In order to account for this, they introduce a constraint called PRWD=PP, which aligns each prosodic word with a pP. It is not clear what justification there is for such a constraint, other than needing it to account for Spanish prosodic phrasing. Unlike the other prosodic constraints both Büring and Gutiérrez-Bravo and Samek-Lodovici present, this has no outside justification and appears to be language-specific, which should be avoided when proposing universal constraints to add to EVAL. Nonetheless, some constraint that will accomplish the effect of parsing every PWd into a pP is necessary to account for the Spanish facts. I will return to this point in Chapter 3.

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12 This formulation of Spanish prosody is not uncontroversial. Prieto (2006), for example, found production data indicating that pPs could be parsed in a number of ways, including (S)P(VO)P, (SV)P(O)P, and (SVO)P, with (SVO)P the most common in rapid speech.

13 Of course, it is possible that this constraint is universal but ranked low. In Chapter 3, I argue that there is a better solution, accounting for the Spanish phrasing facts using alignment constraints, which are independently motivated.
In conclusion, Büring and Gutiérrez-Bravo (2001) and Samek-Lodovici (2005) provide an OT account of focus realization that emphasizes the conflict between prosodic and syntactic well-formedness. Though they are not without their faults, both papers convincingly argue for the superiority of an OT model in accounting for focus, and they introduce a set of constraints that can successfully account for a range of languages and phenomena. I will return to some of the specifics of these papers in Chapter 3.

At this point, I have covered the main relevant issues regarding modeling focus realization. This discussion was necessary to understand the present work, and to contextualize the theoretical model laid out in Chapter 3. Having presented this background, I turn now to the second main component of this study, heritage speakers of Spanish, with an overview of some of the relevant research and an argument for why it is particularly appropriate to study their realization of focus.

2.5. **Heritage speakers**

The second main goal of this study is to shed light on the structure of heritage grammars and on the processes affecting their development. As such, this section gives a brief overview of the research related to heritage speakers and their grammars.

Spanish is the most commonly spoken language other than English in the United States. Of the 42 million U.S. Latinos, approximately 70% speak Spanish at home, and 60% were born in the U.S. (Potowski & Carreira 2010). Among these U.S.-born Latinos, many learn Spanish as a first language at home, and these Spanish speakers are often referred to as heritage speakers of Spanish. A heritage speaker is commonly defined as someone “raised in a home where a non-English language is spoken, who speaks or merely understands the heritage language, and who is
to some degree bilingual in English and the heritage language” (Valdés 2000:1). “Such individuals usually end up functionally bilingual, but dominant in the majority language in which they were schooled” (Potowski & Carreira 2010:73). These speakers often develop grammatical systems in their heritage language that are different from those of monolingual speakers, showing evidence of attrition or incomplete acquisition. Outcomes can range from very reduced, emblematic Spanish to more monolingual-like grammars (a bilingual continuum, according to Silva-Corvalán 1991), and a variety of sociolinguistic factors affect the development of these bilinguals’ Spanish.

The linguistic systems of heritage speakers are different than those of monolingual Spanish speakers. Often, these systems evidence simplification or loss of particular grammatical features, such as the tense/mood/aspect system (Montrul 2002, 2007; Silva-Corvalán 1991, 2003), agreement (Anderson 1999, Montrul et al. 2008; Montrul & Potowski 2007; Sánchez Sadek et al. 1975), the realization of unaccusativity/unergativity (Montrul 2005b), object marking (Montrul & Bowles 2010), semantic and pragmatic factors relating to argument expression (Montrul 2004), as well as changes to the lexicon. This simplification has been attributed to incomplete acquisition of Spanish (Montrul 2002, Silva-Corvalán 2003, Zentella 1997), attrition of Spanish (Anderson 1999, Merino 1983, Sánchez Sadek et al. 1975), complete acquisition of a contact variety, and transfer/interference from English, among other causes.

It is the consensus, then, that various aspects of the grammatical systems of heritage speakers are different than, or reduced compared to, those of monolinguals, even if there remains some debate as to why. In particular, there is evidence that heritage speakers differ from monolinguals in terms of phenomena regulated by the interfaces of syntax with other linguistic systems, which is an extension of the Interface Hypothesis to heritage speakers. There is also
evidence that interface phenomena, like focus, are especially susceptible to contact-induced change. For both of these reasons, it is valuable to study focus in heritage speakers. Furthermore, there exists a debate about the extent to which heritage speaker grammars resemble those of first language (L1) speakers of Spanish and those of second language (L2) learners of Spanish. Each of these issues is addressed in turn in the next three subsections.

2.5.1. The Interface Hypothesis

The Interface Hypothesis was first proposed by Sorace and Filiaci (2006) for second language learners, and they proposed that “language structures involving an interface between syntax and other cognitive domains are less likely to be acquired completely than structures that do not involve this interface” (Sorace 2011:1). This hypothesis has been extended to heritage speakers by Montrul and others, who argue that, despite Sorace’s claim that including heritage speakers is a “misinterpretation” of the IH (Sorace 2011:26), “heritage speakers are not only relevant to the IH, but also an important testing ground for it” (Montrul & Polinsky 2011:60). In fact, Montrul and Polinsky (p. 59) note that “several studies have shown that null/overt subjects, the phenomenon on which the IH has mainly focused, are also highly affected in heritage language speakers of Spanish (Montrul 2004, 2006) and other languages (Polinsky 1997) in ways that are consistent with the IH.”

For instance, Montrul (2004) found that heritage speakers had not acquired pragmatic constraints on subject and object expression, though their syntax was unaffected. In fact, heritage speakers differed significantly from monolinguals in the expression of null and overt subjects, which is “not regulated by purely syntactic agreement and tense features, but by pragmatic features related to topic and focus” (Montrul 2004:137). Interestingly, most of the differences
were pragmatically illicit uses of null subjects, not redundant overt subjects, which runs counter to the idea that they are influenced by English, a language with obligatory overt subjects. Montrul further found differences from monolinguals in the use of the animate direct object marker *a* and in the use of clitic doubling with inalienable possession, two features “regulated by semantics” (Montrul 2004:137), while at the same time heritage speakers “displayed robust and resilient knowledge of dative and accusative clitics” (ibid.:137). In these cases, again, heritage speakers showed considerable proficiency with constructions regulated purely by syntax, while showing greater variability with constructions that interface with the conceptual component.

There is evidence, then, that the IH can apply to heritage speakers—heritage speakers show the same type of optionality and variability with interface constructions that L2 learners do. This is relevant for our purposes here because focus is an interface phenomenon, and thus we would expect heritage speakers to differ from monolinguals in how they realize focus. Finding a difference between monolinguals and heritage speakers in how they realize focus would thus constitute evidence for the IH as applied to heritage speakers. However, the present study did not find differences between these two groups in realizing focus, and thus does not supply additional evidence for the IH (though neither does the present study falsify it).

One additional wrinkle should be pointed out before continuing. Sorace (2011) argues that there is a distinction between *internal* and *external* interfaces, where internal interfaces are between linguistic subsystems while external interfaces are between linguistic systems and non-linguistic modules of the mind, and claims that focus pertains to these internal interfaces. She further argues that the internal interfaces are not the subject of the IH. Thus, Sorace might argue that presentational focus is not subject to the IH. However, Slabakova (2011) and Tsoulas and Gil (2011) argue convincingly against this position, arguing that “if bilinguals have problems
with the pragmatic status of the antecedents of pronouns, they should also have problems with Focus and Topic without distinction” (Tsoulas & Gil 2011:105, emphasis in original). I concur with this latter position, as it seems clear to me that focus is an interface phenomenon that is subject to the IH. Nonetheless, I recognize that the results of the present study are consistent with a version of the IH that distinguishes between two types of interfaces and situates focus at the internal interfaces.

2.5.2. **Contact-induced language change**

Montrul’s work supports a generalization by Silva-Corvalán that the syntax itself is “remarkably impermeable to foreign influence” (Silva-Corvalán 1994:166), while the syntax-pragmatics interface is “more unstable and vulnerable to change” (Montrul 2004:139). For example, Lapidus and Otheguy (2005) found an increase in the use of non-specific ellos ‘they’ in Spanish in New York. This is not a syntactic change, but a contact-induced change in the pragmatic constraints on its use. That is, the core syntax was not effected by language contact, while the interface with pragmatics was. Since focus is an interface phenomenon, we might expect that there will be significant differences in focus marking among heritage speakers, due to contact with English.

It is unclear to what extent any observed difference in bilinguals’ focus marking system could be due to contact with English. As mentioned above, Montrul’s subject expression data shows the opposite of what one would expect if speakers were incorporating pragmatic rules from English. Also, Silva-Corvalán argues that the influence of English on the verbal system of bilinguals is only indirect, rather than the result of direct transfer from English. Nevertheless, she notes that “transfer may play a role once forms have become lost” (Silva-Corvalán
1991:166). So it is possible that bilinguals incompletely acquire the Spanish focus marking system, and then rely on patterns taken from English. Additionally, Lapidus and Otheguy (2005) conclude that the increase in nonspecific *ellos* is “stimulated” by contact with English, and Zentella (1997) postulates that some features of the New York Puerto Rican Spanish she investigates may be influenced by contact with African American Vernacular English.

So, it appears possible that heritage speakers, who often have a reduced system in Spanish, may use some strategies from English to mark focus, or it is possible that contact with English could change the realization of focus in heritage grammars in unpredictable ways. Further, we would expect focus to be more affected than purely syntactic phenomena, due to the fact that it operates at the interfaces. As before with the IH, finding differences between the heritage speakers and the monolinguals in their realization of focus would provide evidence for the idea that interface phenomena are especially susceptible to contact-induced change. As we shall see though, the present study does not provide evidence for this proposal either, because the two groups did not differ significantly.

### 2.5.3. Are heritage grammars like L1 or L2?

Though Spanish is the L1 for most heritage speakers, their grammars often fall somewhere in between those of L1 speakers and L2 learners, resembling the former in some aspects and the latter in others. Researchers have found that heritage grammars can resemble L1 Spanish sometimes (Montrul 2005b, 2006; Montrul et al. 2008; Potowski 2004, 2007), while in other cases they resemble the L2 Spanish of L1 English speakers (Montrul 2002, 2005a; Montrul and Bowles 2010, Montul & Potowski 2007).
If heritage Spanish sometimes resembles the L2 Spanish of learners, it is worth considering what the acquisition of information structure looks like with L2 learners. As we have seen, there is ample evidence that L2 learners have problems with interface phenomena broadly put. Though no studies that I am aware of look at the full range of focus marking in L2 Spanish, several studies that examine discourse-related word order in L2 Spanish (Hertel 2003; Lozano 2003, 2006a, 2006b; Lozano & Mendikoetxea 2009) show that learners have persistent difficulty acquiring discourse-related word order variations, while syntactically conditioned word order variations (SV versus VS order with unaccusatives/unergatives) are more easily acquired, in line with the IH.

If heritage speakers sometimes resemble L2 learners, and L2 learners have difficulty acquiring discourse-conditioned word order, we might expect that heritage speakers will also evidence difficulty or variability in realizing focus. Finding that heritage speakers differ from monolinguals in their focus realization and show such optionality would constitute evidence that they are more like L2 learners in this way. Finding that heritage speakers do not differ from monolinguals, though, would indicate that heritage speakers are not like L2 learners when it comes to realizing focus, and, in fact, the present study found that heritage speakers did not differ from monolinguals. The results of my experiment show that heritage speakers did not resemble L2 learners in realizing focus, but rather that their grammars were similar to those of L1 (monolingual) speakers.

2.6. **Previous experimental work on focus**

Compared to other research areas in linguistics, relatively few experimental studies have been conducted on information structure. Of those studies that do conduct empirical research on
discourse-pragmatic or information-structural phenomena, none is like the present study in all respects, though several have components that I draw on in the design described in Chapter 4.

As previously mentioned, several studies consider acquisition of discourse-related word order by learners (Hertel 2003; Lozano 2003, 2006a, 2006b; Lozano & Mendikoetxea 2009). These studies focus on the acquisition of SV versus VS word order with unaccusative and unergative verbs in Spanish, concluding that learners have difficulty with discourse-conditioned word order variations, acquiring them late, and that “discursive properties operating at the syntax-information structure interface (like presentational focus) are persistently problematic in second language acquisition” (Lozano 2006a:22). Hopp (2009) also looks at learners, examining acquisition of German scrambling. He concludes that convergence is possible for learners, i.e. that L2 learners can acquire target-like representations of the syntax-discourse interface, and that those cases where there is non-convergence are due to the processing difficulties posed by discourse-related word order variations, not representational deficits.

German, Pierrehumbert, and Kaufmann (2006), Keller (2000), and Keller and Alexopoulou (2001) all test native speakers on some information structural issue in order to further develop OT models of information structure, similar to the present study. Keller and Alexopoulou (2001) deserves special mention, as it has informed the design of the present study significantly. Keller and Alexopoulou tested native speakers of Greek in two experiments designed to verify an OT analysis of IS in Greek. In the first, they used a written judgment task to examine the effects of word order and clitic doubling in particular contexts on sentence acceptability. In the second, they also considered the role of main stress, presenting auditory stimuli for judgment. They found that, in “Greek, a standard example of a language exploiting word order for discourse purposes … word order plays a secondary role, whereas accent
placement, as in English, is the most significant cue for signaling the focus-ground partition” (Keller & Alexopoulou 2001:359).

Finally, four other studies deserve special mention because they also question the consensus on focus in Spanish, finding that canonical word order is maintained even under narrow focus.

Gabriel (2007, cited in Gabriel 2010)\textsuperscript{14} collected both “semi-spontaneous data” and acceptability judgments from 18 speakers of a variety of Spanish dialects. In the production data, he found that speakers produce canonical word order with stress on the subject (*S*VO)\textsuperscript{15} in subject focus contexts 100% of the time. This is a clear case against the consensus that Spanish realizes the focus sentence–finally; these speakers always produced the focused subject with stress in situ. In the judgment data, though, all but one speaker rated the sentence-final subject (VO*S*) to be acceptable, indicating that this is also an option in their grammars. When narrow focus was on a direct object, they produced a structure with the object sentence-final (SVPP*O*) the majority of the time, producing the option with movement, and 80% of participants also preferred it in the judgment task. However, stress in situ (SV*O*PP) “was also rated as being acceptable, though to a lesser extent’’ (Gabriel 2010:189). Gabriel concludes “that the mechanisms of syntactic focus marking, i.e. the use of a particular syntactic construction in a given pragmatic context, are governed by strict rules to a lesser degree than suggested in much of the literature” (ibid.:189).

A similar conclusion is reached in a later study (Gabriel 2010), in which 50 participants from two areas of Argentina completed an elicited production task. As before, when focus was on the subject, these participants produced canonical word order with stress on the subject in situ

\textsuperscript{14} I report here the summary of Gabriel (2007) that is presented in Gabriel (2010).

\textsuperscript{15} Here, S = subject, V = verb, O = object, and PP = indirect object prepositional phrase, while the asterisks indicate the constituent with main stress.
(*S*VO), though 5% of the time they produced the sentence-final variant (VO*S*). As before, with object focus, there was more variability. These speakers produced stress in situ (SV*O*PP) the majority (73-83%) of the time but also produced the object-final word order (17-27%). Furthermore, Gabriel documents a range of strategies to mark focus, and notes that all strategies (stress in situ, syntactic movement, focus fronting) are available both for narrow presentational focus and contrastive focus. Clearly, this work presents evidence against the most common view that focus in Spanish is always realized sentence-finally that I have laid out above. As mentioned in Chapter 1, the results of the present study concur with Gabriel’s conclusions that the data on focus in Spanish is more complex than commonly assumed.

Muntendam (2009) also finds data that contradicts the consensus view, in a study of Spanish/Quechua bilinguals in the Andes that included both elicitation and acceptability judgment tasks. In subject focus contexts, monolingual Spanish speakers from several different dialects accepted SVO word order\(^\text{16}\) 100% of the time and VOS order 50% of the time, and the Spanish/Quechua bilingual speakers accepted SVO 100% of the time and VOS 70% of the time. In object focus contexts, both groups accepted SVO 100% of the time. Surprisingly, they both also accepted all other orders more than 50% of the time in object focus contexts, including VOS, OVS and clitic left dislocation of the object. Again we must conclude that the data on focus is more complex than previously thought, and further experimental work in this field is needed. As previously noted, one of the aims of this thesis is to contribute in precisely this manner by expanding the database on focus in Spanish.

Finally, Leal-Méndez and Shea (2012) conducted three experiments with native speakers of Mexican Spanish and L2 Spanish learners. In a judgment experiment, the monolinguals rated VOS order higher than VSO order when the subject was in focus, but they were not given the

\(^{16}\) Muntendam does not include information about stress.
option of SVO. They also rated VPPO order and VOPP order similarly when focus was on the direct object, much like the results of the present study. In a production task, when the focus was on the subject, the monolingual speakers produced SVO order with stress on the subject 90.25% of the time. Finally, in a forced choice listening identification task, in which participants heard a sentence and then had to decide what question the sentence answered, the monolinguals showed SVO order to be compatible with questions putting the focus on the subject. The data from the experiments in this study, as well as the other studies mentioned in this section, thus clearly challenges the consensus on focus in Spanish, and the present study contributes to the field in the same vein.
3. AN OPTIMALITY-THEORETIC MODEL OF FOCUS REALIZATION IN SPANISH AND ENGLISH

3.0. Introduction

In this chapter, I develop an Optimality-Theoretic model of focus realization in Spanish and English. I argued in the previous chapter that a principled theory of conflict resolution via ranked, violable constraints, such as Optimality Theory (Prince & Smolensky 1993/2004), is particularly well suited to explaining how sentences must adapt to the discourse context. In this chapter, then, I develop a model of this sort, drawing on the insights of previous approaches, especially Samek-Lodovici (2005), Büring and Gutiérrez-Bravo (2001), and Truckenbrodt (1999), but also expanding the model to cover cases that have not been considered in such approaches before. This model is then tested experimentally (see Chapter 4).

The theoretical proposal made here is based primarily on the data in the literature (especially Büring & Gutiérrez-Bravo 2001; Domínguez 2004a, 2004b; Gutiérrez-Bravo 2002, 2008; and Zubizarreta 1998). It does not reflect the results of the experiment. That is because the purpose of this chapter is to build a model that accounts for the consensus view of the data in Spanish and English and that can then be tested experimentally. In other words, the idea behind this chapter is to take the data in the literature and build a theory that gives an account of it and adds some new contributions, and then to test the theory in the experiment. The fact that the experiment found that the data for the speakers investigated here is not the same as the data in the literature does not diminish the utility of the theoretical model, which still contributes some new findings and informs the experiment design. To be clear, then: The model developed here is based on data that is the received opinion for Spanish and English, not the results of the
experiment, and what I present in this chapter as being the case for Spanish is based on the consensus view in the literature; these are not my claims for Spanish. This is made more explicit in section 3.1.1, but it needed to be made clear from the outset.

This chapter is structured as follows. First, in section 3.1, some comments about the data used here are made, a sketch of the analysis is given, and some assumptions are made explicit. Next, in order to get to the analysis of focus, the constraints are introduced in sections 3.2 through 3.6. The constraints are introduced along with data on the canonical case of broad or sentence-wide focus. The presentation of the constraints also includes a more extended discussion of the syntax-prosody mapping of Spanish and English (section 3.3), necessary to account for the different prosodic structures in Spanish and English. Though the mapping constraints serve as background to the analysis of focus, this section contains the novel claim that prosodic structure in Spanish is determined via left alignment of XPs to pPs. Once all the constraints are in place, an account is given of narrow subject focus (section 3.7), narrow object focus (section 3.8), and narrow focus on nominal modifiers (section 3.9). Each section presents the data (generally taken from the literature, as discussed in section 3.1.1) appropriate for the discussion in that section. The section on nominal modifiers presents data that has not, to my knowledge, been previously considered in Spanish, as well as the novel proposal that constraints on prosodic well-formedness outrank the constraint on stress-focus correspondence. Section 3.10 lays out the final ranking of constraints and discusses those constraints that are unranked relative to one another. In section 3.11, I make empirical predictions based on the model developed in previous sections that can be tested experimentally. Finally, section 3.12 concludes.
3.1. Preliminaries

3.1.1. The data set

Before presenting the analysis, a more thorough note should be made about the data included here. The data regarding focus and stress in English comes from the literature and from my own judgments as a native speaker of American English. The data on prosodic phrasing in Spanish comes from the sources cited when it is introduced. The data on broad focus, narrow subject focus, and narrow object focus structures is based on the consensus view in the previous literature (see, *inter alia*, Bolinger 1954-1955; Büring & Gutiérrez-Bravo 2001; Casielles 2004; Contreras 1978; Costa 2001; Domínguez 2004a, 2004b; Gutiérrez-Bravo 2002, 2008; Zubizarreta 1998). Specifically, in the data that follows, I assume the most commonly held view that Spanish requires rightmost stress and that focused constituents are thus realized in rightmost position where they also receive stress. I take the consensus view as a starting point from which to build an analysis precisely because this view is the consensus, and it is necessary to account for the data in the literature in order to be able to compare my model with previous approaches. However, as I have previously pointed out, some recent data (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2009) shows that this view may need to be revised, in that Spanish speakers do use stress shift to mark focus, and this is also what my experiment found (and, further, this data can be accounted for within the model built here via constraint re-ranking, as discussed in Chapter 5).

Nonetheless, my intent here was to build a model based on the predominant view in the literature which could capture the movement and stress facts as they are most commonly claimed to be, and then to use this model to inform the experiment. It is for this reason that, in what
follows, I present data in line with the majority of previous studies on focus in Spanish, rather 
than data taken from the minority view to which I eventually contribute. Thus, when I say in this 
chapter that “Spanish” behaves a particular way, this should be interpreted as “Spanish is 
commonly claimed to behave a particular way.” In some cases I make this fact explicit in order 
to avoid confusion, but including that caveat every time I discuss the data could become tedious.

Regarding the data on focus on pre-nominal modifiers, e.g. (5) and (6) below, this is new 
data that I present here for, as far as I am aware, the first time. It should be pointed out at the 
outset, though, that not all speakers agree with these judgments, that in fact some reject the 
judgments in (5) and (6) strongly, and that I did not find evidence of this structure in the 
populations studied here. Despite this, though, this data, provided by a speaker of Peninsular 
Spanish, does represent the mental grammars of at least some subset of Spanish speakers. I am 
not claiming that this data represents all or even most Spanish speakers, and it may be restricted 
to particular dialects or even particular speakers, though this variation has not been studied.

If this data may not represent most Spanish speakers and is from a speaker of a different 
dialect than the one examined here, why include it at all? The reason is that it is an especially 
interesting case that leads to revisions of the theory that would otherwise be unavailable. In 
particular, as mentioned below, the fact that stress and focus fail to correspond yet the sentence is 
still felicitous and the subject still appears sentence-finally leads me to propose a reformulation 
of the constraint on stress-focus correspondence. Without a case like this one, which, it bears 
repeating, does represent the mental grammars of at least some Spanish speakers and is thus a 
variety of natural language from which it is valid to draw conclusions about the formulation of 
universal constraints, this new analysis would not be possible. It is valuable to include this data, 
then, because it allows for a novel argument to be made about stress-focus correspondence.
Furthermore, this data informed the experiment design. Having proposed a new constraint on stress-focus correspondence, I set out to test it as part of the experiment, in order to see whether the participants in this study would have the same judgments or not, and in order to empirically test the analysis I made.

In conclusion, for most of the data presented in this chapter, I take the previous literature as a starting point to build an analysis in order to have maximum comparability with previous studies and a base from which to construct the experiment. For new data on pre-nominal modifiers, I include data that not all Spanish speakers agree with because it is a particularly interesting case allows for novel analyses to be made.

Having made clear the sources of data on which this chapter draws, I now present a brief sketch of the analysis.

3.1.2. Sketch of the analysis

The central problem this chapter addresses is how to account for discourse-related stress and word order variations. I present an analysis in which constraints on prosodic well-formedness conflict with constraints on syntactic well-formedness, in line with previous approaches. In general, based on previous research, I claim that Spanish sacrifices syntactic well-formedness to maintain canonical prosodic structure, while English sacrifices prosodic well-formedness to maintain canonical syntactic structure. The most common example of this is narrow subject focus.
(1) [Context: Who bought a platypus?]

a. [Kalyani]F bought a platypus.

b. Compró un ornitorrinco [Kalyani]F.

Bought a platypus Kalyani

Assuming a constraint which requires focus and stress to correspond, called FOCUSPROMINENCE (FP), English (1a) violates a constraint requiring rightmost stress, while satisfying a syntactic constraint requiring an overt subject. Spanish (1b) violates the constraint requiring an overt subject while satisfying the prosodic constraint on rightmost stress.

A similar analysis is proposed for narrow stress on an object.

(2) [Context: What did Lori sell to Meghanne?]

a. Lori sold [a hedgehog]F to Meghanne.

b. Lori le vendió a Meghanne [un erizo]F.

Lori Cl.dat sold to Meghanne a hedgehog

Again, English (2a) sacrifices canonical prosody by shifting the stress rather than violating a syntactic constraint militating against unnecessary movement. Spanish (2b) violates the syntactic constraint by employing movement, while satisfying the prosodic constraint on rightmost stress.

In addition to accounting for the movement and stress facts, there is another important piece of the puzzle. In order to derive the appropriate prosodic structures for the realization of main stress, constraints on the mapping of syntax to prosody are also proposed. These constraints must account for the facts that (a) English phrases the verb with one of its arguments, but not both, (b) English puts pP-level stress on the argument and not the verb, and (c) Spanish phrases each prosodic word in its own pP. We see prosodic structures like (3) and (4).
In order to account for these facts, I discuss at some length constraints on the alignment of syntactic XPs and prosodic pPs, as well as constraints relating syntactic constituents to pP-level stress. I argue that prosodic phrasing can be accounted for in terms of alignment in English and Spanish. However, I recognize that English also requires the presence of a constraint that requires that each syntactic XP receive a pP-level stress in order to account for the verb-argument stress asymmetry. Regarding Spanish, I make the novel proposal that prosodic phrasing in Spanish is primarily due to a constraint aligning the left edges of XPs to the left edges of pPs, contrary to previous accounts (Büring & Gutiérrez-Bravo 2001, Prieto 2006). I argue that utilizing such a constraint provides a more theoretically desirable account of the Spanish phrasing facts.

Beyond accounting for the structures in (1) and (2) and the prosodic phrasing in (3) and (4), I also consider some more complex cases that challenge previous work on focus, in particular, cases of nominal modification in Spanish. When pre-nominal modifiers are in narrow focus, some varieties of Spanish appear to be able to violate focus-stress correspondence in order

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17 Here, as in the previous chapter, iP = intonational phrase, pP = phonological phrase, PWd = prosodic word. See section 2.2.1 for more discussion.
to maintain rightmost stress (5). While constraints on main stress have been previously argued to be high-ranked in Spanish, the idea that they may outrank FP is, as far as I’m aware, new.

(5) [Context: How many platypuses did Kalyani buy?]

Kalyani compró [tres]FP *ornitorrincos.*

Kalyani bought three platypuses

These cases are especially interesting when the modified noun is the subject (6). Here, we observe that the subject is post-verbal, even though stress does not fall on the focused element, which is the modifier. That is, stress is rightmost and the structure violates constraints on syntax requiring a pre-verbal subject, despite the fact that this syntactic violation does not result in stress-focus correspondence.

(6) [Context: How many police officers arrested the suspect?]

Arrestaron al sospechoso [tres]FP *policías.*

Arrested the suspect three police officers

In order to resolve this puzzle, I propose a formulation of stress-focus correspondence that is gradient, requiring that main stress be aligned with focus as much as possible, with each ‘step’ away incurring additional violations. This is also a novel finding.

3.1.3. Assumptions

First, I assume that the Generator (GEN) takes as its input a Numeration and the discourse context and produces a number of candidates, which serve as the input to the evaluator (EVAL). These candidates consist of syntactic representations complete with prosodic specifications (in terms of metrical grids), which are then evaluated in terms of the ranked constraints which compose EVAL. These constraints can pertain to any part of the candidates.

18 Though see section 3.1.1 for a caveat about this data.
Contra Samek-Lodovici (2005) and Büring and Gutiérrez-Bravo (2001), I do not assume that F-marking comes as part of the input (see section 3.5), but rather I derive it in EVAL à la Schwarzschild (1999). In principle, GEN creates an infinite number of candidates, but I will only include those relevant to the analysis for ease of exposition. I further limit the possible candidates by assuming that faithfulness constraints of the MAX (don’t delete anything) and DEP (don’t add anything) families are sufficiently highly ranked that addition or deletion of constituents is unavailable as a solution to constraint conflict.

In regard to syntax, I assume a computational system that combines elements taken from the Numeration (Merge) that I will not outline here. The only syntactic constraints I consider are those that potentially have a direct bearing on focus realization, though there are many others that deal with syntactic structure (e.g. the Case filter, other movements, etc.). Regarding specific syntactic structures, I assume that Spanish V raises to v and then to T obligatorily, while English V raises only to v. I assume that examples of p-movement in Spanish (see Chapter 2, exs. 25 & 27) involve scrambling of the given constituent immediately to the left of the focused constituent (contra Zubizarreta’s analysis involving VP-remnant movement). Further assumptions regarding particular constraints or derivations will be made explicit in the following text as they arise.

Regarding prosody, I assume a metrical grid representation of prosodic structure (Halle & Vergnaud 1987) composed of a hierarchy where prosodic words (PWd) make up phonological phrases (pP), which in turn make up intonational phrases (iP), in a structure as shown in (4), above, and laid out in more detail in section 2.2.1. This prosodic structure is part of what is evaluated by EVAL, and constraints relating to its realization are introduced below. I do assume that two constraints regarding prosodic structure are in play and are undominated in both Spanish and English: EXHAUSTIVITY, requiring that each level map exhaustively to the next, with nothing
left out of the prosodic structure, and \textsc{NonRecursivity}, which penalizes recursive prosodic structure (Truckenbrodt 1999).

With the preliminary issues of the data set and the assumptions out of the way, I now turn to building the theoretical model, piece by piece. The next section begins to present the constraints that make up the model I am proposing. In order to get to the analysis of focus beginning in section 3.7, we need to first see what constraints will be in play. Since this model must not only derive non-canonical word orders and accent patterns for narrow focus but also the canonical patterns found in broad focus or “out of the blue” contexts, I present the constraints by looking at precisely this basic context. The next four sections, then, serve to put the pieces in place before turning to the analysis of focus. The next section discusses the relevant constraints on syntax. Section 3.3 covers the mapping of syntax to prosody, followed by constraints on prosodic structure in section 3.4, and finishing with discourse-related constraints in section 3.5. Once all the individual pieces are presented, section 3.6 summarizes them.

3.2. The canonical case – Syntactic constraints

Beginning with constraints on syntax, then, we can see that in an “out of the blue” statement, both Spanish and English require an overt subject and restrict unnecessary movement.

(7) a. Kalyani bought a platypus.

b. *Bought a platypus Kalyani.

c. *Kalyani a platypus bought $t_{\text{platypus}}$. 
(8)    a. Kalyani compró un ornitorrinco.
       Kalyani bought a platypus

   b. #Compró un ornitorrinco Kalyani.

   c. *Kalyani un ornitorrinco compró $t_{ornitorrinco}$.

These two generalizations can be captured with the constraints EPP and STAY, taken from Samek-Lodovici (2005).

(9)    EPP

Clauses have subjects.

The highest A-Specifier (or the Spec of I-related heads such as $T^0$, $Agr^0$, $Neg^0$) must be overtly filled.

*Assign one violation mark if a clause does not have an overt pre-verbal subject.*

(10)   STAY

No traces.

*Assign one violation mark for each trace (or copy).*

The formulation of EPP brings with it Samek-Lodovici’s assumptions (which arise from Grimshaw & Samek-Lodovici 1995, 1998; Samek-Lodovici 1996; and Alexiadou & Anagnostopoulou 1999), which I accept, viz., that there are no null expletives and that the preverbal subject position is unfilled in the case of postverbal subjects. Crucially, this means that postverbal subjects constitute a violation of EPP. In fact, EPP is violated whenever the highest A-specifier of a clause is not filled, which is to say, whenever a clause does not have an overt preverbal subject.
The STAY constraint is an economy constraint, and it is violated once for each trace (or copy). That is, each time a constituent is moved (or Copied and Merged) constitutes a violation of this constraint.

In order to discuss these two constraints, I should note that I assume the VP-Internal Subject Hypothesis (Kuroda 1988, Koopman & Sportiche 1989). That is, I assume that a preverbal subject has moved from its originating position in the specifier of little v. As such, these two constraints come into conflict: EPP wants the subject to move to Spec,T, while STAY wants it to, well, stay. Obviously, both Spanish and English evidence preverbal subjects, and, as such, we can conclude that the ranking of these constraints in both languages is EPP $>>$ STAY. Despite this, we can see in (7c) and (8c) that STAY does indeed have an effect, since in both these cases this unmotivated movement is ungrammatical.

3.3. **The canonical case – Mapping constraints**

The next piece of the puzzle is those constraints that deal with the mapping of syntax and prosody. Since focus realization is crucially dependent on main sentence stress, a prerequisite to understanding focus is understanding the prosodic structures that go into determining main stress.

This section must account for three basic facts:

1. In English, verbs are phrased with their closest complement (but not with the subject or indirect object).
2. In Spanish, each PWd is phrased in its own pP and gets pP-level stress.
3. In English, the complement of verbs gets pP-level stress; verbs do not.
In order to account for these facts, two types of constraint are necessary: constraints which govern the alignment of syntactic XPs to prosodic structure (accounting for facts 1 and 2), and a constraint on the placement of pP-level stress (accounting for fact 3).

3.3.1. Prosodic phrasing data

As mentioned in the introduction, in English, verbs are phrased in a pP with their complement, but not with the subject or indirect object (Samek-Lodovici 2005, *inter alia*), as in (3) above, repeated here as (11).

(11) Prosodic phrasing in English

( * ) ( * ) ( * ) iP level

( * ) ( * ) ( * ) pP level

( * ) ( * ) ( * ) ( * ) PWd level

Lori sold a hedgehog to Meghannne.

Crucially, a phrasing with additional pP-boundaries is not attested, nor is one with fewer. Therefore, we will need constraints that derive the phrasing in (11), while prohibiting the phrasings in (12) and (13).

(12) Illicit extra prosodic structure

*( * ) ( * ) ( * ) pP level

Subject Verb Object

(13) Insufficient prosodic structure

*( * ) pP level

Subject Verb Object

In Spanish, on the other hand, every PWd is phrased in its own pP (Büring & Gutiérrez-Bravo 2001, following Fant 1984; Sosa 1991, 1999; and Face 2000), as in (4) above, repeated here as (14). Phrasings with fewer boundaries (15) are prohibited.
(14) Prosodic phrasing in Spanish
(            *       ) iP level
( *  )(   *  )(   *  )(   *  ) pP level
( *  )(   *  )(   *  )(   *  ) PWd level
Lori le vendió un erizo a Meghanne
Lori Cl.dat sold a hedgehog to Meghanne.

(15) Insufficient prosodic structure
*(              ) pP level
Subject Verb Object

*(              ) pP level
Subject Verb Object

To account for these phrasings, I propose an analysis following work by Selkirk (1986, 1995) utilizing alignment constraints. Before presenting that analysis, though, a quick comment on two general facets of syntax-prosody mapping.

As noted by Selkirk (1995) and Truckenbrodt (1999, 2007), the formation of prosodic structure makes reference to syntactic structure without consideration of category, i.e., it pertains to XPs, and it further obeys the Lexical Category Condition (Truckenbrodt 1999), which states that constraints relating prosodic structure to syntactic structure ignore functional heads and apply only to lexical heads and their projections. With this in mind, I turn now to a discussion of alignment constraints on prosodic structure.

3.3.2. Alignment

Chen (1987) noted that the distribution of tones in Xiamen Chinese is sensitive to the right edges of syntactic constituents. Building on this and other observations, Selkirk (1986, 1995) proposed a general theory of prosodic structure aligning with the edges of syntactic structure. Constraints on prosody-syntax alignment can be formulated following the format of
McCarthy and Prince’s (1993) Generalized Alignment. They can take two forms: alignment with left edges and alignment with right edges.

(16) ALIGN (XP, LEFT; pP, LEFT) (ALIGNXP-L)

The left edge of each syntactic XP is aligned with the left edge of a phonological phrase.

Assign one violation mark for each left edge of a syntactic XP that is not aligned with a corresponding left edge of a pP.

(17) ALIGN (XP, RIGHT; pP, RIGHT) (ALIGNXP-R)

The right edge of each syntactic XP is aligned with the right edge of a phonological phrase.

Assign one violation mark for each right edge of a syntactic XP that is not aligned with a corresponding right edge of a pP.

Generally, only one of these two alignment constraints is observed to be active in a particular language. For example, as noted in Truckenbrodt (2007), right alignment is said to be active in Xiamen Chinese (Chen 1987), Chi Mwi:nî (Kisseberth & Abasheikh 1974, Selkirk 1986), and Tohono O’odham (Hale & Selkirk 1987), while Shanghai Chinese (Selkirk & Shen 1990), Japanese (Selkirk & Tateishi 1987), and Northern Kyungsang Korean (Kenstowicz & Sohn 1997) show left alignment. Which constraint is active is not a parameter in the traditional sense (that is, it’s not that a language has either left or right alignment), but rather a consequence of which constraint is ranked above a third constraint which penalizes prosodic structure, which I call *pP, after Truckenbrodt (1999). This constraint is part of the constraint family *STRUCTURE, which is a family of economy constraints that militate against the creation of structures in general.
(18) *PHONOLOGICAL PHRASE (*pP)

Do not create phonological phrases.

Assign one violation mark for each phonological phrase.

If an alignment constraint is ranked above *pP, its effects will be seen; if it is ranked below *pP, it will be effectively rendered inactive. Further, *pP penalizes structures with unnecessary prosodic structure, that is, prosodic structure not required by the higher-ranked alignment constraint, as in (12), above.

How do these constraints account for the data presented in section 3.3.1? Selkirk (2000) assumes that the active constraint in English is ALIGNXP-R, and this does indeed seem to derive the correct phrasing. I propose that the ranking in English is ALIGNXP-R >> *pP >> ALIGNXP-L. This ranking correctly derives the phrasing of simple transitive constructions and of double object constructions.¹⁹ Consider (19) and (20).

(19) Kalyani bought a platypus.

<table>
<thead>
<tr>
<th>N: {Kalyani, buy, a, platypus}</th>
<th>ALIGNXP-R</th>
<th>*pP</th>
<th>ALIGNXP-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( ) ( ) Kalyani bought a platypus</td>
<td></td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>b. ( ) ( ) Kalyani bought a platypus</td>
<td>*!</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>c. ( ) ( ) ( ) ( ) Kalyani bought a platypus</td>
<td>***!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(20) Lori sold a hedgehog to Meghanne.

<table>
<thead>
<tr>
<th>N: {Lori, sell, a, hedgehog, to, Meghanne}</th>
<th>ALIGNXP-R</th>
<th>*pP</th>
<th>ALIGNXP-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( ) ( ) ( ) ( ) Lori sold a hedgehog to Meghanne</td>
<td></td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>b. ( ) ( ) ( ) ( ) Lori sold a hedgehog to Meghanne</td>
<td>*!</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>c. ( ) ( ) ( ) ( ) ( ) Lori sold a hedgehog to Meghanne</td>
<td>****!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹⁹ I imagine that there are more complex cases that will contradict an account of prosodic phrasing based on ALIGNXP-R and *pP, but, of the cases I consider here, I haven’t come up with one.
In both (19) and (20), candidate (b) has insufficient prosodic structure, incurring a violation of ALIGNXP-R. In (19b), the right boundary of the subject NP *Kalyani* should be aligned with a right pP-boundary, and in (20b), the right boundary of the object NP *hedgehog* should be aligned with the right boundary of a pP. The candidates in (19c) and (20c) both have unnecessary prosodic structure. The addition of a pP-boundary between the verb and the object in (19c) does not violate either alignment constraint, but it is disallowed by *pp*, and the pP-boundary between the direct and indirect objects in (20c) is disallowed for the same reason. Crucially, any other ranking would produce different optimal candidates, and thus we can safely conclude that the ranking for English is ALIGNXP-R >> *PP >> ALIGNXP-L.

What ranking of these constraints can account for the Spanish data? Prieto (2006) assumes that the active alignment constraint (i.e. the one ranked above *PP) in Spanish is ALIGNXP-R, but she does not provide the reasoning behind this move. In fact, without recourse to additional constraints, the ranking ALIGNXP-R >> *PP >> ALIGNXP-L does not derive the correct phrasing in Spanish, as we can see in (21).

(21) **Lori le vendió un erizo a Meghanne.**

‘*Lori sold a hedgehog to Meghanne.*’

<table>
<thead>
<tr>
<th></th>
<th>ALIGNXP-R</th>
<th>*PP</th>
<th>ALIGNXP-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>( * )( * )( * )( * )</td>
<td>***!</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>( * ) ( * )( * )</td>
<td>**</td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>( * ) ( * )</td>
<td>*!</td>
<td>**</td>
</tr>
</tbody>
</table>

In (21), candidate (b) is incorrectly evaluated as being the optimal choice (represented by the sad face symbol). This comes as no surprise, since we saw earlier that this ranking produces

---

20 Prieto also assumes a different pP structure for Spanish, though, as noted in Chapter 2.
the phrasing found in English, with the verb and the object phrased together. Trying the opposite ranking, where ALIGNXP-L is the active constraint, in fact yields the correct phrasing.

(22) Lori le vendió un erizo a Meghanne.

Lori Cl.dat sold a hedgehog to Meghanne

‘Lori sold a hedgehog to Meghanne.’

<table>
<thead>
<tr>
<th>N: {Lori, le, vender, un, erizo, a, Meghanne}</th>
<th>ALIGNXP-L</th>
<th>*P</th>
<th>ALIGNXP-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( * ) ( * ) ( * ) ( * ) ( * ) ( * )</td>
<td></td>
<td>****</td>
<td></td>
</tr>
<tr>
<td>b. ( * ) ( * ) ( * ) ( * ) ( * ) ( * )</td>
<td></td>
<td>*!</td>
<td>***</td>
</tr>
<tr>
<td>c. ( * ) ( * ) ( * ) ( * ) ( * ) ( * )</td>
<td></td>
<td>*!</td>
<td>**</td>
</tr>
</tbody>
</table>

I propose, then, that the ranking in Spanish is ALIGNXP-L >> *P, such that ALIGNXP-L is active, that is, its effects are visible. Can we thus conclude that ALIGNXP-R is ranked below *P? Not necessarily. It certainly could be the case that right alignment is ranked below *P, rendering the effects of ALIGNXP-R invisible. In the overwhelming majority of cases, this is what we observe—relying only on ALIGNXP-L yields the correct phrasing, thus making it impossible to determine the ranking of ALIGNXP-R. In the tableau above, right alignment could be ranked in any relation to the other two constraints, or be unranked relative to them, and, as long as the ranking ALIGNXP-L >> *P holds, the result would be the same. Since ALIGNXP-R doesn’t come into conflict with the other mapping constraints, we cannot make an argument as to its ranking. Perhaps, then, we should just make an assumption that it is unranked relative to the other two, or that it is ranked below *P, since it does not appear to be active.

One piece of (very speculative) data may shed some light on this, though. In order to determine the ranking of ALIGNXP-R, we need an example where there is a right boundary of an XP but not a left boundary. An XP followed by a head and contained within the head’s phrase would work. This would be the case, for example, in an SOV language, where the object XP is
followed by a head in $V$, but Spanish is SVO. Nonetheless, one example from Spanish may fit the bill (López, p.c.).

(23)  Tengo cuatro estudiantes entrevistados

Have.1st four students interviewed

‘I’ve got four students interviewed.’

One possible analysis of this structure is that the participle *entrevistados* ‘interviewed’ is a verb, and that its complement *cuatro estudiantes* ‘four students’ is scrambled leftward but still within the VP. We should consider the possibility, though, that *entrevistados* here is an adjective, in which case it is not an example that has anything to say about ALIGNXP-R, since there would be a left XP boundary before the adjective. However, *entrevistados* in this case cannot be coordinated with an adjective, but it can be with another verbal participle, indicating that it is in fact a verb.

(24)  a.  *Tengo cuatro estudiantes entrevistados y contentos*

Have.1st four students interviewed and happy

‘I’ve got four students interviewed and happy.’

b.  Tengo cuatro estudiantes entrevistados y satisfechos

Have.1st four students interviewed and satisfied

‘I’ve got four students interviewed and satisfied.’

Further, no adverb can be inserted between the complement and *entrevistados*, indicating that the complement has not scrambled to a higher position outside the VP.

(25)  *Tengo cuatro estudiantes completamente entrevistados*

Have.1st four students completely interviewed

‘I’ve got four students completely interviewed.’
If we assume, then, that the participle is a verb in V and the complement is in the VP, we have a structure where the right edge of the NP *estudiantes* is not immediately followed by the left edge of another XP, as in (26).

(26)  \[ vP \text{ tengo } [vP [\text{*pP cuatro [NP estudiantes ]] [V'} \text{ entrevistados]]}] \]

The important thing to note about the structure in (26) is that there is no left XP boundary between *estudiantes* and *entrevistados*, though there is a right XP boundary. If *pP is ranked above ALIGNXP-R, we would expect no prosodic boundary between *estudiantes* and *entrevistados*, but if ALIGNXP-R outranks *pP, we would expect one. In fact, a pP-boundary is observed.

(27)  (Tengo), (cuatro), (estudiantes), (entrevistados)

<table>
<thead>
<tr>
<th>N: {pro, tener, cuatro, estudiantes, entrevistado}</th>
<th>ALIGNXP-L</th>
<th>ALIGNXP-R</th>
<th>*pP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (\ast) ((\ast)) ((\ast)) ((\ast)) (\text{Tengo} \ \text{cuatro} \ \text{estudiantes} \ \text{entrevistados})</td>
<td></td>
<td></td>
<td>****</td>
</tr>
<tr>
<td>b. (\ast) ((\ast)) ((\ast)) ((\ast)) (\text{Tengo} \ \text{cuatro} \ \text{estudiantes} \ \text{entrevistados})</td>
<td></td>
<td>*!</td>
<td>***</td>
</tr>
</tbody>
</table>

If this analysis is the correct one, then this would be a case illustrating that ALIGNXP-R outranks *pP. Since the overwhelming majority of Spanish phonological phrasing can be accounted for with ALIGNXP-L, however, nothing essential hinges on the proposed ranking of right alignment. Assuming the phrasing of this structure does show that ALIGNXP-R \(>>\) *pP, though, is interesting in that it would mean that Spanish resembles Māori in this way (de Lacy 2003). Unlike de Lacy’s analysis, in which functional elements are left outside the pP and are phrased directly into the iP, Spanish phrases functional heads with other phonological material, generally that of their complements. This is true at the PWd and pP levels. Nonetheless, the possible parallel is interesting.

Based on this discussion, I assume that ALIGNXP-R outranks *pP, though with the caveat that this ranking is speculative and in need of verification by more data. In almost all cases, the
high ranking of ALIGNXP-L renders the effects of ALIGNXP-R invisible, and as such, I will leave it out of many of the tableaux that follow for presentation reasons.

Regardless of the ranking of right alignment, the claim that left alignment is the primary force determining prosodic structure in Spanish is a new one. I propose that this formulation is an improvement on the system presented by Büring and Gutiérrez-Bravo (2001) for explaining prosodic structure in Spanish. Büring and Gutiérrez-Bravo account for Spanish phrasing with a constraint they call PRWD=PP, which maps each prosodic word to a phonological phrase (28).

(28) Lori le vendió un erizo a Meghanne.

<table>
<thead>
<tr>
<th>N: {Lori, le, vender, un, erizo, a, Meghanne}</th>
<th>PRWD=PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. <em>(</em>) (**)(<em>) (?)(</em>)</td>
<td>Lori le vendió un erizo a Meghanne</td>
</tr>
<tr>
<td>b. <em>(</em>) (**)(<em>) (?)(</em>)</td>
<td>Lori le vendió un erizo a Meghanne</td>
</tr>
<tr>
<td>c. <em>(</em>) (**)(<em>) (?)(</em>)</td>
<td>Lori le vendió un erizo a Meghanne</td>
</tr>
</tbody>
</table>

Though this derives the correct phrasing, obviously, I think it is an undesirable move. This constraint appears to be language specific, contra the general program of OT. I agree with McCarthy (2008) that, when proposing to add new constraints to EVAL, one should make an effort to be sure that they are universal rather than language specific. Because of this, I contend that the current proposal based on ALIGNXP-L has an advantage over previous research in that it uses an independently motivated set of constraints to account for the same data.

We have seen then, that the constraints ALIGNXP-R, ALIGNXP-L, and *PP derive the correct phrasing and correctly prohibit undesirable phrasings. There is one more piece to the puzzle, though, which is pP-level stress in English.

21 Perhaps it is in fact not language-specific, but rather universal and simply low ranked in many languages. While this is a possibility, the case for its universality would be bolstered if there were data from other languages that required its presence to explain, and I am not aware of any such analyses.
3.3.3. **STRESSXP**

As noted at the beginning of section 3.3, one fact that must be accounted for when considering the mapping from syntactic structure to prosodic structure is that, in English, when a verb and its complement are phrased together, the pP-level stress is on the complement, not the verb.

(29) **Stress in English**

\[
\begin{array}{c}
\checkmark \quad (\quad)(\ast) \text{ pP level} \\
\text{Subject Verb Object}
\end{array}
\]

\[
\begin{array}{c}
\ast \quad (\quad)(\ast) \text{ pP level} \\
\text{Subject Verb Object}
\end{array}
\]

To account for this, I propose a constraint requiring that each lexical XP get pP-level stress, called **STRESSXP**, following Truckenbrodt (1995).

(30) **STRESS-XP**

Each lexically headed XP must contain the head of a phonological phrase.

*Assign one violation mark each time none of the lexical items in a lexical XP is the head of its pP.*

This constraint correctly derives the desired stress pattern, as seen in (31).

(31) Kalyani bought a platypus.

<table>
<thead>
<tr>
<th>N: {Kalyani, buy, a, platypus}</th>
<th>STRESSXP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( * ) ( * ) Kalyani bought a platypus.</td>
<td></td>
</tr>
<tr>
<td>b. ( * ) ( * ) Kalyani bought a platypus.</td>
<td>*!</td>
</tr>
</tbody>
</table>

In (31), candidate (a) fully satisfies **STRESSXP**, in that the stress on the object *platypus* means that there is a pP-level stress in both the object NP and the VP, whereas candidate (b) violates **STRESSXP**, in that, though there is a pP-level stress in the VP, the object NP has no stress.
Some previous accounts have handled pP-level stress slightly differently. Samek-Lodovici (2005) proposed a purely prosodic constraint (called H-P) that makes no reference to syntactic structure but simply requires pP-level stress to be rightmost (as mentioned in 2.5).\footnote{It should be noted that, though Samek-Lodovici (2005) determines pP-level stress via his constraint H-P, he does include STRESSXP in his analysis. However, he uses it in conjunction with another constraint called WRAPXP (Truckenbrodt 1995, 1997) to derive the prosodic structure itself, which I have done via alignment, so I do not consider this part of his analysis here.} However, STRESSXP makes the more general prediction that the argument of the verb gets stress, not just that stress is rightmost. STRESSXP seems more crosslinguistically viable, because in SOV languages, like German, for example, the pP-level stress falls on the object, not on the verb, even though the verb is to the right. Truckenbrodt (1995, 2007) also offers crosslinguistic evidence for the existence of STRESSXP. Büring & Gutiérrez-Bravo (2001) account for English and German pP phrasing with a constraint they call ARGUMENT-OVER-PREDICATE, requiring that an argument of a predicate always be more prominent than the predicate, but such a move is unnecessary, as this same phenomenon can be explained via the more generalized, as well as independently and crosslinguistically necessary, STRESSXP.

If STRESSXP plays an important role in determining pP-level stress in English, it is reasonable to wonder what role it has in Spanish. However, the effects of STRESSXP are not visible in Spanish. The high ranking of ALIGNXP-L renders STRESSXP invisible, in that STRESSXP will always be satisfied by any structure that satisfies ALIGNXP-L. Since the alignment constraints have the practical upshot of mapping every PWd to a pP, every PWd, and thus every XP, will contain a pP-level stress, leading STRESSXP to never be violated. Since these two constraints don’t come into conflict, it is also impossible to determine their relative ranking. I therefore assume that STRESSXP is unranked relative to other constraints in Spanish.
Can STRESSXP be ranked relative to other constraints in English? I can think of no example in English where STRESSXP and ALIGNXP-R come into conflict, and I therefore conclude that they are unranked relative to one another. I can conceive of an example in which STRESSXP might come into conflict with *PP. Since by definition each pP can have only one head, and this head is the pP-level stress, STRESSXP’s requirement that XPs be stressed forces the creation of pPs, in conflict with *pP. However, since ALIGNXP-R also outranks *pP, and also forces the creation of pPs, it is impossible to tell whether STRESSXP outranks *pP. As such, I assume it is unranked relative to the other mapping constraints in English as well.

In conclusion, we have seen that the mapping of syntax to prosody is complex. Alignment constraints, constraints against the creation of structure, and constraints on pP-level stress play a role. I conclude that the mapping constraint rankings for English and Spanish are as follows.

(32) Mapping constraint rankings

English: ALIGNXP-R >> *pP >> ALIGNXP-L

(STRESSXP?)

Spanish: \{ALIGNXP-L, ALIGNXP-R\} >> *pP

(STRESSXP?)

Having presented the constraints that govern the syntax-prosody mapping in this section, and having presented constraints on syntax in the previous section, we can now continue with constraints on prosody itself and on discourse status in the next two sections. Once all the constraints relevant for the analysis of focus are in place, they can be used to analyze focus marking, beginning in section 3.7.
3.4. **The canonical case – Main stress**

Having discussed the mapping of syntax to prosody, I now turn to the derivation of main sentence stress, i.e., iP-level stress. Since both English and Spanish have stress rightmost, I follow Samek-Lodovici (2005) and Büring and Gutiérrez-Bravo (2001) in proposing a constraint that aligns the head of an iP with its right boundary, which I call ALIGN-iP-R.

(33) \[ \text{ALIGN (HEAD, RIGHT; iP, RIGHT) (ALIGN-iP-R)} \]

The head of each intonational phrase is aligned with the right edge of the phrase.

Assign one violation mark for each pP head between the iP head and the iP’s right edge.

As noted, I further follow Samek-Lodovici in assuming that this constraint is not categorically violated but rather incurs one violation for each ‘step’ away from the right edge that the main stress falls. This assumption plays a role in sentences where, say, the last element is given, resulting in it being unstressed and main stress thus not being rightmost (violating ALIGN-iP-R), in which main stress is nonetheless, to put it informally, as far right as it can get. For the moment, though, I just present this assumption and set it aside, returning to it in section 3.9.2.

In sum, ALIGN-iP-R requires main stress to be rightmost, unless superseded by a more highly ranked constraint, which is in line with the facts of Spanish and English.

3.5. **The canonical case – Discourse status**

I turn now to those constraints governing the discourse status of the constituents of a sentence. Here, I will follow Schwarzchild’s (1999) influential semantic analysis of F-marking. As seen in Chapter 2, Schwarzchild proposes that F-marking is freely assigned yet constrained by the two constraints GIVEN and AVOIDF (which I will call *F for reasons of symmetry with
other constraints of the family *STRUCTURE). I present them in slightly adapted form in (34) and (35).

(34) **GIVENNESS (GIVEN)**

If a constituent is not F-marked, it must be given.

*Assign one violation mark if a non-F-marked constituent is not given.*

(35) **F-MARKING (*F)**

Do not F-mark.

*Assign one violation mark for each F-mark.*

The reader may recall from Chapter 2 that the GIVEN constraint is based on Schwarzschild’s definition of givenness, repeated in (36).

(36) **Definition of GIVEN**

An utterance U counts as GIVEN iff it has a salient antecedent A and

a. if U is type e, then A and U corefer;

b. otherwise: modulo Ψ-type shifting, A entails the Existential F-Closure of U.

Additionally, Schwarzschild ranks GIVEN above *F, which is only reasonable, since the order *F >> GIVEN would leave us with no F-marking at all.

With these two constraints and their ranking in place, it is possible to determine the F-marking of an utterance. For example, consider (37).

(37) [Context: What did Kalyani buy?]

Kalyani bought a platypus.

The question entails that Kalyani bought something. Thus, in the given context, *Kalyani and bought are both given.* Let us consider possible F-markings for this utterance.
(38)  [Context: What did Kalyani buy?]

<table>
<thead>
<tr>
<th>N: {Kalyani, buy, a, platypus}</th>
<th>GIVEN</th>
<th>*F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context: Kalyani bought x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Kalyani bought [a platypus]_F</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. Kalyani bought a platypus.</td>
<td>!*</td>
<td></td>
</tr>
<tr>
<td>c. Kalyani [bought [a platypus]_F]_F</td>
<td>**!</td>
<td></td>
</tr>
<tr>
<td>d. [Kalyani]_F [bought]_F [a platypus]_F</td>
<td><strong>!</strong>*</td>
<td></td>
</tr>
</tbody>
</table>

The candidate in (b) violates GIVEN; specifically, a platypus is not given, yet it is not F-marked. Candidates (c) and (d) both lose due to additional violations of *F; they both have unnecessary F-marking. The candidate in (a), then, is optimal, because it uses the fewest F-marks while satisfying GIVEN. This tableau would be the same if the example were in Spanish.

As another example, consider (39), and the possible F-markings in (40).

(39)  [Context: Who sold a hedgehog to Meghanne?]

Lori sold a hedgehog to Meghanne.

(40)  [Context: Who sold a hedgehog to Meghanne?]

<table>
<thead>
<tr>
<th>N: {Lori, sell, a, hedgehog, to, Meghanne}</th>
<th>GIVEN</th>
<th>*F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context: x sold a hedgehog to Meghanne</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. [Lori]_F sold a hedgehog to Meghanne.</td>
<td>!*</td>
<td></td>
</tr>
<tr>
<td>b. Lori sold a hedgehog to Meghanne.</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. Lori sold a hedgehog to [Meghanne]_F</td>
<td>!*</td>
<td>*</td>
</tr>
<tr>
<td>d. [[Lori]_F sold a hedgehog to Meghanne.]_F</td>
<td>**!</td>
<td></td>
</tr>
<tr>
<td>e. [[Lori]_F [[sold]_F [a hedgehog]_F [to Meghanne]_F]_F]_F</td>
<td><strong>!</strong>**</td>
<td></td>
</tr>
</tbody>
</table>

In (40), as in (38), the interaction of GIVEN and *F derives the correct F-marking, as in candidate (a), which has the smallest violation of *F while still satisfying GIVEN. Too little F-marking, as in (b), violates GIVEN, in that not F-marking the subject Lori requires it to be interpreted as given, yet it is not given in this context. F-marking the incorrect constituent, as in (c), which F-marks the indirect object rather than the subject, is also unacceptable, since the subject, which is not given, does not get an F-mark. Any more F-marking than minimally
necessary, as in (d) and (e), incurs additional violations of *F, and thus these candidates lose in competition with (a).

We have seen, then, that \textsc{Given} and *F work together to determine the appropriate F-marking of a sentence in a particular context. Since they make no reference to syntax or prosody, they do not come into conflict with any of the constraints presented in previous sections, and, as such, are unranked relative to them. Because of this, in what follows, I will often omit them and assume the F-marking they derive. To be clear though, these two constraints are an active part of EVAL, and I only omit them later for reasons of presentation. Though later tableaux only evaluate candidates with identical F-marking, I do not assume that F-marking is part of the input, as Samek-Lodovici (2005) and Büring and Gutiérrez-Bravo (2001) do. Rather, I follow Schwarzschild (1999) in deriving F-marking via candidate competition.

These two constraints, then, successfully determine the F-marking of a sentence in a particular context, and, though I’ve presented only two simple examples here, Schwarzschild shows that this holds for more complex examples as well. However, just knowing the F-marking is not enough to identify the focus of a sentence. We previously defined the focus, as in López (2009), as that element that resolves a variable left open in the discourse. Adopting the definition that Schwarzschild uses, we can redefine the focus in terms of F-marking as an F-marked node not immediately dominated by another F-marked node.

(41) Focus (definition): A Foc-marked node is an F-node that is not immediately dominated by another F-marked node (Schwarzschild 1999:170).

With the definition of focus in terms of F-marking in place, and with a system for determining said F-marking, we can turn to the final element of the system, namely those constraints that relate focus to stress.
All OT approaches to information structure have some form of constraint that requires the focused element to be most prominent, which corresponds to the widely held generalization that focused elements receive main stress. Schwarzschild (1999)’s Foc, Samek-Lodovici (2005)’s STRESS-FOCUS, and Büring and Gutiérrez-Bravo (2001)’s FOCUSPROMINENCE all, in one way or another, require that the element(s) determined to be the focus of the sentence receive main stress. This constraint is generally assumed to be undominated. I will question both the formulation of this constraint and its ranking. For the moment, let’s just assume a general and uncontroversial formulation of this constraint, based on Büring and Gutiérrez-Bravo’s constraint FP, in order to move forward.

(42) \textsc{FocusProminence} (FP) [Initial formulation]

Focus is most prominent.

Assign one violation mark if the main stress (the iP-level stress) does not correspond to the Foc-marked node(s).

This final constraint, then, completes the basic picture. I have introduced constraints on syntax, constraints on prosody, constraints on the mapping of syntax to prosody, constraints determining discourse status, and finally a constraint relating stress to discourse status. Now it’s time to put it all together and see where the data takes us.

3.6. **Putting it all together**

To review, (43) presents the constraints introduced so far, along with the ranking, if any, for English and Spanish.
We’ve seen that these constraints as presented and ranked (within their type), correctly derive the structure of the canonical case, i.e., broad or ‘out of the blue’ focus. As of yet, the only differences between Spanish and English are in the relative rankings of the mapping constraints. However, we know that the consensus view is that Spanish and English differ in marking cases of narrow focus. When the constraints are put together, the high ranking of FP will force violations of either constraints on syntax or constraints on prosody. In other words, in order to maintain the correspondence between focus and stress, either prosodic or syntactic well-formedness will have to be sacrificed. Because of this, cases of narrow focus will demonstrate the conflict between different types of constraints and will allow us to determine their relative rankings.

Now that all the pieces are in place, then, we can turn to the meat of the analysis: cases of narrow presentational focus in Spanish and English. I begin with a discussion of narrow subject focus and then move on to a discussion of narrow object focus. This data is used to make ranking arguments in order to establish the constraint ranking for English and for Spanish. To generalize, this data, which, as pointed out in section 3.1.1, represents the consensus view on focus in Spanish, shows that Spanish sacrifices syntactic well-formedness in order to keep canonical accent structure, while English sacrifices prosodic well-formedness in order to keep canonical word order, in line with analyses found in Büring and Gutiérrez-Bravo (2001) and
3.7. **Narrow subject focus**

Consider the case of narrow subject focus in English (44), and in Spanish (45), according to the most common view.

(44) [Context: Who bought a platypus?]
   a. 
   b. 
   c. 

(45) [Context: Who bought a platypus?]
   a. 
   b. 
   c. 

As mentioned before, in this case, Spanish sacrifices syntactic well-formedness to keep stress rightmost, while English sacrifices prosodic well-formedness to keep its pre-verbal subject. In this context, the subject *Kalyani* is the only F-marked element, and is thus the focus of the sentence. In terms of our constraints, then, we can say that, for English, assuming FP is undominated and thus the stress must fall on the subject, the syntactic constraint EPP outranks the prosodic constraint ALIGN-IP-R (though we can’t tell yet whether STAY outranks ALIGN-IP-R or not).
(46)  [Context: Who bought a platypus?]

[Kalyani]$_F$ bought a platypus.

<table>
<thead>
<tr>
<th>N: {Kalyani, buy, a, platypus}</th>
<th>FP</th>
<th>EPP</th>
<th>ALIGN-I-P-R</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context: x bought a platypus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. (</td>
<td>$^*_23$ )I</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>$^<em>$ ) ( $^</em>$ )P</td>
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<tr>
<td>Kalyani bought a platypus.</td>
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<tr>
<td>b. (</td>
<td>$^*$ )I</td>
<td>*</td>
<td>*</td>
<td></td>
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<tr>
<td>(</td>
<td>$^<em>$ ) ( $^</em>$ )P</td>
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<tr>
<td>Kalyani bought a platypus.</td>
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<tr>
<td>c. (</td>
<td>$^*$ )I</td>
<td>*</td>
<td>*</td>
<td>**</td>
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<tr>
<td>(</td>
<td>$^<em>$ ) ( $^</em>$ )P</td>
<td></td>
<td></td>
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<tr>
<td>bought a platypus Kalyani</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

For Spanish, since Spanish sacrifices canonical word order to keep stress rightmost, the prosodic constraint ALIGN-I-P-R outranks the syntactic constraint EPP. Since ranking is transitive, and EPP $>>$ STAY, we know that ALIGN-I-P-R also outranks STAY.

(47)  [Context: Who bought a platypus?]

Compró un ornitorrinco [Kalyani]$_F$.

bought a platypus Kalyani

<table>
<thead>
<tr>
<th>N: {Kalyani, comprar, un, ornitorrinco}</th>
<th>FP</th>
<th>ALIGN-I-P-R</th>
<th>EPP</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context: x bought a platypus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. (</td>
<td>$^*$ )I</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>$^<em>$ ) ( $^</em>$ )P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compró un ornitorrinco Kalyani.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. (</td>
<td>$^*$ )I</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>$^<em>$ ) ( $^</em>$ )P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kalyani compró un ornitorrinco.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. (</td>
<td>$^*$ )I</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(</td>
<td>$^<em>$ ) ( $^</em>$ )P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kalyani compró un ornitorrinco.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We can conclude, then, that the narrow subject focus data supports the following rankings:

English:  \{FP, EPP\} $>>$ ALIGN-I-P-R

Spanish:  \{FP, ALIGN-I-P-R\} $>>$ EPP $>>$ STAY

$^{23}$ The underscore mark “_” in this and later tableaux indicates a possible position for the iP-head closer to the right boundary of the iP, and is included so that violations of ALIGN-I-P-R can be easily seen. In other words, each underscore indicates one ‘step’ away from the iP-boundary edge, and thus a violation of ALIGN-I-P-R.
In English, the ranking of STAY relative to rightmost stress is still unclear, but it can be determined by looking at narrow focus on an object.

3.8. **Narrow object focus with an indirect object**

Consider the case of narrow focus on a direct object when the sentence also contains an indirect object PP in English (48) and Spanish (49).

(48) [Context: What did Lori sell to Meghanne?]
   a. Lori sold a [hedgehog]\textsubscript{F} to Meghanne.
   b. #Lori sold a [hedgehog]\textsubscript{F} to Meghanne.
   c. *Lori sold to Meghanne a [hedgehog]\textsubscript{F}.

(49) [Context: What did Lori sell to Meghanne?]
   a. Lori le vendió a Meghanne un [erizo]\textsubscript{F}.
      Lori Cl.dat sold to Meghanne a hedgehog
      ‘Lori sold a hedgehog to Meghanne.’
   b. #Lori le vendió un [erizo]\textsubscript{F} a Meghanne.
   c. #Lori le vendió un [erizo]\textsubscript{F} a Meghanne.

Here again we see the characteristic pattern of English sacrificing rightmost stress and Spanish sacrificing canonical word order. This case is different from the preceding one, though, in that it does not have to do with the need for a preverbal subject, but rather the resistance to unnecessary movement, or, in terms of our constraints, STAY. The only F-marked element is the direct object hedgehog/erizo, which is thus the focus of the sentence and must receive main stress.
(50) [Context: What did Lori sell to Meghanne?]

Lori sold a [hedgehog] to Meghanne.

<table>
<thead>
<tr>
<th>N: {Lori, sell, a, hedgehog, to, Meghanne}</th>
<th>Context: Lori sold x to Meghanne</th>
<th>FP</th>
<th>EPP</th>
<th>STAY</th>
<th>ALIGN-IP-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.  (                                 )I</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(                                 )P</td>
<td>Lori sold a hedgehog to Meghanne.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.  (                                 )I</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>(                                 )P</td>
<td>Lori sold a hedgehog to Meghanne.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.  (                                 )I</td>
<td></td>
<td></td>
<td>**!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(                                 )P</td>
<td>Lori sold to Meghanne a hedgehog.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In (50), candidate (b) violates FP, since the iP-level stress does not correspond to the focused object, and candidate (c), which uses movement to put the object in the position of canonical main stress, violates STAY twice, once for the movement of the subject to Spec,T and once for the scrambling of the indirect object over the object. Candidate (a), on the other hand, violates ALIGN-IP-R, since iP stress is one step removed from the right edge. Since candidate (a) is the optimal one, rather than candidate (c), we can conclude that a violation of alignment is preferred to an additional violation of STAY, indicating that STAY outranks ALIGN-IP-R in English.

There is another possibility which satisfies both STAY and ALIGN-IP-R, though. We could sacrifice canonical pP structure to keep both rightmost stress and canonical word order.

(51) [Context: What did Lori sell to Meghanne?]

Lori sold a [hedgehog] to Meghanne.

<table>
<thead>
<tr>
<th>N: {Lori, sell, a, hedgehog, to, Meghanne}</th>
<th>Context: Lori sold x to Meghanne</th>
<th>FP</th>
<th>EPP</th>
<th>STAY</th>
<th>ALIGN-XP-R</th>
<th>ALIGN-IP-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.  (                                 )I</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(                                 )P</td>
<td>Lori sold a hedgehog to Meghanne.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.  (                                 )I</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(                                 )P</td>
<td>Lori sold a hedgehog to Meghanne.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In (51), phrasing both objects into one pP with stress on the direct object as in (b) violates AlignXP-R (and StressXP, though this violation is indistinguishable in this case from a violation of AlignXP-R), in that there is no pP-boundary aligned with the right edge of the direct object, while satisfying Align-IP-R, in that the iP-level stress corresponds the pP-level head closes to the right boundary of the iP. Candidate (a), on the other hand, violates stress alignment but not AlignXP-R. That candidate (a) is the winner indicates that AlignXP-R outranks Align-IP-R, since the opposite ranking would result in candidate (b) being chosen.

Regarding the Spanish data in (49), main stress alignment outranks both syntactic constraints, as we also saw with subject focus. This data in Spanish is the canonical case of Zubizarreta’s (1998) p-movement, here accounted for clearly under constraint conflict, while avoiding the problems mentioned in the previous chapter.

(52) [Context: What did Lori sell to Meghanne?]

Lori le vendió a Meghanne un [erizo].

<p>| N: {Lori, le, vender, un, erizo, a, Meghanne} |
| Context: Lori sold x to Meghanne |</p>
<table>
<thead>
<tr>
<th>FP</th>
<th>Align-IP-R</th>
<th>EPP</th>
<th>Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>*( ) ( * ) ( * ) ( * ) P</td>
<td>Lori le vendió a Meghanne un erizo.</td>
<td>**</td>
</tr>
<tr>
<td>b.</td>
<td>*( ) ( * ) ( * ) ( * ) P</td>
<td>Lori le vendió un erizo a Meghanne.</td>
<td>* !</td>
</tr>
<tr>
<td>c.</td>
<td>*( ) ( * ) ( * ) ( * ) P</td>
<td>Lori le vendió un erizo a Meghanne.</td>
<td>* !</td>
</tr>
</tbody>
</table>

What about the other possibility we just explored for English? That is, can pP-level phrasing be sacrificed to keep both stress alignment and standard word order?
(53) [Context: What did Lori sell to Meghanne?]

Lori le vendió a Meghanne un [erizo].

Lori Cl.dat sold to Meghanne a hedgehog

<table>
<thead>
<tr>
<th>N: {Lori, le, vender, un, erizo, a, Meghanne}</th>
<th>Context: Lori sold x to Meghanne</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (                      )I(<em>)(</em>)(<em>)(</em>)P</td>
<td>FP</td>
</tr>
<tr>
<td>Lori le vendió a Meghanne un erizo.</td>
<td>**</td>
</tr>
<tr>
<td>b. (                      )I(<em>)(</em>)(<em>)(</em>)P</td>
<td>FP</td>
</tr>
<tr>
<td>Lori le vendió un erizo a Meghanne.</td>
<td>*!</td>
</tr>
</tbody>
</table>

In fact, Spanish prefers to violate STAY rather than to violate ALIGNXP-L. Candidate (a), which has canonical pPs and movement, wins over (b), which violates ALIGNXP-L (and, undetectably, STRESSXP and ALIGNXP-R) by phrasing both objects together while incurring one fewer violation of STAY by not scrambling the indirect object. We can conclude from this that ALIGNXP-L outranks STAY in Spanish, though we can not make any claims about its ranking relative to the other constraints.

So, the rankings we have so far are:

English: \{FP, \{EPP >> STAY\}, ALIGNXP-R\} >> ALIGN-iP-R

Spanish: \{FP, \{ALIGN-iP-R >> EPP\}, ALIGNXP-L\} >> STAY

3.9. **Narrow focus on nominal modifiers**

3.9.1. **Object numbers**

Consider cases with narrow focus on a number before an object in English (54) and (some varieties of) Spanish (55) (see the note about this data in section 3.1.1).
(54) [Context: How many platypuses did Kalyani buy?]
   b. #Kalyani bought [three]$_F$ platypuses.

(55) [Context: How many platypuses did Kalyani buy?]
      Kalyani bought three platypuses
   b. #Kalyani compró [tres]$_F$ ornitorrincos.

In this context, the only F-marked constituent, and thus the focus of the sentence, is the number. The English example gives us no new information regarding constraint rankings; it shows the same phenomenon as previous examples, namely, that main stress is sacrificed for the sake of stress-focus correspondence and syntactic well-formedness. The interesting data is the Spanish example. Unlike previous examples, where movement occurred, sacrificing syntactic well-formedness in order to get rightmost main stress and focus-stress correspondence, in this case, movement of the noun to leave the number in rightmost position (55c) is impossible. Samek-Lodovici (2005) accounts for a similar issue in Italian using a constraint he calls T-Gov, taken from Grimshaw (1997), which requires that traces (or copies) be properly governed, as per Rizzi (1990).

(56) **TRACE-GOVERNMENT (T-Gov)**

A trace is governed.

*Assign one violation mark for each trace that is not properly governed.*
This is a constraint on syntax which penalizes instances of illicit movement. Unlike STAY, which is also a syntactic constraint that penalizes movement, and which is a constraint on economy that penalizes all movement equally, T-Gov is a markedness constraint on syntactic well-formedness that penalizes particular instances of movement that leave a trace ungoverned, such as, say, moving the noun out of a #P, as in (55c). Samek-Lodovici concludes that T-Gov must outrank his version of ALIGN-IP-R, since, in Italian, one finds the #P rightmost, with stress on the focused number and the noun in situ, violating stress alignment, but satisfying both T-Gov and FP, as in (57a). Extracting the noun (57b), leftward stress (57c), and stress-focus mismatch (57d) are not possible (Samek-Lodovici 2005:711-713).

(57)  [Context: How many children arrived?]

a.  Sono arrivati [tre] bambini
    are arrived three children
    ‘Three children have arrived.’

b.  *Bambini sono arrivati [tre]

c.  *[Tre] bambini sono arrivati

In Spanish, though, this is not the case. In fact, it appears, assuming T-Gov is ranked highly enough so as to disallow movement of the noun out of the #P, that ALIGN-IP-R must outrank FP in Spanish, which is a novel finding, in that Samek-Lodovici (2005) assumed that this constraint is undominated.
(58)  [Context: How many platypuses did Kalyani buy?]


Kalyani bought three platypuses

<table>
<thead>
<tr>
<th>N: {Kalyani, comprar, tres, ornitorrincos}</th>
<th>T-GOV</th>
<th>ALIGN-IP-R</th>
<th>FP</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context: Kalyani bought x platypuses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. ( * )( * )( * )( * )</td>
<td></td>
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<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. ( * )( * )( * )</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. ( * )( * )( * )</td>
<td></td>
<td></td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>Kalyani compró ornitorrincos [tres]F.</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

From this data, we can conclude that both T-GOV and ALIGN-IP-R outrank FP, which is surprising. If, instead, FP were undominated, then either the strategy of sacrificing rightmost stress (b) or that of using movement of the noun to align stress and focus (c) would hold. In fact, stress-focus correspondence appears to be sacrificed for the sake of prosodic and syntactic well-formedness.

Interestingly, if this ranking in fact holds, we can see that the characterization of focus marking in Spanish is more complex than is commonly claimed. That is, the usual generalization is that Spanish (and, in many cases, Italian), sacrifices syntax for prosody, while English always sacrifices prosody for syntax, but here we see that a syntactic constraint, T-Gov, may be among the highest-ranked, while another syntactic constraint, STAY, may be the lowest. This further provides evidence, contra Szendrői (2001), and in line with Samek-Lodovici (2005)'s findings for French, of constraint intermingling; that is, it provides evidence that the constraints on the individual modules of the grammar may not necessarily remain separate. I contend that this data is also an argument for the appropriateness of an OT-style approach to
information structure, in that it is via the intermingling of constraints of differing types that this data can be accounted for in the same model as the previous data.

Having looked at a case in Spanish where, due to the constraint T-Gov, stress-focus correspondence and prosodic well-formedness come into conflict, and stress-focus correspondence turns out to lose, we can revise our ranking for Spanish. Before doing so, though, it is worth asking whether we can rank T-Gov in English. Unfortunately, because of the fact that STAY is ranked so highly in English, it is impossible to tell if the movement of a noun out of a #P is disallowed by STAY or by T-Gov.

(59)  [Context: How many platypuses did Kalyani buy?]

Kalyani bought [three]ᵣ platypuses.

<table>
<thead>
<tr>
<th>N: {Kalyani, buy, three, platypuses}</th>
<th>Context: Kalyani bought x platypuses</th>
<th>T-GOV</th>
<th>FP</th>
<th>EPP</th>
<th>STAY</th>
<th>ALIGN-P-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (                    *      _       )I</td>
<td>(    *  )(           * ) (  *       )P</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Kalyani bought [three]ᵣ platypuses.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. (                    *      _       )I</td>
<td>(    *  )(           * ) (  *       )P</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>Kalyani bought [three]ᵣ platypuses.</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. (                    *      _       )I</td>
<td>(    *  )(           * ) (  *       )P</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>**!</td>
</tr>
<tr>
<td>Kalyani bought platypuses [three]ᵣ.</td>
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</tr>
</tbody>
</table>

Since candidate (c) incurs an additional violation of STAY as well as a violation of T-Gov, and since said extra violation of STAY would cause it to lose to candidate (a) even if T-Gov weren’t part of the tableau, it is not possible to tell from this data how T-Gov is ranked relative to the other constraints. Since there is no evidence that it is dominated by any other constraint, I will assume that it is undominated, but I make no claims as to its rankings relative to other constraints. Its effects are generally indistinguishable from those of STAY. In tableaux of English, then, I will leave it out unless relevant.
The rankings we have thus far are:

English: \{FP, T-Gov, \{EPP >> Stay\}, AlignXP-R} >> Align-IP-R

Spanish: \{ \{T-Gov, Align-IP-R} >> FP >> EPP\}, AlignXP-L} >> Stay

3.9.2. Subject numbers

Consider the case of narrow focus on a number that modifies a subject in English (60) and (some varieties of) Spanish (61) (see the note about this data in section 3.1.1).

(60) [Context: How many police officers arrested the suspect?]

a. [Three]F officers arrested the suspect.
b. #[Three]F officers arrested the suspect.
c. *Officers arrested the suspect [three]F.
d. *Arrested the suspect [three]F officers.
e. *Arrested the suspect three officers.

(61) [Context: How many police officers arrested the suspect?]


Arrested the suspect three police officers

d. #Arrestaron al sospechoso [tres]F policías.
e. *Policías arrestaron al sospechoso [tres]F.

The data from English again provides no new information; to wit, prosodic well-formedness is sacrificed in (60a) in order to get stress-focus correspondence on the quantifier and
maintain syntactic well-formedness. Regardless of stress, any violation of EPP (60d and 60e) or T-Gov (60c) is ill-formed, and stress-focus mismatch (60b) is infelicitous.

The Spanish data is more interesting, though. Here we can see that syntactic well-formedness is sacrificed in (61a) in order to get main stress rightmost, even though stress does not end up on the focused constituent. Rightmost main stress alone (61b), though, is not enough; the subject must be post-verbal. Shifting the stress at all (61c and 61d) is unsurprisingly bad, as is a violation of T-Gov (61e).

The reason this data is interesting is that it presents a problem for the model so far developed. Even if we assume that FP is outranked by T-Gov and ALIGN-IP-R, there is no motivation for the post-verbal subject if its stress doesn’t satisfy FP. Specifically, as shown in (62), (61a) and (61b) each violate FP, since main stress does not correspond to the focus, but (61b) should be, on the whole, more harmonious, since it does not violate EPP, which (61a) does. That is, our model as it stands incorrectly predicts that (61b) should be optimal.
(62)  [Context: How many police officers arrested the suspect?]

Arrestaron al sospechoso [tres] policías.

Arrested the suspect three police officers

<table>
<thead>
<tr>
<th>N: {Tres, policías, arrestar, el, sospechoso}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context: x police officers arrested the suspect</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>T-Gov</th>
<th>ALIGN-IP-R</th>
<th>FP</th>
<th>EPP</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
<td>*</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>d.</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>**</td>
</tr>
</tbody>
</table>

Candidates (a) and (b) are the same except that (a) violates EPP, since it does not have a preverbal subject. Both violate FP equally, in that main stress does not fall on the focused constituent. Nonetheless, (a) is the observed configuration; the subject is rightmost even though stress and focus do not correspond. The difference between (a) and (b), though, is in how far ‘apart’ the focus and the main stress are. It seems to be better for the focused constituent to be rightward, even if it can’t get main stress directly. This idea is reminiscent of the handling of ALIGN-IP-R. Specifically, ALIGN-IP-R is formulated in such a way that each step away from the ideal is a further violation; that is, it is gradiently rather than categorically violated. This is a reasonable formulation, in that it does in fact appear to be the case that main stress falls as far right as it can, given the context, with each step leftward necessitating a more restrictive context. Consider (63-66), for example.
(63) [Context: What’s up?]
   a. [Lori sold a hedgehog to Meghanne]f.
   b. # Any stress farther left (on hedgehog, say)

(64) [Context: What have you heard about Meghanne recently?]
   a. [Lori sold a *hedgehog*]f to Meghanne.
   b. # Any stress farther left (on sold, say)

(65) [Context: I just saw Meghanne with a hedgehog. How did she get it?]
   a. [Lori sold]f that hedgehog to Meghanne.
   b. # Any stress farther left

(66) [Context: Who sold a hedgehog to Meghanne?]
   a. [Lori]f sold a hedgehog to Meghanne.

In each case, stress is as far right as it can get, indicating that moving the stress leftward can only happen to satisfy the needs of a higher constraint, but that it’s not the case that, once that higher constraint is satisfied, ALIGN-IP-R no longer cares how far right something is. If ALIGN-IP-R were violated categorically, then once stress was anywhere other than rightmost, further leftward movement would not degrade acceptability. This is obviously not the case.

With this in mind, and considering the Spanish data in (61), the question then becomes whether we can conceive of FP as this sort of constraint. That is, could FP be a constraint that has gradient violations, where a ‘more severe’ mismatch between focus and stress incurs additional violations? This certainly appears to be the case we’ve observed. Example (61b), repeated here as (67b), is worse than (61a), repeated here as (67a), and the difference between them is that main stress is farther from the focused constituent in (b) than in (a).
(67) [Context: How many police officers arrested the suspect?]

Arrested the suspect three police officers


If we were to reformulate FP along the lines of ALIGN-IP-R, though, we can capture this difference and make the correct prediction.

(68) FOCUSPROMINENCE (FP) [Revised formulation]
Focus is aligned with prominence.

*Assign one violation mark for each pP-boundary between main stress (the pP-head that projects the iP-head) and a pP-head corresponding to a Foc-marked node.*

Reformulating FP in this way makes it a constraint that is violated once for each step away from the pP corresponding to the focus that the main stress falls. With this new FP, then, our model gives the correct predictions for (67).

(69) [Context: How many police officers arrested the suspect?]


Arrested the suspect three police officers

<table>
<thead>
<tr>
<th>N: {Tres, policías, arrestar, el, sospechoso}</th>
<th>Context: x police officers arrested the suspect</th>
<th>T-Gov</th>
<th>ALIGN-IP-R</th>
<th>FP</th>
<th>EPP</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>( * )( * )( * )( * )I</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Arrestaron al sospechoso tres policías.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>( * )( * )( * )I</td>
<td></td>
<td></td>
<td>**</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Tres policías arrestaron al sospechoso.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
One concern that may arise from making this change, though, is whether this will cause some problem for the model in regard to English. However, since FP is undominated in English, even a single violation is enough to decide against a candidate. As such, changing the formulation of FP does not change the predictions the model makes for English, while at the same time increasing empirical coverage in Spanish. Another possible concern might be that such a formulation of FP as alignment is theoretically undesirable; however, I have argued by drawing parallels to ALIGN-IP-R that this is a reasonable move to make in that alignment constraints of this type are not \textit{a priori} unreasonable. A more thorough examination of this phenomenon and this data is given in Hoot (2012).

3.9.3. \textbf{Other focused modifiers}

The pattern laid out above for focused numerals also holds for other pre-nominal modifiers that receive narrow focus, for those Spanish speakers who present the pattern in (55) and (61). For example, focused pre-nominal adjectives and demonstratives show a focus-stress mismatch in this variety of Spanish, and, when they modify a subject, that subject is in a postverbal position.

(70) \hspace{1cm} [Context: Which Bad Religion record did you buy?]

\begin{itemize}
\item[a.] Compré su \textit{[último]}\textit{F} \textit{disco}.
\hspace{1cm} bought.1st their latest record
\hspace{1cm} ‘I bought their latest record.’
\item[b.] #Compré su \textit{[último]}\textit{F} \textit{disco}.
\end{itemize}
(71) [Context: Which contestant won the prize?]

a. Ganó el premio el [primer]\_\text{\textsubscript{F}} concursante.
   won the prize the first contestant
   ‘The first contestant won the prize.’

b. #Ganó el premio el [\textbf{primer}]\_\text{\textsubscript{F}} concursante.

c. #El [primer]\_\text{\textsubscript{F}} concursante ganó el premio. (Regardless of stress)

(72) [Context: Which platypus did Kalyani buy?]

a. Kalyani compró [este]\_\text{\textsubscript{F}} ornitorrinco.
   Kalyani bought this platypus

b. #Kalyani compró [\textbf{este}]\_\text{\textsubscript{F}} ornitorrinco.

c. #[Este]\_\text{\textsubscript{F}} ornitorrinco comió toda la comida. (Regardless of stress)

(73) [Context: Which platypus ate all the food?]

a. Comió toda la comida [este]\_\text{\textsubscript{F}} ornitorrinco.
   Ate all the food this platypus
   ‘This platypus ate all the food.’

b. #Comió toda la comida [\textbf{este}]\_\text{\textsubscript{F}} ornitorrinco.

c. #[Este]\_\text{\textsubscript{F}} ornitorrinco comió toda la comida. (Regardless of stress)

In each case above, non-rightmost stress is unacceptable, and, further, the focused constituent must be as close to the rightmost stress as possible. Even though stress-focus mismatch is permitted, as in all the acceptable examples, it must be minimized, which is why (71c) and (73c) are infelicitous. In these cases, if stress is anything other than rightmost, the structure is rejected due to the high rank of ALIGN-IP-R, and if stress is rightmost, then the distance between the stress and the focused constituent is too great, incurring additional
violations of FP. In each case, though, the model as it stands correctly predicts the observed data.

### 3.9.4. Red convertibles

One special case of focused modifiers is known as ‘red convertible’ sentences. First pointed out by Schwarzschild (1999), these are sentences in which a larger constituent than the pre-nominal modifier is in focus, but the stress, in English, still falls on the modifier, since everything else in the focus is given. Consider for example (74).

(74) [Context: John used to drive Mary’s red convertible, but it’s unavailable. What will he do now?]

a. He will drive [her blueF convertible]F.

b. # He will drive [her blueF convertible]F.

Schwarzschild then accounts for this data under constraint conflict, appealing to *F and GIVEN to get the correct F-marking and using his constraint Foc (like FP) to get the correct stress. Important to his account is the definition of Foc-marked nodes as being those F-marked nodes that are not immediately dominated by another F-marked node. According to this definition, both the adjective blue and the object her blue convertible are Foc-marked and thus require that main stress correspond to them, creating the stress pattern in (74a). This is substantially the same account that I offer here. FP requires main stress to be aligned to the Foc-marked node(s), and, thus, stress on the noun convertible will incur a violation of FP.

For some Spanish speakers, though, as with other modifiers, a pre-nominal adjective in a ‘red convertible’ sentence will not be stressed, even though this incurs a violation of FP. In most
cases, though, since few adjectives in Spanish must be pre-nominal, stress will indeed fall on the adjective, which appears in final position.

(75) [Context: John used to drive Mary’s red convertible, but it’s unavailable. What will he do now?]

a. Conducirá [su descapotable [azul]_F].
Will.drive.3rd her convertible blue
‘He’ll drive her blue convertible.’

If the adjective is one of the few that must be pre-nominal, we see the same pattern attested previously; in order to have stress rightmost, a stress-focus mismatch is tolerated.

(76) [Context: The police arrested the real murderer. Who did the FBI arrest?]

a. La FBI arrestó [al [supuesto]_F asesino]_F.
The FBI arrested the supposed murderer
‘The FBI arrested the supposed murderer.’

b. #La FBI arrestó [al [supuesto]_F asesino]_F.

This data brings us no new information about the ranking of constraints, but I include it here to show the empirical coverage of the current model, since, to my knowledge, no one has previously discussed ‘red convertible’ sentences in Spanish.

3.10. **Summary and loose ends**

We have thus far seen the relevant cases for determining the rankings of constraints within the current model. The rankings we have come to thus far are represented in the Hasse diagrams in (77) and (78). In these diagrams, a line down from one constraint to another indicates that the higher constraint outranks the lower one. A constraint that has no line above it
going to a higher constraint is undominated, and constraints that are not connected by a line are unranked relative to one another.

(77) **Constraint ranking – English**

The diagram in (77) tells us several things about the rankings of constraints in English. We can see that FP is undominated and outranks ALIGN-iP-R, as do the syntactic constraints EPP and STAY. ALIGNXP-R also outranks ALIGN-iP-R. ALIGNXP-R also outranks *pP, which in turn outranks ALIGNXP-L. GIVEN outranks *F, but both are unranked relative to the other constraints. Finally, T-Gov and STRESSXP are unranked relative to the other constraints.

(78) **Constraint ranking – Spanish**

The diagram in (78) represents the proposed ranking for Spanish. We can see that T-Gov and ALIGN-iP-R are undominated and unranked relative to one another. Further, both outrank FP, EPP, and STAY. FP outranks EPP, which in turn outranks STAY. STAY is also outranked by both
ALIGNXP-L and ALIGNXP-R, which are unranked relative to each other and undominated. Both alignment constraints outrank *pP. As with English, GIVEN outranks *F, but both are unranked relative to the other constraints. Finally, STRESSXP is unranked relative to any other constraint (since its effects are never visible in Spanish). The ranking in (78) will be revised in Chapter 5 based on the results of the experiment.

Obviously, many of these constraints are unranked relative to one another. In some cases, this is likely because two constraints operate on different parts of the grammar. For example, I cannot think of a situation where GIVEN or *F would conflict with STAY; these constraints simply operate on different things. In other cases, though it may be possible in principle for two constraints to conflict, there are no reliable ways to determine their relative ranking because a lower ranked constraint will always be violated instead, allowing both to be satisfied. For example, we could conceive of a case where STRESSXP would conflict with FP. If we had a structure in English where sacrificing canonical pP-level stress (shifting the stress within the pP from, say, an argument to the verb, leaving the argument without stress) could lead to stress-focus correspondence, and we could compare this case with another candidate where stress-focus correspondence was sacrificed to maintain the canonical pP-level stress, we could determine the ranking between the two. However, since ALIGNXP-R outranks *pP, the solution will always be to create a new pP, violating *pP but satisfying both STRESSXP and FP.

The rankings presented above are as articulated as they can be, I believe, according to the data presented here. With these rankings in mind, then, we can turn now to some empirical predictions.
3.11. **Testing the model experimentally**

The experiment is designed to test the model laid out here. In particular, it looks to determine what the constraint ranking is for each of the groups (monolinguals and two heritage speaker groups). There are many possible rankings, in theory. However, for practical purposes, I will not consider all possible rankings. The broadest assumption that I will make is that the heritage Spanish system will not differ from the monolingual system in terms of the construction of prosodic structure. More concretely, I will assume that both ALIGNXP-L and ALIGNXP-R outrank *PP in heritage and monolingual Spanish, which means that the effects of STRESSXP will be undetectable. This assumption may or may not be a valid one. As Bullock (2009) notes, there is very limited research on heritage prosody, and I am not aware of any that discusses the basic formation of prosodic structure. Nonetheless, in order to limit the experiment to a reasonable size, prosodic phrasing will not be tested directly.

I also assume that GIVEN and *F maintain their ranking (as the opposite ranking would lead to no F-marking), and that these constraints remain unranked relative to any others. T-GOV will be assumed to be undominated as well. I will instead concentrate on the possible variation between FP, ALIGN-IP-R, STAY, and EPP.

If we focus mainly on just these four constraints, the simpler ranking claimed for Spanish based on the data presented in this chapter is as follows:

(79) **Constraint ranking to be tested experimentally**

Spanish: ALIGN-IP-R >> FP >> EPP >> STAY

The relative ranking of EPP and STAY is the same in Spanish and English, and is also necessary to get preverbal subjects at all, so these will be assumed not to vary in regard to each other. Possible variations, then, include the relative ranking of ALIGN-IP-R and FP, the relative
ranking of ALIGN-IP-R and EPP, the relative ranking of ALIGN-IP-R and STAY, the relative ranking of FP and EPP, and the relative ranking of FP and STAY. These relative rankings are tested in the experiment by collecting participants’ judgments of structures that incur violations of specific constraints and comparing the ratings of these structures with those of other structures that violate different constraints. The revised formulation of FP is also tested.

3.12. **Conclusions**

In this chapter I have argued that we can account for the available facts of focus marking in Spanish (as it is commonly claimed to be in the literature) and English, and the crosslinguistic variation between them, using a principled system of ranked, violable constraints, as in Optimality Theory. I developed this analysis, eventually concluding that the constraint rankings were as in the diagrams in (77) and (78).

One novel claim in my discussion is the proposal that, in Spanish, FP may be outranked by ALIGN-IP-R and T-GOV. This is contrary to most previous proposals that assume FP (or something like it) is undominated. Another novel claim is that FP may be gradient, like ALIGN-IP-R, with additional distance between the focus and the main stress incurring additional violations of FP. These claims were based on data from Spanish nominal modifiers, which had not been widely considered before.

Moving forward, this model is tested experimentally, as described in the next chapter, focusing on the rankings of four particular constraints, as well as this new formulation of FP. The model presented here thus informs the design of the experiment. The findings of the experiment will reveal that the ranking proposed in this chapter based on data from the literature needs to be revised.
4. METHODOLOGY

4.0. Introduction

This chapter presents the design of the experiment that seeks to answer the research questions. In section 4.1, the results of several pilot studies are reported so that the reader can understand how the experimental method was developed. Section 4.2 discusses the participants who took part in the study, while section 4.3 explains in detail the design of the experimental materials. Section 4.4 discusses the procedure used. Data analysis is presented in the next chapter.

4.1. Pilot study results

Five pilot studies were conducted in the process of developing the experiment used in this project. I began with a pre-pilot study to ensure that this research held promise, then developed a full-scale pilot based on the theoretical proposal laid out in Chapter 3. The design for the first pilot was subsequently revised, first with a minor revision and then with a complete overhaul. One further revision was made after that, resulting in the current experiment. In this section I report on all the pilot studies, to make it clear how and why the current experiment was developed. The purpose of this discussion is to understand the development of the experiment, and so I will report only relevant details rather than complete numerical results for the pilot studies.
4.1.1. Pre-pilot results

A pre-pilot study was conducted in order to determine whether this research held promise, some of the results of which were reported in Hoot (2009). Six monolinguals and four heritage speakers participated. The design consisted of five tasks: an acceptability judgment task (straight up-or-down felicity judgments with wh-context question), a forced-choice acceptability judgment task (choosing the better of two sentences in a context provided by a wh-question), a guided production task (asked to respond with full sentences, including a particular answer that was provided, to a wh-question), an elicited response task (asked to repeat a provided sentence in a wh-question context), and a sentence construction task (given a randomly distributed group of words in a ‘bubble’ drawing on a page and asked to construct sentences to fit in the context, given by a wh-question). The judgment tasks included fourteen possible information structural contexts, while the production tasks focused on between five and nine different structures. The results showed considerable variability, and the n size was small, so no definite conclusions could be drawn, but some tendencies were observed, and some problems noticed, which inform the current research.

On the whole, few major differences were observed between the monolingual and bilingual groups. The monolinguals showed a slightly greater rate of use of subject-final orders, but no major differences stood out. This could be because the monolingual group was not truly monolingual (several had lived in the U.S. for many years and used mostly English throughout the day), and because the heritage speakers were mostly highly proficient. There were no measures of proficiency in this pre-pilot test, though, so there was no way to tell if proficiency was the issue. To correct for this problem in the current study, proficiency tests were
administered to all groups, and a wider range of heritage speakers were recruited and divided into proficiency groups.

A surprising finding of the pre-pilot study was that both groups preferred to maintain canonical word order even in the face of violating prosodic constraints, in stark contrast to the literature on focus in Spanish, as well as the data presented in Chapter 3. However, it is also possible that this pattern was observed due to deficiencies in the informal design of the pre-pilot. I speculated that one of the reasons that certain unexpected results, such as this one (and this may perhaps have a bearing on the lack of difference between groups as well), is that the contexts were insufficiently salient. That is, using single *wh*-questions to provide contexts may not have made the appropriate focus/givenness structures sufficiently salient to participants. I further speculated that, since word order was maintained but canonical accent patterns sacrificed, perhaps the main stress was insufficiently salient to participants. However, participants in both groups consistently rejected cases of stress-focus mismatch, indicating that they were attending to stress to some extent. In order to rectify these shortcomings, the present study employs more detailed contexts and tested experimental items beforehand to ensure the salience of the stress in stimuli, as outlined below.

Even though the results were inconclusive, the pre-pilot study did provide evidence that this phenomenon can be tested experimentally, in that both groups did exhibit strong preferences in certain contexts. It also showed that designing an experiment to successfully test focus marking would be challenging. The experimental design laid out in this chapter builds on what was learned in the pre-pilot study to avoid such pitfalls.
4.1.2. First pilot study – Factorial design

The first pilot study had a full factorial design, testing every possible combination of stress and word order in three contexts, in a contextualized felicity judgment task.

4.1.2.1. Participants

The participants in the first pilot study were divided into a Spanish monolingual group and a heritage speaker group.

The Spanish monolingual group consisted of nine native speakers of Mexican Spanish. I consider a native speaker to be someone whose first language is Spanish and who did not learn another language before age 18. Since participants were recruited in the United States, all except one had some knowledge of English, and thus were not truly monolingual, but they were all monolingually raised, and thus have fully developed grammatical systems in Spanish. This group was similar to the control group of native speakers in Montrul (2004). These participants were all born and raised in Mexico and had come to the U.S. as adults. All except two had been in the U.S. for less than 15 years. They ranged in age from 18 to 46, with a mean age of 31.9. Two were male and seven were female.

The heritage speaker group consisted of nine heritage speakers of Mexican/U.S. Spanish. In line with Valdés (2000:1), a heritage speaker is someone who is “raised in a home where a non-English language is spoken, who speaks or merely understands the heritage language, and who is to some degree bilingual in English and the heritage language.” These participants were born and raised in the U.S. or came to the U.S. before the age five and were educated in the U.S. Their first language was Spanish or both Spanish and English, and they began acquiring both Spanish and English before age five. They reported speaking a Mexican dialect of Spanish. They ranged in age from 19 to 27, with a mean age of 20.4. Three were male and six were female.
All participants were adults who were at least moderately familiar with the use of computers, and who suffered no specific linguistic or cognitive impairments. Participants were naïve, in that they were neither linguists nor students of linguistics.

4.1.2.2. Materials

This study consisted of a contextualized felicity judgment task. The experiment had a full factorial design with three within-subjects factors: Context (subject focus context, object focus context, modifier focus context), Stress (subject noun stress, modifier stress, direct object stress, indirect object stress), and Word Order (MSVOPP, VOPPMS, MSVPOPO), in addition to the between-subjects factor of Group. The different word orders pertain to the constraints EPP and STAY, while the different stress patterns are manipulations of ALIGN-IP-R. The Context factor manipulates FP. The design thus has $3 \times 4 \times 3 = 36$ cells. Seven lexicalizations per cell were used, for a total of 252 items. Table I illustrates the design with the example sentence *Tres chicos le dieron la carta a mi prima* ‘Three boys gave the letter to my cousin.’

<table>
<thead>
<tr>
<th>Table I. First Pilot Design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSVOPP</strong></td>
</tr>
<tr>
<td><strong>Subject stress</strong></td>
</tr>
<tr>
<td>1. Tres <strong>chicos</strong> le dieron la carta a mi prima.</td>
</tr>
<tr>
<td><strong>Modifier stress</strong></td>
</tr>
<tr>
<td>4. <strong>Tres</strong> chicos le dieron la carta a mi prima.</td>
</tr>
<tr>
<td><strong>DO stress</strong></td>
</tr>
<tr>
<td>7. Tres chicos le dieron la <strong>carta</strong> a mi prima.</td>
</tr>
<tr>
<td><strong>IO stress</strong></td>
</tr>
<tr>
<td>10. Tres chicos le dieron la carta a mi <strong>prima</strong>.</td>
</tr>
</tbody>
</table>

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Here, $M =$ modifier (such as a number), $S =$ subject noun, $V =$ verb, $O =$ direct object, $PP =$ indirect object.
The experiment included the twelve cells in Table I, each of which appeared in three contexts, for a total of 36 cells.

Lexical items for the experimental stimuli were taken from basic vocabulary, defined as being among the 5,000 most common Spanish words (Davies 2006). Direct and indirect objects were definite DPs, while the subject was always a noun modified by a number, and all arguments were balanced for length (i.e., all arguments in the sentence had the same number of syllables), since phonological weight can be a factor in pre- and post-posing (Lozano 2006b). Pretests of the stimuli were performed to ensure that they were intelligible, that the pitch accent marking stress was uniform for all stressed constituents, and that the stress was perceptible on the desired constituent (more on pretests for recorded stimuli in section 4.3.5.2).

Contexts and responses were recorded by a native speaker of central Mexican Spanish living in the U.S. This person received training from the experimenter to ensure he could consistently produce the desired accent patterns. Contexts and answers were recorded separately in order to avoid biasing the reader’s pronunciation of the answers due to the context. Following Lozano (2003, 2006a), the contexts were short stories that involve the participant in a hypothetical situation, and in which the participant must give some information to the other participant in the story, a design which avoids the pitfalls of the wh-question test pointed out by Kahnemuyipour (2009) noted in Chapter 2.

An example context and response are in (1).
Un día entras en la sala, donde tu mamá está mirando un drama legal en televisión. Un personaje está diciendo: “¡El inspector consiguió confesiones de diez banqueros!” No viste el comienzo del programa, y por eso le preguntas a tu mamá: “¿Qué le admitieron diez banqueros al inspector?”

Experimental item (Heard spoken with stress on the word in bold):

Diez banqueros le admitieron la corrupción al inspector.

1 2 3 4 5
(Muy raro) (Perfecto)

‘One day you walk into the living room, where your mom is watching a legal drama on TV. One character is saying: "The inspector got confessions from ten bankers!" You didn't see the beginning of the program, and so you ask your mom: "What did ten bankers admit to the inspector?’”

Experimental item (Heard spoken with stress on the word in bold):

Ten bankers admitted the corruption to the inspector.

1 2 3 4 5
(Very strange) (Perfect)

Following Keller and Alexopoulou (2001), in order to keep the design to a manageable size and the burden on participants to a minimum, two experimental sets were created from these items. Each experimental set consisted of half the critical stimuli. Each participant thus heard three or four lexicalizations per cell, for a total of 126 experimental items. The items each participant heard were pseudo-randomized to control for ordering effects. No distractors were included in the pilot. Five practice items, taken from the other experimental set, were included.

In addition to the experimental materials, participants completed a language background questionnaire and a Spanish proficiency test. The Spanish proficiency test was a modified form of the Diploma of Spanish as a Foreign Language (DELE) test, which has been used in previous studies (Montrul 2002, 2004). These materials are the same as those used in the final study, and are described more fully in sections 4.3.1 and 4.3.2.
4.1.2.3. Procedure

The experiment took place in the Bilingualism Research Laboratory on the campus of the University of Illinois at Chicago. The experiment was conducted using E-Prime Professional 2.0 (Psychology Software Tools, Inc.). The 126 experimental items were divided into twelve blocks of ten items (plus one final block of 6 items), with breaks between each block. Three of the breaks were forced breaks, during which participants filled out the background questionnaire and the two parts of the proficiency test.

Participants did the experiment on one of the lab computers. The experiment began with instructions and five practice items, then moved on to the experimental items. The experiment was self-paced, though the program did not accept judgments until the stimulus had been presented.

Participants saw the context story, which ends in a question, presented in Spanish on a computer screen as they heard it read aloud via headphones. They then heard a response in Spanish, and they were asked to rate the response’s acceptability on a five-point Likert scale from 1 to 5 by pressing the appropriate key on the keyboard. The response was not presented on the screen; since the goal was for them to consider its spoken form, including stress placement, it was decided that they should only hear it in order to avoid influencing them to focus only on word order by reading it.

The experiment took around two hours, and participants were compensated for their time.

4.1.2.4. Results and implications

The data was analyzed using a mixed-design factorial ANOVA, with the between-subjects factor Group (heritage or monolingual) and the within-subjects factors Context, Stress, and Word Order. Following Keller and Alexopoulou (2001), this allows us to test the validity of
the constraints directly, in particular by looking at the interactions in the ANOVA, as well as testing their relative rankings with post hoc tests. This design also had the advantage of testing all the constraints within a single matrix and allowing for a variety of statistical tests, as well as the advantage of testing every possible variant (in terms of word order and stress) of a given sentence. Unfortunately, it also had several disadvantages that became apparent in analyzing the data, which led me to subsequently revise the design.

I present the results of this pilot study in summary here. Rather than reporting on all the results in detail, I focus only on the salient findings that contributed to revisions in the design, for the sake of space and because the purpose of this section is to explain the evolution of the experiment.

There were three especially pertinent results: (i) there was a significant overall difference between groups, with the monolinguals rating all structures higher than the bilinguals; (ii) there was a main effect of word order, driven almost entirely by the bilinguals’ rejection of subject-final orders; (iii) there was no main effect for stress nor significant group × stress, group × context × stress, or group × context × order × stress interactions.

First, there was a main effect for group; that is, across conditions the two groups differed in their acceptability ratings. This was unexpected; the expectation was that there would be interactions of group with the other factors. For instance, an interaction of group and stress would mean that the two groups differed in how they rated different stress patterns, and a four way interaction (group × context × order × stress) would indicate that the groups differed in how they rated different structures (word order and stress patterns) in different contexts. These sorts of interactions would indicate different constraint rankings between the groups. However, a main effect for group was found instead, indicating that, regardless of context, stress or word order,
the groups produced different ratings. In particular, the difference was that the monolingual group rated everything higher than the bilingual group did. In fact, one participant gave every single sentence in the experiment a rating of 5.

The bilinguals’ low ratings of stimuli across the board was probably influenced especially by their nearly complete rejection of the subject-final word order, VOPPMS. The MSVPPO order was also rated lower than MSVOPP, but VOPPMS was rated much lower. The fact that the monolinguals rated everything very high, while the bilinguals rated any word order alterations lower than canonical order (and, in particular, rated the most extreme deviation from canonical word order so low), led me to speculate that both groups were not in fact attending to the felicity of the sentences in context but rather to their grammaticality, based purely on word order.

Finally, there was no significant main effect for stress, nor for interactions between stress and group, between stress, group, and context, or between stress, group, context, and word order, which were predicted. However, significant interactions were found for context × stress and order × stress, in line with expectations. Though these two interactions were promising, the absence of most of the possible effects and interactions involving the stress factor led me to speculate that the stress was insufficiently salient in the experiment, and that participants were not attending to stress patterns.

From these three salient results, two main worries about the experiment were thus exposed: (i) that participants were not judging felicity in context but rather grammaticality, and (ii) that participants were not attending to stress because it was insufficiently salient and were instead judging only word order. The first supposition might explain why the monolingual group rated everything so high, viz.: all the sentences were in fact grammatical in Spanish and only differed in their contextual felicity, and so it is to be expected that they rated the sentences high
if they were judging their grammaticality. If the heritage speakers were also judging grammaticality, the fact that they rated VOPPMS order low consistently raises an interesting possibility: that subject-final word order in this case is in fact ungrammatical for heritage speakers. Regarding the second problem, if participants were not attending to stress, this could explain why expected effects for stress were not found.

In light of these worries, and in consultation with members of my thesis committee and members of my lab, it was decided that I would include an extended training phase to take place before the experiment in order to correct for these potential problems. The training phase explicitly addressed the difference of grammaticality versus felicity, and also explicitly made salient the different stress patterns possible in the experiment. Thus, the second pilot study repeated the design of the first pilot with the addition of a training phase, which I describe in the next section.

Before moving on, though, one final comment should be made regarding the idea that participants may have been judging grammaticality instead of felicity. Though this insight does not relate to the development of the training phase, it does impact the development of the final experiment. The issue is that, according to Gutiérrez-Bravo (2005), unlike in Peninsular Spanish, Mexican Spanish does not in general admit verb-initial orders. That is not the same as saying that Mexican Spanish does not admit subject-final orders, only that some element must precede the verb. For example, an adverb like ayer ‘yesterday’ can serve to make verb-initial orders grammatical. To avoid this problem, I considered adding an adverb to the beginning of all the experimental stimuli. However, it is clear from these results, in which the monolingual group rated all the sentences high, including those with verb-initial structures, that Gutiérrez-Bravo’s restriction on verb-initial orders does not appear to have a large effect on these speakers. Because
of these results, then, and in the interest of not adding unnecessary complexity to already-complex sentences, it was decided to leave the sentences without the adverbs.

4.1.3. Second pilot study – Factorial design with training

The second pilot study had the same structure as the first, in that it used the same factorial design and had, on the whole, the same procedures. The only difference was the addition of a larger training phase.

4.1.3.1. Participants, materials, and procedure

As before, the total number of stimuli were divided into two experimental sets, each of which contained half the critical stimuli. All participants in the second study completed the same experimental set, in order to have the maximum number of judgments on a given structure without needing too many participants, since the purpose of this pilot was primarily to evaluate whether the addition of the training phase was helpful.

Four monolingually-raised speakers of Mexican Spanish participated in the second pilot. They had the same demographic backgrounds as the monolingual group from the first pilot (see section 4.1.2.1). Their ages ranged from 23 to 36 (mean 31.3), and three were male and one was female. Heritage speakers were not included in the second pilot because the goal was to evaluate the training, and it was decided to focus only on one of the groups.

The training consisted of two pages of written explanation with examples, followed by thirty practice items with explanations interspersed. Beginning with the written explanation, the training explained that sentences which convey the same factual information can nonetheless vary depending on the situation in which they are uttered. It was highlighted that these variations may involve both word order and stress. Examples were given in which participants read three
different examples of the same sentence in one context and then in another context and were asked to think about which ones fit in each context. They also heard examples with different stress patterns but the same word order and were asked to think about what the differences were. At no time were they told which sentence went in which context; they were only given multiple examples and asked which one they preferred in a given context. That is, the explanation made explicitly salient the idea of discourse-conditioned variability in word order and stress, but it never specified what particular structures were under investigation nor did it say which ones were felicitous and which were not. In emphasizing that all the options were possible but suitable for different contexts, the training thus made clearer the idea that contextual felicity as opposed to grammaticality was of interest. The explanation was given in Spanish and avoided using technical terms.

After the explanation section, participants completed thirty practice items. The first five included intransitive predicates and subject focus contexts. The next six were simple transitive predicates with broad focus, object focus, or subject focus contexts. In these first eleven questions, participants were given two or three options and asked to choose the best one. Beginning with number twelve, participants were asked to rate each sentence on a five-point Likert scale in addition to choosing the best one. Items 12-16 continued with simple transitives, while 17-24 expanded the options to include ditransitives and prepositional phrases. Items 25-28 introduced nominal modifiers (numbers and adjectives) in simple sentences, and finally 29 and 30 closely resembled the experimental items, with an MSVOPP structure. The full text of the training phase (as it eventually appeared in the computerized experiment, which is very slightly different than the paper version described here) is in the appendix.
The training phase was done on paper and the items were read aloud to participants in person. For all but one the reading was done by the same native speaker of Mexican Spanish who made the recordings used in the experiment; for one participant that person was not available and so the training was read by the experimenter. After the training phase, participants completed the experiment on E-Prime as described in the previous section.

4.1.3.2. Results and implications

The inclusion of the training phase did appear to alter the results somewhat, but there were still enough problems to lead to changing the experiment again. While one participant continued the previous monolingual pattern of rating nearly all examples at ceiling, the others showed more variation than before. Importantly, some of the cases with stress-focus mismatch (where the stressed element does not correspond to the element in focus) were rated lower than in the previous version of the pilot, indicating that, with the addition of the training, participants were more readily able to attend to both context and to stress. This was an encouraging sign; however, there were also some problems with the results.

One problem was the lack of any discernable pattern across participants. Participants did not all react similarly to the same stimuli, sometimes varying widely (one participant rating a particular structure 1 across the board while another gave it 5 consistently, for example). Another problem is that there were some results that were very surprising, to the extent that it raised concerns as to whether participants were able to do the proposed task or not. As just one example, one participant gave an average rating of 4.25, near ceiling, to the VOPPMS order with
stress on the PP in the object context, where one would expect stress on the object, which was the focus, and that there would be no need for word order alterations. This structure satisfies no constraints and was expected to be rated relatively low, but was in fact near the highest-rated for this participant. Of course, receiving a surprising result is not enough to say the experiment is not working. However, the fact that this structure, which deviated so radically in every way from presumably acceptable structures, was rated so high raised the very real question of whether the training was sufficient to overcome the difficulties posed by the long and unnatural sentences included in the experiment design. This is only one example; many other judgments were difficult to reconcile with what was known about focus in Spanish. Again, just because they were different does not mean the experiment is not valid; in fact, the final results of the experiment (discussed in the next chapter) contradict what has been established in the literature. Thus, the problem was not that the results were unexpected or counter the theoretical predictions. The problem was that, given the lack of pattern and the sometimes very unusual results, it was not clear that the participants were in fact able to do the task, despite the addition of a training phase.

It is well known that judgment tasks can be influenced by myriad factors beyond the acceptability of the structures under consideration (Cowart 1997, Myers 2009, Phillips and Lasnik 2003, Schütze 1996), among which is sentence parsing. The worry here, then, is that the fact that these sentences were so long made them harder to parse. Confronted with a situation which required significant attention to be paid just to parse the sentences, participants may not have been able to further make judgments about their felicity, since, in order to do so, they would

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25 Specifically, in a context that ended in a question like (i), this participant rated a structure like (ii) very high.

(i) ¿Qué le quitaron dos muchachos a tu hijo?
   what Cl.dat take.away two boys to your son
   ‘What did two boys take away from your son?’

(ii) Le quitaron la pelota a mi hijo dos muchachos.
    Cl.dat take.away the ball to my son two boys
    ‘Two boys took the ball away from my son.’ (stress on son)
also have to make a complex calculation involving main stress, context, and word order when they were already having difficulty just parsing the sentence.

In light of these concerns, and in consultation with my dissertation committee, it was concluded that the factorial design was not working. That is, I concluded that the experiment as designed was too unwieldy to measure the desired phenomenon and needed to be changed again. In order to avoid problems of parsing and control for the possibility that the length and unnaturalness of the sentence were influencing the judgments, I decided to reduce the experiment to only those structures necessary to evaluate the theoretical proposal. In doing so, I split the stimuli into groups, rather than testing all the predictions in a single factorial matrix, allowing the sentences in each group to be relatively simple compared to the previous design. However, since the training did seem to bring some improvement, it was decided that the training would be kept in the revision. The new design is discussed in the next section.

4.1.4. Third pilot study – Reduced design

The third pilot study was a radical redesign. Instead of a full factorial design, the third pilot focused only on those structures of explicit interest to the theoretical proposal. This reduced the size of the experiment substantially, since only 10 structures would be tested instead of 36. Also, in only focusing on structures that had specific constraint violations, the stimuli were divided into three groups, one corresponding to each type of focus. This splitting of the stimuli allowed the sentences to be much shorter and easier to parse, because it was no longer necessary to have sentences with all the elements of MSVOPP. It also allowed for more natural contexts to be constructed. Further, this redesign avoided the potential pitfalls of the first study by continuing to include the training session.
4.1.4.1. Participants

Three monolingually-raised speakers of Mexican Spanish participated in the second pilot. They had the same demographic backgrounds as the monolingual group from the first pilot (see section 4.1.2.1). Two were aged 21 and one 57, and two were female and one was male. Heritage speakers were not included in the third pilot because the goal was only to test the new experiment design with monolinguals.

4.1.4.2. Materials

The third pilot design consisted of ten structures divided into three conditions: three structures tested in the subject focus condition, three structures tested in the object focus condition, and four structures tested in the modifier focus condition. Rather than a factorial design including every possible combination of stress and word order, only those structures that incurred crucial violations of the theoretical constraints were included.

For the subject focus condition, which is signaled by a *wh*-question like (2a), there was one sentence that incurred a violation of EPP by having a subject final order (2b), one sentence that incurred a violation of ALIGN-iP-R by not having rightmost stress (2c), and one sentence that incurred a violation of FP by having stress-focus mismatch (2d).

(2) Example subject focus condition stimuli

a. [Context: Who bought a car?]  
Compró un carro mi tío.

b. Mi tío compró un carro.

c. Mi tío compró un carro.

d. Mi tío compró un carro.

For the object focus condition, which is signaled by a *wh*-question like (3a), there was one sentence that incurred a violation of STAY by having the object appear rightmost (3b), one
sentence that incurred a violation of ALIGN-I-P-R by not having rightmost stress (3c), and one sentence that incurred a violation of FP by having stress-focus mismatch (3d).

(3) Example object focus condition stimuli

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>[Context: What did your mom give your nephew?]</td>
</tr>
<tr>
<td>b.</td>
<td>Mi mamá le dio a mi sobrino un <strong>chocolate</strong>.</td>
</tr>
<tr>
<td>c.</td>
<td>Mi mamá le dio un <strong>chocolate</strong> a mi sobrino.</td>
</tr>
<tr>
<td>d.</td>
<td>Mi mamá le dio un chocolate a mi <strong>sobrino</strong>.</td>
</tr>
</tbody>
</table>

For the modifier condition, which was signaled by a wh-question like (4a), there was one sentence that incurred violations of EPP and ALIGN-I-P-R by having no pre-verbal subject and non-rightmost stress (4b), one sentence that incurred violations of EPP and FP by having no pre-verbal subject and a stress-focus mismatch (4c), one sentence that incurred a more severe violation of ALIGN-I-P-R by not having rightmost stress (4d), and one sentence that incurred a more severe violation of FP by having a distant stress-focus mismatch (4e).

(4) Example modifier focus condition stimuli

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>[Context: How many boys grabbed a book?]</td>
</tr>
<tr>
<td>b.</td>
<td>Agarraron un libro <strong>tres</strong> chicos.</td>
</tr>
<tr>
<td>c.</td>
<td>Agarraron un libro tres <strong>chicos</strong>.</td>
</tr>
<tr>
<td>d.</td>
<td><strong>Tres</strong> chicos agarraron un libro.</td>
</tr>
<tr>
<td>e.</td>
<td>Tres chicos agarraron un <strong>libro</strong>.</td>
</tr>
</tbody>
</table>

As before, lexical items for all the experimental stimuli were taken from basic vocabulary, defined as being among the 5,000 most common Spanish words (Davies 2006). Direct objects were indefinite DPs in all conditions, while subjects and indirect objects were definite DPs with a possessive, except in the modifier condition, where the subject was a noun
modified by a number. All arguments in any given sentence were balanced for length (i.e., all arguments in the sentence had the same number of syllables), since phonological weight can be a factor in pre- and post-posing (Lozano 2006b). Pretests of the stimuli were again performed to ensure that they were intelligible, that the pitch accent marking stress was uniform for all stressed constituents, and that the stress was perceptible on the desired constituent (see section 4.3.5.2).

As before, contexts and responses were recorded by a native speaker of central Mexican Spanish living in the U.S.. This person received training from the experimenter to ensure he could consistently produce the desired accent patterns. Contexts and answers were recorded separately in order to avoid biasing the reader’s pronunciation of the answers due to the context. Following Lozano (2003, 2006a), the contexts were short stories that involve the participant in a hypothetical situation, and in which the participant must give some information to the other participant in the story.

An example context and response for the subject focus condition are in (5).

(5) Tú y tu amiga Sara están en la casa de ella, haciendo algo de comer en la cocina. Ella va a buscar unos ingredientes que había dejado en el carro, cuando suena tu celular. Es tu tío, quien acaba de comprarse un carro nuevo. Cuando regresa Sara, estás hablando del color y el modelo del carro, y del precio de la gasolina, y ella se da cuenta de que alguien que conoces acaba de comprar un carro. Cuando cuelgas, Sara te pregunta: "¿Quién compró un carro?"

Experimental item (Heard spoken with stress on the word in bold):
Mi tío compró un carro.

1 2 3 4 5
(Muy raro) (Perfecto)
You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”

Experimental item (Heard spoken with stress on the word in bold):
My uncle bought a car.

1 2 3 4 5
(Very strange) (Perfect)

Five lexicalizations per structure were used, for a total of 50 stimuli. Because 50 stimuli is a much more manageable number, they were not divided into experimental sets; all participants judged all the stimuli. Stimuli were pseudo-randomized and counterbalanced to avoid ordering effects (for more details, see section 4.4.5.2).

In addition to these critical items, participants completed the training phase described above in section 4.1.3.1. However, the training phase was now incorporated into the computerized experiment and took place on E-Prime, just as the experimental section did. The recordings of the training were made with the same native speaker of central Mexican Spanish who did the recordings of the experimental stimuli. Participants also completed a background questionnaire and proficiency tests, described more fully in sections 4.3.1-4.3.3.

4.1.4.3. Procedure

The experiment again took place in the Bilingualism Research Laboratory on the campus of the University of Illinois at Chicago, using E-Prime Professional 2.0 (Psychology Software Tools, Inc.). The 50 experimental items were divided into five blocks of ten items with breaks between each block.

Participants completed the experiment on one of the lab computers. The experiment began with the instructions and training phase, then moved on to the experimental items. The
experiment was self-paced, though the program did not accept judgments until the stimulus had been presented.

Just as before, participants saw the context story, which ends in a question, presented in Spanish on a computer screen as they heard it read aloud via headphones. They then heard a response in Spanish, and they were asked to rate the response’s acceptability on a five-point Likert scale from 1 to 5 by pressing the appropriate key on the keyboard. The response was not presented on the screen; since the goal was for them to consider its spoken form, including stress placement, it was decided that they should only hear it in order to avoid influencing them to focus only on word order by reading it. After each judgment was entered, a new context appeared and was heard, and a new sentence was judged. Participants heard a given context story three to four times, but never consecutively.

The experiment took one and a half hours total (another advantage of this design was that it was shorter), and participants were compensated for their time.

4.1.4.4. Results

Though this design had several advantages that previous designs did not have, it too was unsuccessful. As in the first design, most ratings were at ceiling, despite the training phase. There were few differences between structures, though the VOS order in the subject focus context was rated lower than SVO. It again seemed that participants were unable to make the desired type of judgment, making instead judgments on grammaticality and without attending to the stress.

In further examining the results, though, an interesting observation emerged. Participants were more able to distinguish between structures, using more of the scale and showing clearer patterns of behavior, in the training phase than in the experiment itself. So perhaps the problem
was something that made the experiment different from the training. They both asked for the same kinds of judgments on the same scale. Both were recorded the same way. Two key differences emerged: in the training, (i) participants could both see and hear the stimuli, with the stressed constituent marked with asterisks, and (ii) participants heard all the sentences for a given context one after the other, rather than hearing a context, one stimulus, then a new context and a new stimulus. Again in consultation with my dissertation committee, it was decided to incorporate these changes into a new pilot design. This fourth redesign eventually became the final experiment.

4.1.5. Fourth pilot study – Final design

The fourth pilot study resembled the third in its reduced design. Two changes were made, though. First, participants both heard and saw the stimuli, rather than only hearing them. Secondly, participants heard all the stimuli corresponding to a given context story together rather than separately.

4.1.5.1. Participants

Six monolingually-raised speakers of Mexican Spanish participated in the second pilot. They had the same demographic backgrounds as the monolingual group from the first pilot (see section 4.1.2.1). Their ages ranged from 24 to 54 (mean 35.2), and two were male and four were female. Heritage speakers were not included in the fourth pilot because the goal was only to test the new experiment design with monolinguals.

4.1.5.2. Materials

The stimuli for this design were the same as those used previously, described in section 4.1.4.2. Again there were 50 critical stimuli, five lexicalizations each of 10 structures. Because
the way they were presented was reorganized (described below in section 4.1.5.3) they were divided into three blocks of 16-17 stimuli (in a series of five trials) per block. The same background questionnaire and proficiency tests were included as well.

4.1.5.3. Procedure

As in the previous version of the experiment, it was completed on E-Prime in the Bilingualism Research Lab, and it began with the same training phase and ended with the background and proficiency questionnaires. The differences were in how the stimuli were presented.

First of all, the stimuli were written on the screen as well as heard via the headphones. In all previous versions of the pilot, the stimuli were only heard. The idea was that by not printing them on the screen, participants would have to pay attention to the stress and would not be inclined to judge the sentences based only on the written word order. However, as discussed above, this strategy did not appear to be successful, and may have in fact made it harder to hear the stress, leading them, ironically, to judge only based on word order. In this new version, the stimuli were written on the screen, and the stressed constituent was marked with asterisks.

Though there was concern that marking where the stress fell could influence responses, in light of the fact that, in the previous studies without the stress marked on the screen, participants appeared to have difficulty identifying the stressed syllable, it was decided that this additional scaffolding was needed. Main stress can be difficult to identify. Since there is no one acoustic correlate to stress (Zubizarreta & Vergnaud 2005), even linguists can disagree on where the main stress falls. In doing the stress pretests on these stimuli (described below in section 4.3.5.2), for instance, I found multiple instances in which two of my consultants identified different stressed constituents even though the sentences had the same pitch accent patterns (as explained below,
when that happened, those items were discarded). If stress can be hard to hear, then, why not give participants some help identifying it? After all, as one of my committee members pointed out, the purpose of the experiment was to investigate how changes of stress and word order affect sentence acceptability in context, not to test whether or not participants could correctly identify the stressed constituent. That is, participants may have consistent judgments about stress and focus, but they may previously have been unable to express them because they had trouble deciding where the stress fell. By marking the stress on the screen, then, we remove this problem.

The second change in how the stimuli were presented was that all stimuli for a given context were presented at once. Previously, participants heard a context story, then a stimulus (one of the three or four possible stimuli for that context), and then a new, different context, followed by a stimulus for that context. The same context never appeared twice in a row, and only one of the possible stimuli was heard after hearing the context.

Table II gives a step-by-step example of what this looked like. The example is the English gloss of what was presented; the experiment was in Spanish. In step 1, participants both saw and heard the context. In step 2, they heard the stimulus, but did not see it. In step 3, they judged it, and then they moved on to a new context (step 4) and stimulus (step 5). Later in the experiment, they would again hear and see the context from step 1, and then a new stimulus that went in that context (say, for example, *My uncle bought a car*).
### TABLE II. EXAMPLE OF PREVIOUS PILOT PROCEDURE

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Participant sees</th>
<th>Participant hears</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”</td>
<td>You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”</td>
</tr>
<tr>
<td></td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Participant sees</th>
<th>Participant hears</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”</td>
<td>My uncle bought a car.</td>
</tr>
<tr>
<td></td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Participant judges stimulus by pressing appropriate key on keyboard.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4</th>
<th>Participant sees</th>
<th>Participant hears</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>You’re at your friend Pablo’s house, and his younger sister comes into the living room talking on the phone. She says, “Oh, uncle, it’s beautiful. I love it! Thank you so much for sending it to me for my birthday!” She seems very happy, and you ask Pablo: “What did your uncle send to your sister?”</td>
<td>You’re at your friend Pablo’s house, and his younger sister comes into the living room talking on the phone. She says, “Oh, uncle, it’s beautiful. I love it! Thank you so much for sending it to me for my birthday!” She seems very happy, and you ask Pablo: “What did your uncle send to your sister?”</td>
</tr>
<tr>
<td></td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 5</th>
<th>Participant sees</th>
<th>Participant hears</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>You’re at your friend Pablo’s house, and his younger sister comes into the living room talking on the phone. She says, “Oh, uncle, it’s beautiful. I love it! Thank you so much for sending it to me for my birthday!” She seems very happy, and you ask Pablo: “What did your uncle send to your sister?”</td>
<td>My uncle sent to my sister a bracelet.</td>
</tr>
<tr>
<td></td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
<td>12 3 4 5 (Very strange) (Perfect)</td>
</tr>
</tbody>
</table>

| Step 6 | Participant judges stimulus by pressing appropriate key on keyboard. |
In this new version, however, stimuli were organized into *trials*, wherein they heard the context and all the stimuli that pertained to that context. Participants first heard and saw the context story, which ends in a *wh*-question, and which appeared on the screen alone.26 Then one stimulus appeared and was heard. Then they heard the *wh*-question repeated, then a different stimulus pertaining to that same context. The same question was repeated again, and then the last stimulus (and then once more if it was the modifier condition). After that, the experiment moved on to a new trial (that is, a new context story and its attendant stimuli).

This new procedure is exemplified in Table III, which presents this process step-by-step, again with English glosses instead of the actual Spanish used. In step 1, the participant hears and sees the context story. In step 2, one of the stimuli pertaining to that context appears, is heard, and is judged (step 3). Then, the question is repeated while the context story remains on the screen (step 4). In step 5, a new stimulus is presented, both on the screen and aurally. The participant judges the stimulus (step 6), then the question is repeated again (step 7). Finally the last stimulus for this trial is presented visually and aurally (step 8) and is judged (step 9). This is one trial. After ward, a new trial begins, with a new context and its attendant stimuli. The table presents two trials.

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26 One participant saw an early version of the pilot in which the first stimulus appeared on the screen while the context story was being read.
### TABLE III. PROCEDURE WITH STIMULUS SEPARATED INTO TRIALS

<table>
<thead>
<tr>
<th>Trial</th>
<th>Participant sees</th>
<th>Participant hears</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trail 1, Step 1</td>
<td>You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”</td>
<td>You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”</td>
</tr>
<tr>
<td>Trail 1, Step 2</td>
<td>You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?” My <em>uncle</em> bought a car.</td>
<td>My <strong>uncle</strong> bought a car.</td>
</tr>
<tr>
<td>Trail 1, Step 3</td>
<td>Participant judges stimulus by pressing appropriate key on keyboard.</td>
<td></td>
</tr>
<tr>
<td>Trail 1, Step 4</td>
<td>You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”</td>
<td>Who bought a car?</td>
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1 2 3 4 5 (Very strange)  (Perfect)
You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”

My uncle bought a *car*.

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<tbody>
<tr>
<td>(Very strange)</td>
<td>(Perfect)</td>
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Participan judges stimulus by pressing appropriate key on keyboard.

You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”

Who bought a car?

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<td>(Very strange)</td>
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You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”

Bought a car my *uncle*.

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<tr>
<td>(Very strange)</td>
<td>(Perfect)</td>
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<tr>
<td>Trail 2, Step 1</td>
<td>You’re at your friend Pablo’s house, and his younger sister comes into the living room talking on the phone. She says, “Oh, uncle, it’s beautiful. I love it! Thank you so much for sending it to me for my birthday!” She seems very happy, and you ask Pablo: “What did your uncle send to your sister?”</td>
<td>You’re at your friend Pablo’s house, and his younger sister comes into the living room talking on the phone. She says, “Oh, uncle, it’s beautiful. I love it! Thank you so much for sending it to me for my birthday!” She seems very happy, and you ask Pablo: “What did your uncle send to your sister?”</td>
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<tr>
<td>Trail 2, Step 2</td>
<td>My uncle sent to my sister a <em>bracelet</em>.</td>
<td>My uncle sent to my sister a <strong>bracelet</strong>.</td>
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<tr>
<td></td>
<td>(Very strange)</td>
<td>(Perfect)</td>
<td></td>
<td></td>
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<tr>
<td>Trail 2, Step 3</td>
<td>Participant judges stimulus by pressing appropriate key on keyboard.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trail 2, Step 4</td>
<td>You’re at your friend Pablo’s house, and his younger sister comes into the living room talking on the phone. She says, “Oh, uncle, it’s beautiful. I love it! Thank you so much for sending it to me for my birthday!” She seems very happy, and you ask Pablo: “What did your uncle send to your sister?”</td>
<td>What did your uncle send to your sister?</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>(Very strange) (Perfect)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
You’re at your friend Pablo’s house, and his younger sister comes into the living room talking on the phone. She says, “Oh, uncle, it’s beautiful. I love it! Thank you so much for sending it to me for my birthday!” She seems very happy, and you ask Pablo: “What did your uncle send to your sister?”

My uncle sent a *bracelet* to my sister.

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</thead>
<tbody>
<tr>
<td>(Very strange)</td>
<td>(Perfect)</td>
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</tbody>
</table>

What did your uncle send to your sister?

Participant judges stimulus by pressing appropriate key on keyboard.

My uncle sent a bracelet to my *sister*.

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<th>5</th>
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<tbody>
<tr>
<td>(Very strange)</td>
<td>(Perfect)</td>
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</tr>
</tbody>
</table>

Participant judges stimulus by pressing appropriate key on keyboard. Having judged all three stimuli that pertain to this context, a new trial starts. This repeats until all stimuli have been judged.
The effect of this change was that participants could more directly compare between stimuli corresponding to a given context. This is an advantage, in that acceptability judgments are inherently comparative (Myers 2009, Phillips & Lasnik 2003), and one possible explanation for the lack of results before is that participants were not able to judge the sentences in isolation, since there is no absolute scale for acceptability.

Trials and stimuli were pseudo-randomized and counterbalanced to control for ordering effects (see section 4.4.5.2 for more detail).

With these two changes, participants still judged the stimuli on a five-point Likert scale. The stimuli were grouped into three blocks, consisting of five trials (and thus 16-17 stimuli) each. After completing the training and experiment on the computer, participants completed the background and proficiency questionnaires on paper.

4.1.5.4. Results

The results for this version of the pilot were much clearer than the previous versions. Most participants made notable distinctions between cases with stress-focus mismatch and those with stress-focus correspondence, rating those with mismatch consistently lower. Further, most participants also showed patterns of rejecting cases with syntactic movement in favor of stress shift. While this was somewhat unexpected at the time, the important thing was that these patterns were consistent and clear. Compare this with the results presented in section 4.1.3.2, where I concluded that the very unexpected results indicated that participants were not able to make the judgments required due to the unwieldy stimuli. Why, then, do the results of the revised pilot not lead to the same conclusion? Recall that I did not reject the results of the previous pilot only because they did not follow the predictions; rather, there was reason to believe that participants were not judging the phenomenon in question. To put it another way, I
did not change the study because it did not give me the results I wanted; I changed it because I
did not think it was giving valid results. In this revised pilot, though, the clear patterns in the
judgments indicate that the experiment was measuring what it was designed to measure. So, even
though the results went counter to my expectations, I concluded that these judgments were in fact
judgments of the phenomenon in question.

With this last revision of the study, then, my dissertation committee agreed that this
eperiment was likely measuring judgments on acceptability in context, as desired, and that this
design should be used in the final experiment. In the next sections, I discuss the final
methodology in detail. Some of this will be repetition, in that I have discussed parts of the
experiment as they developed in the preceding sections in order to give a picture of how the final
methodology was arrived at. Nonetheless, I repeat some information below in order to provide a
single coherent picture of the experiment in one place.

4.2. Participants

The participants in the study were composed of two groups, which I call the Spanish monolingual group and the heritage speaker group. The heritage speaker group was further
divided into two groups based on proficiency levels, the high proficiency heritage speaker group
and the low proficiency heritage speaker group.

4.2.1. General characteristics

All participants were adults who reported no specific linguistic or cognitive impairments
and who were at least moderately familiar with the use of computers. Participants were naïve, in
that they were neither linguists nor advanced students of linguistics, though some had taken undergraduate linguistics courses. All participants had graduated high school or its equivalent.

4.2.2. **Monolingual Spanish group**

The *Spanish monolingual* group consisted of 22 native speakers of Mexican Spanish recruited in Guanajuato, Mexico. I consider a *native speaker* to be someone whose first language is Spanish and who had no significant exposure to another language before the age of 14. The participants in this group were born and raised in Mexico and had not lived for any significant time in another country. They were educated primarily in Spanish in Mexico for primary, secondary, and tertiary education.

This site was chosen for several reasons. First, in order to get a truly monolingual control group, conducting the study in Mexico, rather than in the U.S., was ideal. Even monolingual Spanish speakers in the U.S. come into significant contact with English and with contact varieties of Spanish that may influence their judgments (Montrul, p.c.). Second, of the 70% of Chicago Latinos who are of Mexican heritage, the majority of them are from the central or western Mexican states of Michoacán, Jalisco, and Guanajuato (Farr 2006); in this way, dialect variation was controlled for as much as possible.

Participants in this group were primarily college students recruited through contacts at the local university. Their ages ranged from 18 to 26, with a mean age of 21.2. There were 17 females and 5 males.

Since English is commonly taught in Mexican schools, many of these participants were not truly monolingual, having studied some English in school. In order to get the most monolingual group possible, only those closest to monolingualism were included in the study. In
fact, there were originally 57 qualifying participants in this group who fit the demographic qualifications. Of these, those who reported using any English during a normal day were excluded. Further, the median score for all 57 monolingual participants on the English proficiency test (described in section 4.3.3), which was 13 points out of 40, was taken, and participants who fell above the median were also excluded, leaving a final group of 22.

Relevant characteristics of this group and both heritage speaker groups are presented in Table IV.

**TABLE IV. PARTICIPANT CHARACTERISTICS**

<table>
<thead>
<tr>
<th></th>
<th>High Prof. Heritage (n = 22)</th>
<th>Low Prof. Heritage (n = 22)</th>
<th>Monolingual (n = 22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range</td>
<td>18-22</td>
<td>18-29</td>
<td>18-26</td>
</tr>
<tr>
<td>Mean age</td>
<td>19.95</td>
<td>20.45</td>
<td>21.22</td>
</tr>
<tr>
<td>Gender (# male / # female)</td>
<td>7M / 15F</td>
<td>6M / 16F</td>
<td>5M / 17F</td>
</tr>
<tr>
<td>Mean age of acquisition of Spanish</td>
<td>0.93</td>
<td>1.14</td>
<td>0.5</td>
</tr>
<tr>
<td>Mean age of acquisition of English</td>
<td>4.57</td>
<td>2.09</td>
<td>13.09</td>
</tr>
<tr>
<td>Mean Spanish proficiency test score</td>
<td>41.64</td>
<td>30.05</td>
<td>46.29</td>
</tr>
<tr>
<td>Mean English proficiency test score</td>
<td>35.95</td>
<td>36.32</td>
<td>2.32</td>
</tr>
<tr>
<td>Mean daily English use</td>
<td>62.52</td>
<td>70.44</td>
<td>0</td>
</tr>
<tr>
<td>Mean daily Spanish use</td>
<td>47.29</td>
<td>31.44</td>
<td>100</td>
</tr>
<tr>
<td>Mean # of years in the U.S. (for heritage groups only)</td>
<td>19.73</td>
<td>20.27</td>
<td>N/A</td>
</tr>
<tr>
<td>Mean years of formal study of Spanish</td>
<td>3.16</td>
<td>2.64</td>
<td>13.57</td>
</tr>
<tr>
<td>Mean years of formal study of English</td>
<td>11.71</td>
<td>12.68</td>
<td>2.90</td>
</tr>
<tr>
<td>Mean self-reported English proficiency (1-5)</td>
<td>4.4</td>
<td>4.59</td>
<td>1.55</td>
</tr>
<tr>
<td>Mean self-reported Spanish proficiency (1-5)</td>
<td>3.95</td>
<td>3.34</td>
<td>4.38</td>
</tr>
<tr>
<td>Mean # of years of schooling</td>
<td>14.27</td>
<td>13.86</td>
<td>14.16</td>
</tr>
</tbody>
</table>
4.2.3. **Heritage speaker group**

The *heritage speaker* group consisted of 44 heritage speakers of Mexican/U.S. Spanish. In line with Valdés (2000:1), a heritage speaker is someone who is “raised in a home where a non-English language is spoken, who speaks or merely understands the heritage language, and who is to some degree bilingual in English and the heritage language.” These participants were of the second and third generations (Silva-Corvalán 1994), whose first language was Spanish or both Spanish and English, and who in any case learned English as children. That is, these participants reported learning both English and Spanish before age six (those that reported learning one of these languages later were excluded). As is common for this demographic group (Potowski & Carreira 2010), these participants were largely English-dominant Spanish/English bilinguals.

These participants were either born in the U.S. or immigrated before the age of six. They were educated primarily in English in the U.S. for primary, secondary, and tertiary education (though some had attended bilingual classes).

For maximum comparability with the monolingual group, all heritage speaker participants were of Mexican heritage. That is, participants with parents or grandparents from other Spanish-speaking areas were excluded. Also, participants with significant exposure to a language other than Spanish or English before the age of 14 were excluded.

The heritage speaker group was further divided into two sub-groups based on the results of a Spanish proficiency test because, in light of previous studies on heritage speakers (e.g., Montrul 2004), proficiency in Spanish was thought likely to be a factor in their responses. The details of this test are discussed below in section 4.3.2. The median score for all heritage speakers on this proficiency test was 38.5 (out of 50 possible points). Those who scored above
the median were placed in the *high proficiency heritage speaker group* and those who fell below the median were placed in the *low proficiency heritage speaker group*. An independent samples t-test was performed on the proficiency scores to ensure that these two groups were in fact different in terms of Spanish proficiency as measured by this test, and the difference was found to be significant ($p < .001$).

The *low proficiency heritage speaker group* consisted of 22 participants. Their mean score on the proficiency measure was 30.0 (out of 50 possible points). Participants in this group were primarily college students recruited through contacts in Chicago. Their ages ranged from 18 to 29, with a mean age of 20.5. There were 16 females and 6 males.

The *high proficiency heritage speaker group* consisted of 22 participants. Their mean score on the proficiency measure was 41.6 (out of 50 possible points). Participants in this group were primarily college students recruited through contacts in Chicago. Their ages ranged from 18 to 22, with a mean age of 20.0. There were 15 females and 7 males.

More information about the characteristics of both these groups is presented in Table IV.

### 4.3. Materials

#### 4.3.1. Linguistic background questionnaires

Participants were asked to complete two language background questionnaires, in order to assess their language ability and history. One questionnaire, which I call the *language background questionnaire*, included questions about language use in particular contexts and with certain people, residential history, and parents’ birthplaces. Participants who reported that their parents were from a region other than Mexico or who reported residence histories different than
those outlined above in sections 4.2.2 and 4.2.3 were excluded. The other questionnaire, which I call the *screening questionnaire* included questions about amounts of formal education in Spanish and English, time spent abroad, languages spoken, linguistic and cognitive disabilities, birthplace, and time spent in the U.S. This second questionnaire was originally intended to screen subjects before their participation. However, due to the way subjects were recruited, it was decided instead to complete it as part of the experimental procedure and exclude participants who did not fit after the fact. And, in fact, participants who reported demographic or background characteristics different than those outlined in sections 4.2.2 and 4.2.3 were excluded. Participants in the heritage speaker group completed the questionnaires in English, and participants in the monolingual group completed the questionnaires in Spanish.

**4.3.2. Spanish proficiency test**

Participants were asked to complete a Spanish proficiency test that is commonly used in the field, a variant of the Diploma of Spanish as a Foreign Language (DELE) test, which is the test used to accredit Spanish fluency by the government of Spain, and which has been shown to be reliable in both L2 studies and with bilinguals (Montrul 2002, 2004). This test consists of a thirty-question multiple choice section and a twenty-question cloze test (also multiple choice), covering vocabulary and grammar. The test was scored out of 50 possible points, with each question being worth one point.

**4.3.3. English proficiency test**

Participants were also asked to complete an English proficiency test, which has been used in previous studies (Ionin & Montrul 2009, 2010; Ionin, Montrul, & Crivos, In press; Montrul
2001). The test consists of a forty-question multiple-choice cloze test. The test was scored out of 40 possible points, with each question being worth one point.

### 4.3.4. Training

As in the pilot studies, participants completed a training phase. The training was done on E-Prime, with participants advancing through explanation screens using the spacebar and entering judgments with the keypad. The training phase was the same one employed in the pilot studies.

The training began with a written explanation with examples followed by 29 practice items with explanations interspersed. Beginning with the written explanation, the training explained that sentences which convey the same factual information can nonetheless vary depending on the situation in which they are uttered. It was highlighted that these variations may involve both word order and stress. Examples were given in which participants read three different examples of the same sentence in one context and then in another context and were asked to think about which ones fit in each context. They also heard examples with different stress patterns but the same word order and were asked to think about what the differences were. At no time were they told which sentence went in which context; they were only given multiple examples and asked which one they preferred in a given context. That is, the explanation made explicitly salient the idea of discourse-conditioned variability in word order and stress, but it never specified what particular structures were under investigation nor did it say which ones were felicitous and which were not. In emphasizing that all the options were possible but suitable for different contexts, the training thus made clear the idea that contextual felicity as opposed to
grammaticality was of interest. The training was given in Spanish for the monolingual group and English for the heritage speaker groups, and it avoided using technical terms.

After the explanation section, there were 29 practice items. The first five included intransitive predicates and subject focus contexts. The next six were simple transitive predicates with broad focus, object focus, or subject focus contexts. In these first eleven questions, participants were given two or three options and asked to choose the best one. Beginning with number twelve, participants were asked to rate each sentence on a 5-point Likert scale rather than choosing the best one. Items 12-16 continued with simple transitives, while 17-24 expanded the options to include ditransitives and prepositional phrases. Items 25-29 introduced nominal modifiers (numbers and adjectives). The full text of the training phase is in the appendix.

4.3.5. **Judgment task**

The judgment task was the main part of the experiment. The purpose of the judgment task was to tap speakers’ intuitions on what structures are acceptable in certain contexts, and thus to measure the relative strength (the ranking) of the constraints proposed in the previous chapter to govern this process, as well as to determine what differences, if any, exist between groups. The reader will recall from section 3.11, that the constraints I am interested in testing experimentally are:

- **ALIGN-IP-R** (stress rightmost)
- **EPP** (sentences have subjects)
- **FP** (stress and focus are aligned)
- **STAY** (no traces).

I am further interested in verifying the gradient formulation of FP that I proposed.
The judgment task consisted of 50 critical stimuli divided into three conditions: the subject focus condition, the object focus condition, and the modifier focus condition, described in sections 4.3.5.3, 4.3.5.4, and 4.3.5.5, respectively. Each condition tests a different set of constraints.

Across conditions, there were some commonalities for all stimuli. All stimuli were presented in a context, and the properties of these contexts are described in section 4.3.5.1. Also, the stimuli and contexts were recorded and presented aurally, and this process is described in section 4.3.5.2. Finally, the stimuli for all conditions were presented together in one experiment as a series of 15 trials. Each trial consisted of a context and then the three or four stimuli to be judged in that context. This procedure is more fully described in section 4.4. The full text of all the experiment materials can be found in the appendix.

4.3.5.1. Contexts

All experimental items were presented in a context. Though many previous studies include a null context condition (that is, no context at all, with sentences presented alone), Keller and Alexopoulou (2001) found that the null context shows the same results as a broad focus context (i.e., a question like What's up?), and so I only tested contextualized stimuli. Following Lozano (2003, 2006a), these contexts were short stories that involved the participant in a hypothetical situation, and in which the participant must give some information to the other participant in the story. Each story ended with a wh-question that biased participants toward one particular focus structure. An example context for the subject focus condition, which ends in a question requiring an answer with the subject in focus, is in (6).
(6) Tú y tu amiga Sara están en la casa de ella, haciendo algo de comer en la cocina. Ella va a buscar unos ingredientes que había dejado en el carro, cuando suena tu celular. Es tu tío, quien acaba de comprarse un carro nuevo. Cuando regresa Sara, estáz hablando del color y el modelo del carro, y del precio de la gasolina, y ella se da cuenta de que alguien que conoces acaba de comprar un carro. Cuando cuelgas, Sara te pregunta: "¿Quién compró un carro?"

‘You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”’

Fifteen contexts were recorded, one for each trial. Five were recorded for the subject focus condition, five for the object focus condition, and five for the modifier focus condition.

4.3.5.2. Recordings

Stimuli were recorded by a native speaker of Mexican Spanish living in the U.S. This person received training from the experimenter to ensure he could consistently produce the desired accent patterns. The same person read both the contexts and the answers, for both the training phase and the judgment task. Contexts and answers were recorded separately in order to avoid biasing the reader’s pronunciation of the answers due to the context.

The materials were recorded on a Zoom H4 digital voice recorder in the Bilingualism Research Laboratory and subsequently transferred to a lab computer, converted to the appropriate format, and incorporated into the experimental software.

Three pretests were performed to ensure the acceptability of the recorded stimuli: a pitch accent uniformity pretest, a stress correspondence pretest, and an intelligibility pretest.

First, a pitch accent uniformity pretest was conducted. I examined the waveforms of all stimuli using Praat (Boersma & Weenink) and ensured that all stimuli had an L+H* pitch accent (using Face 2003’s notation) on the constituent that was intended to bear main stress. This means
that the constituent intended to bear main stress had a pitch contour that started off low near the
beginning of the stressed syllable of that word and then rose, reaching its peak within the same
stressed syllable. The star in ‘L+H*’ indicates that the high tone is associated with the stressed
syllable of the word. This contrasts with constituents that do not receive main sentence stress,
which often have an L*+H pattern; that is, the low tone is associated with the stressed syllable,
with the high tone occurring after the stressed syllable (Face 2003 based on Madrid Spanish;

It is worth noting that questions about the tonal inventory of Spanish, dialectal
differences, and the relationship of main stress, pitch accent, and focus are not uncontroversial.
For instance, there exists a debate in the phonological literature about whether the tonal
inventory of Spanish includes L+H* and L*+H (Face 2003, 2006) or whether there is only one
accent tone H*, which is sometimes displaced rightward for phonetic reasons (Prieto, van Santen
& Hirschberg 1995; Prieto 1998). I will not get into this debate, as it is far outside the scope of
this work. Further, as already mentioned in Chapter 2, while pitch accent is “the most powerful
cue for the perception of main stress” (Gussenhoven 2004:17), “there is no single F0 feature that
can be associated with stress” (ibid.:19). That is, the relationship of a particular pitch accent to
sentence level stress is not absolute. Beyond that, other phonological factors are involved in
marking stress, such as vowel duration and intensity.

Despite this, three facts are generally agreed upon (for an overview of some of these
points, see Martín Butragueño 2006). First, Mexican Spanish, like other varieties of Spanish,
exhibits a series of tone downsteps throughout declarative sentences (Prieto, Shih, & Nibert
1996; Sosa 1999). Second, Mexican Spanish, like other varieties, often realizes a high tone after
the stressed syllable (Face’s L*+H) on non-focal words in prenuclear position. That is, words
that are not in narrow focus and that do not occur in rightmost position often (but not always) have an L*+H pitch accent (whether this is a toneme or just displacement of H*) (Prieto, van Santen, & Hirschberg 1995). Third, sentence final constituents and constituents with main sentence stress usually get a pitch accent that associates a high tone with the stressed syllable. Face (2003) finds this for Peninsular Spanish, and Kim and Avelino (2003) discuss it in Mexican Spanish. Kim and Avelino note that all the pitch accents they investigate occur in broad focus, narrow focus, and contrastive focus contexts alike, and thus conclude that this constitutes evidence against the idea that there is one pitch accent associated with a particular focus structure. Nonetheless, they also find that by far the most common pitch accent on constituents in narrow focus is one which has the high tone associated with the stressed syllable in that word (what they call H* and \(^H^*\)). This preference is even more pronounced when the focused constituent appears sentence-finally.

There is one other fact that is important to mention. In the only study of its type of which I’m aware, Henriksen (2011) investigated intonation in both native speakers of Mexican Spanish and in heritage speakers of Mexican Spanish living in Chicago. He found that, though there was variation between speakers in realizing pitch accents on constituents in narrow focus, the most common pattern for both groups was L+H*.

Though there is variation in the realization of pitch accents on constituents that get main stress, and though there is still lively debate in this area among phonologists, it was necessary to decide on a single pitch accent for all of the experimental stimuli for the sake of uniformity, and so a decision had to be made with the information available. Based on the preceding discussion, especially in light of the Henriksen (2011) data, it was decided that only sentences which
included an L+H* pitch accent on the word that should have main stress would be included in the design. For this reason, the pitch accent uniformity pretest was conducted.

Returning now to the stimuli pretests, the second pretest performed was a stress correspondence pretest. Three native speakers of Spanish who were also linguists (one of whom was a phonologist) listened to all experimental items and judged which constituent main sentence stress fell on. Only those items on which all the consultants agreed that the stress indeed fell on the desired constituent were included in the experiment. Further, as part of this pretest, any item that was judged by the consultants to have an unusual stress pattern or any other irregularity was discarded.

The third pretest was an intelligibility pretest (following Keller and Alexopoulou 2001), wherein two native speakers of Spanish listened to all contexts and stimuli under experimental conditions and judged whether or not the contexts and experimental items were comprehensible. Stimuli and contexts judged to be difficult to understand were discarded or changed.

4.3.5.3. **Subject focus condition**

Stimuli in the subject focus condition test the relative ranking of ALIGN-IP-R and EPP and the relative ranking of FP and EPP. The contexts for the subject focus condition end in questions requiring the answer to have subject focus, such as *Who bought a car?*. As in each condition, only those structures which incur a violation of one of the constraints were included. Each structure violates one constraint, thus allowing the comparison of minimal pairs, which in turn make it possible to establish a constraint ranking. The structures for the subject context are exemplified in Table V, using the example sentence *Mi tío compró un carro* ‘My uncle bought a car.’
As can be seen in this table, each structure violates one and only one constraint in the theoretical model. The *S*VO structure violates ALIGN-iP-R by not having rightmost stress, the VO*S* structure violates EPP by not having a preverbal subject, and the SV*O* order violates FP because the stressed element *carro* ‘car’ does not correspond to the focused element *tío* ‘uncle.’

Five lexicalizations of each structure (different words but the same structures), were created, along with five contexts corresponding to those lexicalizations. A single trial consisted of the context and then all three possible structures with the lexicalization that fit in that context. For example, one trial had a story about someone buying a car, after which participants heard all the examples in Table V, while another trial had a context about someone building a table, after which participants heard the same structures as in Table V but with the base sentence *Mi abuelo construyó una mesa* ‘My grandfather built a table.’ (This is exemplified in Table III, above.) In all, then, participants completed five trials in the subject focus condition and judged 15 stimuli.

In all stimuli in the subject focus condition, the subjects were always animate and definite while the objects were always inanimate and indefinite. No sentences contained null subjects or object pronouns. Since phonological weight can be a factor in pre- and post-posing arguments

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27 Here, and in the tables that follow, S = subject, V = verb, O = object, PP = prepositional phrase (indirect object), and M = (pre-nominal) modifier. The constituent marked on either side with asterisks is the constituent that gets main stress.
(Lozano 2006b), the subject and the object had the same number of syllables and no modifiers. All words were taken from basic vocabulary, defined as being among the 5,000 most common Spanish words (Davies 2006), to ensure that participants understood them.

4.3.5.4. Object focus condition

Stimuli in the object focus condition test the relative ranking of ALIGN-ip-R and STAY and the relative ranking of FP and STAY. The contexts for the object focus condition end in questions requiring the answer to have object focus, such as *What did your mom give to your nephew?*. As in each condition, only those structures which incur a violation of one of the constraints were included. Each structure violates one constraint, thus allowing the comparison of minimal pairs, which in turn make it possible to establish a constraint ranking. The structures for the subject context are exemplified in Table VI, using the example sentence *Mi mamá le dio un chocolate a mi sobrino* ‘My mom gave a chocolate to my nephew.’

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV<em>O</em>PP</td>
<td>Mi mamá le dio un chocolate a mi sobrino.</td>
<td>ALIGN-ip-R</td>
</tr>
<tr>
<td>SVPP<em>O</em></td>
<td>Mi mamá le dio a mi sobrino un chocolate.</td>
<td>STAY</td>
</tr>
<tr>
<td>SVO<em>PP</em></td>
<td>Mi mamá le dio un chocolate a mi sobrino.</td>
<td>FP</td>
</tr>
</tbody>
</table>

As can be seen in this table, each structure violates one and only one constraint in the theoretical model. The SV*O*PP structure violates ALIGN-ip-R by not having rightmost stress, the SVPP*O* structure violates STAY by moving the indirect object over the direct object, and
the SVO*PP* order violates FP because the stressed element sobrino ‘nephew’ does not correspond to the focused element chocolate ‘chocolate.’

Five lexicalizations of each structure (different words but the same structures), were created, along with five contexts corresponding to those lexicalizations. A single trial consisted of the context and then all three possible structures with the lexicalization that fit in that context. For example, one trial had a story about someone’s mother giving a chocolate to their nephew, after which participants heard all the examples in Table VI, while another trial had a context about someone’s uncle sending a gift to their sister, after which participants heard the same structures as in Table VI but with the base sentence Mi tío le envió una pulsera a mi hermana ‘My uncle sent a bracelet to my sister.’ (This was exemplified in Table III, above.) In all, then, participants completed five trials in the object focus condition and judged 15 stimuli.

In all stimuli in the object focus condition, the subjects and the indirect objects were always animate and definite while the direct objects were always inanimate and indefinite. No sentences contained null subjects or object pronouns (except for the indirect object pronoun le doubling the expressed indirect object). Since phonological weight can be a factor in pre- and post-posing arguments (Lozano 2006b), the subject, the direct object, and the indirect object had the same number of syllables and no modifiers. All words were taken from basic vocabulary, defined as being among the 5,000 most common Spanish words (Davies 2006), to ensure that participants understood them.

4.3.5.5. Modifier focus condition

Stimuli in the modifier focus condition test the relative ranking of ALIGN-IP-R and EPP, the relative ranking of FP and EPP, and the formulation of FP as an alignment constraint. The contexts for the modifier focus condition end in questions requiring the answer to have focus on
the pre-nominal modifier of the subject, such as *How many boys grabbed a book?*. As in each condition, only those structures which incur a violation of the constraints were included. Each structure violates specific constraints, thus allowing the comparison of minimal pairs, which in turn make it possible to establish a constraint ranking. The structures for the subject context are exemplified in Table VII, using the example sentence *Tres chicos agarraron un libro* ‘Three boys grabbed a book.’

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>M</em>SVO</td>
<td>Tres chicos agarraron un libro.</td>
<td>ALIGN-I-P-R</td>
</tr>
<tr>
<td>MSV<em>O</em></td>
<td>Tres chicos agarraron un libro.</td>
<td>FP</td>
</tr>
<tr>
<td>VO<em>M</em>S</td>
<td>Agarraron un libro tres chicos.</td>
<td>EPP, ALIGN-I-P-R</td>
</tr>
<tr>
<td>VOM<em>S</em></td>
<td>Agarraron un libro tres chicos.</td>
<td>EPP, FP</td>
</tr>
</tbody>
</table>

As can be seen in this table, each structure violates particular constraints in the theoretical model, but, unlike the other conditions, some structures violate more than one constraint. The *M*SVO structure violates only ALIGN-I-P-R by not having rightmost stress, and the MSV*O* structure violates FP because the stressed element *libro* ‘book’ does not correspond to the focused element *tres* ‘three.’ Both orders without preverbal subjects violate EPP, but they differ in that VO*M*S violates ALIGN-I-P-R by not having rightmost stress while VOM*S* violates FP because the stress and focus do not correspond. These structures with two violations were included in order to test the revised formulation of FP as an alignment constraint, in that the violation of FP incurred by VOM*S* and that incurred by MSV*O* are proposed to differ in
degree, and so VOM*S* needed to be included in order to be able to make this comparison. Similarly, VO*M*S needed to be included in order to compare different degrees of violation of ALIGN-IP-R.

Five lexicalizations of each structure (different words but the same structures), were created, along with five contexts corresponding to those lexicalizations. A single trial consisted of the context and then all four possible structures with the lexicalization that fit in that context. For example, one trial had a story about someone giving away free books, after which participants heard all the examples in Table VII, while another trial had a context about artists sending in paintings to enter an art contest, after which participants heard the same structures as in Table VII but with the base sentence Ocho artistas mandaron una pintura ‘Eight artists sent a painting.’ (This was exemplified in Table III, above.) In all, then, participants completed five trials in the modifier focus condition and judged 20 stimuli.

In all stimuli in the modifier focus condition, the subjects were always animate and modified by a number, while the objects were always inanimate and indefinite. No sentences contained null subjects or object pronouns. Since phonological weight can be a factor in pre- and post-posing arguments (Lozano 2006b), the subject (including the modifier) and the object had the same number of syllables and no modifiers. All words were taken from basic vocabulary, defined as being among the 5,000 most common Spanish words (Davies 2006), to ensure that participants understood them.

4.3.5.6. Distractor items

The purpose of using distractors or fillers in linguistic experiments is to provide a “linguistic background against which the experimental sentences are judged” and to “disguise the pattern of experimental items, making it harder for informants to guess which kinds of sentence
the experimenter is interested in” (Cowart 1997:51). However, neither of those goals were applicable in this case, and so no distractor items were included in this study.

In terms of providing a background or benchmark against which sentences are judged, the addition of filler items would not have helped, since sentences were already presented in contexts and in groups, which serve as background for the stimuli. One could conceive of two possible ways to add filler items: (i) adding filler stimuli to each trial or (ii) adding trials composed only of fillers. For the first option, it is not clear to me what adding a distractor stimulus to a given trial would accomplish, and it could be detrimental. It is also not clear how to go about this. Adding another item to a trial would mean using the same lexicalization as the other items so that the distractor made sense in the context. That is, any distractor added to a trial with a context that ends in the question *Who bought a car?* would have to have something to do with buying a car. Adding such an item would amount to adding another experimental item. Regarding the second option, adding additional trials composed only of filler items has another problem: it is not clear in what way this would act as a background against which other trials are judged. I recognize the usefulness of using distractors as a benchmark across different experiments that Cowart points out, but his advice was intended more for experiments on the grammaticality of individual sentences, not for an experiment like this one.

Regarding the other purpose of including distractors, namely disguising the aims of the experiment, this is precisely what I wanted to avoid with this design. The training phase made it explicit that we were interested in the way that sentences could fit into context via variations in word order and stress. It also made it clear exactly the sorts of sentences that I was interested in testing. I wanted participants to know what was being investigated, and thus to pay attention to the stress and word order and their contribution to contextual appropriateness. This is the same
reason the stressed constituent was marked with asterisks. Because of this, subsequently including distractors intended to mask this interest seems counterproductive.

Fillers or distractors are *de rigueur* in psycholinguistic experiments, but, in constructing an experiment, one must consider what the goals of the data collection are and what the most effective ways of meeting them are. In this case, I have argued that adding distractors would have at best done nothing more than make the experiment longer, and at worst would have added unnecessary confounds. For this reason, no distractors were included in this study.\(^{28}\)

### 4.4. Procedure

After being identified as possible participants (section 4.4.1) and volunteering to participate in the study, participants made an appointment to meet the experimenters, either in the Bilingualism Research lab for the heritage group, or in a café in Guanajuato for the monolingual group (section 4.4.2). The procedure for running the experiment was as follows. First, participants gave informed consent to participate (section 4.4.3). Next, they completed the training phase (section 4.4.4). After the opportunity for a break, they completed the judgment task (section 4.4.5). After completing the experiment on the computer, participants filled out the background questionnaire and the proficiency tests (section 4.4.6), at which point the experiment ended and they were thanked and debriefed (section 4.4.7).

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\(^{28}\) An alternative argument would be that the study included plenty of distractors as is. Since the three conditions are essentially separate experiments with separate analyses, each condition acted as a set of distractors for the other two. For example, in considering the subject condition, one could claim that this is one experiment consisting of 15 stimuli (three structures times five lexicalizations) done in five trials, as well as 35 distractor stimuli done in ten distractor trials, and the same could be said of the object focus condition. The actual reason that no distractors were included is the one outlined in the main text, though.
4.4.1. Recruitment

Participants in the heritage speaker group were recruited in Chicago, primarily via visits to Spanish for Native Speakers classes at the University of Illinois at Chicago, but also through posted flyers. Participants in the monolingual group were recruited in Guanajuato, Mexico, primarily through visits to classes at the University of Guanajuato, but also through flyers posted around the town.

4.4.2. Location and setup

For the heritage speaker group, the experiment took place in the Bilingualism Research Lab at UIC. The experiment was conducted on a desktop or laptop computer using E-Prime Professional 2.0 (Psychology Software Tools, Inc.), and participants interacted with the program by pressing the spacebar or the number keys. Auditory stimuli were presented using headphones.

For the monolingual group, the experiment took place in a café in a central location in Guanajuato. The experiment was conducted on a laptop computer using E-Prime Professional 2.0 (Psychology Software Tools, Inc.), and participants interacted with the program by pressing the spacebar or the number keys. Auditory stimuli were presented using headphones.

4.4.3. Consent and data protection

Before beginning the experiment, subjects completed a standard consent form giving informed consent to participate in the experiment. Among other things, participants were made aware that their participation was voluntary, that they could withdraw from the study at any time,
and that their responses would be confidential and shared only in a way that did not uniquely identify them.

Each participant was assigned a participant number, and all data, including experiment results, proficiency scores, and background information, was identified only with this number. This data was stored on the password-protected server in the Bilingualism Research Lab. Participants’ personal information, including their association with their participant number, was stored separately from their experimental data in a secure location on the password-protected server in the Bilingualism Research Lab. For the monolingual group, experiment results were temporarily stored on the laptop computers on which the experiment was run, which were also protected by passwords, and then transferred to the server. All physical paper records were stored in a locked cabinet in the Bilingualism Research Lab.

4.4.4. Training

After providing consent, the training phase described in section 4.3.4 was conducted on the computer using E-Prime. It began with explanations and instructions, which participants read, advancing through several screens using the spacebar. Participants then judged thirty training items, as described above. After the training phase, there was the opportunity for a break, after which the judgment task began.

4.4.5. Judgment task

The judgment task continued on the computer after the training phase.
4.4.5.1. Instructions

First, instructions regarding how to perform the judgment task were presented on the computer screen, as with the training phase. These were mostly reminders of what had just been presented in the training section about the rating scale and how to input judgments. After reading the instructions, the experimental phase began.

4.4.5.2. Experimental phase

The experimental phase consisted of 15 trials organized into three blocks. There were five trials each for the subject focus condition, the object focus condition, and the modifier focus condition. There were five trials for each condition because there were five lexicalizations (different words, same structure) for each stimulus. A trial consists of a context story and the three or four critical stimuli (depending on the condition) that correspond to that context. The trials were pseudo-randomized: they were first randomized, then the order was altered so that no trial repeated the same condition as the previous trial. The trials were then divided into three blocks.

The blocks were rotated in order to control for ordering effects. Three experiment files were created – one that began with block 1, one that began with block 2, and one that began with block three. Which version of the experiment a participant got was determined by his/her participant number. Between each block, participants had the opportunity to take a break.

In a given trial, participants first heard and saw displayed on the screen the context story, which always ended with a wh-question. The context stayed on the screen throughout the trial. Immediately after hearing the context read, the first stimulus appeared on the screen, as did the rating scale, for reference. Participants heard the stimulus read over the headphones, and also read the stimulus, in which the word with main sentence stress was marked with asterisks, for the
reasons laid out in section 4.1.5.3. After recording their response by pressing one of the number keys on the keyboard, that stimulus disappeared. Then, participants heard the question that ends the context story repeated, and then the next critical stimulus. After judging that stimulus, they again heard the question and then the next stimulus. In the modifier context, since there were four critical stimuli, this was repeated once more. After judging all the stimuli, the program moved on to the next trial. This process is exemplified in Table III in section 4.1.5.3.

The order of presentation of the stimuli was counterbalanced using a pseudo-Latin square design in order to control for ordering effects. That is, the stimuli for a given condition did not appear in the same order across trials.

An example trial, including the context and first stimulus, for the subject focus condition are in (7).

(7) Tú y tu amiga Sara están en la casa de ella, haciendo algo de comer en la cocina. Ella va a buscar unos ingredientes que había dejado en el carro, cuando suena tu celular. Es tu tío, quien acaba de comprarse un carro nuevo. Cuando regresa Sara, estás hablando del color y el modelo del carro, y del precio de la gasolina, y ella se da cuenta de que alguien que conoces acaba de comprar un carro. Cuando cuelgas, Sara te pregunta: "¿Quién compró un carro?"

Mi *tío* compró un carro.

1 2 3 4 5
(Muy raro) (Perfecto)

‘You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”

My *uncle* bought a car.

1 2 3 4 5
(Very strange) (Perfect)’
So, participants would first hear the story in (7), then the stimulus *Mi tío* compró un *carro* appeared. After judging it, participants heard the question ¿Quién compró un carro? repeated and then they heard and saw a new stimulus, Compró un carro mi *tío*. Finally, the question was repeated once more, and they then heard and say the final stimulus, *Mi tío compró un *carro*. This constituted one trial, in which three stimuli were judged. Again, see Table III for a graphical representation of this process.

After judging all 50 stimuli in 15 trials, the judgment task ended.

### 4.4.6. Questionnaires and proficiency tests

After completing the judgment task on the computer, participants were asked to complete four questionnaires. They completed both the proficiency tests, described in sections 4.3.2 and 4.3.3, on paper. They also completed the language background questionnaire on paper. Finally, the heritage speaker group also filled out the screening questionnaire on paper. For the monolingual group, on the other hand, the experimenter filled out the screening questionnaire by asking the participants the questions and recording their answers. Both these background questionnaires are described in section 4.3.1.

After completing the background questionnaires, the experiment was over. All told, the experiment took between 75 minutes and two hours, averaging around one and a half hours.

### 4.4.7. Debriefing

After the experiment, participants were thanked and compensated for their time. At this point, participants were asked to refer other potential participants to the lab and were given a card advertising for participants that they could pass along to others. Additionally, they were
asked if they were interested in participating in future research in the Bilingualism Research Lab, and, if so, they were added to a database of prospective participants. If they had questions about the study, the investigator answered them.
5. RESULTS AND DISCUSSION

5.0. Introduction

This chapter presents the results of the experiment and discusses their significance. The experiment was designed to answer the research questions, as laid out in Chapter 1 and repeated here:

**Research question 1.** Regarding presentational focus, what combinations of main sentence stress and word order are most acceptable in what contexts for monolinguals and heritage speakers?

**Research question 2.** What do the patterns of acceptability of different structures (combinations of main sentence stress and word order) in different contexts indicate about the roles of prosody and syntax in the realization of presentational focus in heritage and monolingual Spanish?

**Research question 3.** Do heritage speakers of Spanish and Spanish monolinguals accept different structures (combinations of main sentence stress and word order) in a particular context, and, if so, what are these differences?

**Research question 4.** With what theories of heritage grammars and language contact are the patterns of acceptability of different structures (combinations of main sentence stress and word order) in context by the two groups consistent?

This chapter sets out to answer these research questions. It begins with some preliminary comments on the data set and the methods of analysis in sections 5.1 and 5.2. Having established some basic information, I then discuss the results in detail for each experimental condition in sections 5.3 through 5.5. Each of these sections has two parts. In the first, I present the results of
the experiment, which pertain to the first three research questions. In the second, I discuss the implications of these results, with regard to the theoretical model developed in Chapter 3, in reference to the second research question. After presenting and discussing the results for each experimental condition separately, I bring them together in section 5.6 to present a unified constraint ranking in terms of the model as well as some further discussion of its implications. Section 5.7 then turns to the other major facet of this study to discuss the (lack of) group difference found in the experiment and implications of this. Section 5.8 summarizes the previous results and discussion with specific reference to the research questions and draws some general conclusions. Finally, in section 5.9, I discuss future directions for research.

5.1. The data

As discussed in the previous chapter, the final data set consisted of 66 people (22 in each group), and they each judged 50 sentences in context (15 in the subject focus condition, 15 in the object focus condition, and 20 in the modifier focus condition). Numerical judgments, made on a five-point Likert scale, were recorded for every stimulus by the experiment software. There were 3,300 judgments made. Six judgments (of individual sentences) were lost due to technical malfunctions, so the final data set consisted of 3,294 judgments.

Participants used the whole scale for their judgments, but the mean judgments (for a given group) rarely fall much below the midpoint of the scale, even in those structures that are clearly less acceptable. No mean judgment is less than 2 for any group; individuals may have had mean judgments of less than 2 for a particular structure, but overall the structures which were clearly rejected by these participants have ratings between 2 and 3.5. I hypothesize that this is because all of the sentences were grammatical in Spanish. It is not the case that mean judgments
near the middle of the scale indicate disagreement within a given group. For example, it is possible that a mean rating of 3 for a given structure could be the result of half of the group giving it a 5 and half the group giving it a 1. However, visual inspection of the data in histograms for each structure by participant revealed no such bimodal distributions.

Participants judged five lexicalizations of each structure. For each participant, the average of all five lexicalizations of a given structure was taken and serves as the input to the analysis. For the six cases where one of the five judgments was missing, the average of the other four was taken. Each lexicalization was compared to the others using a one-way ANOVA, and no significant differences between lexicalizations were found, indicating that the particular words chosen for the stimuli did not affect the results of the experiment.

The analysis was thus based on the mean rating for each participant for each structure. This means that each participant had 10 mean ratings, one for each structure (3 structures in the subject focus condition + 3 structures in the object focus condition + 4 structures in the modifier focus condition), for a total of 660 mean ratings. This data was analyzed as discussed in section 5.2.

### 5.2. Data analysis method

This section discusses issues pertaining to the analysis of the data, including outlining the type of analysis employed, the general properties of the analysis, and the extent to which the data conformed to the assumptions of the analysis. Details specific to the analyses of the three experimental conditions are discussed in later sections.

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29 Since the number of missing cases was so small, in consultation with my thesis committee, I decided that taking the average of the other four judgments was a better way to deal with the missing data than the alternatives. Listwise and pairwise deletion would have resulted in the loss of too much data and can also introduce bias. Imputation techniques would not have yielded significant improvements to the data set and also have other drawbacks.
5.2.1. Overview of analysis

Three mixed-design ANOVAs were conducted. One analysis was conducted for each condition in the experimental design. Rather than a single omnibus analysis, the three conditions were separated in this way because there are no meaningful comparisons to be made between them. That is, whether the rating of a structure in the subject focus condition differs from the rating of a structure in the object focus condition isn’t relevant to answering the research questions; what is important is to discover what structures are possible in each condition, i.e. how focus is marked in each condition. Because of this, each condition is tested separately in order to determine the possible structure(s) used to mark focus in that condition and thus be able to determine the ranking of the proposed constraints.

Each ANOVA has a mixed design. There is one between-subjects variable, Group, with three levels: monolingual, high proficiency heritage speaker, and low proficiency heritage speaker. There is one within-subjects variable, Structure, with three to four levels depending on the condition. As we saw in the last chapter, the levels of this variable correspond to violations of specific constraints. Since it has both between-subjects and within-subjects variables, this is a mixed design.

5.2.2. Assumptions

Like all statistical tests, mixed-design ANOVA requires that certain assumptions be satisfied. As Larson-Hall (2010:356) points out, though, “most real data sets will violate one or all of these assumptions,” and this data set is no exception. The assumptions to be satisfied are (i) normal distribution of data, (ii) homogeneity of variances, (iii) normal distribution of residuals, (iv) homogeneity of variances of residuals, and (v) sphericity.
Visual inspection of the data (in histograms and boxplots) reveals that there are some cases of deviations from normality of the distribution. While most structures do have reasonably normal distributions, the highest-rated structures in each condition exhibit negative skew. This is an artifact of the rating scale. Since the scale has a maximum (five), it stands to reason that the scores of those structures consistently rated as maximally acceptable will not be normally distributed but rather they will cluster around the top end of the scale. Given the scale used, then, this violation of the assumptions is unavoidable. The same holds true for the normal distribution of residuals; for highly rated structures, they cluster at the top of the scale.

There are some problematic cases of heterogeneity of variances. None of the deviations from homogeneity were extreme, but visual inspection via boxplots does reveal different levels of variance between the groups for some structures. The same is true for residuals, which were examined visually in a plot of Studentized residuals versus predicted values—there were slight deviations from homogeneity.

Finally, the ANOVA for the modifier focus condition violates the assumption of sphericity according to Mauchly’s test. Because of this, the Greenhouse-Geisser correction is used in reporting the results of main effects and interactions. This corrects for violations of sphericity and is more conservative than the alternative Huynh-Feldt correction. In fact, many researchers contend that results of ANOVA should always be reported with a correction, and so I will report the results of main effects and interactions using the Greenhouse-Geisser correction for all the conditions, even those that do not violate sphericity.

Because of the violations of the assumptions laid out in this section, it may appear that the analyses that follow are all doomed from the start. However, this is not necessarily the case. As I pointed out at the beginning, most real-world data violates these assumptions, yet the
mixed-design ANOVA analysis I employ here is widely used in the field and can give valid results. For one thing, it is widely believed that ANOVA is robust to violations of the assumptions, though Field (2009) points out that this is not always true. The F statistic used in ANOVA has been shown to be robust when group sizes are equal, but there can be unpredictable problems when group sizes are unequal. In the case of this study, then, where group sizes are equal, the violations of the assumptions are not especially worrisome. In fact, when group sizes are equal, the F statistic has been found to be robust even when there are extreme deviations from normality and homogeneity of variance (Field 2009). Further, Larson-Hall (2010:356) notes “there is a lot of room for … your data violating the assumptions of parametric tests. What this means is that you may not have the power to find differences that may actually exist.” That is, the biggest worry in violating the assumptions is that power will be reduced, increasing the probability of Type II error (false negative). This is obviously a concern, and it is worth keeping in mind, but it casts no doubt on those results that were found to be significant, as the Type I error (false positive) rate is not inflated (though see Field 2009 for cases in which it can be). Finally, regarding the violation of sphericity, this problem can be solved with the aforementioned correction.

In sum, then, the statistical analyses carried out for this study and presented in this section incur some violations of the assumptions of the statistical tests used. While this is cause for caution, it does not mean that the results are not valid. The tests used here are relatively robust to violations of assumptions (particularly because the group sizes are equal) and at worst may suffer from reduced power, plus a correction was used to account for the violation of sphericity.
5.3. **Subject condition**

The subject focus condition was designed to test the relative ranking of FP, ALIGN-IP-R, and EPP. Three structures were tested, each incurring a violation of one of the constraints of interest, as shown in Table VIII.

**TABLE VIII. STIMULI FOR SUBJECT FOCUS CONDITION**

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>S</em>VO</td>
<td>Mi tío compró un carro.</td>
<td>ALIGN-IP-R</td>
</tr>
<tr>
<td>VO<em>S</em></td>
<td>Compró un carro mi tío.</td>
<td>EPP</td>
</tr>
<tr>
<td>SV<em>O</em></td>
<td>Mi tío compró un carro.</td>
<td>FP</td>
</tr>
</tbody>
</table>

To analyze the results of this condition, a mixed-design ANOVA was conducted. There was one between-subjects variable, *Group*, with three levels, and one within-subjects variable, *Structure*, which also had three levels, one for each of the possible structures in Table VIII. As mentioned previously, the ANOVA for this condition did not violate the assumption of sphericity according to Mauchly’s test (p = .16), but I will nonetheless report results with the Greenhouse-Geisser correction. The results of this analysis are presented in the next section.

5.3.1. **Results**

The mean ratings for each group for the three structures in the subject focus condition are presented in Table IX.

---

30 Here, and in the tables that follow, S = subject, V = verb, O = object, PP = prepositional phrase (indirect object), and M = (pre-nominal) modifier. The constituent marked on either side with asterisks is the constituent that gets main stress.
At first glance, it is clear that the *S*VO order was the highest-rated structure for all three groups, and that the three groups do not differ much in how they rated this structure. Another thing worth noting is that the low proficiency heritage speakers rated the VO*S* order higher than the other two groups did, but not as high as they rated the *S*VO structure. The specific differences between the cells in this table are discussed below, but let us first present the main results of the ANOVA.

A main effect for Structure was found ($F_{1.9.119} = 58.7$, $p < .001$, partial $\eta^2 = .48$). This means that, regardless of the group doing the rating, the three structures were rated differently across the board. Further, note that the effect size (partial $\eta^2 = .48$) is fairly large, indicating that which structure was being judged had a major effect on how high the rating would be, across groups.

A main effect for Group was not attested ($F_{2.63} = 1.0$, $p = .37$, partial $\eta^2 = .031$). This means that the groups did not differ overall. That is, the mean ratings given regardless of structure were not different between the groups. This is unsurprising—we expect the groups to differ in which structures they rate highly, but not in their overall ratings across structures. That is, even if there had been an effect for Group, it would not be very informative, as it would be telling us that one group had higher or lower ratings than another overall, without regard to the structure being rated, whereas I am principally interested in which structure is best for each group.
group. It should be noted that the test for group is the only one in this condition that suffers from low power (.22), so it is possible that some actual differences between groups were missed. However, I repeat, even if this is the case, a main effect for Group is not especially interesting; of more concern is the interaction between Group and Structure.

An Group $\times$ Structure interaction was found ($F_{3.8,119} = 3.6, p = .009$, partial $\eta^2 = .10$). This indicates that the three groups rated different structures differently. Put another way, the groups differed on how highly they rated the three different structures. This is a medium-sized effect for an interaction (partial $\eta^2 = .10$).

This interaction is worth exploring in more detail in order to establish how the groups differed. For this purpose, post hoc pairwise comparisons were conducted, with the Sidak correction for multiple comparisons (which has more power than the more commonly used Bonferroni). The overall alpha level was .05, so those results reported below as significant are significant at the $p < .05$ level.

The post hoc tests elucidate the specific differences between the groups and between three structures. Let us first consider what differences exist between the three structures for each group. For the monolingual group, the *S*VO structure is rated significantly higher than both the VO*S* and SV*O* structures, which did not differ from each other. The high proficiency heritage speaker group showed the same pattern. The low proficiency heritage speaker group had a slightly different pattern: the *S*VO structure was rated significantly higher than VO*S*, which in turn was rated significantly higher than SV*O*.

The results of the post hoc tests comparing structures by group are represented graphically in Figure 3. In this figure, the Y axis is the mean rating, and the X axis shows the three structures organized into clusters by group. That is, the left-hand cluster shows all three
structures as rated by the monolingual group, the next cluster shows all three structures rated by the high proficiency heritage speaker group, and the right-hand cluster shows all three structures rated by the low proficiency heritage speaker group. The error bars on the columns show the standard error. Finally, the red brackets indicate significant differences between the two columns at which the ends of the brackets point. The data from Table IX is repeated in a table below the figure for ease of reference.

Figure 3. Mean ratings by group, subject focus condition
This table shows what was already discussed: for both monolinguals and high proficiency heritage speakers, *S*VO was significantly better than the other two structures, which do not differ, while for low proficiency heritage speakers, there are significant differences between each of the structures. This difference between the three structures for the low proficiency heritage speakers is the only way the groups differ, and is likely the source of the $Group \times Structure$ interaction. So, the groups do differ in how they rate different structures, and the main difference is that the low proficiency heritage speakers rated the VO*S* structure higher than the other groups did. The low proficiency heritage speakers rated this structure significantly higher than the stress-focus mismatch structure, SV*O*, whereas the other groups did not. Still, they also rated the stress shift structure *S*VO significantly higher still. This difference between groups can also be seen if we look at the data from the other direction, grouping the results by structure to see if the groups differ in their ratings of a particular structure. This is presented in Figure 4. In this figure, instead of showing the results for each group together, the results are grouped by structure, so that each cluster in the graph consists of the three different groups’ ratings of the same structure. Otherwise it follows the same conventions as the previous figure.
Figure 4 shows the results of the post hoc tests between the groups. For the *S*VO and SV*O* structures, the groups were not different. For the VO*S* order, the low proficiency heritage speakers rated this structure significantly higher than the other two groups did, while the monolinguals and high proficiency heritage speakers did not differ from each other. This is the same effect seen before, just from a different perspective, and, again, it is the likely explanation for the interaction.

In sum, then, the results for the subject condition show the following. The main predictor of how high a particular sentence would be rated was the structure (*S*VO, VO*S*, or SV*O*), and all groups rated the *S*VO structure (stress shift) highest. There were also some differences
between the groups. While the monolinguals and the high proficiency heritage speakers patterned together, the low proficiency heritage speakers rated the subject-final order (VO*S*) higher than the other groups did and were the only group to show significant differences between all three structures. Despite this difference, though, the groups are largely the same, particularly regarding the highest-rated structure. For all groups, the *S*VO structure was significantly higher than both the other structures, indicating that, for these participants in this experiment, the most acceptable structure for marking subject focus is *S*VO. The next section discusses the implications of this surprising finding.

### 5.3.2. Discussion

As we’ve just seen, all three groups preferred using stress shift to mark focus in the subject condition (that is, they preferred the *S*VO structure). This data can be exemplified in (1).

(1) [Context: Who bought a platypus?]

a. [Kalyani]$_F$ compró un ornitorrinco.
   
   Kalyani bought a platypus

b. # Compró un ornitorrinco [Kalyani]$_F$.

c. # [Kalyani]$_F$ compró un ornitorrinco.

Perhaps, for the low proficiency heritage speakers, (1b) should receive an intermediate mark (like ‘?’), designating it marginally acceptable, because (1b), while significantly worse than (1a), was nonetheless significantly better than (1c). However, what is really of interest here is what structure is possible in this context, i.e. what the highest-rated structure is, as this will be the winner in the Optimality computation and the basis for determining the constraint ranking.
Though some argue that the losers are ranked as well and can thus contribute to ranking arguments (Coetzee 2004, Keller & Alexopoulou 2001), the usual practice in building an OT analysis is to consider only the differences between the winners and the losers, not the differences between the losers. Following this general consensus, I will only make ranking arguments based on (1a) being the most acceptable structure in this context for all groups.

In that vein, let us first turn to a discussion of what this data tells us about the relative ranking of the constraints under investigation. These results support a ranking in which both EPP and FP outrank ALIGN-IP-R (though see the caveat about this ranking in section 5.6.3). This can be seen in the tableau in (2).

(2) \{FP, EPP\} >> ALIGN-IP-R

<table>
<thead>
<tr>
<th>N:{Kalyani, comprar, un, ornitorrinco}</th>
<th>Context: x bought a platypus</th>
<th>FP</th>
<th>EPP</th>
<th>ALIGN-IP-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( * ) ( _ ) ( _ ) ( _ ) I</td>
<td>( * ) ( _ ) ( _ ) ( _ ) P</td>
<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>Kalyani compró un ornitorrinco.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. ( * ) ( _ ) ( _ ) ( _ ) I</td>
<td>( * ) ( _ ) ( _ ) ( _ ) P</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>Compró un ornitorrinco Kalyani.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. ( * ) ( _ ) ( _ ) ( _ ) I</td>
<td>( * ) ( _ ) ( _ ) ( _ ) P</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>Kalyani compró un ornitorrinco.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As we can see, candidate (2b), which violates EPP by not having a pre-verbal subject loses to candidate (2a), which violates ALIGN-IP-R by not having rightmost stress. The fact that (2a) wins indicates that EPP >> ALIGN-IP-R. Candidate (2c), which violates FP by having a stress-focus mismatch, also loses to candidate (2a), which has stress-focus correspondence but not rightmost stress. This indicates that FP >> ALIGN-IP-R. Thus, both EPP and FP outrank stress right-alignment. Because neither (2b) nor (2c) are possible, though, there is no way to make an argument about the relevant ranking of FP and EPP; from this data, they must be left unranked relative to each other.
Turning now to more general discussion, the most striking thing about these results is that they do not conform with the general consensus on the way Spanish marks focus. That is, in most work on focus in Spanish since Zubizarreta (1998), it has been taken for granted that Spanish marks narrow focus on the subject by using word order to put the subject rightmost, where it gets main stress. It is also generally thought that, though Spanish can employ stress shift to mark contrastive focus, stress shift is not used to mark narrow presentational focus. However, these results clearly show that all these participants, both the monolingual speakers of Mexican Spanish and the heritage speakers, prefer stress shift to movement. In fact, the monolinguals reject subject-final word order to the same extent that they reject stress-focus mismatch, which is uncontroversially considered to be impossible. For these speakers, then, stress shift is at least a possibility, contrary to previous data on Spanish, and in this data, stress shift is in fact the best option, while subject-final word orders are infelicitous in a context of subject focus. These results thus support the growing challenge (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2010) to the consensus on focus in Spanish. I return to this theme below in section 5.6. Now, though, I turn to the next experimental condition.

5.4. **Object condition**

The object focus condition was designed to test the relative ranking of FP, ALIGN-I-P-R, and STAY. Three structures were tested, each incurring a violation of one of the constraints of interest, as shown in Table X.
TABLE X. STIMULI FOR OBJECT FOCUS CONDITION

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. SV<em>O</em>PP</td>
<td>Mi mamá le dio un <strong>chocolate</strong> a mi sobrino.</td>
<td>ALIGN-iP-R</td>
</tr>
<tr>
<td>b. SVPP<em>O</em></td>
<td>Mi mamá le dio a mi sobrino un <strong>chocolate</strong>.</td>
<td>STAY</td>
</tr>
<tr>
<td>c. SVO<em>PP</em></td>
<td>Mi mamá le dio un chocolate a mi <strong>sobrino</strong>.</td>
<td>FP</td>
</tr>
</tbody>
</table>

As before, a mixed-design ANOVA was conducted, with one between-subjects variable, Group, with three levels, and one within-subjects variable, Structure, which also had three levels, one for each of the possible structures in Table X. As mentioned previously, the ANOVA for this condition did not violate the assumption of sphericity according to Mauchly’s test (p = .14), but I will nonetheless report results with the Greenhouse-Geisser correction. The results of this analysis are presented in the next section.

5.4.1. Results

The mean ratings for each group for the three structures in the object focus condition are presented in Table XI.

TABLE XI. MEAN RATINGS BY GROUP AND STRUCTURE, OBJECT FOCUS CONDITION

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Monolingual</th>
<th>Heritage - High</th>
<th>Heritage - Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV<em>O</em>PP</td>
<td>Mi mamá le dio un <strong>chocolate</strong> a mi sobrino.</td>
<td>4.16</td>
<td>4.13</td>
<td>4.22</td>
</tr>
<tr>
<td>SVPP<em>O</em></td>
<td>Mi mamá le dio a mi sobrino un <strong>chocolate</strong>.</td>
<td>4.02</td>
<td>3.98</td>
<td>4.20</td>
</tr>
<tr>
<td>SVO<em>PP</em></td>
<td>Mi mamá le dio un chocolate a mi <strong>sobrino</strong>.</td>
<td>3.25</td>
<td>3.05</td>
<td>3.11</td>
</tr>
</tbody>
</table>
At first glance, it is clear that the SV*O*PP order was the highest-rated structure for all three groups, and that the three groups do not differ much in how they rated this structure. However, the SVPP*O* structure is rated nearly as high by all three groups, and in fact we’ll see that it is not significantly different than SV*O*PP. The clear difference here is between both structures that have stress-focus correspondence, i.e. stress on the object, and the structure with stress-focus mismatch, SVO*PP*, which is rated much lower by all three groups.

A main effect for Structure was found ($F_{1.9.119} = 50.3, \ p < .001, \ \text{partial } \eta^2 = .44$). This means that, regardless of the group doing the rating, the different structures were rated differently across the board. Further, note that the effect size (partial $\eta^2 = .44$) is fairly large, indicating that which structure was being judged had a major effect on how high the rating would be, again, across groups.

A main effect for Group was not attested ($F_{2.63} = .359, \ p = .70, \ \text{partial } \eta^2 = .01$). This means that the groups did not differ overall. That is, the mean ratings given regardless of structure were not different between the groups. This is unsurprising and not very telling for the reasons laid out in section 5.3.1. Of more interest is the interaction of Group and Structure.

In this case, however, no Group $\times$ Structure interaction was found ($F_{3.8,119} = .39, \ p = .80, \ \text{partial } \eta^2 = .01$). This indicates that the three groups did not rate different structures differently. Put another way, the groups did not differ on how highly they rated the three different structures. All three groups rated both SV*O*PP and SVO*PP* high and rated SVO*PP* low.

In the object focus condition, then, the only significant factor was Structure. The three groups behaved the same. In order to see how the different structures were rated, post hoc pairwise comparisons were conducted to compare the three structures, with the Sidak correction for multiple comparisons (which has more power than the more commonly used Bonferroni).
The overall alpha level was .05, so those results reported below as significant are significant at the p < .05 level.

Post hoc tests show that the two highest rated structures, SV*O*PP and SVPP*O*, are not significantly different from each other, but both are significantly different than SVO*PP*, for all groups. This is represented graphically in Figure 5. This figure presents the results of the post hoc test for Structure, so it does not break the data up by groups, presenting instead the average scores across groups, with each column representing one structure, as noted in the legend attached to the data table at the bottom of the figure. As before, the error bars indicate the standard error and the red brackets indicate significant differences.

**Figure 5. Mean ratings for all groups, object focus condition**
For the sake of completeness, and because I think it effectively illustrates the data, I would also like to include two more figures analogous to the figures in section 5.3.1. It should be noted, though, that, unlike section 5.3.1, post hoc tests were not performed on the \textit{Group} \times \textit{Structure} interaction, since it was not significant. Nonetheless, it is worth taking a look at the data broken out by group, as it makes especially clear the main point of this section, which is that the groups did not differ but rather all groups agreed that SV*O*PP and SVPP*O* were equally good while SVO*PP* was bad.

To this end, Figure 6 presents the data organized by group, using the same conventions as in previous figures. Here each cluster of columns is the data from one group, while each column within the cluster is that group’s rating of a particular structure. The brackets showing significance mark the differences shown to be significant above.
This figure makes clear that each group has the same pattern, rating the stress-focus mismatch option, SVO*PP*, significantly lower than the other two. The lack of difference between the groups is also especially apparent when looking at the data grouped by structure. In Figure 7, the same data is represented differently, with each cluster pertaining to a particular structure and each column within the cluster pertaining to a group. This allows us to see that the groups are not different in how they rate any given structure by comparing the columns within each grouping.
To summarize, the data for the object focus condition shows that all three groups performed the same way. The SV*O*PP (stress shift) and SVPP*O* (movement) structures were equally highly rated, while SVO*PP* (stress-focus mismatch) was rejected. This indicates that, for these speakers in this experiment, both stress shift and word order alterations can be used to mark narrow focus on the direct object. The next section discusses the implications of this finding, including how to account for the apparent variation that exists.
5.4.2. Discussion

In the object focus condition, all groups preferred both the SV*O*PP and SVPP*O* structures over the SVO*PP* structure. In other words, participants preferred both stress shift and word order alterations over violating stress-focus correspondence. This data can be represented by the example in (3), where both (3a), with a focus-final structure, and (3b), with stress shift, are acceptable, while stress-focus mismatch (3c) is infelicitous.

(3) [Context: What did Lori sell to Meghanne?]
   a. Lori le vendió a Meghanne un [erizo]F.

   Lori Cl-dat sold to Meghanne a hedgehog

   b. Lori le vendió un [erizo]F a Meghanne.

   c. # Lori le vendió un [erizo]F a Meghanne.

The first conclusion we can draw from this is that FP, the constraint requiring stress-focus correspondence, must be ranked high. In particular, it must outrank both ALIGN-IP-R and STAY. Alternative rankings generate an optimal candidate inconsistent with the data.

I argued in the previous section that FP >> ALIGN-IP-R. The tableau in (4) shows this as well. Candidate (4a), which violates stress right-alignment, is acceptable, while candidate (4b), which has a stress-focus mismatch, is not.

(4) FP >> ALIGN-IP-R

<table>
<thead>
<tr>
<th>N: {Lori, le, vender, un, erizo, a, Meghanne}</th>
<th>Context: Lori sold x to Meghanne</th>
<th>FP</th>
<th>ALIGN-IP-R</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Tableau" /></td>
<td><img src="image" alt="Tableau" /></td>
<td>FP</td>
<td>ALIGN-IP-R</td>
</tr>
<tr>
<td><img src="image" alt="Tableau" /></td>
<td><img src="image" alt="Tableau" /></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td><img src="image" alt="Tableau" /></td>
<td><img src="image" alt="Tableau" /></td>
<td>*!</td>
<td>*!</td>
</tr>
</tbody>
</table>

FP must also outrank STAY. If it did not, (3c) would be chosen over (3a), contrary to fact. This is shown in the tableau in (5), where candidate (5a), with an additional violation of STAY, is
the optimal one, with candidate (5b), with stress-focus mismatch, rejected. The opposite ordering of constraints would produce (3c) instead of (3a). Thus we can conclude that \( \text{FP} \gg \text{STAY} \).

(5) \( \text{FP} \gg \text{STAY} \)

<table>
<thead>
<tr>
<th>N: {Lori, le, vender, un, erizo, a, Meghanne}</th>
<th>FP</th>
<th>STAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context: Lori sold x to Meghanne</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{FP} \gg \text{STAY} )</td>
<td></td>
<td>**</td>
</tr>
<tr>
<td>( \text{FP} \gg \text{STAY} )</td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>

I conclude, then, that \( \text{FP} \) outranks both \( \text{STAY} \) and \( \text{ALIGN-I-P-R} \). What about the ranking of \( \text{STAY} \) and \( \text{ALIGN-I-P-R} \) in relation to each other? We saw from the experimental results and from the example in (3) that both are possible options in realizing narrow focus on a direct object. That is, the difference between (3a) and (3b) is not conditioned by the grammar (by the Optimality computation) but rather there is a situation of free variation.

Free variation is a vexing topic for OT, and for many theories of grammar, for that matter. Kager (1999:404, italics in original) outlines the nature of the problem well:

Why does free variation pose a challenge to OT? An OT grammar is essentially an input-output mapping device. The grammar is deterministic, in the sense that each input is mapped onto a single output – the most harmonic candidate for a constraint hierarchy. Given a single deterministic competition, how can two candidates ever both be optimal?

Here, however, we encounter precisely a case where two candidates appear to both be optimal. The question of how to account for this type of variation is not settled in the field, and I am not going to settle it here. Getting into this debate goes far beyond the scope of the present study. Instead, I will note some of the possible approaches, while remaining agnostic as to the ultimate solution to this problem.

One option for dealing with free variation in OT is to say that there is free ranking of the constraints. “When two constraints \( C_1 \) and \( C_2 \) are freely ranked, the evaluation procedure
branches at that point. In one branch, $C_1$ is ranked above $C_2$, while in the other branch the ranking is reversed” (Kager 1999:406). There are thus two subhierarchies, one of which is chosen for any given computation, resulting in variation in the output. Kager (1999:406) citing Kiparsky (1993), Kager (1994, 1997), Reynolds (1994), and Anttila (1995) says that free ranking of this sort has “been argued to be the OT counterpart of optional rule application.” This could be the case here: there may be one subhierarchy in which $\text{STAY} \gg \text{ALIGN-IP-R}$ and another with the reverse ranking, and which one is chosen results in either (3a) or (3b).

Another option is Stochastic OT (Boersma 1997, 1998). In this model, each constraint has a numerical ranking along a continuous scale, and, further, each constraint has a range of variation along the scale. This is shown in Figure 8 (Boersma & Hayes 2001) for the usual categorical ranking and in Figure 9 for a case of constraint overlap, i.e. variation.

**Figure 8. Categorical ranking with ranges (Boersma & Hayes 2001:3, ex. 2)**

![Categorical ranking with ranges](image1)

**Figure 9. Free ranking (Boersma & Hayes 2001:3, ex. 3)**

![Free ranking](image2)
Upon evaluation, the value of a given constraint can be taken from anywhere within its range. If the range for two constraints overlaps, then, depending on which point is chosen within the range, two possible orderings could occur. Which point is selected is determined probabilistically. This is demonstrated in Figure 10, where the numbered dots represent the “selection points” for the constraints.

**Figure 10. Selection points in free ranking (Boersma & Hayes 2001:4 ex. 4)**

*Common result: C₂ >> C₃*

![Diagram of selection points in free ranking (C₂ >> C₃)](image)

*Rare result: C₃ >> C₂*

![Diagram of selection points in free ranking (C₃ >> C₂)](image)

This could also be the case for my data. It could be that the ranges of STAY and ALIGN-iP-R overlap, and that because of this, sometimes one output is produced and sometimes a different one is.

There are other options as well. One could postulate two entirely separate constraint hierarchies (Kager 1999:405). Or perhaps, rather than different possible constraint rankings, there is only one hierarchy that produces ranked winners (Coetzee 2004). For very brief
Though the ultimate solution to the problem of free variation in OT is still under debate, and though there appears to be free variation in this data that is problematic to capture in an OT model, this does not detract from the argument that OT is a good model to use to describe presentational focus. Variation is a problem for many models of grammar, and the variation in this particular case would be at least as thorny a problem for a derivational model. For example, the p-movement account laid out by Zubizarreta (1998) could not account for the data in (3) either. P-movement saves a structure as a last resort by moving things to make sure that the focus and stress correspond. But what we see here is a case in which there can be either movement or stress shift; it appears to be optional. In general, derivational models have just as much trouble dealing with variation as OT does. It is often dealt with via optional rules or the presence or absence of a particular lexical item or feature in the derivation, and there is no clear consensus on how it should be explained. Variation is a difficulty for anyone seeking to understand the properties of mental grammars by building generative models of those grammars; it is a problem neither unique to OT nor to presentational focus.

There is another possible view (López, p.c.), which is that variation is not a problem at all. We know that multiple grammars can coexist in a single speaker’s mind. For example, bilingual and multilingual individuals have more than one grammar in their minds. The heritage speaker group of the present study has at least two constraint rankings (one for English and one for Spanish) under the model I’ve proposed. If it is the case, then, that a single mind can hold multiple grammars, perhaps the variation observed in the object condition is simply the result of speakers possessing two grammars with different constraint rankings, one of which favors the
stress shift option and one of which favors the focus-final option. If this is the case, then perhaps the question of accounting for the observed optionality may not be so pressing.

That said, the takeaway message of this section so far is this: the data indicates that, for all groups, FP must be highly ranked and that there is some kind of variation between ALIGN-IP-R and STAY. It is not clear how this variation should be modeled because this is still an open question in the field, but the relative ranking of the two constraints cannot be established. Note that this is not the same as saying they are unranked relative to each other; rather, it may be the case that sometimes the ranking is STAY >> ALIGN-IP-R and sometimes it is ALIGN-IP-R >> STAY (under free ranking, Stochastic OT, in two different grammars, or some other approach). I will indicate this with a double arrow symbol (↔) in order to distinguish constraints in free variation from those that are merely unranked. In symbols, then, this section has thus far argued that FP >> {ALIGN-IP-R ↔ STAY}.

Turning now to more general discussion, this data again shows that stress shift is at least a possible strategy for marking narrow focus in the Spanish of these speakers, contrary to previous claims in the literature. Unlike the subject focus condition, though, stress shift was not the only option: both stress shift and movement appear to be possible. Comparing object focus to subject focus, then, this data shows an asymmetry: movement can be employed to mark focus, but only in the object condition. This seems intuitively reasonable; there is something different about movement within the VP as compared to the presence or absence of a pre-verbal subject. Also, the model presented here captures this intuition, in that two different constraints, which have different rankings, govern these two types of movement. In particular, EPP always outranks ALIGN-IP-R, while STAY can be outranked by it (sometimes).
The other salient result from this data is the lack of difference between the groups. All three groups performed similarly in this condition, which is also surprising. I return to this topic in section 5.7. Now, though, I move on to the data from the final experimental condition.

5.5. **Modifier condition**

The modifier focus condition was designed to test the relative ranking of FP, ALIGN-IP-R, and EPP, like the subject focus condition, but it was also intended to test the formulation of FP as an alignment constraint. Four structures were tested, each incurring a violation (or a specific combination of violations) of the constraints of interest, as shown in Table XII.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>M</em>SVO</td>
<td>Tres chicos agarraron un libro.</td>
<td>ALIGN-IP-R</td>
</tr>
<tr>
<td>MSV<em>O</em></td>
<td>Tres chicos agarraron un libro.</td>
<td>FP</td>
</tr>
<tr>
<td>VO<em>M</em>S</td>
<td>Agarraron un libro tres chicos.</td>
<td>EPP, ALIGN-IP-R</td>
</tr>
<tr>
<td>VOM<em>S</em></td>
<td>Agarraron un libro tres chicos.</td>
<td>EPP, FP</td>
</tr>
</tbody>
</table>

As before, a mixed-design ANOVA was conducted. There was one between-subjects variable, *Group*, with three levels, and one within-subjects variable, *Structure*, which this time had four levels, one for each of the possible structures in Table 5. As mentioned previously, the ANOVA for this condition violated the assumption of sphericity according to Mauchly’s test (p < .001), and I will therefore report results with the Greenhouse-Geisser correction. The results of this analysis are presented in the next section.
5.5.1. Results

The mean ratings for each group for the three structures in the modifier focus condition are presented in Table XIII.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example</th>
<th>Monolingual</th>
<th>Heritage - High</th>
<th>Heritage - Low</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>M</em>SVO</td>
<td>Tres chicos agarraron un libro.</td>
<td>4.53</td>
<td>4.55</td>
<td>4.36</td>
</tr>
<tr>
<td>MSV<em>O</em></td>
<td>Tres chicos agarraron un libro.</td>
<td>3.28</td>
<td>2.93</td>
<td>3.25</td>
</tr>
<tr>
<td>VO<em>M</em>S</td>
<td>Agarraron un libro tres chicos.</td>
<td>3.64</td>
<td>3.41</td>
<td>3.42</td>
</tr>
<tr>
<td>VOM<em>S</em></td>
<td>Agarraron un libro tres chicos.</td>
<td>2.50</td>
<td>2.20</td>
<td>2.67</td>
</tr>
</tbody>
</table>

At first glance, it is clear that the *M*SVO order was the highest-rated structure for all three groups, and that the three groups do not differ much in how they rated this structure. It also seems clear that both MSV*O* and VO*M*S occupy an intermediate tier, and that VOM*S* is the lowest-rated structure of all. The specific differences between the cells in this table are discussed below, but let us first present the main results of the ANOVA. As in the object condition, Structure was significant, but there were no differences between groups.

A main effect for Structure was found ($F_{2.5155} = 97.7, p < .001, \text{partial } \eta^2 = .61$). This means that, regardless of the group doing the rating, the different structures were rated differently across the board. Further, note that the effect size (partial $\eta^2 = .61$) is very large, indicating that which structure was being judged had a major effect on how high the rating would be, across groups.
A main effect for Group was not attested ($F_{2,63} = 1.1$, $p = .34$, partial $\eta^2 = .03$). This means that the groups did not differ overall. That is, the mean ratings given regardless of structure were not different between the groups. This is unsurprising and not very telling for the reasons laid out in section 5.3.1. Of more interest is the interaction of Group and Structure.

In this case, however, as with the object focus condition, no Group $\times$ Structure interaction was found ($F_{4,9,155} = 1.1$, $p = .35$, partial $\eta^2 = .03$). This indicates that the three groups did not rate different structures differently. Put another way, the groups did not show different patterns in how highly they rated the four different structures. All three groups rated *M*SVO high and VOM*S* low, with MSV*O* and VO*M*S in the middle.

As in the object focus condition, then, for the modifier focus condition, the only significant factor was Structure. The three groups behaved the same. In order to see how the different structures were rated, post hoc pairwise comparisons were conducted to compare the four structures, with the Sidak correction for multiple comparisons (which has more power than the more commonly used Bonferroni). The overall alpha level was .05, so those results reported below as significant are significant at the $p < .05$ level.

Post hoc tests show that the highest rated structure, *M*SVO, is significantly different than all others. The lowest rated structure, VO*M*S, is also significantly different from all the other structures. The two structures in the middle, MSV*O* and VO*M*S are not significantly different from each other, but are significantly different from both the highest- and lowest-rated structures. This is represented graphically in Figure 11. This figure presents the results of the post hoc test for Structure, so it does not break the data up by groups, presenting instead the average scores across groups, with each column representing one structure, as noted in the legend attached to the data table at the bottom of the figure. As before, the error bars indicate the
standard error and the red brackets indicate significant differences. The gray bracket over the MSV*O* and VO*M*S indicates that they are grouped together.

Figure 11. Mean ratings for all groups, modifier focus condition

From this figure, we can see that *M*SVO was rated significantly higher than MSV*O* and VO*M*S, which are not different from each other, and higher than VOM*S*. We can also see that MSV*O* and VO*M*S are both significantly different than VOM*S*. 
As before with the object focus condition data, I include here two more figures analogous to the figures in section 5.3.1 for the sake of completeness, and because I think it effectively illustrates the data. It should be noted, though, that, unlike section 5.3.1, post hoc tests were not performed on the *Group × Structure* interaction, since it was not significant. Nonetheless, it is worth taking a look at the data broken out by group, as it makes especially clear the main point of this section, which is that the groups did not differ but rather all groups agreed that *M*SVO was good, MSV*O* and VO*M*S were worse, and VOM*S* was worst.

To this end, Figure 12 presents the data organized by group, using the same conventions as in previous figures. Here each cluster of columns is the data from one group, while each column within the cluster is that group’s rating of a particular structure. The brackets showing significance mark the differences shown to be significant above.
This figure makes clear that each group has the same pattern, rating the stress shift option, *M*SVO, highest. The structure with stress-focus mismatch and canonical order, MSV*O*, and the structure with stress-focus correspondence and subject-final order, VO*M*S, occupy a middle tier. Finally the structure with both stress-focus mismatch and subject-final order, VOM*S*, was rated lowest.

The lack of difference between the groups is also especially apparent when looking at the data grouped by structure. In Figure 13, the same data is represented differently, with each cluster of columns pertaining to a particular structure and each column within the cluster

<table>
<thead>
<tr>
<th>Structure</th>
<th>Monolingual</th>
<th>Heritage - High</th>
<th>Heritage - Low</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>M</em>SVO*</td>
<td>4.53</td>
<td>4.55</td>
<td>4.36</td>
</tr>
<tr>
<td>MSV<em>O</em></td>
<td>3.28</td>
<td>2.93</td>
<td>3.25</td>
</tr>
<tr>
<td>VO<em>M</em>S*</td>
<td>3.64</td>
<td>3.41</td>
<td>3.42</td>
</tr>
<tr>
<td>VOM<em>S</em></td>
<td>2.50</td>
<td>2.20</td>
<td>2.67</td>
</tr>
</tbody>
</table>
pertaining to a group. This allows us to see that the groups are not different in how they rate any given structure by comparing the columns within each cluster. Note that there are no significant differences between groups for a given structure.

Figure 13. Mean ratings by structure, modifier focus condition

<table>
<thead>
<tr>
<th></th>
<th>M*SVO</th>
<th>MSV<em>O</em></th>
<th>VO<em>M</em>S</th>
<th>VOM<em>S</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monolingual</td>
<td>4.53</td>
<td>3.28</td>
<td>3.64</td>
<td>2.50</td>
</tr>
<tr>
<td>Heritage - High</td>
<td>4.55</td>
<td>2.93</td>
<td>3.41</td>
<td>2.20</td>
</tr>
<tr>
<td>Heritage - Low</td>
<td>4.36</td>
<td>3.25</td>
<td>3.42</td>
<td>2.67</td>
</tr>
</tbody>
</table>

To summarize, the data for the modifier focus condition shows that all three groups performed the same way. The *M*SVO order was the highest-rated structure for all groups, with stress-focus mismatch and non-canonical order rejected. This indicates that, for these speakers in
this experiment, stress shift is the preferred strategy to mark narrow focus on a pre-nominal modifier of the subject. The next section discusses the implications of this finding.

5.5.2. Discussion

As we’ve just seen, all groups preferred the *M*SVO structure. In other words, participants preferred to shift stress to the modifier over any other option. This data can be represented by the example in (6).

(6)  [Context: How many police officers arrested the suspect?]
   a.  [Tres]\textsubscript{F} policías arrestaron al sospechoso.
       three police.officers arrested the suspect
   b.  # [Tres]\textsubscript{F} policías arrestaron al sospechoso.
   c.  # Arrestaron al sospechoso [tres]\textsubscript{F} policías.
   d.  # Arrestaron al sospechoso [tres]\textsubscript{F} policías.

This example reflects the results of the experiment. Shifting stress to the modifier (6a) was found to be the best option. Stress-focus mismatch, whether with a pre-verbal subject (6b), or a post-verbal subject (6c), was infelicitous, as was the subject-final order with stress on the modifier (6d).

This data corroborates the earlier analysis arguing that both FP and EPP outrank ALIGN-\textsubscript{IP}-R for these speakers. As shown in the tableau in (7), this ranking generates the correct candidate (7a), which incurs violations of ALIGN-\textsubscript{IP}-R but no violations of EPP or FP. Candidates (7b), (7c), and (7d) all incur violations of either FP or EPP. Any alternative ranking would not produce the correct data.
This ranking was already arrived at because of the subject focus condition data, discussed above in section 5.3. The issue that made the modifier focus condition especially interesting was that it offered the opportunity to test empirically the revised formulation of FP that was proposed in Chapter 3. The reader may recall that I proposed that FP be reformulated as an alignment constraint that admits gradient violations. This proposal was made based on data that indicated that, for some speakers at least, (7c) was the preferred candidate, which I argued could best be explained due by changing FP so that (7b) incurred additional violations of the constraint. This argument was also made in Hoot (2012).

The experiment results fail to support this analysis. There is no evidence from this experiment for the reformulated version of FP. Of course, there is evidence that FP exercises a significant role in focus realization (i.e., stress-focus mismatch is penalized), but because (6a) was in fact found to be the most acceptable option, and ALIGN-IP-R was found to be ranked low, there is no way to tell whether my reformulation of FP is accurate or not. Recall that the chance to reformulate FP only came about based on the idea that ALIGN-IP-R was undominated. It is only in this case, in which the competition must be between (7b) and (7c), that a distinction
between the formulations of FP could be made. Since FP in fact outranks ALIGN-IP-R, this distinction cannot be seen. To put it another way, the ranking represented in the tableau in (7) would choose (7a) as optimal whether (7b) incurs one violation of FP or three, so there’s no way to tell which is right.

If the experiment results had shown (7c) to be the most acceptable option, that would have constituted evidence for my revised formulation of FP. If the experiment had shown elsewhere that ALIGN-IP-R >> FP >> EPP, as postulated in Chapter 3, and (7b) had been shown to be the most acceptable option, that would have constituted clear evidence against my revised formulation of FP. As it stands, the evidence neither supports it nor disconfirms it.

Still, in light of the lack of evidence for it, the revised formulation of FP as an alignment constraint should be considered only a tentative suggestion. Perhaps evidence from other speakers will confirm or disconfirm it, but this experiment does not show support for it.

More generally, these results again support an analysis in which stress shift is at least one option to mark narrow presentational focus, contrary to previous claims in the literature. In fact, in this case, as in the subject focus condition, it appears that stress shift is the preferred option; using syntactic movement to bring the focused element closer to the end of the sentence was rejected by all groups. Further, it is again noteworthy that the groups did not differ from one another in how they marked focus on the modifier.
5.6. **Final constraint ranking and some discussion**

5.6.1. **Final constraint ranking**

Based on the discussion above in sections 5.3-5.5, we’ve found that the rankings of the constraints tested by the experiment for all three groups are as follows: FP and EPP outrank both ALIGN-IP-R and STAY. FP and EPP are not ranked relative to each other, while ALIGN-IP-R and STAY are freely ranked with regard to each other (that is, there is free variation). This ranking is represented in (8).

(8) Constraint ranking found in experiment (all groups)

\{FP, EPP\} >> \{ALIGN-IP-R ↔ STAY\}

Combining these experimentally derived rankings with the rest of the constraints in the theoretical model from Chapter 3, we get the following complete rankings, represented in the diagram in (9). In this diagram, downward lines indicate that the higher constraint dominates the lower one. Constraints that are not connected by lines are unranked relative to each other, and constraints that have no other constraint above them are undominated. I have indicated that ALIGN-IP-R and STAY are freely ranked (that is, sometimes ALIGN-IP-R >> STAY and sometimes STAY >> ALIGN-IP-R, under some analysis of free variation among those discussed in section 5.4.2) by enclosing them in a gray box and connecting them with a double arrow symbol (↔). Regardless of how they are ranked relative to each other, though, they are both dominated by all the higher constraints listed in the diagram (T-Gov, FP, EPP, etc.).
This constraint ranking correctly generates the data from the experiment. In particular, the low ranking of ALIGN-iP-R relative to EPP accounts for the fact that stress shift was the preferred option in both the modifier and subject focus conditions. Put another way, the fact that stress shift is possible is accounted for by the relatively low ranking of ALIGN-iP-R. Further, the relatively high ranking of EPP accounts for the fact that participants rejected subject-final word orders as a strategy for marking focus on the subject or on the subject’s pre-nominal modifier.

This constraint ranking also reflects the fact that these participants always rejected stress-focus mismatch. The high ranking of FP accounts for the apparent requirement that stress and focus correspond.

5.6.2. Spanish is like English

Perhaps the most noteworthy aspect of this constraint ranking and the data that it reflects is the apparent similarity of Spanish, as attested in this experiment, and English. The results of this experiment show that Spanish is much more like English, in that it allows/prefers stress shift to mark focus, than is commonly thought. Indeed, perhaps the central concern in the literature on focus in Spanish is how to explain word order alterations under narrow focus. As we saw in Chapter 2, there are a variety of proposals, resting on prosody, semantics, or syntax. But perhaps
this goal needs to be revised or to become more nuanced. The experiment results presented here show that in fact the generalization that to mark focus English uses stress shift and Spanish uses word order does not always hold, and the constraint ranking in (9), which resembles the constraint ranking proposed for English in Chapter 3, reflects this. These results also reflect the conclusions of other recent studies (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2009) that have found that Spanish admits stress shift, and they are similar to the conclusions reached by Keller and Alexopoulou (2001) for Greek, another language that is commonly thought to use primarily syntactic resources to mark focus, that in fact accent placement played the primary role.

Of course, I realize that most work on focus in Spanish recognizes that the generalization ‘English = stress shift, Spanish = syntax’ is an oversimplification of the real state of affairs. Nonetheless, the use of stress shift to the exclusion (in the case of subject and modifier focus) or along with (in the case of object focus) syntactic movement, is a surprising finding that does run counter to the consensus in the literature.

In particular, Spanish stress is not nearly so inflexible as it is commonly thought to be, which means that explanations based on focus being final in order to satisfy constraints on prosody, whether derivational (Zubizarreta 1998) or in OT (Büring & Gutiérrez-Bravo 2001, Gutiérrez-Bravo 2002), may need to be rethought in light of the fact that Spanish stress need not always be rightmost, at least for these speakers. On the other hand, these results support a view in which Spanish word order is more inflexible than it is commonly thought to be, in that subject-final orders were rejected in this experiment.

That said, it should also be noted that I am not claiming here that Spanish is exactly like English in how presentational focus is realized. Nor am I making the claim that Spanish word
order is as inflexible, or Spanish stress as flexible, as in English. Rather, the results of the experiment show, and the constraint ranking in (9) reflects, that these are the findings of this particular experiment testing these particular structures. It should be clear, though, that the question of word order alterations and the possibility of postverbal subjects in Spanish are not completely accounted for by the data here, and there is much to be discovered in future research (more fully discussed in section 5.9).

5.6.3. A caveat about subject-final word orders

While these results clearly show that stress shift is possible in Spanish, contrary to previous claims, it should be clearly stated that word order alterations are, too, at least in other constructions. For instance, it is well known that unaccusatives in Spanish can have subject-final order, as in (10). Also, in informal consultations with Spanish speakers of various dialects who pattern with my participants in preferring *S*VO order in subject focus contexts, many consultants have informed me that subject-final orders are much more acceptable in these contexts when the object is replaced by a clitic pronoun (11) or dislocated (12). (In fact, Gabriel (2007) found that the same speakers who produced *S*VO 100% of the time produced subject final order 67% of the time when the object was replaced with a clitic.) In modifier contexts, these same informants have told me that putting the modifier at the end of the sentence and stressing it there sounds much better when the object is replaced with a clitic and the subject noun is elided (13).

(10) Llegaron los **hombres**.

arrived    the men

‘The men arrived.’
(11) [Context: Who bought the car?]

Lo compró mi mamá.

it bought my mom

‘My mom bought it.’

(12) [Context: Who bought the car?]

El carro, lo compró mi mamá.

the car it bought my mom

‘The car, my mom bought it.’

(13) [Context: How many police officers arrested the suspect?]

Lo arrestaron tres.

him arrested three

‘Three (police officers) arrested him.’

I mention this data to show that I am cognizant of the fact that there are still questions to answer regarding variable word orders under narrow focus in Spanish, and that the experiment and analysis here do not answer them all. I also mention them to make it clear that I am not making the argument that the constraint ranking in (9) is the final word on the subject. In particular, EPP is either not undominated or should be rethought, because I speculate that even these speakers, who always reject subject-final orders in this experiment, may create sentences with subject-final orders in other contexts. The model I’ve presented here does not account for these facts, and it will thus need to be revised in future research in order to take into account a broader data set. In particular, some new constraints may be in play that outrank EPP and allow it to be violated in cases like (10-13), or perhaps the EPP constraint will need to be reformulated. I leave this revision of the theory for future work.
5.6.4. The utility of an OT model of focus

One question that arises from this discussion so far could be: If Spanish is like English, and the most important things are to maintain canonical word order and to stress the focus, why do we need any further analysis? That is, what is the point of the OT model, and of talking about the ranking of constraints, if this behavior could be captured by the usual rules of sentence formation plus an additional rule saying, “Stress the focus?” Is there any advantage to modeling this phenomenon via constraint conflict if we don’t in fact have discourse-related word order alterations to account for?

First of all, the theoretical model makes some contributions that are unaffected by not finding discourse-related word order alterations. It proposes a novel account of prosodic phrasing in Spanish. It also gives a more comprehensive account of focus in Spanish and English than previous studies, including in a single model the derivation of main stress via prosodic structure, the derivation of F-marking via constraints on its interpretation, the derivation of word order via syntactic constraints, and the interactions of these distinct factors to produce focus realization.

Furthermore, the analysis provided of pre-nominal modifiers that led to revising FP, the constraint on stress-focus correspondence, has something valuable to contribute despite the fact that it was not borne out in the experiment. As discussed in more detail in Hoot (2012) and in section 3.1.1, the data presented in Chapter 3 on pre-nominal modifiers does represent the grammars of at least some speakers of Spanish, though it does not represent the grammars of the participants in this experiment. Nonetheless, because this data does represent some variety of Spanish, and thus some variety of natural language, the proposal that stress-focus correspondence can be violated and may be a constraint on alignment still contributes something new to the field.
Moreover, this model is just one step forward toward a more complete understanding of focus, and it will be valuable to build on in future research. This is especially true in light of the preceding discussion of examples (10-13). We know that there are still word order questions to be answered, and, as already mentioned, the ranking presented in (9) is not the final answer. What this experiment shows is that the relationship between stress, word order, and context is different than what we thought it was, but there are still open questions, and I think an OT model will be useful in accounting for them. For instance, McCarthy (2008:32) notes that phenomena in which there is “systematically inconsistent behavior,” such as when you can describe something with phrases like “only when” or “except when,” are suited for an OT analysis because this behavior is a “solid indicator of constraint interaction.” This is still the case for focus in Spanish and English. Descriptive generalizations of this type can still be made, such as “Put the stress rightmost except when you have to shift the stress to the focus,” or perhaps “There must be a pre-verbal subject except when the object is dislocated or elided.” This sort of descriptive generalization lends itself naturally to an OT model, and the model built here so far can serve as a base from which to proceed.

These and other issues will still need to be addressed in more detail in future research, and I think that a model of focus realization involving conflicting constraints remains a good way to conceptualize this phenomenon.

5.6.5. Other concerns

Another question that may arise from the preceding discussion could be: How is it possible that these results are surprising? That is, if the results clearly show that these speakers, both monolingual and heritage, prefer stress shift, how can it be that the consensus in the field is
still that Spanish has sentence-final stress requiring the focus to be rightmost? One possible
answer to these questions is that most previous studies of information structure in Spanish use
introspection, and the Spanish of those authors does in fact behave as they say. It is likely true
that in Zubizarreta’s grammar stress must always be rightmost, but because there is a dearth of
larger-scale experimental work on this topic, the dataset has been restricted to the grammars of
relatively few speakers. So, because this is one of the few studies to examine focus
experimentally, we may have found something new simply by increasing the number of people
who gave judgments.

However, these findings are not entirely new. In fact, as previously mentioned, other
recent studies (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2009) have come to
the same conclusions, using different methods. The present work thus contributes to a growing
revision of the consensus on focus realization in Spanish, adding to the literature showing that
presentational focus can in fact be realized via stress shift in Spanish.

On a related note, dialect differences could play a role. Though there are some studies of
focus in Mexican Spanish (Kim & Avelino 2003, Martin Butragueño 2005), many works are
based on speakers of other dialects, which may also be why the consensus is that there must
always be rightmost stress. It is possible that some statements about stress and focus ‘in Spanish’
should more properly be characterized as being about stress and focus ‘in this particular dialect
of Spanish.’

It’s also possible that these results are an artifact of the task. Perhaps these speakers do
produce subject-final word orders in their daily lives, but this task is not fine-grained enough to
see the relevant differences. Perhaps speakers just default to canonical word order and stress-
focus correspondence when asked overtly for their judgments, but would actually produce
subject-final orders in natural contexts. This is a drawback of any experimental work; it is always possible that the experiment is not well-designed enough. On the other hand, it is worth noting that the studies mentioned above (Gabriel 2007, 2010; Leal-Méndez & Shea 2012; Muntendam 2009) have all found the same thing using different methods, lending credibility to the results presented here.

Even if these speakers would produce non-canonical word orders in natural contexts, though, this data is still valuable in showing us that stress shift is certainly at least a possibility for these speakers, even if in other situations they may also have recourse to movement. In order to get a better picture, we obviously need a more thorough investigation of the data, drawing from multiple sources—corpus work, experiments with judgments, experiments with production, naturalistic data collection, and introspection—in order to develop a more complete database. The important contribution of this study, though, is to expand the database in a novel way, and to provide new evidence that did not exist before and that contributes to challenges of the prevailing view. Though there remain unanswered questions, this study has provided valuable new evidence about information structure in (this/these dialect(s) of) Spanish, and thus helps to move the field forward.

5.6.6. Conclusions

Despite not being the ultimate answer, the data reported here and the model built on it make significant contributions to the understanding of focus in Spanish. Future work on focus in Spanish should take this data into account and develop theories that do not, for example, rely on the requirement of rightmost stress to motivate sentence-final orders, because it is clear from this data that the requirement that Spanish stress be rightmost is far from absolute. Further, theories
will need to be developed that take into account the possibility of stress shift in Spanish. Many such approaches exist for English (e.g. Reinhart 2006), and perhaps they could be extended, but then word order will still need to be taken into account.

In short, the results of this experiment demonstrate a need for a deeper understanding of the facts of focus marking and more nuanced theories to account for all the data. They are also rather surprising, in that they reveal that Spanish does not behave, for these speakers in this experiment, the way we expected based on the consensus view.

In conclusion, this section has described the final constraint ranking within the OT model built in Chapter 3, based on the evidence from the experiment, and it was found that stress shift was a possible or preferred way to mark narrow focus in the Spanish of these participants, contrary to the prevailing consensus in the field. I turn now to the second motivation of the study, understanding how the groups differed.

5.7. **Group differences and the Interface Hypothesis**

The most notable fact discovered about the differences between the three groups was the lack of difference. The low proficiency heritage speakers differed slightly from both the high proficiency heritage speakers and the monolinguals in the subject focus condition, but, other than that, the groups were largely the same. All three groups rated the same structures as most preferred in all three conditions.

These results are surprising in light of previous work on heritage grammars. Recall from Chapter 2 that it was expected that heritage speakers would differ from monolinguals in how they mark presentational focus based on the following reasoning. First, heritage speaker grammars have been shown to be different from monolingual grammars especially regarding
phenomena regulated not purely by syntax but by the interface of syntax and other grammatical systems (Montrul 2004). This is the Interface Hypothesis (IH) proposed by Sorace and Filiaci (2006) and extended to heritage speakers by Montrul and others (Montrul & Polinsky 2011). The realization of presentational focus is just such an interface phenomenon. Thus, it was expected that heritage speaker grammars would be different regarding focus. Second, interface phenomena have been argued to be more susceptible to contact-induced change than purely syntactic phenomena (Silva-Corvalán 1994). Focus is an interface phenomenon, and heritage speakers acquire Spanish in a situation of language contact. Thus, it was expected that heritage speakers’ focus marking would be different due to language contact.

These expectations were not borne out though, and the present work does not provide additional support for the Interface Hypothesis (as it applies to heritage speakers). Regarding which was the most acceptable structure in each condition, both heritage speaker groups performed like the monolingual group, and there was not evidence of contact-induced change in the realization of presentational focus.

Of course, this is not to say that this work provides evidence against these hypotheses, only that the present experiment fails to support them. Other factors may be at play.

One potential objection to my interpretation of the lack of group differences is: If Spanish (as revealed by the monolingual data) is so similar to English (i.e. they both realize focus via stress shift), how could one see influence from English in the heritage speaker grammars? That is, perhaps the heritage speakers’ grammars have in fact been influenced by English, but the influence cannot be observed because monolingual Mexican Spanish already marks focus via stress shift. This objection presumes that influence from English will necessarily result in making the Spanish of bilinguals more like English. However, recall from section 2.5.2 that in other
situations of language contact it has been shown that contact-induced change can be unpredictable. It is not necessarily change toward the dominant language. For example, Montrul (2004) found that heritage speakers produced pragmatically illicit uses of null subjects, not redundant overt subjects, which runs counter to the idea that they are influenced by English, a language with obligatory overt subjects. Because such changes need not necessarily be toward the dominant language, it was possible that contact with English could have induced other changes in the grammars of these speakers. The fact that no difference was found, then, is still remarkable and contrary to expectations, though I recognize that it may exist but be undetectable in this case.

Another possible explanation for the lack of differences would be that focus does not apply at the correct interfaces. Recall from Chapter 2 that Sorace (2011) claims that there is a difference between internal and external interfaces, that focus pertains to the internal interfaces, and that the internal interfaces are not covered by the IH. If one accepts this reasoning, it would be expected that there should be no difference between the groups. I disagree with the premise of this argument: following Slabakova (2011) and Tsoulas and Gil (2011), it seems clear to me that focus is a notion that relies on the context just as much as the realization of, say, overt subject pronouns (which Sorace locates at the external interface) and thus the IH should apply to focus. Nonetheless, the data here is consistent with this possibility.

A third possible interpretation of the lack of difference (Montrul, p.c.) is that it shouldn’t be surprising at all, because focus involves phonology and there is evidence that phonology is relatively well maintained in heritage grammars. However, while it is true that most research points to “significant native-like [phonological] abilities for heritage speakers” (Montrul 2012), heritage speakers nonetheless do present some differences from monolinguals in their phonology.
Further, most research on the sound systems of heritage grammars has focused on segmental phonology, with relatively little evidence on heritage intonation. Regarding studies of the latter, the evidence is mixed: for example, Henriksen (2011) found that heritage speakers of Spanish used the same basic melodies as monolinguals but in different frequencies, while Bullock (2009) found that heritage speakers of French used novel intonational patterns that do not exist in French, which she attributes to language contact. Bullock also argues that intonation is “particularly vulnerable to cross-linguistic influence” (Bullock 2009: 168); if this view is correct, perhaps these results are indeed surprising. Nonetheless, it is possible that the lack of differences found in the present study simply lends more support to the general conclusion that heritage speakers have relatively intact phonological systems.

It is also worth pointing out that there was one difference between the groups, as already mentioned: the low proficiency heritage speakers were slightly different than the monolinguals and than the high proficiency heritage speakers in the subject focus condition. Though they chose the same preferred structure, *S*VO, the low proficiency heritage speakers rated the subject-final structure higher than the other two groups did. This did not enter into the analysis above because what I was mainly interested in was what the most acceptable structure in any given context was; the relative acceptability of less-acceptable responses was not of particular interest. Nonetheless, since it is the one difference found, it deserves mention here. Rating the subject-final order higher than the other two groups could be a case of low proficiency heritage speakers having a different grammar due to incomplete acquisition, attrition, or complete acquisition of a contact variety. It could be the case that these heritage speakers, having lower proficiency in, and perhaps less exposure to, Spanish, have acquired or kept the relevant features
of the grammar that admit non-canonical word orders but have not acquired or kept the features of the grammar regulating their use under focus situations. To put it another way, perhaps these speakers know that Spanish has subject-final orders (with unaccusatives, for example), but have not completely acquired (or have lost) the features that regulate when these subject-final orders appear. If this speculation is correct, then this could be a piece of evidence in favor of the Interface Hypothesis inasmuch as they may have systems with monolingual-like syntax (subject-final orders are possible) but a non-monolingual-like syntax/prosody or syntax/pragmatics interface (focus marking). However, in the other conditions, these speakers patterned with the other two groups, so if their syntax/pragmatics interfaces are non-monolingual-like, it is in a limited way. Furthermore, it is not clear that any conclusions can be drawn from this difference because the *S*VO structure was still the highest rated for this group, in line with the other two groups. Any conclusions drawn based on the less-preferred option should thus be considered very tentative.

Finally, recall from Chapter 2 that heritage grammars sometimes resemble those of L2 learners and sometimes look more like those of L1 native speakers, and that the extent to which heritage speakers resemble L1 or L2 is an open question in the field. This question was interesting in light of what we know about L2 grammars and focus, namely that L2 learners have been shown to have persistent difficulty acquiring discourse-conditioned word order variations in Spanish (Hertel 2003; Lozano 2003, 2006a, 2006b; Lozano & Mendikoetxea 2009), in line with the IH. If L2 learners have difficulty with phenomena like focus, and heritage speakers sometimes resemble L2 learners, one might expect heritage speakers to also have difficulty with focus. However, the results of this experiment show that these heritage speakers do not show optionality or difficulty with focus realization, unlike L2 learners. Instead, the heritage speakers
pattern like the monolinguals. Therefore, this study provides evidence that, when it comes to realizing presentational focus, heritage grammars are more like L1 grammars than L2 grammars.

In sum, though there was a slight difference between the groups in the subject focus condition, the most striking result of comparing the three groups is that they differed so little. This result was especially surprising because it was expected that the heritage speakers would differ from the monolinguals and would further differ based on Spanish proficiency. In the case of presentational focus for these speakers in this experiment, this particular discourse-related phenomenon does not appear to have undergone contact-induced change, and it was not found that heritage speakers had different grammatical systems than monolinguals, contrary to expectations.

5.8. **Summary, conclusions, and impacts**

This section presents a summary of the conclusions drawn above and comments on the impacts of the present study.

5.8.1. **Summary of conclusions**

In summary, I present the main findings of this study as they relate to the research questions.
**Research question 1.** Regarding presentational focus, what combinations of main sentence stress and word order are most acceptable in what contexts for monolinguals and heritage speakers?

In this experiment, both Spanish monolinguals and heritage Spanish speakers prefer or permit stress shift to mark narrow presentational focus. In cases of narrow focus on the subject or on the subject’s pre-nominal modifier, stress shift to the focused constituent in situ was the most acceptable option. In cases of narrow focus on a direct object, stress shift to the focused constituent in situ or syntactic movement leaving the focused constituent rightmost were both possible. In all cases, stress-focus correspondence was not possible.

**Research Question 2.** What do the patterns of acceptability of different structures (combinations of main sentence stress and word order) in different contexts indicate about the roles of prosody and syntax in the realization of presentational focus in heritage and monolingual Spanish?

Based on the acceptability of stress shift by both groups, I have concluded that:

- Spanish word order is less flexible than commonly thought.
- Spanish stress is more flexible than commonly thought.
- Previous approaches accounting for focus-final word orders may need to be rethought.
- Future studies should adopt more nuanced view of the data on focus in Spanish, taking into account the findings above.
**Research Question 3.** Do heritage speakers of Spanish and Spanish monolinguals accept different structures (combinations of main sentence stress and word order) in a particular context, and, if so, what are these differences?

No, the groups did not differ significantly.

**Research Question 4.** With what theories of heritage grammars and language contact are the patterns of acceptability of different structures (combinations of main sentence stress and word order) in context by the two groups consistent?

The results of this study do not, on the whole, provide evidence for the Interface Hypothesis as applied to heritage speakers. Though these findings are consistent with a particular formulation of the IH that excludes focus as an interface phenomenon, and though there were some tentative findings from the low proficiency heritage speaker group that may indicate support for the IH, the bulk of the data does not provide additional evidence for the IH (though it does not falsify it, either). Further, evidence of contact-induced language change was not found, and the evidence showed that heritage speakers resemble monolinguals more than L2 learners in how they realize focus.

**5.8.2. Impact**

This study makes contributions to studies of information structure in Spanish and more generally, as well as to studies of heritage grammars. One major impact of this study is to expand the empirical coverage of focus in Spanish by bringing new experimental data to bear on the
question in a way that has not been commonly done before. It also presents evidence that some approaches to analyzing focus in Spanish may need to be reconsidered and challenges some widely held views about Spanish information structure.

Another major impact of this study is that it contributes data on focus marking in heritage Spanish, which has not been studied before. Thus, this project presents new data about the features of heritage grammars, fitting into a broad body of research describing these speakers’ linguistic systems. This project adds to that research program.

A third impact is that this study shows that, in the case of this particular interface phenomenon, the heritage speakers did not differ from the monolinguals. This finding contributes to further understanding the interfaces of syntax with other linguistic systems, because heritage speakers have been shown to differ from monolinguals on other discourse phenomena but do not differ on this one. This study thus contributes data regarding what interface phenomena are and are not affected by language contact, which will help build more fully articulated theories in the future.

5.9. **Future directions**

It is clear from the discussion in this chapter that more work needs to be done, and there are many fruitful future directions in which to take this research.

First, it is clear that this study has examined only a limited number of structures, and so one obvious avenue of future research is to look at more varied structures. In particular, an experiment involving sentences with object pronouns or dislocations is called for, in that this may provide us with a more complete picture of how focus is realized in Spanish, including those cases in which subject-final orders are more acceptable.
Second, another obvious area for future research is to expand the database still further using different methods. Production tasks, differently designed judgment tasks, corpus work, naturalistic data—all of these should eventually be combined to create a coherent picture of this phenomenon.

Third, the question of dialect differences in information structure remains understudied and should be more explicitly addressed. There are many possible studies looking more directly at how different varieties of Spanish realize focus and other information structural phenomena.

Fourth, it is clear that a more nuanced view of the interfaces in heritage grammars is necessary. Here we’ve seen evidence that they do not perform differently on this interface phenomenon, but we know that they do on others. What are the sources of these differences, and what do they tell us about the organization of the grammar?

Fifth, there is still work to be done regarding the prosody/syntax interface and how to model it. Further experiments should shed light on whether it is best to model information structure and the prosody/syntax interface using constraint conflict (like OT), or whether the evidence does not support this model. Of particular interest to me is to discover whether there is evidence from other structures or other language pairs that the constraint on stress-focus correspondence should be rethought as an alignment constraint, or whether this proposal is mistaken.
CITED LITERATURE


Martín Butragueño, P. 2006. El estudio de la entonación del español de México. In M. Sedano, A. Bolívar, & M. Shiro (Eds.), Haciendo lingüística: Homenaje a Paola Bentivoglio (pp. 105-126). Caracas: Universidad de Venezuela.


This appendix contains all the materials used in the experiment. Section A.1 presents the stimuli for each experimental condition. Section A.2 presents the context stories for each condition. Section A.3 contains the text of the instructions and the training phase.

A.1. **Stimuli**

This section presents the stimuli used in the experiment. For each condition, the basic stimuli are presented and then a table shows the permutations of the stimuli in terms of word order and stress, with asterisks marking the stressed word.

A.1.1. **Subject focus condition**

1. Mi tío compró un carro.
   my uncle bought a car
2. Mi hermana perdió una joya.
   My sister lost a piece of jewelry
3. Mi amigo consiguió un trabajo.
   My friend got a job
4. Mi abuelo construyó una mesa.
   My grandfather built a table
5. Mi hermano vendió una casa.
   My brother sold a house
APPENDIX (continued)  

<table>
<thead>
<tr>
<th>Structure</th>
<th>Stimuli</th>
</tr>
</thead>
</table>
| **S**VO   | 1. Mi *tío* compró un carro.  
               2. Mi *hermana* perdió una joya.  
               3. Mi *amigo* consiguió un trabajo.  
               4. Mi *abuelo* construyó una mesa.  
               5. Mi *hermano* vendió una casa. |
| VO**S**   | 1. Compró un carro mi *tío*.  
               2. Perdió una joya mi *hermana*.  
               3. Consiguió un trabajo mi *amigo*.  
               4. Construyó una mesa mi *abuelo*.  
               5. Vendió una casa mi *hermano*. |
| **S**VO   | 1. Mi tío compró un *carro*.  
               2. Mi hermana perdió una *joya*.  
               3. Mi amigo consiguió un *trabajo*.  
               4. Mi abuelo construyó una *mesa*.  
               5. Mi hermano vendió una *casa*. |

### A.1.2. Object focus condition

(6) Mi mamá le dio un chocolate a mi sobrino.  
    My mom Cl.dat gave a chocolate to my nephew

(7) Mis hermanos le mandaron una camisa a mi abuelo.  
    My brothers Cl.dat sent a shirt to my grandfather

(8) Mi primito le regaló una manzana a su maestra.  
    My little-cousin Cl.dat gave an apple to his teacher

(9) Mi compañero le prestó un diccionario a su amigo.  
    My roommate Cl.dat lent a dictionary to his friend

(10) Mi tío le envió una pulsera a mi hermana.  
     My uncle Cl.dat sent a bracelet to my sister
<table>
<thead>
<tr>
<th>Structure</th>
<th>Stimuli</th>
</tr>
</thead>
</table>
| SV*O*PP  | 6. Mi mamá le dio un *chocolate* a mi sobrino.  
7. Mis hermanos le mandaron una *camisa* a mi abuelo.  
8. Mi primo le regaló una *manzana* a su maestra.  
9. Mi compañero le prestó un *diccionario* a su amigo.  
10. Mi tío le envió una *pulsera* a mi hermana. |
| SVPP*O*  | 6. Mi mamá le dio a mi sobrino un *chocolate*.  
7. Mis hermanos le mandaron a mi abuelo una *camisa*.  
8. Mi primo le regaló a su maestra una *manzana*.  
9. Mi compañero le prestó a su amigo un *diccionario*.  
10. Mi tío le envió a mi hermana una *pulsera*. |
| SVO*PP*  | 6. Mi mamá le dio un chocolate a mi *sobrino*.  
7. Mis hermanos le mandaron una camisa a mi *abuelo*.  
8. Mi primo le regaló una manzana a su *maestra*.  
9. Mi compañero le prestó un diccionario a su *amigo*.  
10. Mi tío le envió una pulsera a mi *hermana*. |

**A.1.3. Modifier focus condition**

(11) Tres chicos agarraron un libro.  
Three boys grabbed a book

(12) Dos ladrones robaron una obra.  
Two thieves stole a work

(13) Cinco vecinos vieron un accidente.  
Five neighbors saw an accident

(14) Seis personas compraron un boleto.  
Six people bought a ticket

(15) Ocho artistas mandaron una pintura.  
Eight artists sent a painting
TABLE XVI. MODIFIER CONDITION STIMULI

<table>
<thead>
<tr>
<th>Structure</th>
<th>Stimuli</th>
</tr>
</thead>
</table>
12. *Dos* ladrones robaron una obra.  
15. *Ocho* artistas mandaron una pintura. |
| VO*M*S   | 11. Agarraron un libro *tres* chicos.  
12. Robaron una obra *dos* ladrones.  
13. Vieron un accidente *cinco* vecinos.  
15. Mandaron una pintura *ocho* artistas. |
| VOM*S*   | 11. Agarraron un libro tres *chicos*.  
12. Robaron una obra dos *ladrones*.  
13. Vieron un accidente cinco *vecinos*.  
14. Compraron un boleto seis *personas*.  
15. Mandaron una pintura ocho *artistas*. |
| MSV*O*   | 11. Tres chicos agarraron un *libro*.  
12. Dos ladrones robaron una *obra*.  
13. Cinco vecinos vieron un *accidente*.  
14. Seis personas compraron un *boleto*.  
15. Ocho artistas mandaron una *pintura*. |

A.2. **Contexts**

This section presents the context stories used for each condition.

A.2.1. **Subject focus condition**

(16) Stimulus: Mi tío compró un carro.

Tú y tu amiga Sara están en la casa de ella, haciendo algo de comer en la cocina. Ella va a buscar unos ingredientes que había dejado en el carro, cuando suena tu celular. Es tu tío, quien acaba de comprarse un carro nuevo. Cuando regresa Sara, está hablando del color y el modelo del carro, y del precio de la gasolina, y ella se da cuenta de que alguien que conoces acaba de comprar un carro. Cuando cuelgas, Sara te pregunta: "¿Quién compró un carro?"

‘You and your friend Sara are at her house, making something to eat in the kitchen. She goes to get some ingredients she’d left in the car when your cell
phone rings. It’s your uncle, who just bought a new car. When Sara comes back, you’re talking about the color and model of the car, and about the price of gasoline, and she realizes that someone you know just bought a car. When you hang up, Sara asks you: “Who bought a car?”

(17) Stimulus: Mi hermana perdió una joya.

Tu hermana está nadando en la alberca cuando se da cuenta de que se le cayó un anillo. Ella te pide que le ayudes a buscarlo. Mientras buscan, pasa una amiga tuya, y te oye hablando con tu hermana de una joya. Ella te pregunta: “¿Quién perdió una joya?”

‘Your sister is swimming in the pool when she realizes that she dropped a ring. She asks you to help her find it. While you’re looking, a friend of yours passes by and hears you talking with your sister about a piece of jewelry. She asks you: “Who lost a piece of jewelry?”’

(18) Stimulus: Mi amigo consiguió un trabajo.

Te encuentras con tus amigos Rodrigo y Susana después de clase en un cafén, y Rodrigo te explica que lo acaba de contratar una compañía muy buena. Él va a la cajera para comprar un cafén, y mientras tanto, Susana te cuenta todos los detalles del trabajo nuevo. Un profesor tuyo pasa por tu mesa y oye a Susana describir el trabajo, y le pregunta: “¿Quién consiguió un trabajo?”

‘You run into your friends Rodrigo and Susana after class in a cafén, and Rodrigo explains to you that he just got hired by a very good company. He goes up to the register to buy a coffee, and, meanwhile, Susana tells you all the details of the new job. A professor of yours walks by your table and hears Susana describing the job, and he asks you: “Who got a job?”’

(19) Stimulus: Mi abuelo construyó una mesa.

Estás en una tienda de muebles con tu mamá, buscando una mesa para el comedor. Ella ve una mesa redonda de madera, y te dice que le recuerda a una mesa que construyó su papá hace años. Mientras ella está contando la historia, se les acerca un empleado de la tienda, y oye el final de la historia. Él les pregunta: “¿Quién construyó una mesa?”

‘You’re in a furniture store with your mom, looking for a table for the dining room. She sees a round wooden table and tells you that it reminds her of a table that her father built years ago. While she’s telling you the story, a store employee comes up to you and hears the end of the story. He asks you: “Who built a table?”’
(20) Stimulus: Mi hermano vendió una casa.

Estás en la sala de tu apartamento cuando tu hermano te llama. Él es agente de bienes raíces y te dice que finalmente vendió una casa. Estás haciéndole preguntas sobre el precio y cuánto va a ganar cuando regresas a casa tu compañero de apartamento. Cuando cuelgas, tu compañero te pregunta: "¿Quién vendió una casa?"

‘You’re in the living room of your apartment when your brother calls you. He’s a real estate agent and he tells you that he finally sold a house. You’re asking him questions about the price and how much he’s going to earn when your roommate comes home. When you hang up, your roommate asks you: “Who sold a house?”’

A.2.2. Object focus condition

(21) Stimulus: Mi mamá le dio un chocolate a mi sobrino.

Una compañera de clase tuya, Nora, viene a tu casa una tarde para estudiar. Mientras sube las escaleras, tu sobrino va bajando, y grita con la boca llena "Gracias, abuela." Nora te pregunta: "¿Qué le dio tu mamá a tu sobrino?"

‘A classmate of yours, Nora, comes to your house one afternoon to study. While she’s coming up the stairs, your nephew is going down, and he yells with his mouth full “Thanks, grandma.” Nora asks you: “What did your mom give to your cousin?”’

(22) Stimulus: Mis hermanos le mandaron una camisa a mi abuelo.

Un día, estás hablando de tu familia con una vecina. Le cuentas que tus hermanos son muy olvidadizos. Por ejemplo, muchas veces se olvidan de los cumpleaños de los demás. Sin embargo, le dices que este año el cumpleaños de tu abuelo es la semana que viene, y tus hermanos ya le mandaron algo. Tu vecina dice: "¿Ah, sí? ¿Y qué le mandaron tus hermanos a tu abuelo?"

‘One day, you’re talking about your family with a neighbor. You tell her that your brothers are very forgetful. For example, often they forget the birthdays of others. However, you tell her that this year your grandfather’s birthday is next week, and your brothers have already sent something. Your neighbor says: “Oh, yeah? And what did your brothers send to your grandfather?”’

(23) Stimulus: Mi primito le regaló una manzana a su maestra.

Tu primito Lalo va a entrar este año al segundo grado. Quiere darle una buena impresión a la maestra, y tú le sugieres que le lleve una manzana. Después del
primer día de clase, estás hablando con un amigo en frente de la casa cuando viene tu primo y te dice "A la maestra le encantó el regalo. ¡Gracias por la idea!" Tu amigo te pregunta: "¿Qué le dio tu primo a su maestra?"

‘Your little cousin Lalo is going to start second grade this year. He wants to make a good impression on the teacher, and you suggest that he take her an apple. After the first day of class, you’re talking to a friend in front of your house when your cousin comes by and says “The teacher loved the gift. Thanks for the idea!” Your friend asks you: “What did your little cousin give to his teacher?”

(24) Stimulus: Mi compañero le prestó un diccionario a su amigo.

Estás pasando tiempo en el apartamento de tu amigo Juan. Él comparte su apartamento con Ernesto, un chico a quién no conoces bien. Viene un amigo de Ernesto, y le da algo a Juan, pero no ves qué es. Él le pide que le dé las gracias a Ernesto por prestárselo, y dice que lo ayudó mucho en el examen. Tú preguntas: "¿Qué le prestó tu compañero a su amigo?"

‘You’re hanging out at your friend Juan’s apartment. He shares his apartment with Ernesto, a guy that you don’t know well. A friend of Ernesto’s comes by and gives something to Juan, but you don’t see what it is. He asks him to say thanks to Ernesto for letting him borrow it and says that it helped him a lot on the exam. You ask: “What did your roommate lend to his friend?”

(25) Stimulus: Mi tío le envió una pulsera a mi hermana.

Estás en la casa de tu amigo Pablo, y entra en la sala su hermana menor, hablando por teléfono. Dice "Ay, tío, es preciosa. ¡Me encanta! ¡Muchísimas gracias por enviármela para mi cumpleaños!" Parece estar muy feliz, y le preguntas a Pablo: "¿Qué le envió tu tío a tu hermana?"

‘You’re at your friend Pablo’s house and his little sister comes into the living room, talking on the phone. She says “Oh, uncle, it’s beautiful. I love it. Thank you so much for sending it to me for my birthday. She seems to be very happy, and you ask Pablo: “What did your uncle send to your sister?”

A.2.3. Modifier focus condition

(26) Stimulus: Tres chicos agarraron un libro.

Una librería de tu barrio decidió hacer una promoción y dar libros gratuitos a los niños de la escuela primaria. Tú enseñas en la escuela, y el día en que están dando los libros, pasas por la mesa con la caja de libros, y hablas con el señor que está
en la mesa. Le preguntas: "¿Cómo va?" Él dice "Mal. Todavía me quedan muchos libros." Tú le respondes: "¿Ah, sí? ¿Cuántos chicos agarraron un libro?"

‘A bookstore in your neighborhood decided to do a promotion and give free books to the children at the elementary school. You teach at the school, and on the day that they’re giving out the books you pass by the table with the box of books and talk to the man at the table. You ask him “How’s it going?” He says “Badly. I still have a lot of books.” You respond: “Oh? How many boys took a book?”’

(27) Stimulus: Dos ladrones robaron una obra.

Trabajas para un periódico, investigando el crimen en la ciudad. Estás hablando con el dueño de una tienda de arte que ha sufrido muchos robos. Él te cuenta que los ladrones no sólo roban el dinero sino también roban a menudo una obra de arte. Le preguntas: "En el último año, ¿cuántos ladrones robaron una obra?"

‘You work for a newspaper, investigating crime in the city. You’re talking to the owner of an art store that’s had many robberies. He tells you that the thieves don’t only steal the money but also they often steal a work of art. You ask him: “In the last year, how many thieves stole a work of art?”’

(28) Stimulus: Cinco vecinos vieron un accidente.

El tráfico en tu barrio es un problema grave. No hay semáforos en el cruce, y hay muchos accidentes. En una reunión de activistas del barrio, hablas con los políticos del problema. Un político te pregunta: "El mes pasado, ¿cuántos vecinos vieron un accidente?"

‘The traffic in your neighborhood is a serious problem. There’s no traffic light at the intersection, and there are a lot of accidents. At a meeting of neighborhood activists, you’re talking to the politicians about the problem. A politician asks you: “In the last month, how many neighbors saw an accident?”’

(29) Stimulus: Seis personas compraron un boleto.

Trabajas en una agencia de viajes. Hoy la agencia empezó a vender boletos para un viaje especial que está organizando. Al mediodía, viene tu jefe y te pregunta: "Esta mañana, ¿cuántas personas compraron un boleto?"

‘You work at a travel agency. Today the agency started to sell tickets for a special trip it’s organizing. At midday, your boss comes and asks you: “This morning, how many people bought a ticket?”’
(30) Stimulus: Ocho artistas mandaron una pintura.

Tú trabajas en una galería de arte. La dueña de la galería quiere hacer una exposición de arte de Chicago, y solicitó pinturas de muchos artistas. Tú tienes que recibir y catalogar las pinturas que mandan. Hoy es la fecha límite, y la dueña te pregunta: "¿Cuántos artistas mandaron una pintura?"

‘You work in an art gallery. The owner of the gallery wants to do an exposition of Chicago art, and she solicited paintings from many artists. You have to receive and catalogue the paintings they send. Today is the deadline, and the owner asks you: “How many artists sent a painting?”’

A.3. Training phase and instructions

The following is the text of the training phase and instructions used at the beginning of the experiment, first in all Spanish (as it was presented to the monolinguals), then with the instructions in English (as it was presented to the heritage speakers). In section A.3.3, an English translation of the Spanish training items is given.

A.3.1. Training phase with Spanish instructions

Gracias por participar en nuestro experimento.

Primero, vamos a hacer una fase de entrenamiento para darle una idea de qué va a estar haciendo en el experimento.

Va a leer una explicación corta y después va a practicar juzgando algunas oraciones en contexto.

Después de la fase de entrenamiento, tendrá la oportunidad de tomar un descanso y entonces comenzará el experimento.

En todas las lenguas del mundo, incluyendo el español, hay varias maneras de decir la misma cosa. Por ejemplo, considere estas tres oraciones.

i. • Anoche llegó Juan.
   • Anoche Juan llegó.
   • Juan llegó anoche.

Las tres comunican la misma idea, pero tienen formas ligeramente diferentes. ¿A qué se deben las diferencias? Se deben al contexto en que se encuentran, a lo que ya se dijo en la conversación anteriormente, y a la información que quiera enfatizar el hablante.
En este estudio, estamos interesados en entender cómo se ajustan las oraciones con las conversaciones en las que se dicen. O sea, nos interesa comprender porqué alguien decidiría decir una de las oraciones anteriores y no otra.

Para poder hacerlo, necesitamos que usted nos dé sus juicios sobre unas oraciones en su contexto. Antes de empezar, sin embargo, es necesario explicarle un poco más del tema, para que sepa qué hacer en el experimento.

Pensemos en unas oraciones en contexto. Imagine la siguiente conversación. ¿Cuál de las respuestas de Silvia le parece la más adecuada?

ii. Rocío: Oí la puerta anoche. ¿Quién llegó?
   Silvia: a. Anoche llegó Juan.
   b. Anoche Juan llegó.
   c. Juan llegó anoche.

Ahora considéremoslo en otro contexto.

¿Qué respuesta le parece la más adecuada en la siguiente conversación?

iii. Rocío: Me dijeron que Juan está aquí. ¿Cuándo llegó?
   Silvia: a. Anoche llegó Juan.
   b. Anoche Juan llegó.
   c. Juan llegó anoche.

¿Eligió una oración diferente?

Consideremos otro par de ejemplos.

iv. Rocío: Oí el teléfono. ¿Quién te llamó?
   b. Juan me llamó.

Si cambiamos el contexto, no obstante, es posible que otra oración sea más apropiada.

v. Rocío: ¿Vino Juan a visitarte?
   Silvia: a. No, me llamó Juan.
   b. No, Juan me llamó.

En esta situación, ¿eligió usted una oración diferente?

Lo que cambia en los diferentes contextos no sólo es el orden de las palabras. A veces el hablante puede poner énfasis en una palabra u otra.
Escuche las grabaciones de las siguientes oraciones. ¿Nota una diferencia?

vi. Rocío: Oí la puerta anoche. ¿Quién llegó?
    Silvia: a. Anoche llegó Juan.
            b. Anoche Juan llegó.
            c. Anoche Juan llegó.

¿Notó la diferencia?
Para poner otro ejemplo, piense en el siguiente diálogo.

vii. Rocío: Me dijeron que Juan está aquí. ¿Cuándo llegó?
            b. Juan llegó anoche.

Es obvio, entonces, que tanto el orden de palabras como la palabra que tiene el énfasis de una oración pueden tener un impacto en los contextos en los que cabe la oración.

Para decirlo de otra manera, la misma oración puede tener un orden de palabras o un énfasis diferente si se encuentra en un contexto o una conversación diferente.

Esto estará claro al ver unos ejemplos más.

Ahora, vamos a ver unos ejemplos más de este fenómeno.

¿Qué respuesta le parece la más apropiada?

Por favor, indíquelos pulsando en el teclado el número de la oración que le parezca mejor en la conversación.

1. Rocío: ¿Quién bailó en el espectáculo el jueves?
            b. Juan bailó.
            c. Bailó Juan.

2. Rocío está en la sala de estar cuando oye un estornudo fuerte de la cocina. Entrando en la cocina, dice…
   Rocío: ¡Qué ruido! ¿Quién estornudó?
            b. Estornudó Juan.
            c. Juan estornudó.
3. Rocío está en la cocina cuando oye el ruido de algo haciéndose añicos. Entrando en la sala, dice…

Rocío: ¿Qué se rompió?

Silvia: a. Se rompió el espejo.

R. El espejo se rompió.

R. El espejo se rompió.

4. Rocío: Me dijeron que la fiesta estuvo muy bien anoche. ¿Quién vino?

Silvia: a. Los Martínez vinieron.

b. Los Martínez vinieron.

c. Vinieron los Martínez.

5. Rocío: ¡No puedo creer que Paco le diga algo tan feo a Juan! ¿Qué hizo Juan después?

Silvia: a. Juan se fue.

b. Se fue Juan.

R. Juan se fue.

Consideremos ahora unas oraciones más complejas.

Estas oraciones también pueden variar según la conversación en que se encuentren.

Por favor, indique la respuesta más apropiada de Silvia en las siguientes conversaciones.

6. Rocío: Veo que María está muy contenta. ¿Qué pasó?


R. Su marido ganó la lotería.

7. Rocío: Oí que alguien en la oficina ganó la lotería. ¿Quién fue?

Silvia: a. La ganó María.

b. María la ganó.

8. Rocío: Tu hija fue de compras hoy, ¿verdad? ¿Qué compró?


R. Compró ropa.

9. Rocío: ¿Quién escribió La casa de los espíritus?

b. Allende lo escribió.

c. Lo escribió Allende.

10. Rocío entra en la cocina y ve que alguien compró el periódico.

Rocío: Ah, qué bien, el periódico. ¿Quién lo compró?

Silvia: a. Esta mañana Juan compró el periódico.

b. Esta mañana compró el periódico Juan.

11. Rocío sabe que Juan fue a comprar algo, pero no sabe qué.

Rocío: ¿Qué compró Juan esta mañana?

Silvia: a. Esta mañana Juan compró el periódico.

b. Esta mañana compró el periódico Juan.

En el experimento, se le pedirá que juzgue oraciones solas en una escala de 1 a 5, el 1 indicando “suena muy mal *en esta conversación*” y el 5 indicando “suena muy bien *en esta conversación*.”

Ahora, en vez de escoger cuál es la mejor respuesta, por favor indique su juicio para cada oración en el contexto, de 1 a 5.

Va a escuchar las oraciones una por una. Después de cada una, pulse el número que corresponde a su juicio en el teclado.

Recuerde que no está juzgando la oración en sí, sino está juzgando si es apropiada o no para la conversación en que se dice.

12. Rocío: ¿Qué comen las gallinas?

Silvia: a. Las gallinas comen maíz.

b. Las gallinas comen maíz.

c. Comen maíz las gallinas.

13. Rocío: ¿Dónde está el pastel que hice? ¿Quién comió mi pastel?

Silvia: a. Lo comieron los niños.

b. Los niños lo comieron.

c. Los niños lo comieron.

14. Rocío: Los niños me dicen que no quieren comer su cena. ¿Qué comieron esta tarde?

Silvia: a. Esta tarde los niños comieron un pastel.
b. Esta tarde comieron un pastel los niños.

c. Esta tarde los niños comieron un pastel.

15. Rocío: Tengo mucha sed y no encuentro el jugo. ¿Quién lo bebió?

Silvia: a. Ayer bebió el jugo Juan.

b. Ayer Juan bebió el jugo.

c. Ayer Juan bebió el jugo.

16. Rocío: Aquí en tu estantería tienes mi libro favorito. ¿Quién lo leyó?

Silvia: a. Juan leyó ese libro.

b. Leyó ese libro Juan.

c. Juan leyó ese libro.

Hasta ahora hemos considerado dos tipos de oraciones diferentes, pero hay muchos más. Pensemos en algunas oraciones un poco más complejas.

Por favor, otra vez, asignéle a cada respuesta un valor numérico en una escala de 1 a 5.

17. Rocío: ¿Este paquete es para tu tía? ¿Qué le mandas?

Silvia: a. Le mando una bufanda a mi tía.

b. Le mando a mi tía una bufanda.

c. Le mando una bufanda a mi tía.

18. Rocío: Ana no puede encontrar su muñeca. Dice que se olvidó dónde la escondió. ¿Tú sabes dónde la escondió?

Silvia: a. Ana escondió la muñeca debajo de la cama.

b. Ana escondió debajo de la cama la muñeca.

c. Ana escondió la muñeca debajo de la cama.

19. Rocío: Encontré una muñeca debajo de la cama. ¿Quién la puso allí?

Silvia: a. Ana la puso debajo de la cama.

b. La puso debajo de la cama Ana.

20. Rocío: ¡Qué bonitas las flores! ¿Son para ti?

Silvia: No, son para María.

Rocío: Ah, ¿sí? Y ¿quién le dio flores a tu hija?
Silvia: a. Se las dio Juan.
   b. Juan se las dio.
   c. Juan se las dio.

21. Rocío: Juan pasó y dejó estas flores, pero no me dijo para quién son.
     b. Son para María. Juan siempre le da flores a mi hija.
     c. Son para María. Juan siempre le da flores a mi hija.

22. Rocío: ¿Qué escondió Ana debajo de la cama?
    Silvia: a. Ana escondió la muñeca debajo de la cama.
     b. Ana escondió debajo de la cama la muñeca.
     c. Ana escondió la muñeca debajo de la cama.

23. Rocío: ¿Tu papá finalmente vendió ese carro viejo? ¿A quién?
    Silvia: a. Mi papá le vendió el carro al vecino.
     b. Mi papá le vendió al vecino el carro.
     c. Mi papá le vendió el carro al vecino.

24. Rocío: Hablé con tu vecino y me dijo que está muy contento con lo que le compró a tu papá. ¿Qué le vendió tu papá?
    Silvia: a. Mi papá le vendió el carro al vecino.
     b. Mi papá le vendió al vecino el carro.
     c. Mi papá le vendió el carro al vecino.

No sólo son las preguntas “¿quién?” y “¿qué?” que requieren que sus respuestas sean de cierto tipo.

También podemos hacer otras preguntas, como se ven a continuación.

25. Rocío: ¿Cuántos alumnos faltaron hoy?
     b. Cinco alumnos faltaron.
     c. Faltaron cinco alumnos.
     d. Cinco alumnos faltaron.
26. Rocío: ¿Cuál de las muñecas quiere Ana?
   Silvia: a. Quiere la muñeca rosada.
   
   b. Quiere la muñeca rosada.
   
   c. Quiere la muñeca rosada.

27. Rocío: Sé que Isabel Allende es tu autora favorita. ¿Cuántos libros suyos has leído?
   Silvia: a. He leído cuatro libros suyos.
   
   b. He leído cuatro libros suyos.
   
   c. He leído cuatro libros suyos.

28. Rocío: Me dijeron que tu fiesta tuvo éxito. ¿Cuántas personas vinieron anoche?
   
   b. Anoche treinta personas vinieron.
   
   c. Anoche treinta personas vinieron.
   
   d. Anoche vinieron treinta personas.

29. Rocío: Sé que fuiste ayer a vender boletos para tu espectáculo de baile. ¿Tuviste mucho éxito? ¿Cuántas personas te compraron boletos?
   
   b. Ayer compraron boletos cuarenta personas.
   
   c. Ayer cuarenta personas compraron boletos.

¡Muy bien!

Ha terminado la fase de entrenamiento.

En el experimento, va a juzgar las oraciones una por una usando la escala numérica tal como ya ha hecho y también va a escuchar contextos más elaborados en forma de pequeños cuentos.

Antes de comenzar el experimento, tome un descanso. Si desea algo de tomar o comer, el/la experimentador/a le traerá algo con gusto.

Pulse la barra espaciadora cuando esté listo/a para volver a comenzar.

Como ya ha hecho en el entrenamiento, usted verá y escuchará un contexto, presentado como un cuento corto. Cada cuento termina con una pregunta, a la cual responde un participante del cuento. A usted se le ruega que decida si la respuesta dada le suena natural en el contexto.

Por favor, recuerde que no está juzgando las oraciones en sí, sino está juzgando si le parecen apropiadas *para la conversación en que se dicen*.
Va a indicar su juicio pulsando en el teclado el número que corresponde a su juicio, de 1 a 5. Puede utilizar todos los números de la escala.

El narrador de los cuentos le va a tutear, porque queríamos enfocarnos en la comunicación diaria, que es menos formal, y acercarnos tanto como fuera posible a cómo habla la gente. Rogamos nos disculpe la informalidad.

Si le queda cualquier duda, por favor, pregúntale al / a la experimentador/a ahora.

Si ya está listo/a, seguiremos con las pruebas experimentales. Después de cada grupo de oraciones, tendrá la oportunidad de tomar un descanso.

¿Listo/a? ¡Perfecto! Pulse la barra espaciadora para comenzar.

¡Bien hecho!
Ha terminado el experimento.
¡Muchas gracias por su participación!
La última cosa que se tiene que hacer es rellenar unos cuestionarios en papel. Por favor, dígale al / a la experimentador/a que ha llegado a esta pantalla, y él/ella le ayudará a rellenar los cuestionarios..

**A.3.2. Training phase with English instructions**

Thank you for participating in our experiment.

First, we're going to do a training phase in order to give you an idea of what you'll be doing during the experiment.

You're going to read a short explanation and then you're going to practice judging some sentences in context.

After the training phase, you'll have the opportunity to take a break, and then the experiment will begin.

In every language in the world, including Spanish, there are several ways to say the same thing. For example, consider these three sentences.

i. • Anoche llegó Juan.
   • Anoche Juan llegó.
   • Juan llegó anoche.
All three communicate the same idea, but the have slightly different forms. What are these differences due to? They're due to the context in which they occur, what was already said in the conversation, and the information that the speaker wants to emphasize.

In this study, we are interested in understanding how sentences adapt to the conversations in which they are said. That is, we are interested in understanding why someone would say one of the previous sentences rather than another.

In order to do this, we need you to give us your judgments about some sentences in context. Before beginning, though, we need to explain a bit more about this topic, so that you know what to do in the experiment.

Let's think about some sentences in context. Imagine the following conversation. Which of Silvia's answers seems most appropriate to you?

ii. Rocío: Oí la puerta anoche. ¿Quién llegó?
   Silvia: a. Anoche llegó Juan.
          b. Anoche Juan llegó.
          c. Juan llegó anoche.

Now let's consider it in another context.

Which answer seems most appropriate to you in the following conversation?

iii. Rocío: Me dijeron que Juan está aquí. ¿Cuándo llegó?
   Silvia: a. Anoche llegó Juan.
          b. Anoche Juan llegó.
          c. Juan llegó anoche.

Did you choose a different sentence?

Let's consider a couple more examples.

iv. Rocío: Oí el teléfono. ¿Quién te llamó?
          b. Juan me llamó.

If we change the context, however, perhaps a different sentence is more appropriate.

v. Rocío: ¿Vino Juan a visitarte?
   Silvia: a. No, me llamó Juan.
          b. No, Juan me llamó.
In this situation, did you choose a different sentence?

What changes in the different contexts isn’t just the word order. Sometimes the speaker puts emphasis on a particular word or another.

Listen to the recordings of the following sentences. Do you hear a difference?

vi. Rocío: Oí la puerta anoche. ¿Quién llegó?
   Silvia: a. Anoche llegó Juan.
   b. Anoche Juan llegó.
   c. Anoche Juan llegó.

Did you notice the difference?

As another example, think about the following dialogue.

vii. Rocío: Me dijeron que Juan está aquí. ¿Cuándo llegó?
   b. Juan llegó anoche.

It is clear, then, that both the word order and the word that is emphasized can have an effect on the contexts in which a sentence can fit.

In other words, the same sentence can have a different word order or emphasis if it is found in a different context or conversation.

This will become clear after seeing a few more examples.

Now we're going to see a few more examples of this phenomenon.

Which answer seems to be the most appropriate to you?

Please indicate your choice by pressing the number on the keyboard of the sentence that sounds best to you in the conversation.

1. Rocío: ¿Quién bailó en el espectáculo el jueves?
   b. Juan bailó.
   c. Bailó Juan.

2. Rocío está en la sala de estar cuando oye un estornudo fuerte de la cocina. Entrando en la cocina, dice…
   Rocío: ¡Qué ruido! ¿Quién estornudó?
Silvia: a. **Juan** estornudó.

   b. Estornudó **Juan**.

   c. Juan **estornudó**.

3. Rocío está en la cocina cuando oye el ruido de algo haciéndose añicos. Entrando en la sala, dice…

Rocío: ¿Qué se rompió?

Silvia: a. Se rompió el **espejo**.

   b. El espejo se **rompió**.

   c. El **espejo** se rompió.

4. Rocío: Me dijeron que la fiesta estuvo muy bien anoche. ¿Quién vino?

Silvia: a. Los **Martínez** vinieron.

   b. Los Martínez **vinieron**.

   c. Vinieron los **Martínez**.

5. Rocío: ¡No puedo creer que Paco le diga algo tan feo a Juan! ¿Qué hizo Juan después?

Silvia: a. Juan se **fue**.

   b. Se fue **Juan**.

   c. **Juan** se fue.

Now let's consider a few more complex sentences.

These sentences can also vary according to the conversation in which they occur.

Please indicate the most appropriate answer of Silvia's in the following conversations.

6. Rocío: Veo que María está muy contenta. ¿Qué pasó?

Silvia: a. Su marido ganó la **lotería**.

   b. Su **marido** ganó la lotería.

7. Rocío: Oí que alguien en la oficina ganó la lotería. ¿Quién fue?

Silvia: a. La ganó **María**.

   b. María la **ganó**.

8. Rocío: Tu hija fue de compras hoy, ¿verdad? ¿Qué compró?

Silvia: a. Compró **ropa**.
b. Compró ropa.

9. Rocío: ¿Quién escribió La casa de los espíritus?
   b. Allende lo escribió.
   c. Lo escribió Allende.

10. Rocío entra en la cocina y ve que alguien compró el periódico.
    Rocío: Ah, qué bien, el periódico. ¿Quién lo compró?
    Silvia: a. Esta mañana Juan compró el periódico.
           b. Esta mañana compró el periódico Juan.

11. Rocío sabe que Juan fue a comprar algo, pero no sabe qué.
    Rocío: ¿Qué compró Juan esta mañana?
    Silvia: a. Esta mañana Juan compró el periódico.
           b. Esta mañana compró el periódico Juan.

In the experiment, you will be asked to judge individual sentences on a scale of 1 to 5, with 1 indicating “sounds very bad *in this conversation*” and 5 indicating “sounds very good *in this conversation*.”

Now, instead of choosing which is the best answer, please indicate your judgment for each sentence in the context, from 1 to 5.

You'll hear the sentences one by one. After each one, press the number on the keyboard that corresponds to your judgment.

Remember that you are not judging the sentence in and of itself, but rather you are judging if it is appropriate or not for the conversation in which it is said.

12. Rocío: ¿Qué comen las gallinas?
    Silvia: a. Las gallinas comen maíz.
           b. Las gallinas comen maíz.
           c. Comen maíz las gallinas.

13. Rocío: ¿Dónde está el pastel que hice? ¿Quién comió mi pastel?
    Silvia: a. Lo comieron los niños.
           b. Los niños lo comieron.
c. Los niños lo **comieron**.

14. Rocío: Los niños me dicen que no quieren comer su cena. ¿Qué comieron esta tarde?
   Silvia: a. Esta tarde los niños comieron un **pastel**.
   b. Esta tarde comieron un pastel los **niños**.
   c. Esta tarde los **niños** comieron un pastel.

15. Rocío: Tengo mucha sed y no encuentro el jugo. ¿Quién lo bebió?
   Silvia: a. Ayer bebió el jugo **Juan**.
   b. Ayer Juan bebió el **jugo**.
   c. Ayer **Juan** bebió el jugo.

16. Rocío: Aquí en tu estantería tienes mi libro favorito. ¿Quién lo leyó?
   Silvia: a. Juan leyó ese **libro**.
   b. Leyó ese libro **Juan**.
   c. **Juan** leyó ese libro.

Up to this point we have considered two different types of sentences, but there are many more.
Let's think about some slightly more complex sentences.

Once again, please assign each answer a numeric value on a scale of 1 to 5.

17. Rocío: ¿Este paquete es para tu tía? ¿Qué le mandas?
   Silvia: a. Le mando una **bufanda** a mi tía.
   b. Le mando a mi tía una **bufanda**.
   c. Le mando una bufanda a mi **tía**.

18. Rocío: Ana no puede encontrar su muñeca. Dice que se olvidó dónde la escondió. ¿Tú sabes dónde la escondió?
   Silvia: a. Ana escondió la muñeca debajo de la **cama**.
   b. Ana escondió debajo de la cama la **muñeca**.
   c. Ana escondió la **muñeca** debajo de la cama.

19. Rocío: Encontré una muñeca debajo de la cama. ¿Quién la puso allí?
   Silvia: a. Ana la puso debajo de la **cama**.
   b. La puso debajo de la cama **Ana**.
20. Rocío: ¡Qué bonitas las flores! ¿Son para ti?
   Silvia: No, son para María.
   Rocío: Ah, ¿sí? Y ¿quién le dio flores a tu hija?
   Silvia: a. Se las dio Juan.
       b. Juan se las dio.
       c. Juan se las dio.

21. Rocío: Juan pasó y dejó estas flores, pero no me dijo para quién son.
       b. Son para María. Juan siempre le da flores a mi hija.
       c. Son para María. Juan siempre le da flores a mi hija.

22. Rocío: ¿Qué escondió Ana debajo de la cama?
   Silvia: a. Ana escondió la muñeca debajo de la cama.
       b. Ana escondió debajo de la cama la muñeca.
       c. Ana escondió la muñeca debajo de la cama.

23. Rocío: ¿Tu papá finalmente vendió ese carro viejo? ¿A quién?
   Silvia: a. Mi papá le vendió el carro al vecino.
       b. Mi papá le vendió al vecino el carro.
       c. Mi papá le vendió el carro al vecino.

24. Rocío: Hablé con tu vecino y me dijo que está muy contento con lo que le compró a tu papá. ¿Qué le vendió tu papá?
   Silvia: a. Mi papá le vendió el carro al vecino.
       b. Mi papá le vendió al vecino el carro.
       c. Mi papá le vendió el carro al vecino.

It's not just the questions “who?” and “what?” that require that their answers be of a certain type. We can also ask other questions, as you can see in the next examples.

25. Rocío: ¿Cuántos alumnos faltaron hoy?
       b. Cinco alumnos faltaron.
c. Faltaron cinco alumnos.
d. Cinco alumnos faltaron.

26. Rocío: ¿Cuál de las muñecas quiere Ana?
   Silvia: a. Quiere la muñeca rosada.
          b. Quiere la muñeca rosada.
          c. Quiere la muñeca rosada.

27. Rocío: Sé que Isabel Allende es tu autora favorita. ¿Cuántos libros suyos has leído?
   Silvia: a. He leído cuatro libros suyos.
          b. He leído cuatro libros suyos.
          c. He leído cuatro libros suyos.

28. Rocío: Me dijeron que tu fiesta tuvo éxito. ¿Cuántas personas vinieron anoche?
          b. Anoche treinta personas vinieron.
          c. Anoche treinta personas vinieron.
          d. Anoche vinieron treinta personas.

29. Rocío: Sé que fuiste ayer a vender boletos para tu espectáculo de baile. ¿Tuviste mucho éxito? ¿Cuántas personas te compraron boletos?
          b. Ayer compraron boletos cuarenta personas.
          c. Ayer cuarenta personas compraron boletos.

Well done!

You've finished the training phase.

In the experiment, you'll be judging the sentences one by one using the numeric scale just like you've already done, and you'll also hear more elaborate contexts in the form of short stories.

Before beginning the experiment, take a break. If you'd like something to eat or drink, the researcher would be happy to get you something.

Press the spacebar when you're ready to begin.
Like you've already done in the training, you will see and hear a context, presented as a short story. Each story ends with a question, which a participant in the story responds to. You are asked to decide if the response sounds natural in the context.

Please remember that you are not judging the sentences in and of themselves, but rather you are judging whether they seem appropriate *for the conversation in which they're said*.

You'll indicate your judgment by pressing the number on the keyboard that corresponds to your judgment, from 1 to 5. You can use all the numbers in the scale.

The narrator of the stories is going to use "tú" with you, because we wanted to focus on daily communication, which is less formal, and come as close as possible to how people talk. We hope you can pardon the informality.

If you have any questions, please ask the researcher now.

If you are ready, we'll move on to the experimental trials. After each group of sentences, you'll have the opportunity to take a break.

Ready? Great! Press the spacebar to begin.

Well done!

You've finished the experiment.

Thank you very much for participating!

The last thing that needs to be done is to fill out some questionnaires on paper. Please tell the researcher that you've reached this screen, and he or she will help you fill out the questionnaires.

A.3.3. English translation of training items

i. • Last night arrived Juan.
• Last night Juan arrived.
• Juan arrived last night.

ii. Rocío: I heard the door last night. Who arrived?
Silvia: a. Last night arrived Juan.
   b. Last night Juan arrived.
   c. Juan arrived last night.
iii. Rocío: They told me that Juan is here. When did he arrive?
   Silvia: a. Last night arrived Juan.
          b. Last night Juan arrived.
          c. Juan arrived last night.

iv. Rocío: I head the phone. Who called you?
   Silvia: a. Called me Juan
          b. Juan called me.

v. Rocío: Did Juan come to visit you?
   Silvia: a. No, called me Juan.
          b. No, Juan called me.

vi. Rocío: I heard the door last night. Who arrived?
    Silvia: a. Last night arrived Juan.
            b. Last night Juan arrived.
            c. Juan arrived last night.

vii. Rocío: They told me that Juan is here. When did he arrive?
     Silvia: a. Juan arrived last night.
            b. Juan arrived last night.

1. Rocío: Who danced in the show on Thursday?
          b. Juan danced.
          c. Danced Juan.

2. Rocío is in the living room when she hears a loud sneeze from the kitchen. Entering the kitchen, she says…
   Rocío: ¡What a noise! ¿Who sneezed?
          b. Sneezed Juan.
          c. Juan sneezed.
3. Rocío is in the kitchen when she hears the noise of something shattering. Entering the living room, she says…

Rocío: ¿What broke?
Silvia: a. Broke the mirror.
   b. The mirror broke.
   c. The mirror broke.

4. Rocío: They told me that the party was great last night. Who came?
Silvia: a. The Martínez came.
   b. The Martínez came.
   c. Came the Martínez.

5. Rocío: I can’t believe Paco would say something so ugly to Juan. What did Juan do then?
Silvia: a. Juan left.
   b. Left Juan.
   c. Juan left.

6. Rocío: I see María’s very happy. What happened?
Silvia: a. Her husband won the lottery.
   b. Her husband won the lottery.

7. Rocío: I heard that someone in the office won the lottery. Who was it?
Silvia: a. Won it María.
   b. María won it.

8. Rocío: Your daughter went shopping today, right? What did she buy?
Silvia: a. She bought clothes.
   b. She bought clothes.

9. Rocío: ¿Who wrote *La casa de los espíritus*?
Silvia: a. Allende wrote it.
   b. Allende wrote it.
   c. Wrote it Allende.

10. Rocío goes into the kitchen and sees that someone bought the newspaper.
Rocío: Oh, great, the newspaper. Who bought it?

Silvia: a. This morning Juan bought the newspaper.
   b. This morning bought the newspaper Juan.

11. Rocío knows that Juan went to buy something, but she doesn’t know what.

Rocío: What did Juan buy this morning?

Silvia: a. This morning Juan bought the newspaper.
   b. This morning bought the newspaper Juan.

12. Rocío: What to hens eat?

   b. Hens eat corn.
   c. Eat corn hens.

13. Rocío: Where’s the cake I made? Who ate my cake?

   b. The children ate it.
   c. The children ate it.

14. Rocío: The children tell me they don’t want to eat their dinner. What did they eat this afternoon?

Silvia: a. This afternoon the children ate a cake.
   b. This afternoon ate a cake the children.
   c. This afternoon the children ate a cake.

15. Rocío: I’m very thirsty and I can’t find the juice. Who drank it?

Silvia: a. Yesterday drank the juice Juan.
   b. Yesterday Juan drank the juice.
   c. Yesterday Juan drank the juice.

16. Rocío: Here on your bookshelf you’ve got my favorite book. Who read it?

   b. Read that book Juan.
   c. Juan read that book.
17. Rocío: This package is for your aunt? What are you sending her?

Silvia: a. I’m sending a **scarf** to my aunt.
   
   b. I’m sending to my aunt a **scarf**.
   
   c. I’m sending a scarf to my **aunt**.

18. Rocío: Ana can’t find her doll. She says she forgot where she hid it. Do you know where she hid it?

Silvia: a. Ana hid the doll under the **bed**.
   
   b. Ana hid under the bed the **doll**.
   
   c. Ana hid the **doll** under the bed.

19. Rocío: I found a doll under the bed. Who put it there?

Silvia: a. Ana put it under the **bed**.
   
   b. Put it under the bed **Ana**.

20. Rocío: What pretty flowers. Are they for you?

Silvia: No, they’re for Maria.

Rocio: Oh, really? And who gave flowers to your daughter?

Silvia: a. Gave them to her **Juan**.
   
   b. **Juan** gave them to her.
   
   c. Juan gave them to her.

21. Rocío: Juan came by and left these flowers, but he didn’t tell me who they’re for.

Silvia: a. They’re for María. Juan always gives flowers to my **daughter**.
   
   b. They’re for María. Juan always gives **flowers** to my daughter.
   
   c. They’re for María. **Juan** always gives flowers to my daughter.

22. Rocío: What did Ana hide under the bed?

Silvia: a. Ana hid the doll under the **bed**.
   
   b. Ana hid under the bed the **doll**.
   
   c. Ana hid the **doll** under the bed.

23. Rocío: Your dad finally sold that old car? To who?

Silvia: a. Mi dad sold the car to the **neighbor**.
b. Mi dad sold to the neighbor the car.
c. Mi dad sold the car to the neighbor.

24. Rocío: I talked to your neighbor and he told me he’s very happy with what he bought from your dad. What did your dad sell him?

Silvia: a. Mi dad sold the car to the neighbor.
b. Mi dad sold to the neighbor the car.
c. Mi dad sold the car to the neighbor.

25. Rocío: How many students missed (class) today?

Silvia: a. Missed five students.
b. Five students missed.
c. Missed five students.
d. Five students missed.

26. Rocío: Which of the dolls does Ana want?

Silvia: a. She wants the pink doll.
b. She wants the pink doll.
c. She wants the pink doll.

27. Rocío: I know Isabel Allende is your favorite author. How many books of hers have you read?

Silvia: a. I have read four books of hers.
b. I have read four books of hers.
c. I have read four books of hers.

28. Rocío: They told me your party was a success. How many people came?

Silvia: a. Last night came thirty people.
b. Last night thirty people came.
c. Last night thirty people came.
d. Last night came thirty people.

29. Rocío: I know you went yesterday to sell tickets for your dance show. Were you very successful? How many people bought tickets from you?
   b. Yesterday bought tickets forty people.
   c. Yesterday forty people bought
VITA

EDUCATION

PhD  University of Illinois at Chicago  August 2012
  Hispanic Studies – Linguistics

MA  University of Illinois at Chicago  May 2005
  Hispanic Studies – Applied Linguistics

BA  University of Florida  May 2003
  Spanish (summa cum laude), minors in linguistics and business
  Honors thesis: Percepción de dialecto por aprendices de español

PUBLICATIONS


http://www.lingref.com/cpp/hls/14/abstract2673.html

CONFERENCES AND PRESENTATIONS


RESEARCH EXPERIENCE

Dissertation, University of Illinois at Chicago 2010 to 2012
Advisor: Luis López-Carretero

Bilingualism Research Laboratory, Univ. of Illinois at Chicago June 2008 to May 2012
Graduate Student Director

Bilingualism Research Laboratory, Univ. of Illinois at Chicago May 2011 to May 2012
Director of Research Administration
RESEARCH GRANTS

National Science Foundation Doctoral Dissertation Improvement Grant Supports dissertation experiment and fieldwork in Mexico - $7,581 2011

UIC Chancellor’s Graduate Research Fellowship Provides supplementary support for interdisciplinary research - $4,000 2011

UIC Provost's Award for Graduate Research Supports dissertation experiment - $1,500 2005

TEACHING EXPERIENCE

University of Illinois at Chicago, Chicago, IL August 2003 to May 2012
Teaching Assistant, Department of Hispanic and Italian Studies
• Introduction to Hispanic Linguistics
• Language and Society
• Spanish Grammar in Practice, an intermediate Spanish course
• Conversational Spanish and Basic Writing, an intermediate Spanish course
• All introductory levels of language in UIC's Basic Language Program
  o Elementary Spanish Review, an accelerated course in basic Spanish
  o Elementary Spanish I, the first course in the Basic Language Program
  o Elementary Spanish II, the second course in the Basic Language Program
  o Elementary Spanish III, the third course in the Basic Language Program
  o Topics in Spanish Language and Culture, the final Basic Language Program course

University of Illinois at Chicago, Chicago, IL July 2008 to May 2010
Coordinator, Department of Hispanic and Italian Studies
• Coordinate 16-18 sections of Elementary Spanish III, the third course in the Spanish Basic Language Program

Roosevelt University, Chicago, IL September 2008 to May 2012
Adjunct Faculty, Department of Languages and Literatures
• Beginning Spanish I & II
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DePaul University, Chicago, IL January 2010 to March 2010
Adjunct Faculty, Department of Modern Languages
• Intermediate Spanish II, the fifth in a six-course basic Spanish series
ADMINISTRATIVE EXPERIENCE

University of Illinois at Chicago, Chicago, IL
Editorial Assistant, *Spanish in Context*  
June 2009 to June 2012

University of Illinois at Chicago, Chicago, IL
Editorial Assistant, Kim Potowski  
August 2007 to August 2010

Universitat de Barcelona, Barcelona, Spain
Graduate Assistant, Centro California-Illinois  
August 2006 to July 2007

University of Illinois at Chicago, Chicago, IL
Editorial Assistant, Kim Potowski & Richard Cameron  
August 2005 to April 2007

HONORS AND AWARDS

University of Illinois at Chicago WOW Award  
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Honor Societies: Phi Beta Kappa, Phi Kappa Phi, Golden Key, National Residence Hall Honorary

UNIVERSITY AND COMMUNITY SERVICE

UIC Bilingualism Forum
Reviewer  
2011 to 2012

Department of Hispanic & Italian Studies
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August 2007 to August 2008
January 2006 to August 2006

UIC Talks in Linguistics
Organizing Committee  
August 2007 to December 2009

Graduate Employees Organization
Constitution Committee  
August to September 2005
OTHER EDUCATION

SyntaxFest 2010, Bloomington, IN. June 2010

National Heritage Language Resource Center Summer Research Institute, Urbana-Champaign, IL June 2009

Study Abroad, Universitat de Barcelona September 2006 to June 2007

Certificate, University of Illinois at Chicago May 2006
Interdepartmental Concentration in Gender and Women's Studies

Study Abroad, Universidad Complutense de Madrid June to July 2002

Study Abroad, Universidad de Salamanca June to July 2000

PROFESSIONAL AFFILIATIONS

Linguistic Society of America

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