The intonation of expectations

On marked declaratives, exclamatives, and discourse particles in Castilian Spanish

Jan Fliessbach

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"La prosodia es simultáneamente reflejo y herramienta de los objetivos pragmáticos de los hablantes." (Martín Butragueño 2015: 260)

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Abbreviations and symbols

AM	Autosegmental-Metrical
AP	Adjective Phrase
CG	Common Ground
CS	Context Set
DC	Discourse Commitment Set
DCT	Discourse Completion Task
IP	Intonational Phrase
ip	Intermediate Phrase
IPA	International Phonetic Alphabet
IS	Information Structure
K	Context State
MI	Mutual Information
NAI	non-at-issue
NI	Nuclear Intonation
NP	Nominal Phrase
OT	Optimality Theory
$\boldsymbol{p}$	Proposition
PP	Prepositional Phrase
$\boldsymbol{ps}$	Projected Set
ϕ**-phrase**	Phonological Phrase
SF	Stress Focus Constraint
Sp_ToBI	Spanish Tone and Break Indices
σ	Syllable
T	Tone
T*	Pitch Accent
T–	Phrase Accent
T%	Boundary Tone
TCU	Turn-Constructional Unit
ToBI	Tone and Break Indices
VP	Verb Phrase
ω	Phonological Word
QUD	Question Under Discussion
XP	Maximal Projection
$\longmapsto$	Mapping
$\neg$	Negator
$\wedge$	Conjunction (and)
$\vee$	Disjunction (or)
$\rightarrow$	Material implication (if ... then)
$\leftrightarrow$	Biconditional (iff)
$\prec$	Ascending order between elements in a set
$\Box\boldsymbol{p}$	Necessity operator over a proposition
$\Diamond\boldsymbol{p}$	Possibility operator over a proposition
$\mathbf{S}^2$	Variance of a distribution
SD	Standard deviation of a distribution
$[\![S]\!]$	Denotation of a sentence
$\langle a, b\rangle$	Ordered pair of a and b
{a,b,c,...}	Set of a, b, c, ...

1 Introduction

1.1 Goals

This is a book on Castilian Spanish intonation. More precisely, on prosodically marked declaratives (1), *wh*-exclamatives (2), and discourse particles such as (3) and (4) in the Madrid variety.[1]

(1) ¡Es el presidente del gobierno!
'(He/She) is the prime minister!'
a. L* HL% 🔊
b. L+H* L!H% 🔊
c. L+¡H* L% 🔊

(2) ¡Qué buena limonada! L+¡H* L% 🔊
'What a good lemonade!'

(3) ¡Sí, sí, claro! L* H% 🔊
'Yes, yes, sure!'

(4) ¡Anda! L+¡H* L% 🔊
'Wow!'

I argue that these marked forms differ from unmarked forms such as (5), (6), (7), and (8) in that they encode modal evaluations of the at-issue meaning.

(5) Es el presidente del gobierno. L* L% 🔊
'(He/She) is the prime minister.'

(6) Qué buena limonada. L* L% 🔊
'What a good lemonade.'

(7) Sí, sí, sí, claro. L* L% 🔊
'Yes, yes, yes, sure.'

[1] A guide on how to read and listen to the examples follows in §1.4. Contexts and elicitation methods for (1), (2), (5), and (6) are given in Appendix C and explained in Chapter 6. Examples (3), (4), (7), and (8) are cited from PRESEEA (2014–2020) and explained in Chapter 5.

(8) Anda, anda. L* L% 🔊
'Whoa, whoa.'

These forms are marked in the Greenbergian sense: overtly and saliently encoded, semantically complex, relatively rare in texts, and neutralized in unmarked contexts (Haspelmath 2006, Greenberg 1966). In other words, the presence of additional tonal targets or features (intonational marking) brings about conversational moves that are pragmatically marked in the sense that they not only proffer a conversational update, but evaluate it relative to possible worlds. Two epistemic evaluations that can be shown to be encoded by intonation in Spanish are linguistically encoded surprise (or mirativity, DeLancey 1997, 2012, Rett & Sturman 2020, Rett 2011, Hengeveld & Olbertz 2012) and obviousness. I propose that these meanings are modal in that they evaluate propositions relative to possible worlds accessible from the set of shared assumptions between interlocutors, the Common Ground (Stalnaker 1974). The fact that this evaluation is encoded via intonation allows it to combine with a Common Ground update, which can lead to different relations between the Common Ground and what is asserted (at-issue). Mirative assertions, if they are accepted as true, will lead the interlocutors to change some of their shared assumptions, because they assert a proposition and evaluate it as incompatible with all the ways they would have envisioned the conversation to proceed. Obvious assertions, on the contrary, propose a context update and evaluate it as necessary from the perspective of the Common Ground, pointing to a lack of relevance of the previous speech act that triggered the assertion. This perspective is inherently dynamic in the sense that such modal evaluation requires a temporal shift of perspective relative to the at-issue content of an utterance (Filippi-Deswelle 2019). Mirativity is past impossibility, and obviousness is past necessity, of a proposition asserted or accepted as true (Reich 2018).

An empirical investigation via a production experiment with audio-stimuli finds that mirativity and obviousness are associated with distinct intonational features under constant focus scope, with stances of (dis)agreement showing an impact on obvious declaratives. *Wh*-exclamatives are found not to differ significantly in intonational marking from neutral declaratives, a finding that underlines the importance of distinguishing between the meaning of *wh*-syntax and exclamative intonation. Moreover, a corpus study based on natural dialogue data shows that the intonational marking that discourse particles receive differs between particles. The mirative use of *anda* 'wow' is not marked with intonational configurations that have been linked to obviousness, while *claro* 'sure' seems

prone to such marking. Qualitative investigation shows a clear link between contexts in which interlocutors negotiate expectations and the occurrence of prosodically marked particles. I therefore propose to see expectations of interlocutors and projected next dialogical steps as a source of intonational variability that cannot be reduced to the marking of a set of contextually salient alternatives, which is a standard definition of focus (Rooth 1992, Krifka & Musan 2012). Rather, speakers can additionally encode whether proffered content is expected or unexpected, based on what has been accepted so far. Furthermore, I take the complex interaction between expectations and (dis)agreement under constancy of focus scope as an argument for a more complex perspective on the notion of contrast. A contrast between expectations and the proffered at-issue content, as expressed by miratives, can combine with a contrast between two stances, or disagreement. But these two levels of contrast are independent. Therefore, disagreement can also combine with obviousness or occur without any modal evaluation of the at-issue content.[2]

1.2 The problem

> Intonation […] refers to the use of *suprasegmental* phonetic features to convey "postlexical" or *sentence-level* pragmatic meanings in a *linguistically structured* way. (Ladd 2008: 4)

Intonation is defined by sentence-level meanings. But what kinds of meanings are encoded intonationally? And what does sentence-level mean? There is broad consensus in the literature that variability in the mapping between syntactic and prosodic structure can be attributed to the encoding of information structure (e.g. Selkirk 2011, Büring 2016). The dichotomic dimensions *focus* vs. *background* and *topic* vs. *comment* can divide sentences and are therefore prone to be linked to the delimitative functions of prosody in the sense of Trubeckoj (1939: 29). Once divided, parts of sentences can also be foregrounded prosodically. For English and German, the choice of prominence lending cue has been attributed to more complex interactions of Common Ground update, (dis)agreement, speaker/hearer attribution (Steedman 2007, 2014), as well as referential and lexical givenness (Baumann 2006, Baumann & Riester 2012).

[2] This proposal, while broadly along the lines also pursued by Repp (2016) and Cruschina (2021) to break up the notion of contrast, goes beyond degrees of contrast and allows for complex contrastive discourse configurations. See Fliessbach (forthcoming) for more details and a discussion of examples from Kogi, Kurtöp, and Turkish.

While information structure, and in particular focus-background partition, is one of the main factors made responsible for intonational variation in research on Spanish as well, the state of the art is inconsistent when it comes to tonal inventories. The Atlas Interactivo de la Entonación del Español (Prieto & Roseano 2009–2013a), updated and contextualized in Hualde & Prieto (2015), provides *nuclear configurations*[3] for eighteen different sentence types. The Madrid variety is described to have seven different configurations for six types of declaratives, summed up in Table 1.1.[4] This research tradition implicitly understands "sentence-level meanings" not as the delimitation of sentence-parts according to the notions of Information Structure (IS), but rather on the level of utterances or Turn-Constructional Units (TCUs), which can vary in length and complexity between "sentences, clauses, phrases, and individual words" (Clayman 2013: 151). In the following, I will understand sentences as minimally composed of one clause in the sense of Brown & Miller (2013: 77), containing at least one inflected verb, but possibly more. This will be important in the discussion of nuclear configurations, entities that operate on the level of Intonational Phrases (IPs) and can map to TCUs that are not sentences.[5]

Table 1.1: Previous findings on Castilian Spanish declarative intonation by Prieto et al. (2010–2014) and Estebas-Vilaplana & Prieto (2010) with revised notation by Hualde & Prieto (2015)

Types of statements	Nuclear Intonation (NI)
Broad focus statements	L* L% / L+H* L%
Contrastive focus/contradiction	L* HL%
Exclamative statements	L+¡H* L%
Dubitative/uncertainty statements	L+¡H* !H%
Statement of the obvious	L+H* L!H%
Insistent explanation	H+L* L%

[3] In the literature on Spanish intonation, a nuclear configuration is a combination of the most prominent pitch accent in an intonational phrase, sometimes assumed to be the last or "rightmost" one by default because of a Nuclear Stress Rule (Chomsky & Halle 1968), with a boundary tone. See Chapter 2 for background information on the Spanish Tone and Break Indices (Sp_ToBI) notations used here.

[4] Appendix A provides the full picture for Madrid Spanish, including declaratives, questions, imperatives, and vocatives.

[5] I thank an anonymous reviewer for stressing the importance of this issue.

In an investigation of focus as both a syntactic and prosodic phenomenon, Gabriel (2007) proposes the smaller inventory in Table 1.2. Here, intonational categories are not defined in terms of nuclear configurations, but rather in terms of individual functions. Tables 1.1 and 1.2 contradict each other. The L+H* pitch accent is univocally associated only with the meaning of contrastive focus in Table 1.2, while Table 1.1 presents L* HL% as marker of contrastive focus and/or contradiction. Another feature that sets the two overviews apart is the high phrase accent H−, mentioned only in Table 1.2. Finally, obviousness, insistence, uncertainty, and exclamation are only mentioned in Table 1.1.

Face (2001b,a, 2002) differs from Gabriel (2007) in analyzing L+H* pitch accent as a marker that can be used independently of, and additionally to, phrase accents and scaling differences to mark contrastive focus. Nevertheless, both authors agree in taking the presence or absence of contrastive focus as their independent variable for the investigation of intonational variability in Spanish declaratives, with additional variability interpreted as phonetic implementation (Gabriel 2007, Face 2002: 175). As is common in intonation research (Ladd 1980: 102), the key discrepancy between research on contrastive focus and Table 1.1 are different perspectives on whether nuances such as obviousness, surprise, and insistence are independent levels of meaning.

1.3 Proposal and structure

How should the field deal with this discrepancy? One possibility is to exclude obviousness and exclamation from the scope of our investigation by interpreting them as a matter of "phonetic implementation of the pitch contour, and [...] as such non-structural" (Gussenhoven 2004: 24). Another possibility is to see obvious and exclamative intonation as structured markers of evaluative meanings which, if taken into account, reduce the amount of unexplained intonational variability. The present book attempts to follow the latter approach. Starting from the inventory of declaratives in Table 1.1, this book proposes a perspective on intonational meaning encoded in the prosodic marking of Spanish declaratives, exclamatives, and discourse particles that is not captured by most definitions of information structure. It combines a commitment-based model of discourse meaning (Farkas & Bruce 2010, Rett 2021b,a) with research on modal presuppositions and conventional implicatures (Potts 2007, Bianchi et al. 2016, Reich 2018). The main argument is that we need a "full integration of intonational meaning into dynamic and multidimensional models of meaning"(Prieto 2015: 371) to be able to answer the questions surrounding intonational form.

Table 1.2: Previous findings on Spanish intonation and information structure by Gabriel (2007: 201)

Pitch accents		
/(L+H)*/	L*+H	prenuclear
	L+H*	nuclear
		word-finally context induced: /_)ω
		IP-finally context induced: /_)ip)IP
	L*	free variant: /_)ip)IP
/L+H*/		contrastive focus
Phrase accents		
/L–/		delimitation of (contrastive) focus domain
/H–/		delimitation of presupposed prefocal material
		continuation in coordinate structures
		syntactic disambiguation
		separation of left-peripheral *topic* constituents
Boundary tones		
/L%/		closure, declarative
/H%/		interrogative (yes-no questions)
/%H/		facultative (high initial pitch in interrogatives)

The categories in Table 1.1 are closely linked to the inductive methodology used in research on pragmatics and sociolinguistics (the Interactive Atlas of Romance Intonation mentions Blum-Kulka et al. 1989, Billmyer & Varghese 2000 and Félix-Brasdefer 2010). They are holistic labels born out of an intuition for the subtleties of spoken discourse and the necessity to create short, vivid situations accessible to native speakers who would participate in *Discourse Completion Tasks* under laboratory conditions. The methodology was developed by Prieto (2001), further refined by Prieto & Roseano (2009–2013a), and has since allowed the replication of similar and comparable observations on dozens of varieties of nine Romance languages (cf. Prieto et al. 2010–2014), a major achievement in terms of setting up a point of departure for further, in-depth study of the categories involved.

Empirically, we investigate the declarative categories subsumed in Table 1.1 in Castilian Spanish from the Comunidad de Madrid, a variety that has already been the object of previous investigations on intonation. This allows us to draw on a body of comparable literature that facilitates the theoretical discussion (e.g.

Estebas-Vilaplana & Prieto 2008, 2010, Elvira-García 2016, Torreira & Grice 2018).

The structure of the book can be broadly divided into a theoretical part, comprising Chapters 2 and 3, an empirical part (Chapters 4–6), and the conclusions in Chapter 7. Chapter 2 lays out the notational conventions and some core issues of intonational phonology, particularly those relevant to the understanding of Spanish intonation. It also provides the necessary terminological basis for Chapter 3, which is broader in scope and contains the main theoretical proposal of this book. Chapter 3 first provides the reader with insights into the pragmatic meanings commonly associated with intonation and reviews the relevant literature on intonational meanings. It then discusses possible ways of modeling the meaning of marked and unmarked statements and argues for a combination of modal semantics with a dynamic model of discourse commitments and discourse evaluations. Chapter 4 builds a bridge between the theoretical discussion and the empirical part of the book. It sums up the main arguments made so far, and discusses ways of empirically investigating intonational meaning with methods from Laboratory Phonology and Corpus Phonology. Chapters 5 and 6 present the methodology and results of two such attempts. While Chapter 5 is about a corpus study on the interaction of intonation and discourse particles in Madrid Spanish, Chapter 6 describes a production experiment on the intonation of epistemically marked declaratives in comparison with *wh*-exclamatives. Chapter 7 sums up the main results and concludes with an outlook on the next steps necessary to gain a full-fledged picture of the meanings of intonation, in Madrid Spanish and in general.

1.4 A quick guide to the examples in this book

Before we begin our discussion, a quick guide to the examples used in this book is necessary. Many of them end with exclamation marks, question marks, or even graphemic sequences such as ⟨¡¿⟩ and ⟨?!⟩, or ⟨¿¡⟩ and ⟨!?⟩. Yet punctuation is prosodically unreliable. Exclamation marks are usually used to indicate marked intonation, but the intended intonation can often only be disambiguated by reading a sentence out loud (Real Academia Española 2010). This is not surprising, given that the number of marked intonational forms exceeds the number of graphemes available for punctuation.

We therefore need to enrich written examples with additional information to allow us to capture their intonation and to fathom the intended interpretation. Unfortunately, the International Phonetic Alphabet (IPA) is not very precise when it comes to intonation, distinguishing only between global rises, falls,

upsteps, and downsteps. The Sp_ToBI system (Beckman et al. 2002, Estebas-Vilaplana & Prieto 2008, Hualde & Prieto 2015) is the most convenient tool currently available,[6] given that it reduces intonation to the tones high H, low L, upstepped high ¡H (sometimes also written HH), and downstepped high !H, which can associate with prominent syllables H* to form pitch accents, with intermediate boundaries H– to form phrase accents, or with final boundaries H% to form boundary tones. The system gets complicated by the fact that pitch accents and boundary tones can also form bitonal contour tones such as L+H*, H+L*, LH%, and HL%. But most importantly, the system is no International Prosodic Alphabet, but language-specific (Hualde & Prieto 2016). Reading a language-specific ToBI system aloud is almost impossible without having heard audio data for comparison. I therefore opted for an approach that combines the textual discussion with as much audio data as was available to me. If you are reading this book on a device with access to the web, the loudspeaker symbol after figures or examples 🔊 refers you to web hosted audio files. Some are hosted on existing online publications, but most are made available via the Open Science Framework (Foster & Deardorff 2017). The external-link symbol 🔗 links to websites in which audio files are embedded as part of larger entries. If, on the other hand, you are reading on paper but would still like to consult an audio recording, Appendix B presents a list of all web links not contained in the bibliography.

[6] A detailed introduction to Sp_ToBI follows in Chapter 2.

2 Spanish intonational phonology

As indicated in Chapter 1, the proliferation of sentence or TCU level meanings as listed in Tables 1.1 and A.1 has turned Sp_ToBI into a system for the notation of nuclear configurations. This chapter tries to understand this as the result of an attempt to go beyond delimitative views on prosody (§2.2) and take distinctive functions of intonation on the level of entire dialogical turns seriously (§2.3). Yet it also argues that this requires us to have a theory of the kinds of dialogical meanings intonation can distinguish between, which is the subject of Chapter 3.

2.1 Autosegmental-Metrical theory and Sp_ToBI

The Autosegmental-Metrical (AM) theory of intonational phonology is the basis for the series of Tone and Break Indices (ToBI) transcription systems that has been developed since the last decade of the twentieth century. As Ladd (2008: 42) lays out, it rests on four core assumptions, dating back to the seminal work by Pierrehumbert (1980): sequential tonal structure, distinction between pitch accent and stress, analysis of pitch accents in terms of Low L and High H level tones, and the analysis of pitch scaling in terms of an effect of iterated local changes.[1] Sequential tonal structure means that any pitch contour can be broken down into tones. Stretches between these tones are only seen as interpolations that are not phonologically distinctive.

The distinction between pitch accent and stress is an important part of what makes AM theory autosegmental, because stress can be defined as the metrical prominence of a syllable at the word level (Hyman 2014, Buchholz 2021), whereas Tones (Ts) are autonomous and lined up with either prominent positions or boundaries in a process called alignment. This gives rise to an *intonation pattern* composed of Pitch Accents (T*s), Phrase Accents (T–s) and Boundary Tones (T%s). While sequential tonal structure and the distinction between pitch accents and stress have been generally adopted by research on Spanish intonation in the last three decades, the incorporation of a two-level distinction between H and L tones, combined with a view on pitch scaling in terms of iterated

[1] In the following, the terms pitch and F_0 will be used interchangeably (see Ladd 2008: 5 for an explanation).

local changes, has been less consistent. Table A.1 in Appendix A shows the prolific use of upstepped and downstepped tones in the description of Madrid Spanish intonation. The NIs with the indices c, d, e, h, and j make use of some sort of up- or downstep, indicated by exclamation marks in both vertical directions (! for 'down', ¡ for 'up'). As visible in Table A.1, both pitch accents and boundary tones are now made up of three tonal levels: L, H, and ¡H for pitch accents, and L, !H, and H for boundary tones. Only phrase accents have maintained the two-level distinction between L and H.

Yet the complex system of pitch accents that arises from these additional tonal levels and their different alignments is mostly found within nuclear configurations. For prenuclear pitch accents, rises from L to H are the norm, with the main debate concerning alignment. Hualde & Prieto (2015) state that prenuclear peaks in Spanish rising accents can be aligned either with the tonic or the posttonic syllable of polysyllabic words that do not bear lexical stress on the ultimate syllable and leave open the question whether they are in complementary distribution, which is a disputed point in the literature. Hualde (2002: 106) presents rising accents in Spanish as underspecified with respect to tonal alignment (9). As in Table 1.2, the proximity to phrase accents and boundary tones can then determine the early or late alignment of the H tone. Face & Prieto (2007), on the other hand, argue that Madrid Spanish has three phonologically distinct rising accents, L+H*, L+<H*, and L*+H, which are determined by an interplay between two dichotomies: declarative vs. interrogative, and broad vs. narrow focus.

(9) Phonological representation of rising accents in Spanish (Hualde 2002: 106)

```
        *
[..... (σ)    .....] word
      |
      L+H
```

The problem of choosing between three different labels for prenuclear rising pitch accents or a single label with different realizations according to the presence or absence of an intervening phrase accent hints at a deeper problem that affects the entire description of Spanish intonation. Whereas the analysis of phonological phrasing relies on functional dichotomies such as *focus* and *background* or *given* and *new* information, which divide sentences into domains of IS (Krifka & Musan 2012) and are therefore prone to be expressed prosodically by accents with *delimitative* functions (in the sense of Trubeckoj 1939: 29), the paradigmatic choice between different pitch accents, phrase accents, and boundary tones has been related to nuclear configurations that encode obviousness,

exclamation, insistence and other meanings. This dichotomy is key in understanding the different approaches to prosody that have guided the literature on intonation. Showing its importance will be the goal of the rest of this chapter, which is structured accordingly.

2.2 Delimitation

Delimitative approaches to prosody have to deal with several layers of complexity. And as will become clear, this complexity arises in part because of paradigmatic relations between types of boundaries and syntagmatic relations between pitch accents and boundary tones that compete for alignment with the segmental string. Delimitative approaches are usually considered to establish a relation between syntactic and phonological boundaries, usually in the form of some kind of correspondence or *mapping* between syntactic constituency, IS, and prosodic constituency (§2.2.1).[2] They then have to give accounts for the tonal categories that express the boundaries of these prosodic constituents (§2.2.2). Finally, they need to decide whether they see pitch scaling and alignment as relevant for the delimitation of prosodic constituents (§2.2.3).

2.2.1 Mapping

Féry (2017: 63) distinguishes between what we could broadly call a *one-edge* and a *two-edge* approach. Without using the terms *one-edge*/*two-edge approach* herself, Féry (2017) groups *relation-based*, *edge-based*, and *alignment* approaches as those which map pre-existing syntactic constituents at one edge to prosodic constituents, whereas *containment* and *match* strategies map syntactic constituents to prosodic constituents at two points in the speech chain.

One-edge approaches allow for mismatches between syntactic and prosodic constituents and therefore lend themselves to explaining cases in which a local prosodic marking is supposedly ambiguous between a local and a broader (possibly sentence-level) interpretation. The classic example for such an ambiguity is sentence-final stress, which in Spanish and other Romance and Germanic languages has been found to be ambiguous between narrow focus on the final constituent and broad focus on the entire sentence (Gabriel 2007: 36). Example (10) shows a broad focus declarative sentence in which the focus feature F "percolates" from the prominent last word to the sentence as a whole.[3]

[2]Note that the term mapping is sometimes also used for *tone mapping rules*, which serve to calculate the phonetic value of tones in sequences relative to the preceding ones (Féry 2017: 105). We restrict the term to the syntax-prosody interface.

[3]Focus "percolation" refers to the idea in generative syntax that the focus feature F passes the maximal projection of the accented terminal node and attaches to higher levels of syntactic structure.

(10) Based on Gabriel (2007: 65)
María compra el diario en $_F$[el KIOSco.]$_F$ ⟼
$_F$[María compra el diario en el KIOSco.]$_F$
'Maria buys the newspaper at the kiosk.'

An example of a relational rule would be the *Relative Prominence* rule, which assigns prominence to either the right or the left edge of a ϕ-phrase depending on the direction of syntactic branching in that language. Prominence, in turn, would then be a cue that helps us delimit ϕ-phrases. According to the original approach by Nespor & Vogel (2007), the ϕ-phrase is aligned with a syntactic phrase dominated by one syntactic head. A leftmost head position implies rightward branching, which in turn would imply rightmost prominence in complex constituents. To allow for ϕ-phrases that include more than one syntactic head, this approach allows for optional ϕ-phrase restructuring, thereby licensing (11a-b), but not (11c).[4]

(11) Optional ϕ-phrase restructuring according to Nespor & Vogel (2007) as illustrated by Féry (2017: 67)
   a. Italian
   (I caribù)$_\phi$ (nani)$_\phi$ (sono estinti)$_\phi$ ⟼ (I caribù nani)$_\phi$ (sono estinti)$_\phi$
   'Dwarf caribous are extinct.'
   b. (Darò)$_\phi$ (un libro)$_\phi$ (a Gianni)$_\phi$ ⟼ (Darò un libro)$_\phi$ (a Gianni)$_\phi$
   'I'll give a book to Gianni.'
   c. (Papà)$_\phi$ (mangia)$_\phi$ ↛ *(Papà mangia)$_\phi$
   'Dad is eating.'

The crucial problem for the current discussion is the incompatibility of such a relational approach with a prosodic form as in Figure 2.1 from Hualde (2014: 269), which shows the typical intonation of a response to *¿Qué miraba Mariana?* 'What was Mariana looking at?'.[5] A rule that prohibits restructuring of (S)(V) to (SV) as in (11c) does not allow for restructuring of (S)(V)(O) to (SV)(O) as in (12) either.

[4] Note that a proposal for rhythm-based restructuring by Ghini (1993) still obeys strong syntactic boundaries as in (11c).

[5] Given that most publications are not open-access, intonation research is faced with the problem of how to cite pitch contours. Stylization will be used for pitch contours from commercial publications throughout this introduction.

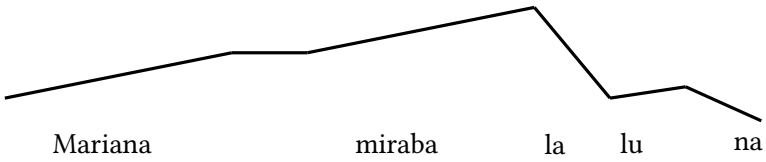


Figure 2.1: Declarative with given subject and verb *Mariana miraba*$_{H\text{-}}$ *la luna.* 'Mariana was looking at the moon.' (Hualde 2014: 269).

(12) (Mariana)$_\phi$ (miraba)$_\phi$ (la luna)$_\phi$ $\not\mapsto$ *(Mariana miraba)$_\phi$ (la luna)$_\phi$
'Mariana was looking at the moon.'

Edge-based approaches (Chen 1987, 2000), which allow for ϕ-phrases to cross the boundaries of syntactic phrases by projecting ϕ-phrases from maximal projections, still fall short of accounting for Figure 2.1. They allow for ϕ-phrases that contain verbs and their complements, or even verbs and adjuncts, but external arguments seem to be problematic.[6] All in all, the inviolable mapping rules presented so far seem descriptively inadequate if (SV)(O) is to be within the realm of possibilities.

Optimality Theory (OT) based systems like the one in Truckenbrodt (1995) move past the simple *one-edge*/*two-edge* dichotomy in combining one-sided alignment constraints like Align (ϕ, R, L) with two-sided matching constraints like Wrap-XP. They go even further in incorporating stress-assignment mechanisms like Stress-XP and constraints on prosodic domination like Nonrecursivity (NonRec) into the list of constraints on ϕ-phrasing, which together select an optimal candidate in sentences with two or more Maximal Projections (XPs) as in (14). Most importantly, though, IS categories such as *focus* can be incorporated as a high-ranking constraint like Stress Focus (13) (Gabriel 2007: 235) that override other mapping requirements to give rise to marked prosodic structures as in (15).

(13) Stress Focus (SF) (Gabriel 2007: 235)
$_F$[X/XP]$_F$ is prosodically more prominent than [Y/YP].

[6] See Koopman & Sportiche (1991) as well as Gabriel et al. (2018: 75–80) for an account that generates subjects inside the Verb Phrase (VP) for θ-role assignment and then moves them to an external position for further grammatical feature assignment and serialization of the surface word-order. Nevertheless, the visibility of syntactic movement to prosodic structure would pose a problem to any modular theory of grammar that takes a syntactic form as an input to prosodic structure, a mechanism upheld even in so-called *try-and-filter approaches* which select between different syntactic forms on the basis of prosodic requirements (Büring 2013: 872–873).

(14) Based on Truckenbrodt (1995: 230) and Féry (2017: 77)

	[la.ˈo.tɾa]$_{\omega}$[a.ˈmi.ɣa]$_{\omega}$ [mi.ˈɣa.βa]$_{\omega}$[la.ˈlu.na]$_{\omega}$	Wrap XP	Stress XP	Align (ϕ,R)	Non Rec
☞ a.	[la.ˌo.tɾa.a.ˈmi.ɣa]$_{\phi}$ [mi.ˌɾa.βa.la.ˈlu.na]$_{\phi}$				
b.	[la.ˌo.tɾa.a.ˈmi.ɣa [mi.ˌɾa.βa.la.ˈlu.na]$_{\phi}$]$_{\phi}$				*
c.	[la.ˌo.tɾa.a.ˈmi.ɣa]$_{\phi}$ [mi.ˈɣa.βa]$_{\phi}$[la.ˈlu.na]$_{\phi}$	*			
d.	[la.ˌo.tɾa.a.ˌmi.ɣa mi.ˌɾa.βa.la.ˈlu.na]$_{\phi}$	*	*	*	
e.	[la.ˌo.tɾa.a.ˌmi.ɣa mi.ˈɣa.βa]$_{\phi}$[la.ˈlu.na]$_{\phi}$	**	*	*	

(15)

	$_{F}$[la.ˈo.tɾa]$_{\omega F}$[a.ˈmi.ɣa]$_{\omega}$ [mi.ˈɣa.βa]$_{\omega}$[la.ˈlu.na]$_{\omega}$	SF	Wrap XP	Str. XP	Al. (ϕ,R)	Non Rec
☞ a.	[la.ˈo.tɾa [a.mi.ɣa mi.ɾa.βa.la.ˌlu.na]$_{\phi}$]$_{\phi}$		**		*	*
b.	[la.ˈo.tɾa]$_{\phi}$[a.ˌmi.ɣa mi.ˌɾa.βa.la.ˈlu.na]$_{\phi}$	*	**		*	
c.	[la.ˈo.tɾa]$_{\phi}$[a.ˈmi.ɣa]$_{\phi}$ [mi.ˌɾa.βa.la.ˈlu.na]$_{\phi}$	**	*			
d.	[la.ˌo.tɾa.a.ˈmi.ɣa]$_{\phi}$ [mi.ˌɾa.βa.la.ˈlu.na]$_{\phi}$	***				

The most recent development in OT approaches to syntax-prosody mapping opt for two-edge *match* constraints that link every level of morphosyntax with a prosodic domain (Selkirk 2011, Féry 2017: 85–86). The main advantage of the reformulation of constraints that has taken place in the new millennium is a possibility to account for recursive prosodic structure. Yet variation in the phrasing of utterances of the same length and complexity are still left to grouping constraints such as MaxBin,[7] which enforce a rhythmic grouping of constituents based on weight-sensitive eurhythmicity. Nevertheless, this mechanism does not account for prosodic groupings such as (SV)(O).

[7] MaxBin is the OT version of a finding by Ghini (1993: 52) that ϕ-phrasing in Italian favors a weight of two ω at normal speech rate, a constraint also used by Sandalo & Truckenbrodt (2002: 294–295) to explain phrasing decisions in Brazilian Portuguese.

For Catalan and Spanish, the picture is more complex. Instead of a purely weight-sensitive constraint, it is only the utterance-final ϕ-phrase containing the main stress (or nuclear accent) that is restricted to binarity. First termed MaxBinEnd in an analysis of Catalan (16a), the constraint has since been renamed MaxBinIPhead in an analysis of Spanish phrasing patterns (16b). The new name would suggest that its domain of application has become flexible, depending on the position of the IP head. Yet Prieto (2006: 52) points out that examples such as Figure 2.1 constitute "crucial evidence that Max-Bin should be restricted to the end of the utterance."

(16) Locally restricted grouping constraints

a. MaxBinEnd: ϕ-phrases containing the main stress of the utterance consist of maximally two ω. (Prieto 2005: 205)

b. MaxBinIPhead: A ϕ-phrase which is the head of an IP constituent must be binary (at ω level). (Prieto 2006: 52)

While MaxBinEnd seems well designed to account for phrasing patterns in Catalan,[8] Spanish SVO phrasing is a debated topic. Nibert (2000) sees (SV)(O) as the default phrasing type in Spanish, while Elordieta et al. (2003, 2005) find (S)(VO) to be the dominant mapping pattern. Prieto (2006) finds some inter-speaker variation, but with a clear tendency for (SV)(O) as the predominant pattern for sentences with complex objects (two or more ω), a result compatible with MaxBinIPhead. Yet Feldhausen (2014: 111–115) attributes these findings to influence from Catalan and takes (S)(VO) to be the default for all varieties except Barcelona Spanish, with free variation between (SVO) and (S)(VO) attested for in Argentinian Spanish.[9]

What are we to make of such contradictory results? Though language contact may well have an impact, what emerges most notably is that every detailed study finds variation between different possible phrasing patterns. And though there have been attempts to model this variation in terms of syntactic mapping (or match) constraints as well as weight-sensitive eurhythmicity constraints, phrasing patterns such as (SV)(O) seem to require reference to different levels of description to be made the optimal candidate in a specific context. The main level of description currently absent from the debate (at least as summed up here so far) is discourse meaning.[10]

[8] Feldhausen (2010: 103–126) argues at length for MaxBinEnd to be the highest ranking constraint in Catalan.

[9] No additional data on SVO phrasing without clitic left dislocation is provided in Feldhausen (2014).

[10] See §5.2.2 and §6.2 for further discussion.

Phrasing is expressed by boundaries. But there are paradigmatic choices in the selection of boundary cues, and these can be linked to meaning differences. The typology of boundary cues presented in Frota et al. (2007) includes eight different types present in Romance languages. Among them are high targets such as *continuation rise*, *sustained pitch*, *pitch reset*, but also low boundaries such as a drop "to the speaker's base level at the boundary" (Frota et al. 2007: 134). The main phonetic correlate of the phrasing discussed in Prieto (2006) is a high pitch target right before the last ϕ-phrase. Given the debate on H– boundary tones, I propose that the variation in phrasing could (at least partially) be explained by information-structural and pragmatic factors (laid out in Chapter 3). Just as with SF, meaning could take precedence over mapping, weight, and eurhythmicity.[11] So to fully capture the impact of IS and other types of meaning on prosodic structure, we need to move beyond the syntactic distribution of boundaries and look at the types of boundaries at play in ϕ/Intermediate Phrase (ip)-phrasing.

2.2.2 Boundaries

As useful as the theoretical innovations for models of syntax-prosody mapping have been, they tend to assume identifiable phonetic correlates for prominence and phrasing relations that can sometimes be very elusive. The edges of IPs are usually uncontroversial because they involve long pauses, the beginning of a new breathing cycle (Lieberman 1986, Lieberman & Blumstein 1988: 198–204), full pitch reset, preboundary lengthening (Prieto et al. 1995: 438), and possibly even a change of speaker. On the other hand, intermediate phrases pose the challenge of identifying breaks that involve only minor pauses (>100 milliseconds according to Pešková 2015: 138), reduced breathing cycles (Shi et al. 2010), partial or no pitch reset, and a continuation of the same turn. For Castilian Spanish, we have seen two boundary tone candidates: H– and L–.

2.2.2.1 L–, pitch accent form, and "contrastive" focus

Gabriel (2007) proposes L– as a marker for *in situ* focus, which is being placed at the right edge of a node in focus. A core question surrounding SF is whether it applies only to contrastive focus (18), or also to informational focus cases as in (17). The possibility of such non-final informational stressed foci has often

[11] See Dufter (2003) for rhythm as a secondary level of structure (Ger. 'nachgeordnete Qualität') overridden by meaningful contrasts.

been denied in the literature on Spanish syntax (Zubizarreta 1998, 1999)[12] or attributed to specific non-European varieties (Zubizarreta 2016). Yet empirical investigation has shown them to be the default case for sentences with full (non-pronominalized) subjects (Gabriel 2007: 289–294), a result visible in the number of speakers who chose (18) and (17) in an experiment that allowed for syntactic and prosodic variability (picture and question elicitation).[13] The lack of phonetic and phonological detail in syntactic analyses (as well as the noticeably reduced importance of such *in situ* marking in Romance as opposed to Germanic languages) has impeded the acknowledgment of this possibility in Spanish. Yet it would be misleading to rule it out completely (Uth & García García 2018: 9–11).

(17) 13 out of 18 speakers (Gabriel 2007: 289)
Context: 'Who gives his/her brother a newspaper?'
$_F$[MaRÍa]$_F$ le da el diario a su hermano
'Maria gives the newspaper to her brother.'

(18) 6 out of 18 speakers (Gabriel 2007: 283)
Context: 'Julia gives the newspaper to her brother, right?'
$_F$[MaRÍa]$_F$ le da el diario a su hermano
'Maria gives the newspaper to her brother.'

An unsolved problem in the analysis of narrow focus is how to distinguish between focus which serves to make a choice between salient alternatives, which I will call *selection focus*, and focus which corrects or reverses (parts of) a previous assertion (Lee 2017: 10). Büring (2016: 27, 32, 34–35) shows that any size of focus can be used in corrections, ranging from narrow corrections like the ones in (17) and (18) to cases of all new contrastively focused sentences (19).

(19) A: ¿Por qué tanta agitación? ¿Ha fallecido alguien?
'Why the turmoil? Did someone die?'
B: No, $_F$[el jefe le acaba de dar un aumento a Mariana]$_F$.
'No, the boss just gave Mariana a raise.'

[12]With the exception of sentence initial *verum foci* such as ***Algo** debe de saber* 'He must know something' or ***Poco** te puedo decir* 'I really can't tell you much', which Leonetti & Escandell-Vidal (2009) describe as "unstressable".

[13]The Spanish corpus in Gabriel (2007: 277) consists of 14 educated speakers from various parts of Spain and 4 speakers from other countries, namely Mexico, El Salvador, Colombia and Argentina. The results are therefore primarily valid for peninsular varieties, yet they have been corroborated by Muntendam (2010: 426–427) for Andean Spanish, Hoot (2016) for Mexican Spanish, and Vanrell & Fernández Soriano (2018) again for European Spanish. See Dufter & Gabriel (2016: 427–431) for an overview.

Since the standard definition of focus as marking a set of contextually salient alternative propositions obtainable from the ordinary semantic value of a phrase by making a substitution in the domain of focus (Rooth 1992: 76) does not distinguish between cases where a focus value corrects a previous assertion and where it only selects an answer to a previous question among salient answers, these different cases are often treated together under the notion of contrastive focus (e.g. Lee 2017). And while there are more precise definitions of contrastive focus in the literature, these nevertheless diverge in their criteria.

Gabriel (2007: 54) reserves the term contrastive focus for cases of correction, opting to label cases that respond to alternative questions with "neutral focus". This is more precise than lumping correction focus together with selection focus. Yet it requires a semantic specification that one of the alternative propositions obtained by making a substitution in the focus domain is the discourse commitment of an interlocutor which is currently under discussion. In §3.3, I will present an account of meaning in dialogue based on the model by Farkas & Bruce (2010), in which propositions can be distinguished as part of a commitment set.

Another widely cited definition by Zimmermann (2008) is given in (20).

(20) Contrastive marking on a focus constituent α expresses the speaker's assumption that the hearer **will not consider** the content of α or the speech act containing α **likely to be(come) common ground**.
(Zimmermann 2008: 354)

Here, instead of taking the commitment of the interlocutor as criterion for contrast, the likelihood of the content of the focus constituent (or the speech act containing the focus constituent) to be(come) part of the Common Ground (CG) distinguishes contrastive from non-contrastive cases of focus. And while the inclusion of both *be* and *become* allows for the focal contrast evoked by the speech act to target an existing commitment of the interlocutor, it also allows for cases in which this contrast does not target anything she has said so far, but an assumption that the speaker has about her informational state.

Such a definition of focus perfectly captures (19), because there is a stark contrast between the expectations of A (*someone died*) and B (*Mariana got a raise*), which accordingly licenses the presence of contrastive marking. Yet this raises the question if such a case of contrastive focus will be marking with the same prosodic cues as cases of selection focus. And even more importantly, it raises the question if contrastive focus in the sense of Gabriel (2007), or disagreement between interlocutors, can license contrastive marking even in cases in which the speaker can assume that the hearer *will certainly consider* the content of the

focus constituent or the speech act containing it to become part of the Common Ground. For Büring (2016: 35), the problem is solved "by definition". He argues that contrastive focus is not limited to corrections, but can apply to any salient proposition, making the empirical prediction that any other reason for turmoil in (19) would receive the same "default prosody".

> Sentence-wide focus always results in the same accent pattern as default prosody alone. This is so because within the focus, default prosody applies, so if the entire sentence is focussed, the resulting prosody will be the same as that of a focus-less sentence (in which default prosody applies, by definition). (Büring 2016: 35)

Prosody, according to this dictum, could not possibly distinguish between different forms of contrast (correction vs. selection vs. expectation), but only between different focus domains. Once again, a conflict is identified to lie in the relation of delimitation (between information-structural domains) and distinction (between types of contrast). In Chapter 3, I will argue that we need a model of meaning in dialogue that distinguishes between selection, correction, and expectation to account for the intonational variability in Madrid Spanish, with empirical evidence presented in Chapters 5 and 6.

2.2.2.2 Poly-functional H–

Continuing our overview of the delimitative functions of intonation in Spanish, the H– boundary poses two problems. The first problem is its apparent multifunctionality. Nibert (1999) sees it as a way of disambiguating coordinated NP structures, which falls in line with the finding by D'Imperio et al. (2005) and Frota et al. (2007) that syntactic complexity (and not constituent length) triggers prosodic phrasing in Spanish. Gabriel (2007: 201), on the other hand, identifies four different functions for intermediate H– phrase accents (Table 1.2): 1) delimitation of presupposed prefocal material; 2) continuation in coordinate structures; 3) syntactic disambiguation; 4) separation of left-peripheral topic constituents. Faced with such a multifunctional category, predictions about the occurrence or non-occurrence of an H– are a stochastic claim. Gabriel (2007: 276–282) finds that speakers of Spanish realize an H– before sentence final focus domains of different sizes in over eighty percent of all cases, with the probability of an H– partition diminishing with broader focus domains. Example (21) shows the strong tendency of speakers to resort to an H– marking before a focused constituent in cases of narrow focus, here on the locative Prepositional Phrase (PP). In 83.3%

of the cases, speakers resorted to (21a), whereas only 17.3% of the realizations resulted in (21b).

(21) Context: 'Where did Maria buy the newspaper?'

a. ((María compró el diario)$_{ip}$ ($_{F}$[en el KIOSco.]$_{F}$)$_{ip}$)$_{IP}$
L*+H L+¡H* L*+¡H H– L+H* L– L%

b. ((María compró el diario $_{F}$[en el KIOSco.]$_{F}$)$_{ip}$)$_{IP}$
L*+H L+¡H* L*+¡H L+H* L– L%

'Maria bought the newspaper at the kiosk.' (Gabriel 2007: 278)

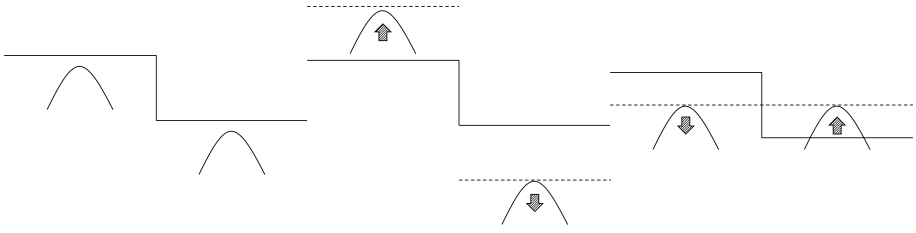
Not only the position, but also the form of the H– is a matter of considerable debate. Following the above-mentioned typology by Frota et al. (2007), Gabriel et al. (2011) go into detail about possible surface realizations of H– in Spanish. They distinguish six categories: 1) *continuation rise*, 2) *sustained pitch*, 3) *pitch reset*, 4) *pre-boundary upstep*, 5) *sustained hat contour* and 6) *complex boundary* (Gabriel et al. 2011: 163–170).

Whereas a *continuation rise* can be seen as a prototypical case of an intermediate high phrase accent in that the pitch maximum coincides with a local turning point of a rise that reaches or exceeds the scaling of previous rising pitch accents, a *sustained pitch* may reach its phonetic maximum two syllables before a perceptually salient reduction in pitch frequency. A *pitch reset* is even less prototypical in that it cannot be identified locally. Instead, it is characterized as a long-distance scaling relationship between two turning points (or local maxima), with the second maximum reaching a similar F_0 value as the first, thereby counteracting a general downtrend in an utterance. A *preboundary upstep* is defined as an effect by which a high phrase accent raises the scaling of preceding pitch accents without a separate F_0 maximum or turning point at the prosodic boundary.

2.2.3 Scaling and alignment

The relevance of scaling relations for the detection of H– poses a significant empirical problem. While a *continuation rise* following a rising pitch accent in a word with antepenultimate stress might be clearly detectable, the shoulder of a late rise on a word with penultimate stress (which is the vast majority of words in Spanish) would be barely distinguishable from an H–. We might stipulate that an H– would be scaled higher than an H*, but the threshold for distinguishing

between the two would have to be determined first. Moreover, scaling is the defining characteristic for *pitch reset*. And both *sustained pitch* and *preboundary upstep* raise the overall pitch level of the phrase they delimit, a process that to date has been mainly described as correlate of focus in Germanic languages. Based on observations from German and English, Féry (2017: 154) proposes a scaling effect of IS in which focus raises and givenness lowers the pitch height of a corresponding section of a pitch contour.[14] Figure 2.2a shows a contour which, by virtue of consisting of two phrases of the same type ϕ, are assumed to be in a downstep relation.[15] Figure 2.2b illustrates the effect of focus on the first ϕ and givenness on the second ϕ, while Figure 2.2c shows an inverse relation.



(a) ϕ to ϕ (b) ϕ_{focus} to ϕ_{given} (c) ϕ_{given} to ϕ_{focus}

Figure 2.2: German ϕ to ϕ downstep with given/focus scaling (Féry 2017: 154)

While these raising and lowering mechanisms have been developed to account for Germanic languages, their cross-linguistic validity has to date been tacitly assumed. Yet if we take H– to be a marker of givenness in Spanish, and if we take *sustained pitch* and *preboundary upstep* to be correlates of H–, we are faced with a diametrically opposed structure. If we were to calculate mean F_0 values on a ϕ delimited by *preboundary upstep* or *sustained pitch*, we would expect them to be higher than those of a non-given constituent or one with *in situ* focus delimited by an L–. This could lead us to believe that focus has a lowering effect and givenness a raising effect on the pitch scaling of Spanish sentences, even though we would actually be dealing with an effect of tonal alignment.

[14] Importantly, givenness is not treated as the counterpart to focus (which is the background). Note that Figure 2.2b is not identical to the one in Féry (2017: 154) due to the correction of a minor error.

[15] As argued with references in Féry (2017: 107–113), downstep (or catathesis) is a categorical type of downtrend that holds between prosodic constituents. Other types of downtrend are (continuous) declination, which is an involuntary result of decreasing air pressure, and final lowering, which is a voluntary and phonologically significant pitch lowering at the end of an utterance (L%). Note that declination has been shown to be insignificant for Mexican Spanish (Prieto et al. 1996).

Tonal alignment describes the temporal coordination between tones and segments. Since Pierrehumbert & Beckman (1988) established the notion of secondary association of tones with prosodic units, a growing number of scholars has come to differentiate alignment from association. According to Arvaniti (2012: 266), tones are phonologically associated to constituents of the prosodic hierarchy, whereas they are phonetically aligned with segments.[16] Secondary association was developed to account for variability in tonal alignment depending on syllable structure and accentuation, that is, for cases in which reference to two or more levels of the prosodic hierarchy or other phonotactic criteria are necessary to describe alignment patterns. The possibility for an H– boundary to surface as something other than a *continuation rise* shoulder (a high turning point that coincides with a segmental anchoring point) can be understood in terms of *tonal spreading*.

Secondary association of pitch accents has been a hotly debated topic for Spanish rising accents. As mentioned in §2.1, Face & Prieto (2007: 129f.) argue against the (L+H)* analysis in Hualde (2002) on the basis of two observations for Castilian Spanish. Firstly, the peak of a rising pitch accent is reached within the lexically accented syllable if the constituent is focused, but not if it is part of the background. Secondly, the beginning of a rising pitch accent on a focused constituent occurs at the beginning of the lexically accented σ in declaratives, but not in interrogatives. They introduce the early rise L+H*, the late rise L*+H, and the early rise with delayed peak L+<H*, where starredness indicates primary association and the delay sign < indicates the absence of simultaneous secondary association of H with the stressed σ, which allows it to align with the ω-boundary.[17]

Once again, the main reason for further distinctions are subtle differences in meaning. Notions of IS such as focus and background are found to be expressed differently depending on illocutionary moods such as assertion and question. Yet to date, no incorporation of these findings into the paradigm of intonationally distinguished sentence types has been achieved. Coming back to the state of the art on sentence types in Table A.1, we see that all yes-no and *wh*-questions

[16] Note that most of the literature on alignment did not incorporate this distinction and still uses the term alignment interchangeably with primary association. Note also that not even the two entries in the relevant handbook agree on the definition of these terms. The entry on tonal alignment defines it as the temporal coordination of tones with "prosodic units (e.g. syllables) and their constituents (the segments that make up syllables)" (D'Imperio 2012: 275). Since the coordination between tones and prosodic units is precisely the definition of association, this abolishes the distinction in Arvaniti (2012).

[17] See Face & Prieto (2007: 138) for an illustration. Note that the contrastive foci in declaratives are cases of metalinguistic *expression focus* (Krifka & Musan 2012: 8); see Face (2001b: 212) for context. We do not know if the question foci are contrastive or corrective based on the original description in Face (2006: 298–299).

align an L tone with the lexically accented syllable in nuclear configurations (L*). Echo-questions, as well as most other sentence types, are assigned an H*. Are there regularities hidden behind such overlap? To find out, we need to go beyond delimitative accounts of intonation and venture into distinctive accounts.

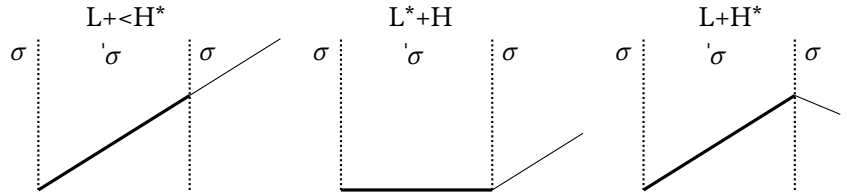


Figure 2.3: Three-way distinction for rising accents in Spanish (Face & Prieto 2007: 135)

2.3 Distinction

2.3.1 Tones and tunes

Apart from IS, the set of meanings among which intonation is said to distinguish is broad and varies from author to author. Recurrent notions are illocutionary moods, interclausal dependencies and interactive attitudinal aspects (Féry 2017: 156). This echoes in the proposal by Pierrehumbert & Hirschberg (1990: 271) in which the choice of a tune conveys "a particular relationship between an utterance, currently perceived beliefs of a hearer or hearers (H), and anticipated contributions of subsequent utterances." Before we turn to a more detailed proposal on how to model these meanings in §3, we shall see that there are different views on how these meanings are expressed by intonation. The main divide is between holistic approaches, where sentence-level meanings are attributed to entire tunes, and compositional approaches, where they are computed from the meaning of individual tones.

Approaches to Spanish intonation have a long holistic tradition. The early work by Navarro Tomás (1944) described *tonemas*, which were not decomposed into individual tonal targets with identifiable functions. Beckman et al. (2002) follow the notational conventions of autosegmental-metrical theory, yet particular functions are still associated with entire tunes. To give an example, they identify a *redundancy contour* which serves to mark "something that I know you know, and think you could have thought of yourself as the motivation or explanation for this opinion or observation." (Beckman et al. 2002: 19) Example (22) gives the context and Figure 2.4 the a stylized representation of their example.

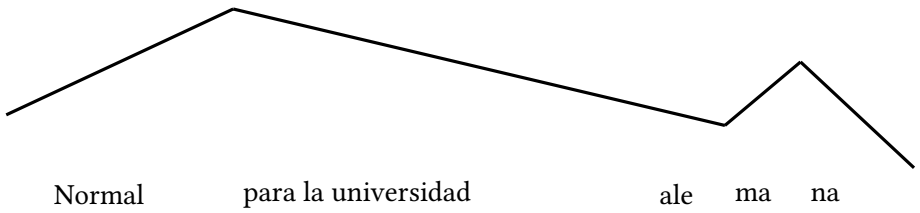


Figure 2.4: Redundancy contour *Normal para la universidad alemana.* 'Normal for the German university.' (Beckman et al. 2002: 20)

(22) Context Figure 2.4 (Beckman et al. 2002: 19)

A: A mí me parece normal que todo empiece a su hora.
'I think it is normal for everything to start on time.'

B: Bueno, sí, *normal, para la universidad alemana*. No para cualquier sitio, o también puede ser quizá normal para un alumno de alemán.
'Well, yeah, *normal for the German university*. Not just for any place. Or maybe normal for a student of German.'

Their tentative description is "an intonational idiom consisting of a pair of L+H* accents at the beginning and end of the target phrase, with no intervening accent." (Beckman et al. 2002: 19) In other words, they propose a correspondence between a holistic meaning (redundancy) and an intonational form /L+H* L+H* (L%)/. Concerning this example, several questions remain unanswered. It seems as if its particular discourse meaning arises due to a mixture of agreement and disagreement between A and B. While B agrees with the normality of *starting on time*, he disagrees with the realm of reference. He therefore starts by (partially) denying the previous assertion with *bueno*, then proceeds to agree by using *sí*, and then explains his partial disagreement by using this particular intonational contour. A decompositional approach would need to disentangle these different aspects.

Concerning the state of the art, Table 1.2 is more compositional than Table A.1 since it attributes individual functions to tonal categories. Yet Table 1.2 only covers the most prototypical cases of declaratives and interrogatives, allowing for four functional distinctions: focus, presupposition/topic, declarative, and interrogative.[18] Less prototypical sentence types in Spanish have so far only received a holistic treatment.

[18] Since /(L+H)*/ varies according to boundaries introduced either by phrase accents or boundary tones (or in free variation in the case of L*), it does not carry informational load of its own and renders contrastive /L+H*/ phonetically identical to a /(L+H)*/ followed by /L–/. Since %H is facultative, the four meaningful categories are /L+H*/, /H–/, /L%/, and /H%/.

2.3.2 The Provocation-Response Nexus

This is true not only for Spanish, but also for French. Building on the seminal paper by Pierrehumbert & Hirschberg (1990) and its adaptation by Steedman (2007), there has been a lot of work on the meanings encoded by French intonation (Beyssade & Marandin 2009, Portes & Beyssade 2015, Portes & Reyle 2014, Portes et al. 2014, Michelas et al. 2016). Yet in the treatment of marked speech acts, such as the implication contour (Delattre 1966) as investigated by Portes et al. (2014), we again find that the level of description is rather on the level of tunes than on individual tones. Portes et al. (2014) found that speakers chose different types of reactions depending on the final contours of the previous declarative *Jules a engagé un ingénieur* ('Jules hired an engineer'). Declaratives ending in "conclusive intonation" L* L% (23) led listeners to choose the reaction *J'en prends note* ('I get it'). On the contrary, the "implication contour" H* L% led to the reaction *J'en sais rien* ('I've no idea about it') (24).[19] Finally, the "incredulous reply" H+!H* H% statements were met with *Si, si, je t'assure* ('No, really, it's true') (25). Note that here, much as for Spanish nuclear configurations, we make reference to sequences of simple or complex pitch accents and boundary tones, not to correspondences between individual tones and meanings.

(23) "conclusive intonation" (French)
A: Jules a engagé un ingénieur. L* L%
'Jules hired an engineer.'
B: J'en prends note.
'I get it.'

(24) "implication contour" (French)
A: Jules a engagé un ingénieur. H* L%
'Jules hired an engineer.'
B: J'en sais rien.
'I've no idea about it.'

(25) "incredulous reply" (French)
A: Jules a engagé un ingénieur. H+!H* H%
'Jules hired an engineer.'
B: Si, si, je t'assure.
'No, really, it's true.'

[19] This response was also preferred in reaction to the "question" contour H* H%.

These findings show that variability in the prosodic form of a declarative can have a strong impact on the kind of response the interlocutor will choose. Note that we are not dealing with question-answer pairs, but pairs of statements that nevertheless differ in conversational initiative.[20] I will refer to sentences such as those uttered by A in these examples as *provocations*.[21] Replies such as those uttered by B will be called *responses* (Farkas & Bruce 2010).

A declarative can serve as a provocation, proffering a proposition as true and adding information about the way it relates to the discourse context as composed of the commitments of the speaker, the hearer(s), and the Common Ground by way of its prosodic makeup. The response can then react to the proffered content. If the reaction targets the proffered content directly, non-at-issue markers such as intonation can serve to evaluate the reaction. Finally, in the case of a prosodically marked provocation, the response can also switch tack and react to the additional, prosodic information. To capture this complex relation, (26) defines the intonational *Provocation-Response Nexus*. It is stated as a broad concept here, but will be illustrated and discussed more precisely in §3.3.3.

(26) *Intonational Provocation-Response Nexus*
Marked intonation on a response is meaningful relative to its provocation.

2.3.3 Spanish intonational phonemes

As stated above, research on Spanish intonation has paid a lot of attention to the different meanings encoded by nuclear contours, yet without an explicit theory of intonational meaning.[22] The occurrence of specific pitch accents, phrase accents, and boundary tones in different positions and sentence types was meticulously documented, leading to a proliferation of tonal categories with varying degrees of distributional flexibility. Table 2.1 gives an overview based on Aguilar et al. (2009) of different pitch accents and their distribution pattern.[23] Table 2.2 does the same for phrase accents and Table 2.3 for boundary tones.

[20] The model is introduced in §3.3. Conversational initiative is defined there as the act of commitment to the content of a speech act which raises an issue that requires a reaction (or tacit agreement) to be settled.

[21] These are also called "first pair parts" in the literature on adjacency pairs (Sacks et al. 1974, Schegloff & Sacks 1973).

[22] Even though Escandell-Vidal (1998) made some early contributions to the differentiation between neutral, hearer attributed, and speaker attributed polar questions, a finding corroborated by Henriksen et al. (2016).

[23] These are often called intonational morphemes (Gussenhoven 2016), but rather have the status of phonemes in holistic approaches such as the one presented here (Büring 2016: 219–223). I thank an anonymous reviewer for pointing this out.

Table 2.1: Previous findings on Spanish pitch accents by sentence type (Aguilar et al. 2009)

Pitch accent	Sentence type	Nuclearity
a. H*	*wh*-questions	nuclear
	polite yes-no questions	nuclear
b. L*	broad focus statements	nuclear
c. H+L*	confirmatory yes-no questions	nuclear
	imperative yes-no questions	nuclear
d. L+¡H*	counter-expectational questions	nuclear
e. L+H*	broad/narrow focus statements	nuclear
	vocatives	nuclear
	insistent requests	nuclear
	statements of the obvious	nuclear
f. L*+H	yes-no questions	prenuclear
	requests	prenuclear
g. L+<H*	broad focus statements	prenuclear

Table 2.2: Previous findings on Spanish phrase accents by sentence type (Aguilar et al. 2009)

Phrase accent	Occurrence
a. L–	after left- and before right-dislocated elements
b. M–/!H–	in pedagogic enumerations; after clefted foci in questions
c. H–	at the end of non-final constituents, inconclusive statements, etc.
d. HH–	at the end of the first part of alternative questions
e. LH–	in anti-expectational/incredulity questions and statements of the obvious
f. HL–	in exhortative requests and statements of the obvious
g. LHL–	in exhortative requests

Table 2.3: Previous findings on Spanish boundary tones by sentence type (Aguilar et al. 2009)

Boundary tone	Occurrence
a. L%	broad and narrow focus statements, imperatives, anti-expectational and imperative yes-no questions, *wh*-questions, etc.
b. M%	pedagogic enumerations, hesitation statements, polite yes-no questions, stylized vocatives (+lengthening)
c. HH%	yes-no questions
d. LH%	anti-expectational and invitation questions
e. LM%/L!H%	statements of the obvious
f. HL%	contrastive focus with obviousness nuance (Estebas-Vilaplana & Prieto 2008: 279), exhortative requests, emphatic exclamatives and insistent vocatives
g. LHL%	exhortative requests

Taken together, Tables A.1 and 2.1 show that the focus on sentence types leads to a phonological perspective in which nuclear configurations become the sorting category on which both the tonal inventory and the functional descriptions depend. Yet nuclearity is a problematic category. Dating back to the Nuclear Stress Rule by Chomsky & Halle (1968: 17), which explicitly claims automatic rightmost primary stress for syntactic phrases in English, a strict view on prominence assignment has persisted in parts of the literature on Spanish (e.g. Zubizarreta 2016). As mentioned in §2.2.2, Spanish cannot simply be classified as a "word order language" as opposed to "intonation languages" such as German. Yet nuclearity as used in the literature on Spanish intonation is still mostly interpreted as IP finality in terms of the end of a turn, often in the form of a sentence. Moreover, the difference between T– and T% is blurred in cases of bi- or tritonal boundaries. Are the bitonal HL% and HL–, found in exhortative requests, statements of the obvious, and contrastive focus with obvious nuances, actually two different phonemes? Are they different from LHL– and LHL%?

A similar question arises in the comparison of LH– and LH% in anti-expectational questions and obviousness statements. Moreover, this similarity raises the question about what it means for a question to be anti-expectational and for a statement to be obvious. We need a semantic criterion that distinguishes LM%/L!H% from LH% to know if the phonological distinction holds. Continu-

ing this line of thought, an understanding of HL% requires a definition of emphatic exclamatives and insistent vocatives, particularly if we want to maintain the idea that HL– can be found in obviousness statements. In the attempt to establish the intonational phonemes of Spanish, two problems seem to mutually reinforce each other. On the one hand, variability of tonal association leads to a proliferation of tonal categories. On the other hand, subtle meanings beyond the declarative-interrogative and focus-background dichotomies seem important, yet are poorly understood. This becomes particularly clear when looking at larger data sets.

2.3.4 Variable intonation on Spanish insubordinates

In an exceptionally large-scale study of Spanish intonation, Elvira-García (2016) investigates the prosody of insubordinate clauses in Spanish. In total, nineteen types of insubordinates are investigated, based on the combination of six conjunctions/particles (some commencing only with *si* 'if/but/well' or *que* 'that', others with combinations such as *como si* 'as if', *ni que* 'not even that', etc.). For those insubordinations that allow it, both indicative and subjunctive verbal mood are tested (Elvira-García 2016: 58). See (27) for an example with indicative mood, and (28) together with Figure 2.5 for an example with subjunctive verbal mood (Elvira-García 2016: 324–325).[24]

(27) CONTEXTO: Eres la canguro de dos niñas, una de las niñas está comiendo chuches a las 5 de la tarde y, entonces, viene la otra hermana (que soy yo) a chivarse y te digo:
ENTREVISTADORA: Marina está comiendo cuches
RESPUESTA: ¡Pero si va a merendar!

'CONTEXT: You're the nanny of two girls, one of the girls is eating sweets at 5 pm and then the other sister (which is me) to snitch and I tell you:'
'INTERVIEWER: Marina is eating sweets'
'RESPONSE: ¡But SI she is going to have lunch!'

(28) CONTEXTO: Imagina que soy tu canguro y la de tu hermana. Tú quieres pasar una temporada sin merendar para adelgazar y yo no te dejo y te digo...
ENTREVISTADORA: Mira, tu hermana está delgada y sin dejar de tomar ninguna comida

[24] See §6.1.2 for a discussion and application of Eti_ToBI, the tool developed by Elvira-García (2016), Elvira-García et al. (2016) to generate these tonal analyses. Two additional phonetic transcription tiers are omitted here for convenience.

CONTEXTO: Pero tú sabes que ella no merienda
(lo tira a la basura), y me respondes:...
RESPUESTA: ¡Como si merendara médula!

'CONTEXT: Imagine that I'm the nanny of you and of your sister. You want to skip lunch for a while to lose weight, but I don't let you and tell you "Look your sister is thin without skipping meals", but you know that she doesn't have lunch (she throws it away), and you answer me...'
'RESPONSE: As if she'd be having meat-soup for lunch!'

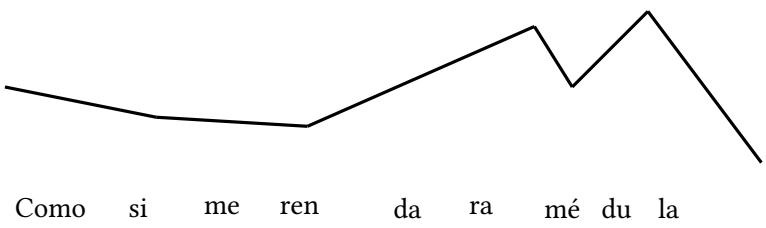


Figure 2.5: *¡Como si merendara médula!* 'As if she'd be having meat-soup for lunch!' (Elvira-García 2016: 120).

In her examples, the subordinating conjunction/insubordinating particle is integrated into the same intonation unit as the main declarative clause. Even though I translate *si* with 'if', this is actually not correct because it functions as an adversative marker. Yet neither can it be translated as 'but', because it does not express *restrictive adversativity* (or PA adversativity, Anscombre & Ducrot 1977). Moreover, for sentences with indicative verbal mood, Schwenter (2016: 22) found that it cannot simply be translated with 'but rather' either (also called SN or *corrective adversativity*), since it adds non-truth conditional meaning which marks "the proposition that it accompanies as one that is obviously true to the speaker."[25]

Elvira-García (2016) deserves to be discussed at length here for at least three reasons. Firstly, the study is an impressive example for the way in which intonation research can go beyond the discussion of individual examples by a series of interactive discourse completion task experiments and a partial automation of ToBI transcription. Even more importantly for the discussion of distinctive functions of intonation, the study is also a prime example of how a relatively reduced interest in meanings such as obviousness can make it more difficult to interpret a wealth of important empirical results.

[25]It is therefore possible, and even common, to have a sequence of two adversative conjunctions and particles such as *pero si*, which combine the adversative meanings of both. See §5.2.1 for the very common sequence *hombre si*.

In an attempt to control for tonal crowding effects, Elvira-García (2016: 54–56) varies the metrical structure (and syllabic structure in case of ultimate stress) of the final prosodic word with examples such as (29). (29) is supported by a stimulus that shows a girl (Marina) eating a carrot. This is an important detail, because such a stimulus gives the participants a reason to reject the provocation independently of any general (shared) assumptions about Marina's diet.

(29) CONTEXTO: Sabes que Marina merienda todos los días verdura.
ENTREVISTADORA: Marina merienda chocolate.
RESPUESTA:

a. ¡Pero si merienda **mé**dula! (antepenultimate)
b. ¡Pero si merienda ver**du**ra! (penultimate)
c. ¡Pero si merienda guara**ná**! (ultimate, −coda)
d. ¡Pero si merienda bibe**rón**! (ultimate, +coda)

'CONTEXT: You know that Marina is having vegetables for lunch every day.'
'INTERVIEWER: Marina is having chocolate for lunch.'
'RESPONSE:'

a. '¡But SI she is having meat soup for lunch!'
b. '¡But SI she is having vegetables for lunch!'
c. '¡But SI she is having guaraná for lunch!'
d. '¡But SI she is having a baby bottle for lunch!'

For Madrid Spanish sentences of the form <si+V_{IND}+O>, Elvira-García (2016: 138–143) finds only L* HL% examples in sentences with antepenultimate stress on the final word. Sentences with penultimate stress on the final word have the same preference but also allow for L+H* L% realizations. Finally, ultimate stress leads to truncation of the final low tone L+H*(L%), which surfaces as L* H%.

While these results seem conclusive, the picture becomes much less clear when taking into account the whole set of insubordinates (e.g. introduced by *como* 'as', *ni que* 'not that', *que* 'that', etc.). Table 2.4 shows the overall results for Madrid Spanish insubordinates. We see here that the tendency for the penultimate condition to prefer L* HL% found for *pero si* insubordinates has been reversed. If taken as a whole, the intonational form of insubordinates seems unstable in the penultimate condition. Given that the vast majority of words in Spanish have penultimate stress, this instability concerns a crucial point in the system. Elvira-García (2016: 253–263) discusses four possible explanations (30).

Table 2.4: Elvira-García (2016: 254) results for low-rise-fall in Madrid Spanish depending on accent type

		FINAL WORD STRESS				
		ult. (+coda)	ult.	penult.	antepenult.	Total
NI	L* HL%	4	11	23	125	163
	L+H* HL%	0	0	0	5	5
	L+H* L%	25	11	51	44	131
	Total	29	22	74	174	299

(30) a. retraction of an underlying L* HL% to L+H* L% in penult. and ult. condition
b. expansion of an underlying L+H* L% to L* HL% in antepenult. condition
c. variation according to the number of prosodic words in the phrase
d. variation according to slightly different pragmatic functions

(30a,b) both cannot explain the variability in the penultimate condition. (30c) explains some tendencies for three-word utterances to prefer L+H* L%, but is far from covering the variability in the data. Finally, (30d) is discarded because the data does not show a "complementary distribution" (Elvira-García 2016: 253).

I would argue that (30d) deserves to be tested again, given that the data in Elvira-García (2016) has not been controlled at the semantic/pragmatic level and can reveal a complementary distribution only with regard to the categories tested. While it is without doubt a groundbreaking study in many regards, it still suffers from the lack of a theory of notions such as *contradiction* and *obviousness*. I take this to be one reason why the state of the art has always been inconclusive about contrastive focus and contradiction statements. While Table A.1 takes L* HL% to be the norm for contrastive focus and contradiction, Table 1.2 sees L+H* L% as the obligatory tonal–metrical association for contrastive focus. In their discussion of narrow-focus and epistemically biased statements, Hualde & Prieto (2015: 369) state that "although the overall shape of the contour is essentially the same (rise-fall), there is an important different alignment of the H with respect to the tonic, resulting in perceptually quite different contours. […] Where both nuclear contours are found, L* HL% carries a greater emphatic, contradictory force."

This becomes even more apparent when taking into account the L+H*L!H% contour. Elvira-García (2016: 258–260) finds that in utterances with only one

prosodic word (that is with one lexically stressable syllable), approximately one third of the realizations receives such a contour. Yet it also occurs in multi-word utterances, as in Figure 2.6, contextualized in (31) (Elvira-García 2016: 325–326).

(31) CONTEXTO: Tú sabes que siempre que llevo a Lorena a la carnicería se compra médula para merendar y a ti no te gusta ir a la carnicería pero piensas que si es por la médula de Marina [sic!] te tendrás que sacrificar.
ENTREVISTADORA: Yo te digo que lleves a Marina a la carnicería y tú me respondes:
RESPUESTA: ¡Sí, hombre! Para que meriende.
'CONTEXT: You know that I always take Lorena to the butcher's [for her to] buy herself some meat-soup for lunch and you don't like going there but think that when it comes to Marina's meat-soup you need to make that sacrifice.'
'INTERVIEWER: I tell you to take Marina to the butcher's and you answer me:'
'RESPONSE: ¡Sure, man! For her to have lunch.'

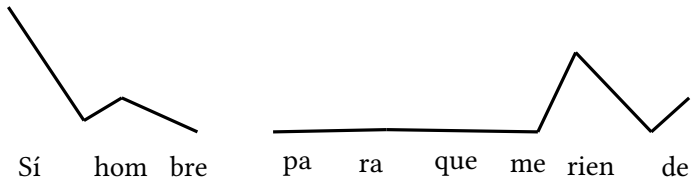


Figure 2.6: *¡Sí, hombre! Para que meriende.* 'Sure, man! For her to have lunch.' (Elvira-García 2016: 129).

While Elvira-García (2016: 258–260) discusses this prosodic configuration primarily as a phenomenon related to one-word utterances, such longer examples indicate that phrase length does not determine its occurrence. I therefore argue that a key factor is the presence of a context such as (31) or (27) in which the reaction to the provocation does not challenge the at-issue content, but indicates that the provocation put well-established shared conventions up for discussion (e.g. *No sweets before lunch*, *Marina's soup is a priority*, etc.). This is quite different from contexts in which visual evidence (e.g. the picture of Marina eating a carrot) allows participants to correct the provocation.

While different contexts induce different meanings such as (dis)agreement and expectations, the same holds for the different forms of insubordination in Spanish. Elvira-García (2016: 62, 323–325) intuitively integrates this fact by adding

particles to some of the target sentences which support the respective meanings, as in (2.3.4).

(32) ¡*Sí, hombre*! ¡Para que meriende verdura!
'*Sure, man*! For her to have meat-soup for lunch'

(33) *Pues*, ¡que merienden médula!
'*Well* let them have meat-soup for lunch'

(34) ¡*Anda*! ¡Si merienda!
'*Wow*! SI she's having lunch!'

Relatively consistent findings for individual insubordinates such as <pero si + V_{IND} + O>, as compared to the rather inconsistent global results in Table 2.4, indicate that the choice of a particular context for elicitation, combined with the meaning of the preceding particles and the meaning of the insubordinating form, triggers specific pragmatic interpretations which determine the intonational form of the utterances. And as long the pragmatics involved in this process are not fully understood, investigations of their form of expression run the risk of lumping together slightly different meanings and then taking differences in form as a sign of phonologically determined (or free) variation.

Before we turn to a model that attempts to provide such an understanding in Chapter 3, I end Chapter 2 with a discussion of a more recent proposal for a new way of doing intonational phonology based primarily on Spanish obviousness contours.

2.3.5 A melodic construction for obviousness?

Taking example (35) from the Nijmegen Corpus of Casual Spanish (Torreira & Ernestus 2012) as a point of departure, Torreira & Grice (2018) argue that speakers of Peninsular Spanish choose different metrical associations of the /LHL/ tonal sequence depending on the length of the target phrase and the proximity between lexical stresses and prosodic boundaries. Example (35) is taken from the discussion between two speakers from Madrid about the treatment of boys and girls in school. Speaker 2RM marks that his statement should "be beyond any doubt by using the interjection *claro* [as well as] by using the low-rise-fall in at least three out of the four phrases in this turn (as opposed, for instance, to a rising-falling declarative tune which would not have conveyed the same sense of obviousness […])" (Torreira & Grice 2018: 16).

(35) NCCSp_02_3494

a. 2RM: Pero en el colegio les tienes que tratar igual, o sea …
'But in school you should treat them in the same way, I mean …'

b. 2CM: En nivel educa[tivo, que aprendan lo mismo].
'At the educational level, they should learn the same.'

c. 2RM: [En educación, la educación,]
'In terms of education, education,'

d. 2CM: Que aprendan lo mismo.
'They should learn the same.'

e. 2RM: ¡**CLA**ro! ¡**Es** que **es e**so!
L* H(L%)
'Of course! That's it!'
¡**Es** que de **e**so se e**stá** ha**BLAN**do! ¡De educa**CIÓN**!
L* H* L% L* H(L)%
'That's what's being discussed! Education!'

As indicated in (35e), only the multi-word phrase with penultimate stress reaches a final low tone. And while the authors do not mention the similar findings by Elvira-García (2016), the three low-rise-fall sequences in (35e) still "strike the attentive native listener [the researcher] as functionally equivalent at the intonational level" (Torreira & Grice 2018: 16).

Torreira & Grice (2018) go on to show that L1 speakers of Italian with high L2 proficiency in Spanish differ from native speakers of Spanish and that they do not succeed in imitating the difference between a reduced fall in case of an HL% association in single-word utterances (36) and a fully realized fall in case of an H* L% association in two-word utterances (37) and three-word utterances (38) with non-ultimate lexical stress in nuclear accent position.

(36) **CLA**ro, Ma**NO**lo.
L* H(L)% L* H(L)% Spanish and Italian speakers
'Of course, Manolo.'

(37) **CLA**ro, el her**ma**no de Ma**NO**lo.
L* H(L)% L+H* L% Spanish speakers
L* H(L)% L* H(L)% Italian speakers
'Of course, Manolo's brother.'

(38) **CLA**ro, la a**mi**ga del her**ma**no de Ma**NO**lo.

L* H(L)%	L+H* L%	Spanish speakers
L* H(L)%	L* H(L)%	Italian speakers

'Of course, Manolo's brother's (girl)friend.'

Theoretically, they account for these findings by proposing a strict separation of the tonal and metrical tiers in AM-phonology, together with *melody-specific* principles of tonal–metrical association. To allow for these principles to be specific to a certain melody, they propose to model them as constructions in the sense of Kay & Fillmore (1999), Croft (2001), Jackendoff (2002), Goldberg (2006). As such, they do not contain fixed metrical information, but rather consist of a sequence of tones with principles of tonal–metrical association, together with a meaning specification that makes simultaneous reference to discourse context (discourse meaning) and syntax (Torreira & Grice 2018: 28–29). For the low-rise-fall /LHL/, they propose an obviousness meaning and three association rules (39).[26]

(39) low-rise-fall (obviousness) /$L_1H_1L_2$/

a. L_1:
   i. associate with the first stressed syllable of the ip
   ii. spread rightwards up to the last stressed syllable of the ip

b. H_1:
   i. if $N_\omega \geq 2$ associate with the last stressed syllable of ip
   ii. if $N_\omega = 1$ associate with the right edge of the ip

c. L_2: associate with the right edge of the ip

Such flexibility in tonal association seems desirable given the apparent overlap in the inventories of Spanish intonational phonemes in Tables 2.1–2.3. Unfortunately, this algorithm based on phrase-length measured in ω seems to be contradicted by the findings in Elvira-García (2016: 142–143, 253–260) as well as Chapter 5, which clearly show that H_1 can also associate with the right edge of

[26] I take it to be no coincidence that Torreira & Grice (2018) develop their proposal based on a tune which they take to communicate "obviousness". They draw their inspiration from the discussion about the difference in English between *contradiction contours* and *contrastive accents* dating back to Liberman & Sag (1974) and Grice (1995). It seems as if the distinction between *contrast* and *contradiction* should receive as much attention in English intonational phonology as it should for Spanish.

the ip if $N_{\omega} \geq 2$.[27] So while the phrase-length based proposal would need to be refined if we take the findings by Elvira-García (2016) and in Chapter 5 to concern the same meaning as in Torreira & Grice (2018),[28] the idea of an association between specific meanings and tones (tonal sequences) which receive their association based on additional factors such as metrical structure and phrase length is still a viable possibility that could reduce the size of the inventory of intonational phonemes.

My main point is that melodic constructions, just as nuclear configurations, can only be defined relative to shared meaning. As long as we lack a semantic model to predict intonational marking (be it in the form of tonal sequences with rules of tonal–metrical association or in the form of pitch accents, phrase accents, and boundary tones), there is no way of deciding on the required inventory of phonological categories and rules. We should therefore start from a model of discourse meaning which tells us what meanings to look for. This is the goal of Chapter 3, in which we take a step back from Spanish intonation and consider intonational meanings such as mirativity and obviousness from a cross-linguistic, onomasiological perspective.

[27] Elvira-García (2016: 142) finds L* HL% to be the most frequent contour on insubordinates of the form *¡Si merienda!* 'But she is having lunch!'. Chapter 6 finds non-truncated L* HL% on multi-word IPs.

[28] Perhaps Spanish native speakers see *Manolo* as an answer that is more likely to be obvious than *Manolo's brother's (girl)friend* and adjust their prosody accordingly, whereas non-native speakers are less aware of the intonational meaning.

3 Mirativity and obviousness as intonational meanings

To solve some of the inconsistencies we encountered in our review of the literature on Spanish intonation in Chapters 1 and 2, we need to take a step back and reflect on intonational meaning more generally. That is what we will do in this chapter, before returning to the investigation of Spanish intonation from Chapter 4 onward.

What does it mean when we link intonation to notions such as declarative, interrogative, imperative, and vocative? First and foremost, it means that we link it to speech acts (Austin 1962, Searle 1969). Speech acts can be seen as moves in a *Sprachspiel* 'language game' (Wittgenstein 1953). These moves take propositions, expressed by sentence radicals, and use them to change the state of the game (Krifka 2014: 62–66). Yet apart from speech acts, there are distinctions in Table A.1 that do not fall squarely within such a view. *Obviousness*, (*counter*)*expectation*, *uncertainty*, *insistence*, and *echo* are notions that seem to have an impact on intonation, yet they are not easily captured in terms of speech acts.

One solution to this problem is to simply exclude them from our analysis by interpreting them as emotive flavors added to the grammatically relevant distinctions. Instead of representing systematic linguistic choices, they would express the state of arousal or degree of emphasis of a speaker in an extralinguistic way. An alternative approach is to model the meanings behind these labels based on the observation of phenomena that lend themselves for comparison (such as particles and syntactic structures). This allows us to predict possible combinations and mutually exclusive meanings. Such models can then guide empirical research that discerns whether the individual meanings are encoded by prosody, or by other grammatical means, or are not reliably encoded at all in a specific language or variety.

Let's recapitulate Table 1.1. The first two categories, neutral broad focus statements and contrastive focus statements, mirror the extensive literature on the relation between focus and prosody. Even though there is disagreement between Tables 1.1 and 1.2 about the tonal association of the H target in contrastive focus conditions (L* HL% vs. LH* L%), both analyses agree in that contrastive focus is a

relevant category for the intonational phonology of Spanish. Exclamative statements, obviousness statements, and insistent explanations, on the other hand, present us with a series of meanings that have only recently been added to the discussion on IS in Spanish and are therefore not represented in Table 1.2. By putting them at the center of our discussion, I attempt a decompositional approach to intonational meaning in Spanish.

Throughout this chapter and the following investigation, I ask the same questions for each sentence type: Is it possible to decompose the meanings that give rise to its interpretation? And if so, is there a way to express some of these individual meanings with intonation only? Based on work by Kratzer (1991, 2012), Zanuttini & Portner (2003), Potts (2007), Farkas & Bruce (2010), Bianchi et al. (2016), Roberts (2017), Reich (2018), and Rett (2021b), the main argument is that there are several layers of meaning at play in the determination of the prosodic form of a turn. Apart from the basic distinction between assertion and interrogation, these are focus-background structure, interactive stances of (dis)agreement, and evaluative modal meaning.

3.1 Decomposing exclamatives

3.1.1 Exclamatives in perspective

The basic assumption underlying most of the literature on exclamatives in Spanish and many other languages is that *wh*-exclamatives are a kind of exclamative prototype. In English, *wh*-exclamatives (40a) can be distinguished from *wh*-questions (40b) because they lack an auxiliary and therefore have no subject-auxiliary inversion. Yet in Spanish and other Romance languages (see Kellert et al. 2018 for Cosenza Italian), only prosody distinguishes between the two in the absence of disambiguating lexical material (40c,d).[1]

(40) a. What spicy food she eats!
b. What spicy food does she eat?
c. ¡Qué comida picante come!
'What spicy food (s)he eats!'
d. ¿Qué comida picante come?
'What spicy food does (s)he eat?'

[1]Note that adverbs of quantity such as *tan* 'so' as well as definite countable nouns with the *wh*-pronoun in specifier position are ungrammatical in questions, whereas do-support is ungrammatical in *wh*-exclamatives.

Yet *wh*-exclamatives are far from being the only candidates for exclamative intonation. Interjective syntactic groups (41a), exclamative groups (41b), quantificational expressions (41c), particle-infinitive constructions with *mira* 'look' (41d), and so-called "hidden exclamatives" (41e) also deserve to be mentioned (Bosque 2017: 5, Real Academia Española 2010: 811, Villalba 2017: 144).

(41) a. ¡Caramba con el muchachito!
'Damn, what a guy!'
b. ¡Menuda suerte!
'What luck!'
c. ¡Vaya si me gusta!
'Boy do I like it!'
d. ¡Mira que haber dejado tu empleo!
'I can't believe you left your job!'
e. ¡El chico es de travieso!
'They boy is so naughty!'

What all these written examples have in common is the fact that they make use of the graphemes ⟨¡⟩ and ⟨!⟩, the Spanish exclamation marks. They are counted as cases of primary exclamatives, as opposed to "intonation only" cases with declarative syntax (42a), which are either labeled as "secondary" (Bosque 2017: 7) or as grammatically irrelevant (Olbertz 2012) since they are syntactically and lexically identical with declarative sentences (42b).

(42) a. ¡Come comida picante!
'(S)he eats spicy food!'
b. Come comida picante.
'(S)he eats spicy food.'

The main argument of this section is that dismissing "intonation only" cases from our analysis is damaging to our understanding of both intonation in general and the sentence types commonly discussed as syntactically encoded "primary" exclamatives. Only by comparing the prosodic variability of both *wh*-exclamatives and "intonation only" exclamatives is it possible to determine the role of intonation in both of them.

The nuclear contour of *wh*-exclamatives such as (40c) is described as L+¡H* L%, that is, an upstepped early rising pitch accent followed by a low IP boundary

(see Table 1.1). This nuclear intonation is also found in echo yes-no questions, but it is different from an L+H* L!H% in statements of the obvious.

Semantically, two types of exclamatives have received an in-depth, decompositional analysis: degree exclamatives and polar exclamatives. While most of the literature on the syntax and semantics of exclamatives has dealt with degree exclamatives such as (44), Grosz (2012) can be credited with having shifted the focus towards polar exclamatives such as (43). Yet in both strands in the literature, prosody has been largely neglected as a factor. In the following, I shall compare the influential approach by Zanuttini & Portner (2003) with the unified treatment of polar exclamatives and optatives in Grosz (2012). En route, we will learn about the potential of semantic decomposition of exclamatives, while also appreciating the limiting effect of neglecting prosody on the understanding of exclamatives.

(43) German
Mensch, dass Sie hier sind!
'Man, that you are here!'

(44) Wie schön er ist!
'How beautiful he is!'

According to Grosz (2012: 26) "degree exclamatives express amazement at the degree to which something holds; they typically involve some gradable property, and often take the shape of wh-clauses". Zanuttini & Portner (2003: 15,16) analyze *wh*-exclamative clauses as denoting two abstract features: *widening* of a scalarly ordered domain (45) and presupposed *factivity* of the proposition denoted by the root sentence (48). The definition of *widening* is to be read as adding to an ascendingly ordered ($\prec$) domain of reference an object (45a) which supersedes the rank of any object of the domain (45b).[2] In natural language, (40a,c) would read '(s)he eats food that is more spicy than what would fall under grades of spiciness'. The test applied by Zanuttini & Portner (2003) for this relation is the impossibility of embedding an exclamative sentence under certain negated verbs of wonder or amazement (46). This is explained by an incompatibility between a scalar implicature of the exclamative and the denying of the predicate *amazing*, which according to them denotes the same *widening* relation (Zanuttini &

[2]Note that Zanuttini & Portner (2003) use * for ungrammaticality instead of #, which I use here and in all following examples for turns deemed unacceptable either by me or other researchers. This is meant both as a precaution against taking individual acceptability judgments as universal (in the absence of controlled perceptual tests) and to avoid confusion with ToBI pitch accent notation.

Portner 2003: 21). Crucially, though, this effect does not hold if it is possible to separate the speaker's domain of expected scalar values from the expectations of the subject of the matrix sentence (47). This is explained by the fact that (46) denies the existence of (or difference between) two ordered domains, whereas (47) only denies such a domain difference for the subject of the sentence.

(45) Widening:
For any clause S marked by $R_{widening}$, widen the initial domain, D1, to a new domain, D2, such that
a. $[\![S]\!]_{D2,\prec} - [\![S]\!]_{D1,\prec} \neq \emptyset$ and
b. $\forall x \forall y[(x \in \text{D1 \& y} \in (\text{D2}-\text{D1})) \rightarrow x \prec y]$.

(46) # It's not amazing how (very) tall he is.

(47) She is not amazed at how (very) tall he is.

The property of *factivity*, on the other hand, can be seen in that it is impossible to deny knowledge about the content of an exclamative (49). Moreover, it is impossible to answer a question with an exclamative (50), a fact that is expected under the presuppositional analysis given that answers may never presuppose the information that the question asked about (51). The definition of *factivity* (48) is to be read as requiring a presupposition of truth for every proposition that is an element of the difference in sentence denotation $[\![S]\!]$ between a widened and an unwidened domain.

(48) Factivity:
For any clause S marked by $R_{factivity}$, every $p \in [\![S]\!]_{D2,\prec} - [\![\text{S}]\!]_{D1,\prec}$ is presupposed to be true.

(49) # I don't know how very tall he is.

(50) A: Is he tall?
B: # How tall he is.

(51) A: Did Bill leave?
B: # It's odd that he did.

At first glance, the arguments for presupposed factivity hold equally well for Spanish. Neither is it possible to embed exclamatives under negated verbs of knowing (52), nor can they be used as answers (53).

(52) # No sé ¡qué (tan) alto es!
'I don't know how (very) tall (s)he is!'

(53) A: ¿Es alta?
'Is she tall?'
B: # ¡Qué (tan) alta es!
'How (very) tall she is!'

Yet Spanish orthography hints at a problem less easily visible in English: exclamatives, if marked by exclamation marks, cannot be embedded at all (54).[3] We cannot apply the intonational marking for exclamation to the embedded sentence only. Either the entire complex sentence is marked with exclamation marks (55), which seems like a dubious case to me, or with a full stop (56). Instead, a different construction (lo + Adjective Phrase (AP) + que + VP) has to be used (57) (see García García 2018: 229 for examples of such adjective phrase exclamatives).

(54) # Ya sé ¡qué (tan) alto es!
'I know already how (very) tall (s)he is!'

(55) ?# ¡Ya sé qué alto es!
'I know already how (very) tall (s)he is!'

(56) Ya sé qué alto es.
'I know already how (very) tall (s)he is.'

(57) Ya sé lo alto que es.
'I know already how (very) tall (s)he is.'

Given the reduced amount of prosodic scope information encoded by exclamation marks in English, which simply do not indicate the beginning of a prosodic domain, written examples such as (47) give the illusion of a stable illocutionary meaning in both embedded and unembedded exclamatives. The lack of interest in prosodic features has led to the assumption that the features of syntax (or their meanings) impede the embedding of exclamatives. Yet I take this effect to be caused by an additional level of meaning, which is encoded by intonation. To understand exclamatives, or any other sentence type (Reich 2008), it is necessary to disentangle the contribution of intonation from that of syntax and other markers.

Turning to polar exclamatives, Grosz states that they "are utterances that express surprise, shock or amazement at a fact (not at the degree to which something holds) without a lexical item that means surprise, shock or amazement"

[3] See Farkas & Roelofsen (2017: 244) for a similar argument for English rising declaratives.

(Grosz 2012: 25). In that respect, they could be called mirative insubordinates.[4] They have been described for German and other Germanic languages such as Swedish as exclamatives introduced by a complementizer corresponding to *that*, yet without a subordinating effect (58). They differ from degree exclamatives (59) in allowing for non-gradable properties, contrasting the modified proposition with its negation and/or salient alternatives.

(58) German
Mensch, dass Sie hier sind!
'Man, that you are here!'

(59) # Mensch, wie Sie hier sind.
'Man, how you are here!'

> Optative utterances are a variant of exclamative utterances, the meaning of which is due to a null operator EX. EX selects a contextually salient scale and conveys that the modified proposition exceeds a salient threshold on that scale. (Both *if*- and *that*-clauses can be complements to EX.) In optatives, the relevant scale reflects the speaker's preferences […]. Crucially, the lexical meaning of EX is weak. It simply indicates that the modified proposition is relatively high on a contextually given scale. (Grosz 2012: 2)

The scale represents either speaker preferences in the case of optatives, or prior speaker unlikelihood in the case of polar exclamatives (Grosz 2012: 65). The proposal, only superficially sketched here, is "intentionally weak" in that it does not include an assumption of emotivity or a mechanism of determining the threshold or scale (Grosz 2012: 72). While context is the primary locus for their determination, particles can "conspire" with such exclamatives to determine the modality of the scale – *doch* 'actually' triggering a truth-related or epistemic reading, *wenigstens* 'at least' a bouletic reading (Grosz 2012: 216–217).

(60) German
Wenn Otto doch nur auf seine Mutter gehört hätte!
'If only Otto had in fact listened to his mother!'

(61) Wenn Otto nur wenigstens auf seine Mutter gehört hätte!
'If only Otto had at least listened to his mother!'

[4] Miratives denote a "semantic category of new or unassimilated information" (DeLancey 2012: 533) and have been found to be a grammatical category in a variety of languages (Hengeveld & Olbertz 2012). Further examples are provided in §3.3.3.

Without going into the details of this account, we can already appreciate the fact that separating scalar meaning from modal meaning helps us see symmetries between seemingly different sentence types. Yet, once again, the question remains if the insubordinate syntax requires marked intonation or if the violation of expectation (e.g. by exceeding a threshold) is a meaning added by exclamative intonation alone.

To test the status of *that*-insubordinates as exclamatives, Grosz (2012: 27) returns to the diagnostics from Zanuttini & Portner (2003). He argues that the unexpectedness of the *that*-insubordinate or polar exclamative cannot be canceled (62), whereas he presents (63) to argue that "a canonical root declarative does not entail or imply remarkability".

(62) German
Dass der wieder verschlafen hat! – # was zu erwarten war.
'That he overslept again! – which was to be expected.'

(63) Der hat wieder verschlafen! – was zu erwarten war.
'He overslept again! – which was to be expected.'

I differ in my intuition about the acceptability of (63). It is not a canonical declarative because it does not have canonical prosodic form. Instead, I propose to see (64) as unacceptable and (65) as acceptable. While we cannot be sure about the precise prosodic form of (64), the exclamation mark should be interpreted as denoting a difference compared to (65). And canceling this difference may be possible, but odd.

(64) Der hat wieder verschlafen! – # was zu erwarten war.
'He overslept again! – which was to be expected.'

(65) Der hat wieder verschlafen. – was zu erwarten war.
'He overslept again. – which was to be expected.'

The analysis by Grosz (2012) is comparable to Zanuttini & Portner (2003) in at least two respects. Both present a highly sophisticated decomposition of the meaning components of exclamatives, separating scalarity from threshold exceedance or domain widening. Yet both also prolifically use exclamation marks or embedded exclamation without taking prosodic effects and constraints into account.

As much as research on intonation has neglected the need to take into account the meaning of prosodic forms, research on the semantics of prosodically marked

utterances has tended to neglect prosody. Both research traditions have made significant progress in recent years, as becomes apparent in the work cited here. Yet they need to acknowledge each other to see, or rather hear, the full picture.

3.1.2 The mirative component

Most of the work on intonational variability in declaratives in Romance has focused on the encoding of information structure, mostly without fine-grained accounts of additional meanings. One rare example is work on mirative fronting in Italian. Bianchi et al. (2016) describe a case of intonationally marked focus fronting in "standard" Italian that conventionally implicates the modal evaluation of a proposition relative to a focus alternative. They call it mirative fronting, relating it to the grammatical encoding of surprise or newsworthiness. Fronting of a focal constituent to a left-peripheral position is a common syntactic possibility in many Romance languages (Leonetti & Escandell-Vidal 2009, Hülsmann 2019). It has often been found to convey an unexpectedness import, yet may also serve a corrective or contrastive function.

The phonological difference between mirative fronting (66) and contrastive fronting (67) is analyzed as a choice between an initial %H together with a H* pitch accent on the word in mirative focus (Figure 3.1) or a bitonal L+H* pitch accent on the word in contrastive focus (Figure 3.2).

(66) Italian

a. A: E io che pensavo che non avessero nemmeno un soldo!
'And I thought that they didn't have a penny!'

b. A: Indovina un po'?!
'Guess what?!'

c. A: *Alle Maldive* sono andati in viaggio di nozze!
'They went to the Maldives on honeymoon!'

(67) a. B: Sono andati alle isole Vergini.
'They went to the Virgin Islands.'

b. A: No, ti sbagli!
'No, you are wrong!'

c. A: *Alle Maldive* sono andati in viaggio di nozze!
'They went *to the Maldives* on honeymoon!'

Bianchi et al. (2016: 5) argue that corrective readings for fronting are available in assertions functioning as a partial denial of a previous assertion (68), whereas

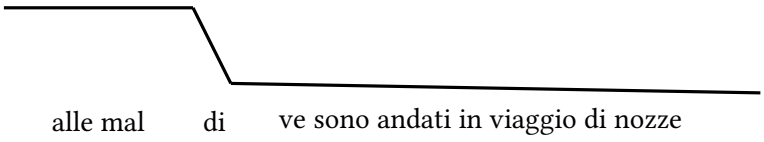


Figure 3.1: Mirative fronting $_F$*Alle Maldive*$_F$ *sono andati in viaggio di nozze!* 'They went $_F$to the Maldives$_F$ on honeymoon!' (Bianchi et al. 2016).

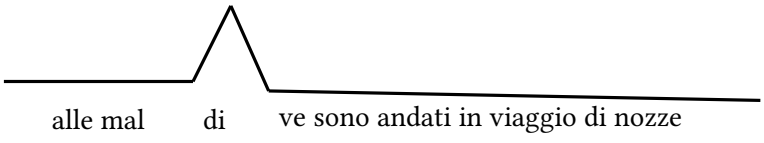


Figure 3.2: Contrastive fronting $_F$*Alle Maldive*$_F$ *sono andati in viaggio di nozze!* 'They went $_F$to the Maldives$_F$ on honeymoon!' (Bianchi et al. 2016).

they are not available in questions functioning as a partial correction of a previous question (69). This is valid for Italian, but also for Spanish. Whereas fronting in Spanish has long been described as exclusively linked to focus marking in corrective contexts, Cruschina (2019) shows that speakers also accept fronting in mirative contexts. In fact, fronting receives significantly higher acceptability scores in mirative all-new contexts than in corrective reactions to previous assertions.

(68) Italian
A: Gianni ha regalato una collana a Maria.
'John gave a necklace to Maria.'
B: No. *Un anello* le ha regalato.
'No. A *ring* (is what) he gave her.'

(69) A: La domanda cruciale è: ha insultato il suo collega?
'The crucial question is: did he insult his colleague?'
B: # *Il direttore* ha insultato?
'(Is it) *the director* (whom) he insulted?'

Examples such as (70) have occasionally been acknowledged in the literature on the syntax and intonation of Spanish (Reich 2018, Leonetti & Escandell-Vidal 2009). But the main insight they provide has yet to penetrate research on the

syntax-prosody interface in general, namely that at-issue meaning and non-at-issue (NAI) meaning can be encoded via different channels and should be tested for independently.

(70) Cruschina (2019: 131)
¡Y yo que pensaba que no tenían ni un euro! ¡¿Sabes qué?!
¡*A las MalDIvas* fueron de luna de miel!
'I thought they were penniless! Guess what?! To the Maldives they went on honeymoon!'

The analysis provided by Bianchi et al. (2016) for mirative fronting differs from the analysis for *wh*-exclamatives in Zanuttini & Portner (2003) in three ways. Firstly, the at-issue content of declaratives with mirative fronting is asserted, instead of being presupposed to be true. In this sense, the root sentence resembles an ordinary statement. Secondly, the fronted constituent triggers a set of alternatives, both in corrective and in mirative contexts. Thirdly, the prosodically marked case of fronting conventionally implicates that "the proposition expressed by the clause is less likely than at least one distinct alternative proposition with respect to a contextually relevant modal base and stereotypical ordering source." (Bianchi et al. 2016: 13)

I briefly recapitulate some of the definitions necessary for an understanding of this approach based on Kratzer (2012: 30–43) and Portner (2009: 50–85). Modal logic starts from a set of atomic sentences $\{p, q, r, ...\}$ and the logical relations Negation ($\neg\alpha$), Conjunction ($\alpha \wedge \beta$), Disjunction ($\alpha \vee \beta$), and Possibility ($\Diamond\alpha$). Possible worlds semantics further assumes a set of possible worlds W conceivable by humans, e.g. $\{u, v, w, x, y, z\}$.

A proposition p is the set of those possible worlds in which it is true. This is the case for $w \in W$ iff $w \in p$. Modal forms are taken to invoke a conversational background f, in the light of which they are interpreted. We could rephrase (70) as '*In view of what I know*, it is to the Maldives that they went on honeymoon!', which would be an epistemic *modal base*. So a conversational background contributes premises for drawing conclusions about what is the state of affairs. In a context c containing a speaker a and for a world w and a domain D in which a exists, a conversational background is formalized as a function $f(w) = \{p : a$ knows/sees/$...p$ in $w\}$. The set obtained serves as a *modal base*. A non-exhaustive list of types of conversational backgrounds are listed in (71).

(71) a. Epistemic: $f(w)$ is a set of facts known in w.
b. Stereotypical: $f(w)$ is a set of expectations about w.

c. Teleological: $f(w)$ is a set of goals in w.
d. Bouletic: $f(w)$ is a set of desires in w.
e. Deontic: $f(w)$ is a set of rules in force in w.

A crucial task of modal reasoning is to establish accessibility relations between possible worlds. Since propositions are sets of possible worlds, conversational backgrounds are sets of sets of worlds. To establish accessibility relations, it is more convenient to work with the set of worlds in which all p in $f(w)$ are true, which is the intersection $\cap f(w)$. A world v is accessible from w in an epistemic conversational background f iff $\cap f(w) \subseteq v$ (if every fact known by the speaker in w is true in v). An epistemically accessible world in this sense is someone's truth or belief space. A world v is accessible from w in a deontic conversational background f iff $\cap f(w) \subseteq v$ (if every rule in force in w is true in v). A deontically accessible world in this sense is a state of order.

The strength or force of the conclusions drawn under the premises established by the modal base is determined by a second modal relation (a set of propositions A called the *ordering source*), which can be based on a different conversational background. It is formalized as a function $g(W)$ which gives a subset of the power set of W ($A \subseteq \text{Pot}(W)$) and serves to induce a partial ordering $\leq_A$ on W.[5]

Coming back to the proposal by Bianchi et al. (2016), we should note that the mirative import consists in evaluating possible worlds as less expectable than another proposition obtained with an alternative focus value given two conversational backgrounds, which are the circumstances of conversation (modal base) and knowledge about the normal course of events (ordering source). We could again rephrase (70) as '*In view of what I know*, it is to the Maldives that they went on honeymoon. *In view of what I expect*, the set of propositions that are true in such a world is smaller than the set of propositions true in a different accessible world.' Note that this specific implementation of mirativity is different from similar proposals by Grosz (2012) in not requiring any contextually given likelihood threshold, which is intended to allow for out-of-the-blue miratives in which the only requirement is the possibility to come up with some more likely alternative.

At this point, it is important to stress the difference between surprise and mirativity. Surprise is often counted as one of the primary emotions which are recognized across cultures. It is typically caused by the violation of an expectation

[5]See also Kratzer (1991: 644) and Portner (2009: 64) on how two worlds v and w in W can be ordered according to how many propositions in A (e.g. $\{p, q, r\}$) are true (e.g. just one, $\{p\}, \{q\}, \{r\}$, or two, $\{p, q\}, \{p, r\}, \{q, r\}$, or three, $\{p, q, r\}$). In short, they are partially ordered by ranking the cardinalities of the subsets of the power set of W. Note that $\text{Pot}(W)$ is just a different form of writing $\mathfrak{P}(W)$.

and results in a state of arousal that becomes visible in a specific and universal facial expression. Boredom has been proposed as the psychological counterpart to surprise (VandenBos 2015: 139, 406, 831, 1053).

Mirativity, on the other hand, takes on different forms and ways of expression in the languages of the world.[6] It can be expressed without a state of arousal, since it is, like all pragmatic meanings, a public discourse commitment (Farkas & Bruce 2010) that not necessarily expresses the speakers true internal state. A mirative can be a lie, surprise cannot. It can also refer to the violation of the hearer's expectations (Hengeveld & Olbertz 2012, Rett & Sturman 2020).[7] And since it is not necessarily linked to arousal, it need not be accompanied by facial expressions and can be communicated without any visual cue (e.g. on the phone).[8] We should therefore distinguish between surprise and mirativity, which is the relation between expectations and asserted beliefs.[9] Bianchi et al. (2016: 16) also report on cases in which prosodically marked fronting takes on a value of discontent. These cases are prosodically similar to mirative fronting, which is unproblematic given that they are also semantically similar. The main difference is that they are evaluated according to a bouletic ordering source, rather than a stereotypical one.

From the point of view of a decompositional approach to Spanish intonation, there is therefore an empirical and a theoretical question to be answered. The empirical question is if the mirative import present in prosodically marked cases of fronting is also available in other syntactic contexts. Coming back to the types of statements presented in Table 1.1, we need to check if *wh*-exclamatives differ systematically from declaratives in terms of their intonation. If this is not the case, I expect there to be the following prosodic minimal pairs: ±mirative *wh*-

[6] See DeLancey (2012) for an overview of the morphological means of encoding mirativity, and Diewald & Smirnova (2010) for why non-morphological ways of encoding meanings such as mirativity should be analyzed in much the same fashion (pace Aikhenvald 2012).

[7] Note that a study on the features associated with nouns for surprise in a number of languages found a strong positive association with novelty, but not with power, arousal, or valence (Fontaine et al. 2013).

[8] Cognitive processing of non-emotional abstract categories such as mirativity may, however, involve neuronal circuits reaching from multi-modal cortical areas into face-related sensorimotor areas (Dreyer & Pulvermüller 2018). See Xiang & Kuperberg (2014) on the neuronal effects of reversing expectations during discourse comprehension.

[9] A recent in-depth discussion of surprise and mirativity can be found in Kraus (2018: 35–77). After having meticulously reviewed possibilities of modeling surprise, she concludes that calculating either a threshold or a degree for surprise is not crucial to the linguistic phenomena she investigates (German and English modal particles and intonational patterns, Kraus 2018: 53). This is to be expected if mirativity does not depend on a feeling of surprise, but rather on communicative intentions.

exclamatives and ±mirative declaratives.[10] The theoretical question is about the status of mirative import relative to other prosodically expressed meanings that distinguish sentence types (declarative, interrogative, …) or mark the corroboration of expectations (obviousness), rather than their violation. In §3.2, I discuss the relation between these two concepts as it shows in work on intonation. This discussion highlights the need for a formal model integrating different aspects of discourse meaning (modalized at-issue and non-at-issue commitments in combination with relative polarity), which is laid out in §3.3.

3.2 Decomposing statements of the obvious

As already mentioned in Chapter 2, accounts of Spanish intonation often include statements of the obvious. Beckman et al. (2002) describe a redundancy contour consisting of two rises and a facultative fall.[11] Estebas-Vilaplana & Prieto (2008: 277), Estebas-Vilaplana & Prieto (2010), Prieto & Roseano (2009–2013a), and Hualde & Prieto (2015) all mention the L+H*L!H% contour, which has also been found in insubordinates by Elvira-García (2016). A second contour often found in insubordinates is L* HL%. Different accounts of the semantic contribution of this contour can be found in the literature. It is either seen as "foco contrastivo con matiz de obviedad" 'contrastive focus with obvious nuance' (Estebas-Vilaplana & Prieto 2008: 277), as an emphatic contradiction (Hualde & Prieto 2015: 369), or simply as a statement of the obvious (Torreira & Grice 2018).

Regarding the L+H* L!H% contour, there is a debate about the effect of timing and scaling that touches at the heart of the question about whether obviousness and mirativity are encoded phonologically or phonetically. Hualde (2014: 278) proposes that an utterance with an L+H* L!H% contour can be turned from a statement of the obvious into an incredulous surprise simply by increasing duration and pitch excursion. Figures 3.3 and 3.4, both produced by Hualde himself, are intended to illustrate this difference.

What observations about these examples are possible from visual inspection? Firstly, the presence of a final rise seems similar to so-called rising declaratives, yet the status of rising declaratives as either declaratives, interrogatives, or exclamatives remains unclear (note the change between exclamation marks and

[10] Rett (2011) can be credited with first acknowledging the possibility of a mirative import in both *wh*-exclamatives and "intonation only" exclamatives. Yet she does not acknowledge the possibility of non-mirative *wh*-exclamative, which blurs the contribution of intonation.

[11] A contour difficult to translate into current ToBI conventions, given that the first rise seems to not be part of the nuclear configuration and the second rise could be either L+H* L% or L* HL% (Figure 2.4).

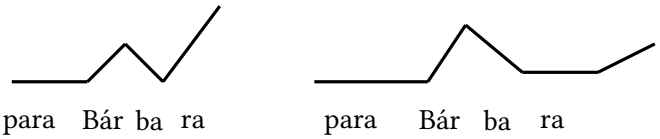


Figure 3.3: Obviousness (left) and "surprise-echo" (right) intonation on *Bárbara* (Hualde 2014: 278).

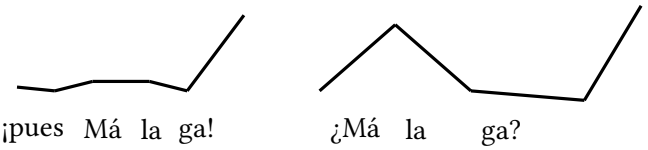


Figure 3.4: Obviousness (left) and "surprise-echo" (right) intonation on *Málaga* (Hualde & Prieto 2015: 379).

question marks, which indicates the uncertainty about an appropriate classification). Secondly, the scaling of the final rise seems inconsistent. While in Figure 3.3 there is clearly a higher final rise in the condition described as obvious than in the one described as "echo-surprise", in Figure 3.4 the opposite seems to be the case. This is important because scaling is phonologically included as downstep in the L+H*L!H% transcription. Thirdly, the target word in the surprise condition is lengthened by approx. 20ms, mostly due to the duration of the final syllable. Finally, the obvious condition is further disambiguated by an initial particle *pues* 'well' with falling intonation. This coincides with the data in Prieto & Roseano (2009–2013a), in which 17 out of 23 statements of the obvious from different Spanish varieties show initial particles (*pues* or a particle such as *hombre* or *mujer*).[12]

From a theoretical point of view, the main problem is the claim that the difference between exclamative and obvious intonation lies solely in timing and scaling differences. This contrasts sharply with the proposal in Table 1.1, where exclamatives are listed with L+¡H* L% and therefore lack a final rise. If we assume that obviousness and mirativity are incompatible meanings (Reich 2018), an intonational similarity between the two would mean that listeners would need to perceive quite subtle cues in order to distinguish between them. An alternative interpretation would be that both Figures 3.3 and 3.4 are obviousness contours, but anchored to different kinds of expectations. According to a proposal put forward for the so-called Surprise Redundancy Contour in English (Sag & Liberman

[12] Particles seem to be present in many utterances with marked intonation. We come back to this topic in §3.3 and §5.1.

1975: 497), the nuance of surprised obviousness "could arise because the intonation of this utterance is expressing surprise at the very fact that it's necessary for the speaker to be asking such a question at all." So instead of evaluating a proposition as unexpected, such an utterance would mark it as so highly expectable as to render any inquiry about it a surprise. This kind of discourse-level surprise would fit in with the idea of redundancy also captured in the notion of "counter-expectational echo question" (Hualde & Prieto 2015: 379).

If we accept such an interpretation, it poses an even greater challenge for the formal treatment of intonational meaning. How can we capture the difference between a modal evaluation of a state of affairs (as expressed in a proposition) and the evaluation of a prior speech act? How can we distinguish between these two very different layers of meaning? In §3.3.1, I propose to tackle this problem by asking for every example a set of very basic question: Is this sentence a provocation or a response? If it is a response, is the provocation an assertion or a (biased) question? What is the current Question Under Discussion (QUD)? What are the propositions that interlocutors have publicly committed to? Are there points of (dis)agreement? What would be a marked or unmarked response? More generally, I want to stress that intonation research needs to start from the assumption of a *Provocation-Response Nexus* in which even minor prosodic or syntactic differences in the provocation may lead to intonational differences in responses. Therefore, investigation of sentence-level prosody in responses is close to impossible without a detailed knowledge of the lexical, syntactic, and prosodic form of the respective provocation.

Research on intonation has only recently started to make provocations maximally explicit. Examples for statements of the obvious make this particularly clear. To start with the L+H*L!H%, see the example Figure 3.5 and the respective context in (72) (Prieto & Roseano 2009–2013b).[13]

(72) Context for Figure 3.5
Estás con una amiga y le cuentas que María, una amiga común, está embarazada. Ella te pregunta que de quién está embarazada y tú te extrañas mucho de que no lo sepa porque todo el mundo sabe que es de Guillermo, su novio de toda la vida. ¿Qué le dices?
'You're with a friend and you tell her that María, a mutual friend, is pregnant. She asks you who she is pregnant by and you're astonished that she doesn't know because everybody knows that it's by Guillermo, her life-long boyfriend. What do you tell her?'

[13]The mid-tone M was later replaced by !H (Hualde & Prieto 2015: 362).

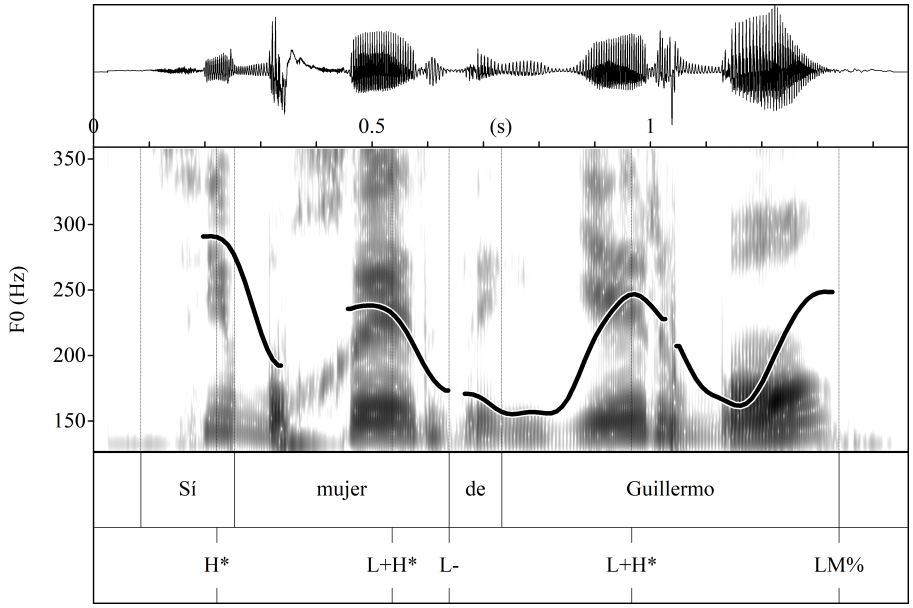


Figure 3.5: Statement of the obvious *¡Sí, mujer, de Guillermo!* 'Yes, woman, by Guillermo!' (Prieto & Roseano 2009–2013a). Response to *¿De quién está embarazada?* 'Who is she pregnant by?' (Prieto & Roseano 2009–2013b), probably reinterpreted as response to a biased *¿Está embarazada de Guillermo?* 'Is she pregnant by Guillermo?'.

The provocation in (72) does not seem congruent with the answer *¡Sí, mujer, de Guillermo!*. If the provocation had actually been the unbiased *wh*-question *¿De quién está embarazada?*, neither the polarity particle *sí* nor the particle/vocative use of *mujer* would have been warranted. Either the experimenters gave a provocation such as *Está embarazada de Guillermo, ¿verdad?* 'She's pregnant by Guillermo, right?', or the participant interpreted the context description in such a way.

A similar case in point is Figure 2.6, partially repeated for convenience in Figure 3.6. The context, repeated in (73), does not provide the exact form of the provocation, but we can assume it to be an imperative, perhaps in combination with an explanation of the sort *Por favor, ¡lleva Marina a la carnicería! Tú sabes por qué te lo pido.* 'Please, take Marina to the butcher's. You know why I'm asking you about it.' Given that the *Discourse Completion Task* methodology (Vanrell et al. 2018) standardly requires the experimenter to pre-construct a written context but leaves any possible verbal provocation open for the experimenter to deliver

ad-hoc, we do not know the exact form of the provocation. It may also be the case that the experimenter provided the contexts without uttering a provocation. In this case, I would argue that the participants still need to imagine a provocation in order to choose an appropriate response.

(73) Context for Figure 3.6
CONTEXTO: Tú sabes que siempre que llevo a Lorena a la carnicería se compra médula para merendar y a ti no te gusta ir a la carnicería pero piensas que si es por la médula de Marina te tendrás que sacrificar.
ENTREVISTADORA: Yo te digo que lleves a Marina [sic!] a la carnicería y tú me respondes:
RESPUESTA: ¡Sí, hombre! Para que meriende.
'CONTEXT: You know that I always take Lorena to the butcher's [for her to] buy herself some meat-soup for lunch and you don't like going there but think that when it comes to Marina's meat-soup you need to make that sacrifice.'
'INTERVIEWER: I tell you to take Marina to the butcher's and you answer me:'
'RESPONSE: ¡Sure, man! For her to have lunch.'

Turning to examples of the L* HL% contour, the difficulty of determining the nature of a particular *Provocation-Response Nexus* becomes apparent. In (74), the highly complex declarative/imperative provocation can be split up into several assertions and presuppositions, only one of them (she eats meat-soup) being challenged by the response.

(74) Context for Figure 3.7 (page 58)
CONTEXTO: Imagina que soy tu canguro y la de tu hermana. Tú quieres pasar una temporada sin merendar para adelgazar y yo no te dejo y te digo...
ENTREVISTADORA: Mira, tu hermana está delgada y sin dejar de tomar ninguna comida
CONTEXTO: Pero tú sabes que ella no merienda (lo tira a la basura), y me respondes:...
RESPUESTA: ¡Como si merendara médula!
'CONTEXT: Imagine that I'm the nanny of you and of your sister. You want to skip lunch for a while to lose weight, but I don't let you and tell you...'
'INTERVIEWER: Look your sister is thin without skipping meals'

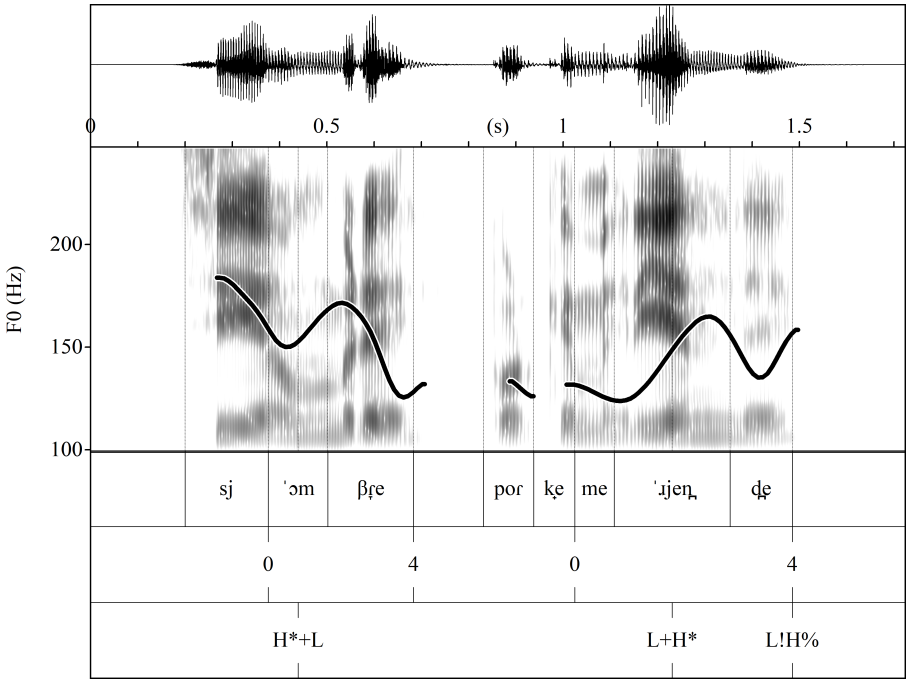


Figure 3.6: *¡Sí, hombre! Para que meriende.* 'Sure, man! For her to have lunch.' (Elvira-García 2016).

'CONTEXT: But you know that she doesn't have lunch (she throws it away), and you answer me...'
'RESPONSE: ¡As if she'd be having meat-soup for lunch!'

A clearer case of obvious stimulus is (29), repeated in (75) for convenience. Here, the *todos los días* 'every day' stimulus, presented by the experimenter herself, stands in contrast with the assertion by the experimenter and forces the participant to disagree based on mutually shared knowledge.

(75) CONTEXTO: Sabes que Marina merienda todos los días verdura.
ENTREVISTADORA: Marina meriende chocolate.
RESPUESTA:
a. ¡Pero si merienda **mé**dula! (antepenultimate)
b. ¡Pero si merienda ver**du**ra! (penultimate)
c. ¡Pero si merienda guara**ná**! (ultimate, −coda)
d. ¡Pero si merienda bibe**rón**! (ultimate, +coda)

'CONTEXT: You know that Marina is having vegetables for lunch every day.'
'INTERVIEWER: Marina having chocolate for lunch.'
'RESPONSE:'

a. '¡But SI she is having meat soup for lunch!'
b. '¡But SI she is having vegetables for lunch!'
c. '¡But SI she is having guaraná for lunch!'
d. '¡But SI she is having a baby bottle for lunch!'

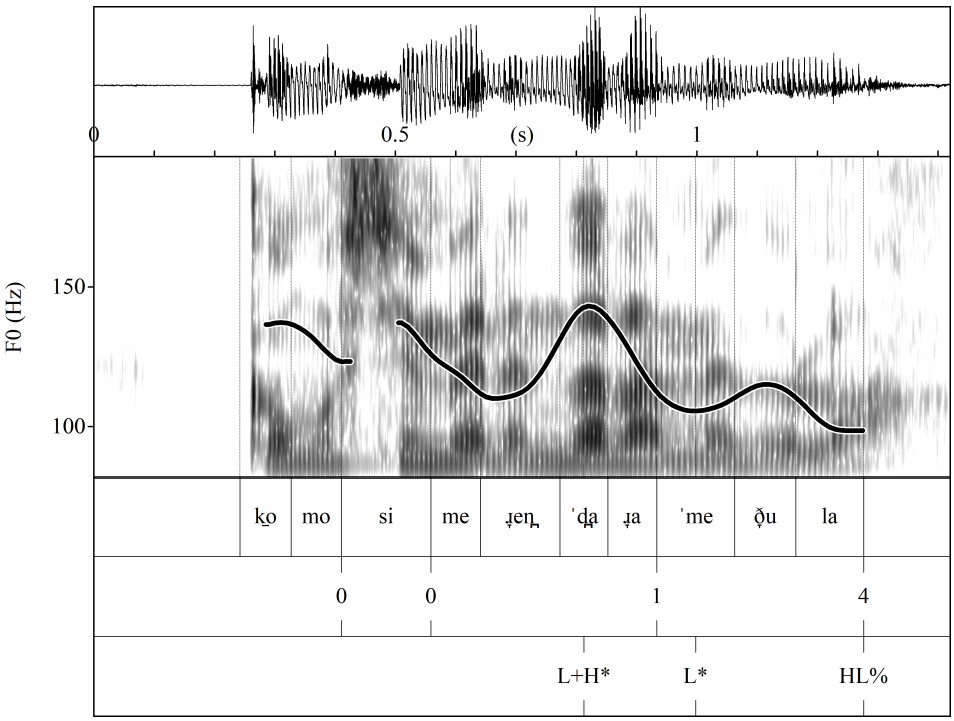


Figure 3.7: *¡Como si merendara médula!* 'As if she'd be having meat-soup for lunch!' (Elvira-García 2016: 187).

Corpus examples require a close reading of the context in order to capture their intricate discourse relations. (35), repeated here as (76), is presented by Torreira & Grice (2018) as an obvious assertion. Yet the dynamics of interaction seem more complex. In (76a), 2RM asserts that equal treatment is required in school for boys and girls. In (76b), 2CM accepts this, but restricts the acceptance to the level of education. 2RM accepts this restriction in (76c). Nevertheless, 2CM explains the restriction in (76d) as if there had been no agreement in (76c). The reaction by

2RM in (76e) should be seen not only as a statement of the obvious, but one which rejects the necessity for clarification, given that the educational level was probably implied since the first mention of a school in (76a).

(76) NCCSp_02_3494

a. 2RM: Pero en el colegio les tienes que tratar igual, o sea …
'But in school you should treat them in the same way, I mean …'

b. 2CM: En nivel educa[tivo, que aprendan lo mismo].
'At the educational level, they should learn the same.'

c. 2RM: [En educación, la educación,]
'In terms of education, education,'

d. 2CM: Que aprendan lo mismo.
'They should learn the same.'

e. 2RM: ¡**CLA**ro! ¡**Es** que **es e**so!
L* H(L%)
'Of course! That's it!'
¡**Es** que de **e**so se e**stá** ha**BLAN**do! ¡De educa**CIÓN**!
L* H* L% L* H(L)%
'That's what's being discussed! Education!'

As with exclamatives and miratives, obviousness is too broad a label for different interactive stances. Saying that a sentence carries a nuance of surprise or obviousness is insufficient for determining the specific contribution of prosodic form to the discourse function of a turn in dialogue. Both corpus investigation and laboratory experiments need a deeper understanding of the interaction between different layers of discourse meaning. (Dis)agreement, discourse commitments, Question Under Discussion (QUD) structure, and modal meaning need to be integrated when assigning a sentence-type to a prosodic form. In the following, I present a model that decomposes discourse functions, allowing us to be more precise about the meaning contribution of intonational markers.

3.3 A model of meaning in dialogue

Farkas & Bruce (2010) develop a model of meaning in dialogue to capture similarities and differences between assertive speech acts (such as declaratives) and inquisitive speech acts (such as polar interrogatives) in terms of the possible ways of reacting to them.[14] It gives a formal account of their functions in dialogue and

[14]The term *inquisitive* has since become much more central to semantic theory through the development of *inquisitive semantics* (Ciardelli et al. 2019), a framework that will not be laid out in full detail here, though it should be compatible with what follows (Farkas & Roelofsen 2017).

thereby provides the mechanisms necessary to predict markedness relations between different provocations and responses. It is essentially a dynamic model of the negotiation of *Discourse Commitments* and the *Question Under Discussion*. While the QUD determines what is at-issue in a discourse context, Discourse Commitments are what links interlocutors to the QUD. This combination has several advantages. It captures the intuition that dialogue can go wrong in different ways, either because interlocutors do not *stick to the point* or because they cannot solve a disagreement. This focus on (dis)agreement is crucial to capture markedness relations between responsive speech acts that negotiate how interlocutors position themselves towards what is at-issue. Even more importantly for our current purpose, the model is also flexible enough to be expanded to non-at-issue meaning (Farkas & Bruce 2010: 89, Rett 2021b,a). After introducing the core model in §3.3.1, we show its limitations in dealing with the ambiguity of Spanish discourse markers in §3.3.2. We then include non-at-issue meanings in §3.3.3 to capture their two levels of meaning: polar and modal.

3.3.1 Reacting to assertions and polar questions

According to Stalnaker (1974, 1978), a declarative sentence is a conversational move made with the intention of adding its asserted content to the common background knowledge or CG of the interlocutors. Farkas & Bruce (2010) stress the point that this move is only successful if no participant in the conversation objects. A declarative is therefore best understood as a proposal that triggers a process of several steps and choices. These steps have to do with different aspects of conversation that interlocutors keep track of, and the choices they make can be marked or unmarked.

Firstly, interlocutors keep track of the current goal of the conversation. What sets questions and statements apart from imperatives and vocatives are their goals. Questions and statements inquire about the state of affairs, they participate in answering the current QUD (Roberts 2012, Beaver et al. 2017). More generally, they attempt to capture the world in terms of words. Their direction of fit is words-to-world (Searle 1979). Imperatives and vocatives, on the other hand, pursue goals in which the direction of fit is world-to-words. Both questions and statements can set a new goal by opening a new QUD. Farkas & Bruce (2010: 86) christen the place-holder for the current QUD the *Table*. It is a stack, to whose top items can be *pushed*, from whose top items can be *popped*, and from which an item can be *removed*.[15] Conversational moves that put an issue on the *Table*

[15]Push and pop are terms necessary to make reference to the top of a stack as opposed to an element of a set, which could simply be added or removed.

are called provocations, as opposed to responses which are defined by a requirement for a non-empty *Table*. A second component of the *Farkas & Bruce Model* are Discourse Commitment Sets (DCs) for each interlocutor. A declarative commits a speaker to *p* by asserting it, but assertion and speaker commitment are not the same thing. Speakers can retract from a commitment that forms part of a set of commitments, whereas an assertion is an individual act of committing to the truth of a proposition. Unmarked moves add to the set of discourse commitments, removing a commitment is a marked move. This captures the relative ease with which many speech acts commit a speaker to a proposition, whereas removing a commitment requires explicit acknowledgment of an error or a lie. Markedness in terms of the model is therefore first and foremost semantic markedness. Yet, as we will see throughout, it fits neatly into a Greenbergian notion of markedness that links semantic complexity with overt coding, rare occurrence in texts, and neutralization in unmarked contexts (Greenberg 1966).[16]

The conversational game proceeds in steps, each of which represents a Context State (K). If both participants in a dialogue have publicly committed to a proposition, it is added to the *cg*.[17] Furthermore, a Projected Set (*ps*) keeps track of requirements imposed on upcoming moves by some types of sentences, among them assertions. By putting an item on the Table, a set of future Common Grounds is projected. In each of these Common Grounds the issue on the Table is decided. If there is just one CG in *ps* (for example due to an assertion), K is biased towards it.[18] This captures the idea that there are discourse contexts in which there are marked and unmarked ways for a dialogue to proceed. Notably, tacit agreement is built into the model.[19] An interlocutor can tacitly agree with an assertion, but (s)he cannot tacitly deny one. (77) shows a graphic representation of a context state.

(77) K: Context state (Farkas & Bruce 2010: 89).

A	Table	B
DC_a	S	DC_b
Common Ground *cg*	Projected Set *ps*	

[16]Pace Haspelmath (2006), I opt against reducing *markedness* to *frequency of use*, because frequency does not predict these relations to be universals (cross-linguistic and diachronic), which could be seen as the main point in Greenberg (1966) and Farkas & Bruce (2010).

[17]Note how the Stalnakarian notion of Common Ground becomes a derived component of the DCs. By convention, sets are in lowercase, so CG is written *cg* here.

[18]Note, again, that the projected set is determined by the Tabletop.

[19]While this insight has only recently been integrated into research on formal pragmatics, it is by no means a new idea that "*qui tacet, consentire videtur*" 'who is silent seems to consent' (Boniface VIII. [1298] 1584: 825).

At the beginning of a dialogue K_1, the Table and the DCs are empty while the *cg* already contains shared background knowledge (78). This assumption, innocent as it may seem, is actually one of the crucial differences between the *Table* and standard QUD-structure. For Roberts (2012: 6:5), discourse starts with the *Big Question* "What is the way things are?". Solving any sub-question of the *Big Question* only brings interlocutors closer to this initial state, never to an empty *Table*. In this sense, Farkas & Bruce (2010) take a micro-perspective within discourse, focusing on a smaller level of relevance in which issues are prototypically raised and solved (accepted or denied) in a window of one or two turns. Longer negotiations of one specific issue,[20] while theoretically possible and empirically existent (see Chapter 5), become progressively more marked because they require successions of reversal and insistence.[21] It is this micro-perspective that allows for a model of the dynamics between adjacent turns, where it is highly important to track which interlocutor sets up an issue for discussion and which interlocutor denies it, accepts it, or evaluates it in other ways (see §3.3.3). I will call the status of a turn as either provocation or response its *Turn Adjacency*, relating it to adjacent (directly previous or posterior) turns in terms of possible discourse anaphoric relations.[22]

(78) K_1: Initial context state.

A	Table	B
Common Ground s_1	Projected Set $ps_1 = \{s_1\}$	

A declarative sentence is represented as a syntactic and prosodic form S[D].[23] Uttering a declarative denotes a declarative operator **D** (79).[24] Farkas & Bruce

[20] At the same level of specificity, not at the level of sub-questions.

[21] Otherwise the issue is solved, either via tacit agreement or, as we will see below, an agreement to disagree.

[22] While purposefully close to the notion of adjacency pair in Schegloff & Sacks (1973) and Sacks et al. (1974), Turn Adjacency gears the perspective towards the different functions of the turns within such pairs with regard to Discourse Commitments.

[23] The model remains agnostic about the representation of non-sentential turns with declarative prosody. Given that many non-sentential turns are responses that require sentential provocations, I will follow the Farkas & Bruce formalism to keep the illustration as simple as possible.

[24] Note that the original model by Farkas & Bruce (2010) coins an assertion operator **A** corresponding to S[D]. I follow Rett (2021b) in capturing the function of the declarative illocutionary mood under the operator **D** because I also attribute assertive force to sentences without declarative illocutionary mood which still upgrade doxastic discourse commitments (see Table 3.1); see also the notion of *assertive family* in Jary (2010: 11–13) and the relation between assertion and discursive commitment in Brandom (1994: 157) and Jary (2010: 19–23).

(2010: 90) "take it that a default assertion is performed when a participant X utters a declarative sentence *S* with falling intonation."[25] **D** is a function that takes the sentence S[D], the speaker index a, and the input context state K_i as arguments and gives an output context state K_o, in which the $DC_{a,o}$ is the union of $\{p\}$ and $DC_{a,i}$, T_o is the result of *pushing* $\{p\}$ together with its sentence form S and the declarative sentential feature [D] on the input Table T_i, and the ps_o is the union of $\{p\}$ and cg_i minus all the resulting inconsistent sets, which is represented by $\bar{\cup}$ and can be called *consistent union*.[26] The K_o of *A* over K_1 is K_{2a}, illustrated in (80).

(79) **D** (S[D], a, K_i) = K_o such that (all operators revised in §3.3.2)

a. $DC_{a,o} = DC_{a,i} \cup \{p\}$

b. $T_o = push(\langle S[D]; \{p\}\rangle, T_i)$

c. $ps_o = ps_i \,\bar{\cup}\{p\}$

(80) K_{2a}: A states 'She drinks lemonade' relative to K_1

A	Table	B
p	⟨ 'She drinks lemonade'[D]; $\{p\}$⟩	
$s_2 = s_1$		$ps_2 = \{ s_1 \cup \{p\}\}$

Once the Table is not empty, the conversation is driven by the need to empty it, or to settle the issue. A conversation is in a *stable state* when the Table is empty. Conversational moves that place items on the Table bring with them a way of removing them by deciding upon them. This happens iff either p or $\neg p$ follows from *cg*. Therefore, the most straightforward way of deciding upon an assertion is to confirm it. All other reactions to assertions are marked.

A polar question has as a syntactic/prosodic form S[I]. Given that Farkas & Bruce (2010: 94) are dealing with English, they take the syntactic form to be cru-

[25] While they do not treat rising declaratives and tag-declaratives, they assume that they place specific demands on the input context.

[26] "Let $ps = \{cg_1, \ldots, cg_n\}$ be a collection of sets of propositions (e.g. possible Common Grounds) and let $P = \{p_1, \ldots, p_m\}$ be a set of propositions. Then define

$$ps \,\bar{\cup} P = \{cg_i \cup \{p_j\} | 1 \leq i \leq n, 1 \leq j \leq m\} - \{cg' \mid cg' \text{ is inconsistent}\}$$

(Farkas & Bruce 2010: 90). I follow Farkas & Bruce (2010) in only listing the operation $ps \,\bar{\cup} P$ in the formalization of the operators with no additional indications in the illustrations. At the risk of getting ahead of the discussion, I want to note here that canceling this consistency operation might be a side-effect of mirative provocations, since miratives proffer a proposition that is inconsistent with the CG and therefore require interlocutors to re-evaluate the CG.

cial. For Spanish, it would be a purely prosodic form L* HH% (Table A.1).[27] Uttering a polar question denotes a polar question operator **PQ** (81). **PQ** is a function that takes the interrogative sentence S[I] and the input context state K_i as arguments and gives an output context state K_o, in which T_o is the result of *pushing* $\{p, \neg p\}$ together with its sentence form S and the interrogative sentential feature [I] on the input Table T_i, and the ps_o is ps_i with either $\{p\}$ or $\{\neg p\}$. The K_o of **PQ** over K_1 is K_{2pq}, illustrated in (82). An important aspect of placing both S[I] and $\{p, \neg p\}$ on the Table is the fact that S[I], though not asserted, is *highlighted* and can serve as an antecedent for subsequent anaphoric expressions such as *yes* and *no* (Farkas & Roelofsen 2017: 254 and references therein).

(81) **PQ** (S[I], K_i) = K_o such that

a. $T_o = push(\langle S[I]; \{p, \neg p\}\rangle, T_i)$

b. $ps_o = ps_i \cup \{p, \neg p\}$

(82) K_{2pq}: 'Does she drink lemonade?' was asked relative to K_1

A	Table	B
	⟨'She drinks lemonade'[I]; $\{p, \neg p\}$⟩	
$s_2 = s_1$	$ps_2 = \{ s_1 \cup \{p\}, s_1 \cup \{\neg p\} \}$	

As mentioned above, apart from *initiating* questions and assertions, the model provides a formalization of *responding* conversational moves. Every response has a provocation, and the communicative effect of a responding move is conditioned by its provocation. Assertions and polar questions both place a proposition-denoting sentence radical on the Table. Therefore, both allow for responses in terms of *confirmation* and *reversal*. The crucial difference between reactions to polar questions and assertions is that polar questions project their own reversal, whereas assertion reversal results in a *conversational crisis*.

A conversation can be in three states: stable (no issue on the Table), unstable, and in crisis. A conversation is in crisis if either its *cg* is inconsistent or all the sets in *ps* are inconsistent (because the next K would then have an inconsistent *cg*). Denying an assertion creates a conversational crisis, because it commits the reacting interlocutor to a proposition that is incompatible with the current *ps* and itself projects a *ps* that is incompatible with a commitment already made. There are two solutions to a conversational crisis: retraction of a commitment by one of

[27] The low-rise contour has variously been transcribed as either L* H% or L* HH%. I use L* HH% here to acknowledge that scaling of final rises in polar questions seems to be higher than in other cases of final rises. See also §6.3.4 on why further research is needed here.

the interlocutors, or agreeing to disagree. What is important here is that neither of the two can happen tacitly. Either an interlocutor explicitly retracts from her incompatible commitment, or the two commitments remain in the respective *DC*s without entering the Common Ground.

The Farkas & Bruce model takes assertions and polar questions as defined in (79) and (81) as well as assertion confirmation to be unmarked conversational moves. It also provides arguments for characterizing moves as marked. Unmarked moves are steps towards a stable state, which means that they strive to add propositions to all sets of discourse commitments until they result in an empty Table and a consistent *cg*. Moves can be marked because they do not lead to a stable state, or because they are inconsistent either with a publicly held discourse commitment, with the projected set, or with the *cg*. By exploring these markedness relations, we can make predictions about the amount of additional marking we expect to find for specific speech acts, since a higher degree of pragmatic markedness should lead to additional formal marking (lexical, phonological, syntactic, etc.). This understanding of *markedness* is what Haspelmath (2006) describes as *Greenbergian*.

Additionally, moves can be more or less flexible with regard to their demands on the input context. If they require an input context to provide certain conditions, they can be used less flexibly and should have a more restricted distribution. Assertions and polar questions are unmarked moves without *input context conditions*. Confirming and reversing moves, on the other hand, are defined in part by their need for a non-empty Table. Assertion confirmation (83) and total denial (84) are two ways of reacting to an assertion.[28] Partial denial differs from total denial in that it contradicts only a subpart of the previous assertion while committing the speaker to the rest of the previous assertion (Farkas & Bruce 2010: 101).[29]

(83) *Assertion Confirmation* (**AC**)

a. *Input context conditions*:

i. $top(T_i) = \langle S[D]; \{p\} \rangle$

ii. p in $\mathrm{DC}_{a,i}$

b. *Change*: $\mathbf{AC}(b, K_i) = K_o$ where $\mathrm{DC}_{b,o} = \mathrm{DC}_{b,i} \cup \{p\}$

[28] I follow Schneider (2017: 14) in assuming that (84)b.i adds the negated proposition to B's DC (instead of A's DC, as in Farkas & Bruce 2010: 101).

[29] Note, however, that Total Denial is defined by an overt negation in the response. The more general notion of *reversal* is therefore useful to include cases of disagreement in which the response has positive *absolute polarity* (which is the absence of a negator, as explained below).

(84) *Total Denial* (**TD**)

a. *Input context conditions*:

i. $top(T_i) = \langle S[D]; \{p\}\rangle$

ii. p in $\mathrm{DC}_{a,i}$

b. *Change*:

i. $\mathbf{TD}(b, K_i) = K_o$ where $\mathrm{DC}_{b,o} = \mathrm{DC}_{b,i} \cup \{\neg p\}$

ii. $T_o = push\,(\langle S'[D]; \{\neg p\}\rangle, T_i)$

Polar question confirmation (85) and polar question reversal (86) are two ways of reacting to a polar question.[30]

(85) *Polar Question Confirmation* (**P-QC**)

a. *Input context conditions*: $top(T_i) = \langle S[I]; \{p, \neg p\}\rangle$

b. *Change*:

i. $\mathbf{P\text{-}QC}(b, K_i) = K_o$ where $\mathrm{DC}_{b,o} = \mathrm{DC}_{b,i} \cup \{p\}$

ii. $T_o = push\,(\langle S[D]; \{p\}\rangle, T_i)$

(86) *Polar Question Reversal* (**P-QR**)

a. *Input context conditions*: $top(T_i) = \langle S[I]; \{p, \neg p\}\rangle$

b. *Change*:

i. $\mathbf{P\text{-}QR}(b, K_i) = K_o$ where $\mathrm{DC}_{b,o} = \mathrm{DC}_{b,i} \cup \{\neg p\}$

ii. $T_o = push\,(\langle \neg S[D]; \{\neg p\}\rangle, T_i)$

Reversing an unbiased polar question is more marked than confirming it (since it places an additional, negated proposition on the Table), yet it does not result in a conversational crisis. A conversational crisis occurs only when the provocation includes speaker commitment towards the at-issue content and the response is a reversal of that commitment.[31] It is important to note that partial reversals (and in particular denials) in the sense of Farkas and Bruce are what has been called correction focus in the literature on information structure.

In terms of markedness relations, reversals of a biased Table (which result in an empty projected set) are more marked than confirmations because they do not lead to an empty Table and are inconsistent with a publicly held DC. A conversational move that does not allow for an item to be *popped* off the Table (by

[30] Partial polar question reversal would require the speaker "to commit to a proposition that, together with the current *cg*, is inconsistent with the denotation of the sentence radical on the top of the input Table (or one of its implicatures)." (Farkas & Bruce 2010: 105)

[31] See §3.3.2 for the inclusion of non-at-issue content in the Farkas and Bruce model.

not committing to it) and that places an incompatible or contradicting item on the Table results in an empty projected set. (87) illustrates such a conversational crisis.

(87) K_{3a}: B states 'She doesn't drink lemonade' relative to K_{2a}

A	Table	B
p	⟨'She drinks lemonade'[D]; {p}⟩ ⟨'She doesn't drink lemonade'[D]; {$\neg p$}⟩	$\neg p$
$s_3 = s_2$	$ps_3 = \emptyset$	

The Farkas & Bruce model, with its discourse components and mechanisms, is above all an attempt to explain markedness relations between responding moves. Before we venture into the relations between provocations and responses, a short remark on marked provocations is in order. Farkas & Roelofsen (2017) argue that rising tag interrogatives are marked provocations because they signal a credence level towards the proposition. While they are mostly dealing with examples from English, (89) illustrates what a rising tag interrogative would look like in Spanish. Their argument, based on a comparison with falling polar interrogatives and rising declaratives, seems mostly incompatible with Spanish syntax given the lack of subject-verb inversion. Likewise, speakers reject falling tag interrogatives in Spanish (88). Table 3.1 is an adaptation of their perspective on commitment and bias in provocations, with alternative questions added based on the perspective from Estebas-Vilaplana & Prieto (2008: 278).[32]

(88) A: # Ana se ha ido↓, no↓.
'Ana has left, hasn't she.'

(89) A: Ana se ha ido↓, ¿no↑?
'Ana has left, hasn't she?'

Farkas & Roelofsen (2017) separate commitment from credence, which impedes generalizing the discourse effects of commitments to cases of bias. Yet I take it to be the default hypothesis that bias, just as commitment, can be confirmed and denied in responding moves. In other words: I deviate from the notion

[32] *Wh*-questions are typically falling both in English and in Spanish. For American English, rising *wh*-questions have been shown to encode echo-questions requesting supplementary information that does not answer the current Question Under Discussion (Hedberg et al. 2010). Rising *wh*-questions in Spanish are also echo-questions and may additionally convey a counterexpectational nuance (Sosa 2003, Estebas-Vilaplana & Prieto 2010: 36–37). Rudin (2018: 24–27) argues that rising *wh*-questions do not differ from falling *wh*-questions in terms of bias. I take this to be an unresolved point.

Table 3.1: Commitment and bias in provocations

Provocation	Commitment/Bias
Declaratives ↓	full commitment (categorical bias)
Tag interrogative ↓↑	high credence level (strong bias)
Polar interrogative ↑	no commitment (weak bias)
Alternative interrogative ↓	no commitment (no bias)

of *categorical* and *non-categorical bias* in Farkas & Bruce (2010: 92), because I take findings for Bari Italian (Grice & Savino 2004) to be indicative of the possibility to confirm/deny bias. See Domaneschi et al. (2017) and Dehé & Braun (2019) for the choice of prosodic cues and negation position according to bias in German and English. See also Vanrell (2011) for Catalan, and Armstrong (2017) for the Puerto Rican variety of Spanish.

Responses are defined by an input context condition and a particular type of context change potential. They require an item whose sentence radical denotes a proposition p to be on top of the Table, and they update the discourse commitment set of the speaker by either p or $\neg p$. From this definition arise the two *relative polarity* features [AGREE] and [REVERSE]. This is not to be confused with *absolute polarity*, which refers to the presence [−] or absence [+] of a negator in the sentence (90) (Farkas & Bruce 2010: 106–109).

(90) A: Anna doesn't laugh. [−]
  a. B: Yes, she does. [REVERSE,+]
  b. B: No, she doesn't. [AGREE,−]

As is well known, negative absolute polarity is universally more marked than positive absolute polarity.[33] Farkas & Bruce (2010) argue that the possibility of silent agreement shows that positive relative polarity (agreement) is less marked than negative relative polarity (reversal or denial).

While [REVERSE] reactions are more marked than [AGREE] reactions, Farkas & Bruce (2010) argue for a difference between reversing (that is, denying) assertive declaratives and reversing polar questions because declaratives are categorically biased in favor of the proposition denoted by the sentence radical. The implications of such markedness relations should show up in cross-linguistic comparison. We expect to find more systems with special markers for [REVERSE] than for

[33] Not even the much-cited Dravidian Zero Negatives are less marked than their affirmative counterparts (Miestamo 2010: 188–189).

[AGREE]. We would also expect to find more expressions for [REVERSE,+] than for [AGREE,−].

Given the lack of studies on intonation and relative polarity in Spanish (but see studies on English by Steedman, e.g. Steedman 2007, and on French, e.g. Beyssade & Marandin 2007, 2009, Portes & Reyle 2014), a cross-linguistic comparison between [REVERSE] markers and [AGREE] markers is easier with polarity particles. The example presented by Farkas & Bruce (2010) is Romanian, which has three polarity particles for [+]*da*, [−]*nu*, and [REVERSE]*ba*. *Ba* must combine with *nu* to form negative reversals [REVERSE,−] (91), and can facultatively combine with *da* to form positive reversals [REVERSE,+] (92). Negative reversals of polar questions can only be formed using *nu* (93), which is expected given that neutral questions (or queries) are not biased towards one of their alternatives.

(91) Romanian

A: Ana a plecat. [+]
'Ana has left.'

B: Ba nu, n-a plecat. / # Nu, n-a plecat. [REVERSE,−]
'No, she hasn't left.'

(92) A: Ana nu a plecat. [−]
'Ana hasn't left.'

B: Ba da. / Ba da, a plecat. / Ba a plecat. [REVERSE,+]
'You're wrong, she has left.'

(93) A: Ana a plecat?
'Has Ana left?'

B: Nu. / Nu, n-a plecat. / # Ba nu. / # Ba nu, n-a plecat. [−]
'No, she hasn't.'

Whereas polarity particles in Romanian are specified for either absolute or relative polarity, German turn-initial *doch* (94) and French *si* (95) are cases of [REVERSE,+].

(94) German

A: Anna ist nicht gegangen. [−]
'Anna hasn't left.'

B: Doch, sie ist gegangen. [REVERSE,+]
'You're wrong, she has left.'

(95) French
A: Anna ne'est pas partie. [−]
'Anna hasn't left.'
B: Si, elle est partie. [REVERSE,+]
'You're wrong, she has left.'

3.3.2 Beyond (dis)agreement

German *doch* and French *si* solve a problem encountered in languages such as English or Spanish, in which *yes* and *no* become ambiguous between an AGREE and a REVERSE reading in responses to provocations with negative absolute polarity [−] (96).

(96) A: Ana no se ha ido. [−]
'Anna hasn't left.'
a. B: Sí, no se ha ido. [AGREE,−]
'Yes, she hasn't left.'
b. B: No, no se ha ido. [AGREE,−]
'No, she hasn't left.'
c. B: No, se ha ido. [REVERSE,+]
'No, she has left.'
d. B: Sí, se ha ido. [REVERSE,+]
'Yes, she has left.'

Given this ambiguity, Spanish responses need additional disambiguation. Responses can disambiguate towards [*agree*] by inserting *es verdad* 'that's true' or *claro* 'sure' after *sí* (97a,b). Insubordinates can disambiguate towards a [*reverse*] reading (97c,d).

(97) A: Ana no se ha ido. [−]
'Anna hasn't left.'
a. B: Sí, es verdad, no se ha ido. [AGREE,−]
'Yes, you're right, she hasn't left.'
b. B: No, claro, no se ha ido. [AGREE,−]
'No, sure, she hasn't left.'
c. B: No, si se ha ido. [REVERSE,+]
'No, SI she has left.'

d. B: Sí, si se ha ido. [REVERSE,+]
'Yes, SI she has left.'

Yet, as shown by Schwenter (2016) and discussed in §2.3.4 and §3.2, such insubordinates are often understood as marking not only disagreement, but obviousness. The same holds for other Spanish polarity particles that can be used for disambiguation. Intuitively, *claro* seems less ambiguous than *sí* in denoting agreement. Yet in the now extensively discussed example (76) by Torreira & Grice (2018), *claro* with L* HL% intonation communicates more than just agreement.

The problem of additional modal meaning beyond (dis)agreement becomes particularly apparent in attempts at defining the meaning of discourse particles. The *Diccionario de partículas discursivas del español* 'Dictionary of Spanish discourse particles' has two entries for both *claro* and *hombre*, one related to agreement about a proposition (*claro*[1], Pons Bordería 2011a; *hombre*[1], Briz & Villalba 2011a) and one related to the status of a proposition as beyond doubt (*claro*[2], Pons Bordería 2011b) or as a valid possibility (*hombre*[2], Briz & Villalba 2011b). The authors of the respective entries in the dictionary acknowledge the importance of prosody, yet without linking their discussion to the literature on Spanish intonation or intonational meaning.

> *hombre*[1]: El hablante atenúa su intervención porque esta corrige, explica, matiza, añade argumentos, mostrando al menos un pseudoacuerdo con el interlocutor. O se atenúa porque existe desacuerdo parcial o total. […] No olvidemos que la atenuación y la intensificación son funciones pragmáticas y, por ello, determinadas solo contextualmente. En esta identificación funcional, la entonación es pieza fundamental para el análisis. (Briz 2012: 31–32)
>
> 'The speaker attenuates his/her intervention because it corrects, explains, qualifies, adds arguments, showing at least a pseudo-agreement with the interlocutor. Or else s/he attenuates because there is partial or total disagreement. […] Let us not forget that attenuation and intensification are pragmatic functions and, therefore, only contextually determined. Intonation is a fundamental piece for the analysis under this functional label.'
>
> *hombre*[2]: La acepción cortés de hombre[1] […] contrasta con la acepción intensificadora, estrictamente argumentativa de hombre[2]. Con hombre[2] el hablante refuerza su argumentación sea en beneficio propio o sea en perjuicio del otro, puesto que intensifica con frecuencia los desacuerdos con este. (Briz 2012: 36)
>
> 'The polite meaning of hombre[1] […] contrasts with the intensifying, strictly

> argumentative meaning of hombre[2]. With hombre[2], the speaker reinforces his/her argument, be it to his/her own benefit or be it to the detriment of the other, given that it often intensifies their disagreement.'

Figures 3.8 and 3.9, taken from Briz (2012) with some modifications,[34] show the prosodic differences underlying this analysis. The main difference is a rightward displacement of the rise for *hombre*[2], combined with extreme lengthening of the final syllable now bearing tonal movement (note that the second syllable of Figure 3.9 is twice as long as the entire word in Figure 3.8).

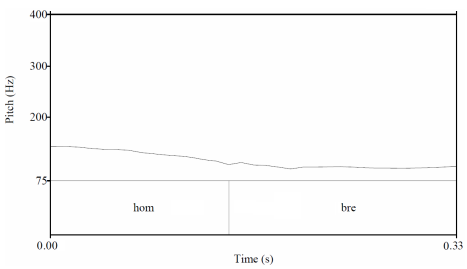


Figure 3.8: *hombre*[1] (adapted from Briz 2012: 33).

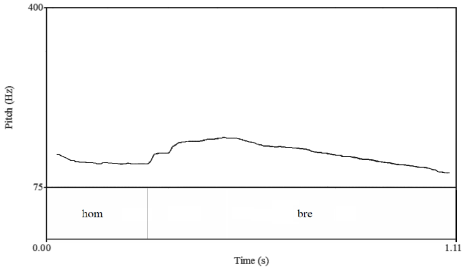


Figure 3.9: *hombre*[2] (adapted from Briz 2012: 39).

For *claro*, Pons Bordería (2011a) distinguishes between an agreement function and an obviousness function. For *claro*$_1$, the main function is assumed to be agreement. Yet it remains unclear what distinguishes "emphatic agreement" from agreement in combination with obviousness.[35]

> *claro*[1]: Indica acuerdo con algo dicho o, en menor frecuencia, sobreentendido. Dicho acuerdo puede aparecer como respuesta o como parte de esta. [...] se diferencia de la partícula de afirmación [sí] en que el acuerdo manifestado por *claro* es más enfático. Se forma así una escala entre *claro*, *sí* y *bueno*, que expresan, respectivamente, 'acuerdo enfático' (*claro que sí*), 'acuerdo' (*sí*) y 'acuerdo atenuado' (*bueno/sí*). (Pons Bordería 2011a)

[34] Figures 3.8 and 3.9 with starting time set to zero, pitch-scale capped at 400 Hz, approximated syllable boundary, and with reduced garment for readability. I abstain from further changes to maintain some comparability with the original figures.

[35] The term *emphasis*, though used prolifically in many sub-disciplines of linguistics, has not received a proper definition to date (notwithstanding remarks on the rhetoric device *emphasis* as cover term for litotes and hyperbole in Bussmann 2006: 358, *emphatic pronouns* or *emphatic word order* in Brown & Miller 2013: 151, or articulatory properties of semitic *emphatic consonants* in Crystal 2008: 167). For research on prosody, it threatens to become a waste-basket category.

> 'Indicates agreement with something that has been said or, less frequently, obviousness. […] differs from the affirmative particle [sí] in that the agreement shown by *claro* is more emphatic. This creates a scale between *claro*, *sí*, and *bueno*, which respectively express 'emphatic agreement' (*claro que sí*), 'agreement' (*sí*), and 'attenuated agreement'(*bueno*/*sí*)'.'
>
> *claro*[2]: Refuerza como evidente y, por tanto, seguro el miembro del discurso al que afecta […]. (Pons Bordería 2011b)
>
> 'Reinforces as evident and, therefore, certain, the part of discourse it concerns […].'

Figure 3.10 shows one example of a use of *claro* based on the audio available in Pons Bordería (2011a).[36] Note the intonational similarity of the particle to Figure 3.11, which is a representation of the prosodic form of *claro* in (35) from Torreira & Grice (2018: 15).[37] Torreira & Grice (2018) take this to be an example of obviousness expressed by L* HL%. Since both Figures 3.10 and 3.11 are corpus examples, we have the advantage of being able to investigate their contexts. (98) gives the provocation and (99) the response in which the particle in Figure 3.10 occurs. The prosodic form of the entire response is given in Figure 3.12.

(98) (Briz & Gupo Val.Es.Co. 2002: 59, line 353)
A: por eso digo te lo has preparao tú el bocata
'that's why I say: you did prepare yourself the sandwich' [+]

(99) B: claro, ¿¡iba a hacerme yo una tortilla nano!? [SAME,+]
L* HL% H– L+H*L!H–L* H% [obvious]
'sure, I was gonna make myself a tortilla, dude'

(35) and (99) are two examples in which there seems to be meaning beyond relative polarity. Having two dictionary entries for each discourse particle is a rather complicated way of capturing these two facets of meaning. If there are two levels of form-meaning-pairs at play, they should be represented separately. I argue that a clearer understanding of intonational meaning would help us understand the different uses of *claro* and *hombre*.

[36] If here or in the following no citation for the figure itself is given, then I created it from a WAV-file and a TextGrid using Praat (Boersma & Weenink 2017) in combination with the praat script EasyAlign (Goldman 2011) and one of several implementations of the CreatePictures script (Elvira-García & Roseano 2014). Syllables and phones are transcribed with the Extended Speech Assessment Methods Phonetic Alphabet (X-SAMPA) (Wells 1995).

[37] Figure 3.11 with approximated syllable boundary based on amplitude of omitted oscillogram.

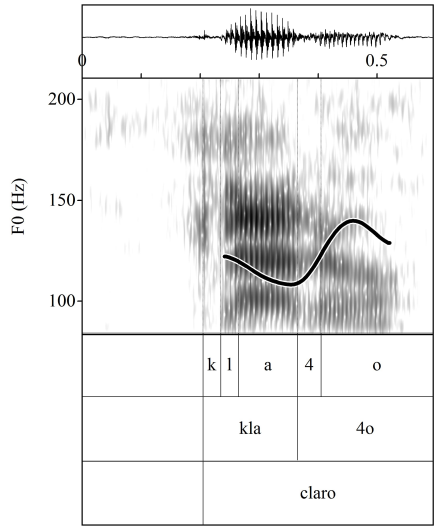


Figure 3.10: *claro* (audio-file from Pons Bordería 2011a).

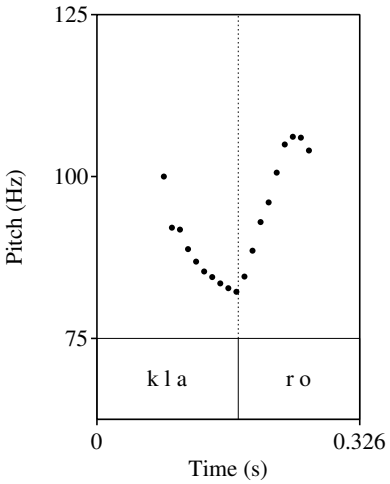


Figure 3.11: *claro* in (35) (adapted from Torreira & Grice 2018: 15).

Disentangling the interplay of discourse particles and intonation in the disambiguation of responses in dialogue requires a model of dialogue that keeps track of different layers of discourse meaning. Moreover, it requires an understanding of markedness relations between different kinds of responses. There is a difference between using an obviousness contour in a reversal and in a confirmation. Marking a reversal as obvious should be highly marked because it creates a conversational crisis, conventionally implicates its denotation to be expectable from shared background knowledge, and thereby conversationally implicates that the provocation violated the Cooperative principle (Grice 1975) and is therefore to blame for the crisis.[38] In terms of politeness, we can say that the interlocutor uttering an obvious reversal strongly threatens the positive face of the interlocutor that committed to the proposition (the asserter). Not only does it contradict a previously made assertion, which is itself "associated with disapproval" (Brown & Levinson 1988: 66), but it marks the contradictory content as highly expectable. This can conversationally implicate that the previous assertion was ignorant of accessible possibilities or necessities. If we assume that for every Question Under Discussion there is the possibility to establish an epistemic gradient between interlocutors (Heritage 2012: 32), such a conversational move gears it steeply towards the denier.

[38] Asserting something that is incompatible with the CG flouts the Maxim of Relevance and does not help in the pursuit of an empty Table.

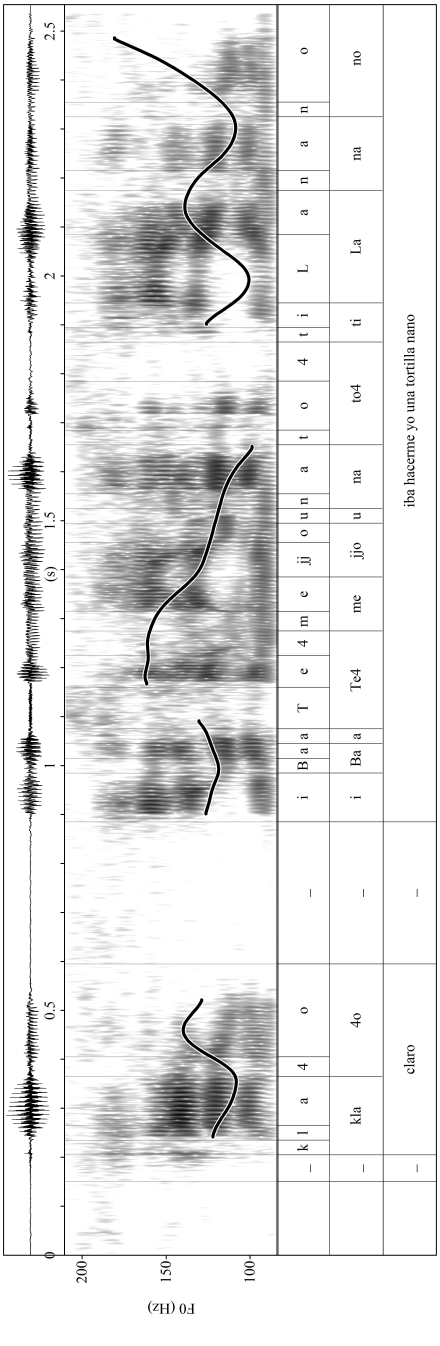


Figure 3.12: *claro* L* HL%, *iba a hacerme yo una tortilla* L+H*!L!H– *nano* L* H% (audio-file from Pons Bordería 2011a).

The politeness of obvious agreement, in turn, is actually less predictable. While marking an agreement as expectable can still conversationally imply that the provocation was unnecessary, it can also be interpreted as gearing the epistemic gradient towards the asserter by framing the approval of her assertion as unnecessary. Yet such conversational implicatures are dependent on a conventional meaning of these forms. As argued by Waltereit (2006: 188–189), notions such as attenuation and politeness fail to capture the modal mechanisms involved. We need to make progress both at the level of theoretical description and at the level of empirical investigation to overcome the confusion about the contribution of particles and intonation in denoting (dis)agreement and/or obviousness. §3.3.3 presents a proposal for an extension of the model by Farkas & Bruce that allows to integrate these two levels of meaning. With Chapter 4, we then proceed to the empirical investigation.

3.3.3 Including modal non-at-issue meaning

Dialogue unfolds along a structure of Questions Under Discussion. Agreement, as well as partial and total disagreement, are possible configurations of stances of interlocutors toward the current QUD. It is an inquiry about "the way things are" (Roberts 2012), and relative polarity arises in negotiating different perspectives for the sake of creating a Common Ground of mutually accepted facts. I have argued that apart from relative polarity, modal evaluative meaning needs to be taken into account when modeling mirative and obvious intonation. Three notions have been used to capture mirative intonational meaning: conventional implicature (Bianchi et al. 2016), presupposition (Reich 2018), and emotive marker (Rett 2021b). All three categories fall under the broader notion of non-at-issue meaning. At-issueness has been introduced as a concept by Simons et al. (2010). The slightly simplified version by Beaver et al. (2017: 280) should suffice for our purpose.

> At-issueness: A proposition expressed by a constituent is *at-issue* if it contributes to the ordinary semantics of the clause in which it is located (i.e., it has Obligatory Local Effect), and entails that some possible answer to the QUD is false; otherwise the proposition is *not at-issue*.

One diagnostics for at-issueness is Obligatory Local Effect, established in Tonhauser et al. (2013). Contents that are obligatorily part of the content targeted by an embedding operator can be distinguished from those that are not (100). Intonational meaning arguably does not have Obligatory Local Effect (101).[39]

[39]It remains empirically unclear if nonrestrictive relative clauses can actually receive the full

(100) (Beaver et al. 2017: 280)
John's gone home sick. Mary thinks that his boss, who I'm going to talk to now, found out that John's unwell.
→ Mary thinks that John's unwell.
↛ Mary thinks that a male is salient in our conversation.
↛ Mary thinks that I'm going to talk to John's boss.

(101) John's gone home. Mary found out that John's unwell **!**
↛ Mary thinks that it is surprising that John's unwell.

Apart from projective behavior, *constancy under negation* is one standard test for non-at-issueness. Negation is here usually understood as intra-sentential, absolute polarity. For prosodic non-at-issue meaning, *constancy under reversal*, or relative negation, is a similarly useful test. Non-at-issue meaning cannot be challenged directly with 'No! I don't agree!' but only with moves like 'Oh, so you're saying that …?' or 'Wait a minute, are you implying that …?' which do not target the current QUD (Potts 2012: 2521,Taniguchi 2017, Westera 2017: 259). Speakers can directly target an assertion made in a provocation with either a total reversal (102a) or a partial reversal (102b). Yet denying the meaning of intonation or particles is not possible directly (103c.i). Instead, it requires interlocutors to turn it into a new QUD first (103c.ii).[40] In other words, it needs to become at-issue. As long as the QUD is maintained, intonational meaning therefore remains non-at-issue.

(102) A: Ha venido. [+]
L* L%
'(S)he has come.'

a. B: No, no ha venido. [REVERSE,−]
L* L%
'No, (s)he didn't come.'

b. B: No, ha salido. [REVERSE,+]
L+H* L%
'No, (s)he left.'

inventory of nuclear contours. The one study I am aware of found mostly rising patterns in English nonrestrictive relative clauses (Garro & Parker 1982), which suggests a comparatively restricted inventory.

[40] Note that the Corpus del Español News on the Web (Davies 2012-2019) indicates that there are two construction with quite divergent meanings in Spanish. Whereas *o yo qué sé* translates to 'or whatever', *¡¿Y/Pero yo qué sé?!* 'How should I know?!' is restricted to contexts rejecting an assumption of expectability or knowledge on the part of the interlocutor. The nuclear configuration is presumably the counterexpectational echo question L+H* HH% presented in Table A.1. Note further that the graphemic sequence ⟨?!⟩ is significantly associated with the word *qué* (MI=3.17, 1460 co-occurrences), whereas ⟨!?⟩ rather associates with verbs such as *exclamó*, *gritó* as well as interjections such as *oh* and *ay*.

(103) a. A: ¿Y qué pasa con Juan? [QUD:p]
L* H%
'And what about John?'

b. B: ¡Ha venido! [at-issue:p, +]
L+H* L!H% / L* HL% [NAI: obvious(p)]
'He has come!'

c. i. A: No, no ha venido. [at-issue:p, REVERSE, −]
L* L% / L+H* L%
'No, he didn't come.'

ii. A: ¡¿Y yo qué sé?! [at-issue: q]
[NAI: mirative(q)]
'And how should I know?'

When it comes to integrating non-at-issue meaning into the model by Farkas & Bruce (2010), there are several points to consider. What is on top of the Table is the current QUD. In modeling sentences that communicate both at-issue content p and non-at-issue content q, we cannot place both p and q on the Table. If q does not enter the Table, it does not enter the projected set either, since the projected set is directly derived from the Table. Without entering the projected set, non-at-issue content cannot create markedness relations between agreeing and reversing reactions. Yet the model needs to capture the fact that challenging non-at-issue meaning is more marked than leaving it unmentioned (103c.ii). Given that it is impossible to agree with non-at-issue meaning via agreement particles such as *yes*, the markedness relation needs to be different from the difference between (possibly silent) agreement and (necessarily overt) disagreement. So what causes the markedness of challenging non-at-issue meaning?

Within the model, two options are available to answer this question. According to Potts (2015: 32), conventional implicatures "quietly *impose* their content on the Common Ground", whereas presuppositions require that p be in the Common Ground to be felicitous. So if we understand intonational meaning as conventional implicature (Bianchi et al. 2016), we can model it as a direct CG update by revising illocutionary operators for sentences with non-at-issue content so as to include a direct update of the Common Ground (104).[41] Moreover, there is no

[41]Rett (2021b) considers a direct Common Ground update for non-at-issue meaning as well, yet opts to model what she calls "emotive" meaning as Discourse Commitments anchored to the speaker, as discussed below. See Schneider (2017) for a different implementation of direct-CG-update for German sentence internal *ja* and Zimmermann (2019: 133) for a direct-CG-update account of *als ob*-miratives in German.

declarative feature on the Table in (104). This is warranted because the structures encoding sentence type itself (in particular prosody and syntax) are no target for anaphoric reference.[42]

(104) **D**, for sentences $S[D]$ with at-issue content p and non-at-issue content q:
(S[D], a, K_i) = K_o such that
a. $DC_{a,o} = DC_{a,i} \cup \{p\}$
b. $T_o = push(\langle S; \{p\}\rangle, T_i)$
c. $ps_o = ps_i \cup \{p\}$
d. $CG_o = CG_i \cup \{q\}$

Under the perspective of (104), prosodic non-at-issue meaning transfers easier than asserted at-issue content by directly committing all interlocutors. Challenging it is therefore as marked as retracting from a commitment. But does intonational meaning actually commit all interlocutors? Rett (2021b) argues that this is not the case. She includes mirative exclamatives in a group of forms she calls "emotive markers". Apart from prosody, these are particles such as English *alas* and *wow*. She also cites work by Wu (2008) on Mandarin *jingran* and *guoran*, which lack a straightforward translation but can broadly be translated as 'surprisingly/unexpectedly' and 'unsurprisingly/obviously' (105).

(105) a. Wow, Jane lost the race!
b. Alas, Jane lost the race.
c. Mandarin
Zhangsan guoran/jingran lai le.
Zhangsan GUORAN/JINGRAN come PST
'Zhangsan came (as expected/not expected).'

According to Rett (2021b: 326), "emotive markers" are non-at-issue Discourse Commitments to pairs of evaluative stances and propositions (106). These have the form 'x has attitude ϵ toward p' and enter the Common Ground in this form.

(106) *Discourse Commitments* according to Rett (2021b: 326)
Let DC_a be sets of propositions of the form believes$_a(p)$, is-pleased$_a(p)$, is-disappointed$_a(p)$, is-surprised$_a(p)$, or is-not-surprised$_a(p)$, representing the public commitments of a with respect to a discourse in which a and b are the participants, where:

[42] At least not for *Apt Responses* in the sense of Roberts (2017), which target proffered and relevant content. A possible way to pick up on sentence prosody is by stylized repetition (Persson 2018, Torreira & Grice 2018: 29).

a. believes$_a$(p) is a public commitment of a iff 'a believes p' is a mutual belief of a and b;
b. is-disappointed$_a$(p) is a public commitment of a iff 'a is disappointed that p' is a mutual belief of a and b;
c. is-pleased$_a$(p) is a public commitment of a iff 'a is pleased that p' is a mutual belief of a and b.
d. is-surprised$_a$(p) is a public commitment of a iff 'a is surprised that p' is a mutual belief of a and b;
e. is-not-surprised$_a$(p) is a public commitment of a iff 'a is not surprised that p' is a mutual belief of a and b.

Rett (2021b: 335) proposes a differentiation between doxastic DCs and emotive DCs, arguing that while doxastic commitments transfer in unchallenged conversation, emotive commitments do not transfer because default agreement doesn't apply to them.[43] If we follow this view, intonational meaning only commits the speaker to a pair of emotive stance and proposition. The only effect it can have on the hearer is that it forced her to acknowledge the commitment of her interlocutor, but there is no need for her to share this evaluation. This would contrast with a perspective in which intonational meaning would affect the CG.

I would argue that the terminology of "emotive attitude" hinders us from acknowledging the difference between emotions and modal stances. A feeling of surprise does not transfer by tacit acknowledgment, nor one of disappointment. But a commitment to an expectability or a desirability of p relative to shared assumptions does. This is why it is odd, or at least uncooperative, to agree with a commitment on the at-issue level while disagreeing with a modal commitment on the non-at-issue level (107a, 108a). It seems more natural to mark such diverging evaluation with a concessive construction (107b, 108b).[44]

(107) A: Alas, it's raining.
  a. B: # Yes, fortunately.
  b. B: Well, yes, it's raining, but fortunately so.

(108) A: Wow! It's raining!
  a. B: # Yes, unsurprisingly.
  b. B: Well, yes, it's raining, but unsurprisingly so.

[43] Note that Rett & Sturman (2020) do acknowledge that miratives "occasionally instead reflect the perspective of the hearer or some third party."

[44] A speaker willing to create a particularly deadpan persona might still use such uncooperative moves, but the very effect would be explainable by disobedience of a rule of dialogue.

Rett (2021b: 313–315) further argues that "emotive markers" differ from other non-at-issue markers in that they appear in Moorean sentences, in which the second part of a conjunct denies the sincerity condition of the first conjunct (109). These become acceptable under *suppose* (110).

(109) # It's raining, but I don't believe it's raining.

(110) Suppose that it is raining, but that I do not believe that it is raining.

According to Rett, markers like *unfortunately* (111) differ from markers like *allegedly* (112) in that they have these Moorean effects.

(111) Suppose that, unfortunately, Jane lost the race, but that I do not find it unfortunate that she did.

(112) # Suppose that, allegedly, Jane lost the race, but that no one alleged that she did.

Yet I would argue that *unfortunately* can create an amount of unacceptability similar to that in (112) if the second conjunct includes everyone, not just the speaker (113). In fact, it seems worthwhile to ask why (111) is acceptable. One explanation would be that there is the possibility to accomodate an independent, hypothetical context update for the first conjunct (with the non-at-issue evaluation introduced by *unfortunately*) and then a second one in which the at-issue content of the second conjunct challenges this evaluation.

(113) Suppose that, unfortunately, Jane lost the race, but that no one finds it unfortunate that she did.

In the light of these examples, I opt for the more parsimonious approach of using just one mechanism for non-at-issue content. Instead of seeing mirative intonation as "emotive", I treat it as a modal Common Ground update. Two aspects of this proposal need to be motivated: the idea that we are dealing with a Common Ground update, and the idea that this update is modal in nature. The oddness of disagreeing with evaluative stances without challenging them in (107) and (108) is one argument for their relation to the CG. Another motivation are counterexamples to the concept of "speaker-orientation" in which miratives are used to invoke an assumed hearer-evaluation. Hengeveld & Olbertz (2012) provide a range of such examples from a diverse set of languages. To get an idea, see (114) in which a speaker of Tarma Quechua expresses surprise about a fact long

past and known to her, yet new and unexpected to the hearer(s).[45] The examples in Hengeveld & Olbertz (2012) show that it is quite common for miratives to be addressee-oriented. If we take the Common Ground to be the point of reference for evaluative modals, the possibility of addressee-orientation follows naturally. A proposition long known to the speaker can still be marked as unexpected as long as it is not a mutually accepted fact and would seem highly unlikely from the perspective of the CG.[46]

(114) Tarma Quechua (Hengeveld & Olbertz 2012: 491)
Altu-ĉaw ka-yka-nqa-y-kama-m intrega-rqa-ma:-**ñaq**
highlands-LOC be-PROG-NML-1.A-DLMT-CERT give.away-PF-1.P-3.A.MIR
mamá-y.
mother-1.POSS
'While I was staying in the highlands, my mother had given me away [in marriage].'

Apart from a motivation for the mechanism of a CG-update, we also need to motivate a perspective on miratives that makes reference to modality rather than emotive stance. In fact, a perspective on mirativity and obviousness in terms of modality is rather common in the literature. Wu (2008) analyzes *jingran* 'surprisingly' and *guoran* 'unsurprisingly/obviously' in terms of evaluative modality. Against Hsieh (2005, 2006a,b), he argues that evaluative modals can have model-theoretic semantics in terms of possibility and necessity. This has also been proposed for mirative and obvious intonation (Reich 2018), with further reference to morphological mirativity in Turkish (DeLancey 1997, 2012) and morphological obviousness in Kurtöp (Hyslop 2011: 597–598).

The question if evaluative modality should be grouped under the "modal umbrella" (Nuyts 2006: 2), alongside more common types such as epistemic and deontic modality, is hotly debated. One counterargument is that evaluative modals always concern the real world as opposed to a set of possible worlds. Wu (2008) circumvents this problem by modeling the meaning of the two antonymic particles in terms of (in)compatibility between a proposition and all possible worlds accessible via the speakers' expectations (115).

[45] According to Adelaar (2013), *ñaq* is actually uncommon in cases of speaker-surprise. Rather, it "indicates a fact or occurrence that is objectively surprising" (Adelaar 2013: 99). Glossing has been changed to better conform with Comrie et al. (2008). A/S for *agent/subject* has been changed to A, O/IO for *object/indirect object/patient* has been changed to P.

[46] Following Harris & Potts (2009), Rett (2021b: 308) assumes that there is an unspecified pragmatic mechanism that allows "speaker-oriented" constructions to represent other perspectives. In line with Amaral et al. (2007: 733–739), I think that this mechanism should be part of our model of dialogue.

(115) Let $B(w)$ be the set of possible worlds which represent the speaker's expectation, i.e. the modal base for *jingran* and *guoran*.

a. $[\![\text{jingran}(p)]\!]^{B,\leq,w} = 1$ iff for all $w' \in B(w)$ there is a $w'' \in B(w)$ with $w'' \leq_w w'$ and $[\![p]\!]^{w''} = 0$.

b. $[\![\text{guoran}(p)]\!]^{B,\leq,w} = 1$ iff for all $w' \in B(w)$ there is a $w'' \in B(w)$ with $w'' \leq_w w'$ and $[\![p]\!]^{w''} = 1$.

> In plain English, [this] says that *jingran*(p) is true with respect to a modal base B, an ordering source $\leq$ and a possible world w if and only if for all possible worlds w' that are members of the modal base $B(w)$ there is a possible world w'' such that w'' is at least as close to w as w' and p is false in w''. This semantics instantiates the incompatibility of the proposition *jingran* presents with the set of possible worlds that represent the speaker's expectation.
>
> [...] *guoran*(p) is true with respect to a modal base B, an ordering source $\leq$ and a possible world w if and only if for all possible worlds w' that are members of the modal base $B(w)$ there is a possible world w'' such that w'' is at least as close to w as w' and p is true in w''. This semantics instantiates the compatibility of the proposition *guoran* presents with the set of possible worlds that represent the speaker's expectation. (Wu 2008: 171)

Compare this to the proposal by Bianchi et al. (2016) for mirative fronting, already touched upon in §3.1.2. Mirative fronting is modeled here as a modal extension to focus alternative semantics as proposed by Rooth (1992), which for any sentence with a focused constituent yields a set of alternative propositions with a variable of the same denotational type as the focused constituent.[47] According to Bianchi et al. (2016: 14), "the mirative import conveys that there is at least one member of this subset of alternative propositions which is more likely than the [asserted] proposition". The relation of being more likely, or *a better possibility*, reproduced in (117), is formally defined via the relation of being *at least as good a possibility*, reproduced in (116).

(116) p is *at least as good a possibility* as q w.r.t. a modal base $B(w)$ and an ordering source $O(w)$ iff there is no world u in $B(w)$ in which q is true and p is false which is closer to the ideal represented by $O(w)$ than all the worlds v in $B(w)$ in which p is true and q is false.

$$[\neg\exists u(u \in B(w) \wedge u \in q - p \wedge \forall v((v \in B(w) \wedge v \in p - q) \rightarrow u <_{O(w)} v))]$$

[47] A subset of this set of alternative propositions is taken to be the value of the free variable introduced by the focus operator.

(117) p is *a better possibility* than q w.r.t. a modal base $B(w)$ and an ordering source $O(w)$ if and only if
  a. p is at least as good a possibility as q w.r.t. $B(w)$ and $O(w)$;
  b. q is not at least as good a possibility as p w.r.t. $B(w)$ and $O(w)$.

(118) Mirative Import:
The proposition expressed by the clause is less likely than at least one distinct alternative proposition with respect to a contextually relevant modal base and stereotypical ordering source. (Bianchi et al. 2016: 12–13)

Since Bianchi et al. (2016) do not themselves compare their approach to Wu (2008), some short remarks on the differences between these similar proposals. First and foremost, both approaches have the advantage of easily adapting to different types of modal bases and ordering sources. Different modal flavors can be triggered by conversational background or other markers of modality, such as modal adverbs, particles, or verbs, while still keeping the mirative import constant.

One difference is that while Wu (2008) models mirativity in terms of necessity via universal quantification over an ordered set of possible worlds that excludes any expectation of the asserted proposition, Bianchi et al. (2016: 15) opt for a much weaker approach in terms of existence of at least one more likely alternative.

> This is certainly the weakest possible definition of the mirative import […] The participants need only agree on the fact that there is at least one more likely alternative proposition, but they need not agree on any specific alternative […]

For the question of appropriate contexts for miratives, this has significant implications. A mirative is either warranted once interlocutors can imagine one ever so slightly more probable alternative, or it is warranted only if there was no way interlocutors could have imagined the asserted proposition to be true. Both positions are somewhat extreme. A third option is to integrate a contextual threshold into the meaning of miratives (119) (Villalta 2007, Grosz 2012: 71–73,139–148).

(119) For any scale S and proposition p, interpreted in relation to a context c and assignment function g, an utterance $\text{EX}(S)(p)$ is felicitous iff $p \geq_S \textsc{threshold}(c)$

> "EX expresses an emotion that captures the fact that p is higher on a (speaker-related) scale S than all contextually relevant alternatives q below a contextual threshold." (Grosz 2012: 72)

While a threshold perspective seems to be a sort of middle ground, the context dependency of both the threshold and the relevant alternatives makes this view empirically difficult to distinguish from the stronger perspective in terms of necessity and impossibility. If no alternatives above the contextually determined threshold are contextually relevant, (119) makes the same empirical predictions as (115). For most miratives, it seems quite reasonable to assume that alternatives to *p* which are sufficiently unlikely to surpass the contextually determined threshold are not contextually relevant, which would render *q* in (119) irrelevant.

One possible argument to exclude at least one of the three proposals is by asking which of them can capture the semantic symmetry between *jingran* (mirative/surprise) and *guoran* (corroborative/obviousness) (Wu 2008, Reich 2018). For Wu (2008), *guoran* can be used if the proposition presented is expected to be necessarily true. A threshold model would require the proposition to be higher on a scale of expectedness than all contextually relevant alternatives below a contextual threshold. These two proposals seem not only plausible, but interchangeable if no contextually relevant alternatives are also above a contextual threshold. A minimal-difference model, on the contrary, would only require interlocutors to imagine one less probable alternative to *p*. There is a less probable alternative to almost any proposition, which means that obviousness would always be licensed. Moreover, both a more and a less probable alternative to a proposition can be accessible, which would make *jingran* and *guoran* compatible. Yet speakers of Mandarin reject such a combination (120), at least when one is not interpreted as under the scope of the other.[48]

(120) Mandarin
Zhangsan jingran guoran lai le.
Zhangsan JINGRAN GUORAN come PST
'Zhangsan surprisingly unsurprisingly came.'

Can we integrate a modal perspective into the Farkas and Bruce model? One way is to maintain the perspective on Discourse Commitments as pairs of modal evaluations and propositions as in (106), yet decompose the meaning of the evaluative stances. In a sense, the decomposition of mirativity and obviousness is

[48] Many thanks to Yuting Li for advice on this matter.

actually much more straightforward once we combine a context-update perspective with standard possible-world understandings of *must* and *can*. As we have seen, surprise and obviousness can be modelled in terms of an assertion of a proposition which is necessarily false/true in all worlds accessible via a stereotypical conversational background.

(121) A stereotypical conversational background is a function f which assigns sets of propositions to members of W such that for any $w \in W$: $f(w)$ contains all those propositions p such that it is the normal course of events in w that p – for someone, for a community etc. (Kratzer 1981: 45)

The problem when modeling mirativity in terms of a stereotypical conversational background is that the normal course of events changes if a previously unexpected proposition has been accepted as true. If the set of possible worlds accessible via a stereotypical conversational background was stable, a mutually accepted proposition would remain unexpected after having been singled out as a true fact. This is not what we observe in mirative examples. Rather, once a proposition has been accepted as true by all interlocutors, marking it with a mirative form becomes unacceptable. To my knowledge, this has first been noted for mirative evidentials by Rett & Murray (2013: 456). In (122a), A's exclamation that C is driving a new car is felicitous, and B agrees with the proposition and also commits to the evaluative non-at-issue content (122b). In (123c), A's exclamation that C is driving a new car is infelicitous for two reasons: firstly, the at-issue content is infelicitous because it is not informative, given that the past tense in (123a) implicates that A was wrong. After B's agreement (123b), the Common Ground has been updated so as to include the fact that C has a new car. Secondly, (123c) is infelicitous because the expectations have been updated as well.[49]

(122) Context: A and B watch C pull up in a new car.

a. A: (Wow!) C has a new car! [QUD:p, +]
[NAI: mirative(p)]

b. B: Yeah, true, wow! [at-issue:p, SAME, +]
[NAI: mirative(p)]

(123) Context: A and B watch C pull up in a new car.

a. A: I thought C was driving an old Nissan. [QUD:p, +]
[conversational implicature: q 'C has a new car'.]

[49] I have annotated the examples from Rett & Murray (2013: 456) to be more explicit.

b. B: I did too. [at-issue:p, SAME, +]
[tacit agreement: q]

c. A: # Wow! C has a new car! [at-issue:q, +]
[NAI: mirative(q)]

Evaluative modality, as in (106b–e), differs from other types of modality not in the type of accessibility relation (epistemic, deontic, etc.) but in a temporal shift of perspective. The difference between mirativity and epistemic impossibility, and that between obviousness and epistemic necessity, is that it combines the acceptance of one possible world as the actual world with a commitment to its impossibility or necessity from a previous actual world.[50]

This temporal shift in modal perspective can be illustrated nicely in a dynamic context-update model as proposed by Farkas & Bruce (2010). Compare the difference between a neutral, non-modal declarative (124a) formalized in (125), a declarative with a modal verb (124b) formalized in (126), a statement of the obvious (124c) formalized in (127), and a mirative exclamative (124d) formalized in (128).[51]

(124) A: ¿Y qué pasa con Juan? [QUD:p]
L* H%
'And what about John?'

a. B: Ha venido. [at-issue:p,+]
L* L%
'He has come.'

b. B: Tiene que haber venido. [at-issue:p,+]
L* L%
'He must have come.'

[50]The "actual world" should not be misunderstood as a physical reality independent of the interlocutors, but rather as a discursively constructed reality. I do not see this as a case of *psychologism* (Bradley & Swartz 1979: 4–5) or *subjectivism* (Portner 2009: 122–129), since the psychological states of interlocutors are not relevant here. Interlocutors can agree on something that they do not believe in. And once a set of propositions is agreed upon, it can form the basis for modal evaluation, irrespective of any objective truth. As recognized by Lyons (1977: 797), the distinction between objective and subjective truth "is not a distinction that can be drawn sharply in the everyday use of language; and its epistemological justification is, to say the least, uncertain." See also Portner (2009: 73–74) on the difference between statistical certainty and modal certainty, and MacFarlane (2014) on the relation between commitments and relative truth.

[51]The negative absolute polarity of (124d) allows us to see how (128) relates to (127). If the shared assumption at CG_i was that Juan coming was not a feasible option to consider, a mirative with positive absolute polarity would be licensed.

c. B: ¡Ha venido! [at-issue:p,+]
L+H* L!H% / L* HL% [NAI: obvious(p)]
'He has come!'

d. B: ¡No ha venido! [at-issue:p,−]
L+¡H* L% [NAI: mirative(p)]
'He hasn't come!'

(125) **D**, for sentences $S[D]$ with at-issue content $\{p\}$:
(S[D], a, K_i) = K_o such that
a. $DC_{a,o} = DC_{a,i} \cup \{p\}$
b. $T_o = push(\langle S[D]; \{p\}\rangle, T_i)$
c. $ps_o = ps_i \cup \{p\}$

(126) **D**, for sentences $S[D]$ with at-issue content $\{\Box p\}$:
(S[D], a, K_i) = K_o such that
a. $DC_{a,o} = DC_{a,i} \cup \{\Box p\}$
b. $T_o = push(\langle S[D]; \{\Box p\}\rangle, T_i)$
c. $ps_o = ps_i \cup \{\Box p\}$

(127) **D**, for sentences $S[D]$ with at-issue content $\{p\}$ and non-at-issue content $\{\Box p\}$:
(S[D], a, K_i) = K_o such that
a. $DC_{a,o} = DC_{a,i} \cup \{p\}$
b. $T_o = push(\langle S[D]; \{p\}\rangle, T_i)$
c. $ps_o = ps_i \cup \{p\}$
d. $CG_o = CG_i \cup \{\Box p\}$

(128) **D**, for sentences $S[D]$ with at-issue content $\{\neg p\}$ and non-at-issue content $\{\Box p\}$:
(S[D], a, K_i) = K_o such that
a. $DC_{a,o} = DC_{a,i} \cup \{\neg p\}$
b. $T_o = push(\langle S[D]; \{\neg p\}\rangle, T_i)$
c. $ps_o = ps_i \cup \{\neg p\}$
d. $CG_o = CG_i \cup \{\Box p\}$

The necessity operator used here can be read as *must*. The difference between an at-issue modal verb and a non-at-issue update via mirativity or obviousness is that the latter shifts the worlds relative to which the necessity is interpreted

to CG_i.[52] With an asserted modal verb (124b), there is the possibility for the interlocutor to challenge the evaluation. If she does, the accessibility relation itself becomes the QUD. If she doesn't, it enters the CG via tacit agreement. Crucially, tacit agreement is less direct than a CG update triggered by non-at-issue content since it completes in the subsequent context update. Being the unmarked reaction to an assertion, agreement is the bias of the projected set. Yet the automaticity of a direct CG update triggered by non-at-issue miratives is even more informative. By asserting $\neg p$ and implicating or presupposing that $\Box p$, a strong shift in perspective on p is forced upon all interlocutors.

Conversely, a combination of at-issue p and non-at-issue $\Box p$ seems less informative. What reason is there to assert a proposition and mark it as highly expectable from mutually accepted knowledge? One answer might lie in the politeness effect of downplaying one's epistemic position, in fact negating any epistemic gradient on a topic between the asserter and the respondents (Heritage 2012). Yet, from the examples seen so far, a highly explanatory answer lies in the distinction between provocation and response. As we have seen in our review of the examples in the literature, an assertive provocation with obvious intonation is not the only option. Rather, statements of the obvious can also react to biased provocations that call into question an already established fact (29,76). In such a context, asserting p and conventionally implicating that $\Box p$ not only (re)establishes p as the reacting speakers commitment, but reminds the interlocutor(s) that p could already have been deduced from the Common Ground. Since the original provocation cannot have changed the *CG*, this change of perspective actually reaches back by conversational implicature to the input *CG* of the provocation.

To illustrate the difference between an obvious provocation and an obvious confirmation or reversal, see the difference between (129b), formalized in (130), and (131b), formalized in (132). Note that the prosodic annotations are hypotheses based on the intuitions expressed in the few publications available. The literature does not tell us if there is semantic overlap between the configurations L* HL% and L+H*L!H%. We do not know if L* HL% and L+H*L!H% have agreement or reversal as part of their meaning. But we can take these categories as guiding lines for empirical investigation. The space of possibilities becomes visible once we compare the combinations of at-issue content, non-at-issue content, and (dis)agreement.

[52] Which in turn determines the Context Set (CS), "i.e. the set of worlds in which all the propositions in CG are true" (Roberts 2006: 208).

(129) a. A: Juan ha venido. [QUD:p,+]
L* L%
'John has come.'

b. B: ¡Claro! ¡Ha venido! [at-issue:p,+, same]
L+H* L– L+H* L!H% [NAI: obvious(p)]
'Sure! He has come!'

(130) Assertion Confirmation (**AC**) for sentences with at-issue content $\{p\}$ and non-at-issue content $\{\Box p\}$:

a. *Input context conditions*:
   i. $top(T_i) = \langle S[D]; \{p\}\rangle$
   ii. p in $\mathrm{DC}_{a,i}$

b. *Change*:
   i. $\mathbf{AC}(b, K_i) = K_o$ where $\mathrm{DC}_{b,o} = \mathrm{DC}_{b,i} \cup \{p\}$
   ii. $\mathrm{CG}_o = \mathrm{CG}_i \cup \{\Box p\}$

(131) a. A: Al final no ha venido. [QUD:p, –]
L* L%
'Ultimately (s)he hasn't come.'

b. B: ¡Si ha venido! [at-issue:p, +, reverse]
L* HL% [NAI: obvious(p)]
'But (s)he has come!'

(132) Assertion Reversal (**AR**) for sentences with at-issue content $\{p\}$ and non-at-issue content $\{\Box p\}$:

a. *Input context conditions*:
   i. $top(T_i) = \langle S[D]; \{\neg p\}\rangle$
   ii. $\neg p$ in $\mathrm{DC}_{a,i}$

b. *Change*:
   i. $(\mathbf{AR}b, K_i) = K_o$ where $\mathrm{DC}_{b,o} = \mathrm{DC}_{b,i} \cup \{p\}$
   ii. $\mathrm{CG}_o = \mathrm{CG}_i \cup \{\Box p\}$

It is of course possible to assert these modal evaluations. Instead of marked intonation and particles as in mirative exclamatives (133a), formalized in (134), we would expect a modal verb in the indicative case and an embedded proposition in the subjunctive case (133b,c).[53] (133b) can be formalized as in (135).[54] An

[53] According to Palmer (2001: 3), subjunctive marks non-at-issue status or lack of assertion.
[54] A formalization of (133c) is straightforward and omitted here.

advantage of asserting a modal evaluation, instead of presupposing or conventionally implying it, is that changes of perspective can be made explicit via "In view of what I know, it's surprising that …" or the likes (Kratzer 1981).

(133) a. (¡Anda!) ¡Ha venido! [at-issue:p,+]
L+¡H* L% [NAI: mirative(p)]
'(Wow!) (S)he has$_{\text{IND}}$ come!'

b. Es sorprendente que haya venido. [at-issue: mirative(p),+]
L* L%
'It's$_{\text{IND}}$ surprising that (s)he has$_{\text{SUBJV}}$ come.'

c. Era de esperar que viniera. [at-issue: obvious(p),+]
L* L%
'It was$_{\text{IND}}$ to be expected that (s)he would come$_{\text{SUBJV}}$'

(134) **D**, for sentences $S[D]$ with at-issue content $\{p\}$ and non-at-issue content $\{\Box\neg p\}$:
(S[D], a, K_i) = K_o such that
a. $DC_{a,o} = DC_{a,i} \cup \{p\}$
b. $T_o = push(\langle S[D]; \{p\}\rangle, T_i)$
c. $ps_o = ps_i \cup \{p\}$
d. $CG_o = CG_i \cup \{\Box\neg p\}$

(135) **D**, for sentences $S[D]$ with at-issue content $\{\Box\neg p\}$ and non-at-issue content $\{p\}$:
(S[D], a, K_i) = K_o such that

a. $DC_{a,o} = DC_{a,i} \cup \{\Box\neg p\}$
b. $T_o = push(\langle S[D]; \{p\}\rangle, T_i)$
c. $ps_o = ps_i \cup \{p\}$
d. $CG_o = CG_i \cup \{p\}$

In principle, there is no limit to the amount of non-at-issue commitments speakers can make with one speech act.[55] Prosodically marked *wh*-exclamatives are an example of multiple non-at-issue commitments. Prosodically neutral *wh*-exclamatives still presuppose the proposition to be true, and assert that the *wh*-pronominalized constituent is high on a scale. But only exclamatives that are

[55] For lexical presuppositions, this is commonplace (e.g. existence and uniqueness presupposition introduced by a definite article, Zimmermann & Sternefeld 2013: 205–211).

marked via mirative prosody or mirative particles also add to the output CG that this high position on a scale was expected to be impossible from the perspective of the input CG.

Note that a similar semantic proposal to the one made here for mirative prosody has been developed independently by Fleury (2021: 195–230) for some readings of French *comment*-questions that express the unexpectedness of the proposition that the speaker inquires about.[56] It was published after the defence of the thesis on which this publication is based, so the insights contained in it did not find consideration during my empirical investigations. I nevertheless encourage readers primarily interested in the dynamic semantics of unexpectedness to take it into account. Extending Fleury's model to obviousness and broadening his empirical perspective by taking prosody into account would be a logical next step for future research.

Summing up, we have seen that it is high time for semantic theory to take exclamation marks as seriously as question marks. While prosodically underspecified, they represent the writer's attempts to capture the additional intonational meaning encoded in the sentences they mark. On the other hand, intonational phonology needs to formulate and test hypotheses based on explicit semantic and pragmatic models. In the following, I attempt to do so for a subset of marked declaratives, exclamatives and relative polarity particles in Madrid Spanish.

[56]The reading of *comment*-interrogatives that is closest to mirative declaratives is called *rhetorical* by Fleury because it lacks questioning force. It has 'the presupposition that no relevant information is able to resolve the conflict between the speaker's expectations and the prejacent *p*' ("la présupposition qu'aucune information pertinente n'est capable de résoudre le conflit entre les attentes du locuteur et la préjacente *p*", Fleury 2021: 52).

4 Summary and methodological implications

4.1 Main arguments

Before turning to the empirical treatment of the problems presented so far, I want to sum up the arguments and reflect on their methodological implications. In Chapter 2, we have seen that the presence or absence of pitch accents (F_0 excursions on stressable syllables) depends on discourse contexts (Ortega-Llebaria & Prieto 2011: 74), which I take as an argument for seeing syllables not as ±stressed, but as ±stressable, with phonetic correlates surfacing at higher levels of prosodic structure only under the condition that sentence prosody associates accents with stressable syllables. These accents, in turn, are partly conditioned by syntax-prosody mapping constraints, but also by illocutionary mood, information structure, and "interactive attitudinal aspects" (Féry 2017: 156).

I argued that $(SV)_\phi(O)_\phi$ phrasing can only partly be explained on the basis of mapping rules or constraints that *match* or *wrap* syntactic constituents. Instead, it should be linked to the scaling implications of the proposal by Hualde (2002: 110–112) to interpret H– as an indicator of givenness (or presupposed prefocal material according to Gabriel 2007, see Table 1.2), namely a reversal of the standardly assumed downtrend throughout the utterance up to the H–. The empirical challenge posed by this prenuclear global rise is further complicated by the variety of possible realizations of intermediate phrase accents, some more locally realized (continuation rise), some spreading over several syllables (sustained pitch, preboundary upstep, pitch reset) (Gabriel et al. 2011).

The importance of solving the role of intermediate phrase accents is underlined further by the debate surrounding prenuclear rising pitch accents in Spanish, which are said to vary according to illocutionary mood (Face & Prieto 2007) or according to the proximity of phrase accents and boundary tones (Hualde 2002: 106, Gabriel 2007).

In reviewing the intonational phonemes proposed for Spanish, I noted that complex phrase accents (LH–, HL–, LHL–) and boundary tones (LH%, L!H%, HL%, LHL%) are predominantly linked to notions of anti-expectation/incredulity,

obviousness, and insistence (Tables 2.2 and 2.3). Finally, I argued that two recent investigations of Madrid Spanish intonational phonology, Elvira-García (2016) and Torreira & Grice (2018), both place obviousness at the heart of their respective analyses but suffer from the lack of a model of intonational meaning that would relate it to other aspects of discourse meaning.

Taken together, in Chapter 2 I have tried to show from different angles of the phonological debate about Spanish intonation the need for a clarification of the relation between sentence types such as *declarative*, *interrogative*, *exclamative* on the one hand, and *anti-expectation*, *obviousness*, *insistence* on the other hand. Once understood, these sentence-level meanings need to be related to information structure, which operates on parts of sentences.

Chapter 3 first approaches this task decompositionally, before presenting a model that recomposes these complex discourse functions in a unified fashion. Regarding exclamatives, I proposed to disentangle the contribution of *wh*-exclamative syntax (which seems to be *factivity* and *scalar implicature*) from the mirative component (instead of *widening*, Zanuttini & Portner 2003), which seems attributable to marked intonation in many of the relevant examples. Regarding statements of the obvious, we noted that the state of the art is highly inconclusive about corresponding prosodic forms, which seems to be due to a lack of understanding of what obviousness actually is. I further noted that one of the few points of agreement in the literature on obviousness is the possibility to disambiguate prosody by means of particles such as *claro*, *pues*, and *hombre/mujer* (Beckman et al. 2002: 19, Prieto & Roseano 2009–2013a, Hualde 2014: 278, Torreira & Grice 2018).

I then proposed to use a modalized version of the Farkas and Bruce model (Farkas & Bruce 2010, Rett 2021b) to arrive at a more complex understanding of the interplay between illocutionary moods, relative polarities, and modal stances towards propositions. This leads to an understanding of assertions in terms of at-issue Discourse Commitments, but also to an understanding of evaluative non-at-issue Discourse Commitments as direct modal Common Ground updates. I finally argued that for mirativity and obviousness, these Discourse Commitments mark the proposition as necessary/impossible from the perspective of the input Common Ground, thereby shifting the world from which the modal base of the non-at-issue evaluation is accessible one context-update back.

Furthermore, in responses to biased provocations, this shift reaches two updates back. This is particularly relevant for statements of the obvious, which in reversals are informative. The model therefore predicts a markedness relation with regard to relative polarity. An obvious declarative that serves as a reversal of a previous assertion (or a biased tag-question) should be more marked than

an agreement. Since markedness as presented in Chapter 3 is seen as a predictor of overt coding, we expect differences between the (prosodic) modal marking of reversals and confirmations. In natural dialogue, we also expect lexical markers of (dis)agreement to occur together with prosodically marked modal assessment.

Modal intonation should behave just as "chameleonic" (von Fintel & Gillies 2007: 34) as lexical modals, with modally marked intonation partly underspecified until context provides a modal base. An empirical investigation of the prosodic expression of one type of modality should therefore check for interfering effects of another type of modality.[1]

Finally, intonation is an independent cue. Modal meaning seems to be expressed by such diverse strategies as insubordinate syntax, discourse particles, and intonation. This means that intonation should not depend on the occurrence of these other strategies. While the general prevalence of redundancy in phonology and grammar (Pinker 1994: 184, Shannon 1948) would have us expect intonational marking to co-occur with other markers of modal non-at-issue commitments, it should in principle also occur without them.

The pending questions for empirical investigation are summed up in (136). In §4.2, we turn to the methodological implications of these tasks, taken on in Chapters 5 and 6.

(136) Pending questions

a. Can the findings about nuclear contours of statements of the obvious and mirative exclamations be reproduced beyond individual examples?

b. Can mirative intonation be disentangled from exclamative syntax?

c. Does relative polarity affect obvious intonation?

d. Is phonological phrasing affected by modal non-at-issue commitments?

e. Does intonation correlate with other non-at-issue markers such as discourse particles?

[1]Moreover, I would expect turns which assert a high expectation about a proposition and conventionally imply a surprise about this proposition to be either infelicitous or ironic (i).

(i) # Wow! I totally expected this!

4.2 Methodological implications

> Researchers working on language and speech are no "signal hunters", but hunt for functions and meanings as reflected in the speech signal [...]
> The out-of-the-way setting of a recording booth can be conducive to out-of-the-way linguistic behaviour, in cases where the speaker lacks a real addressee or a real communicative task to perform. (Niebuhr & Michaud 2015: 3, 10)

Laboratory speech, though central to the endeavor of *laboratory phonology* to go beyond an "impressionistic transcription of a corpus of utterances" (Cohn et al. 2012: 6), often provides as many advantages as disadvantages. This becomes particularly visible when dealing with the pragmatics of intonation, where functions and meanings are much more dependent on interactional settings and therefore less accessible for elicitation via visual stimuli or textual cues. The trade-off seems to be between naturalness and control, with control over lexical material, syntax, and many other aspects of speech varying greatly between elicitational and observational data (Kasper & Dahl 1991: 217, Vanrell et al. 2018: 192).

The model presented in §3.3 is based on the idea that interlocutors negotiate commitments to stances about the way things are or ought to be. The markedness relations predicted in the model are the pitfalls speakers face when entering such negotiation. It is to be expected that their willingness and capability to avoid or bridge them will vary greatly depending on their involvement in the topic of conversation, their social relation with interlocutors, the global setting, and likely many more factors. What does this mean for data acquisition and empirical investigation? Firstly, it imposes minimum requirements on the kind of data to acquire. Provocations, responses, and relative polarity are prototypically associated with dialogues. While alterity can also be constructed in monological settings (e.g. in soliloquies), a corpus of dialogical data seems preferable for the detection of context updates. Moreover, the relation between provocations and responses goes beyond lexical and syntactical structure. Crucially, since the prosodic form of the provocation determines the associated commitments, responding moves can only be understood with access to the prosodic form of their provocations. I call this the *Provocation-Response Nexus*.

This nexus is no minor issue. If a laboratory production experiment is intended, it excludes any elicitation strategy in which the prosodic form of the provocation is underspecified (e.g. written text) or varies from elicitation to elicitation (e.g. provocation by an investigator/lab technician/etc.). To date, research on Spanish intonation has not achieved this level of control. Though it may seem as if

perception studies avoid this problem by using an invariable stimulus as provocation, they offer either "silent" (written) choices or capture only a narrow section of the range of possible reactions. Moreover, obtaining and selecting the recordings needed for forced-choice perception tasks is itself a process that requires interpretable production data and selectional criteria.

I see three solutions to this problem: Firstly, to investigate natural dialogue data to develop an idea of some key features detectable in spontaneous speech and thereby sharpen the hypotheses derived from our model and from the literature. Even though a fine-grained, comparative phonetic and phonological analysis is fraught with difficulties with such data, some intonational tendencies should become visible. This strategy is pursued in Chapter 5. A second solution is to enhance trusted and well-established experimental set-ups (such as the *Discourse Completion Task*, Vanrell et al. 2018) so as to allow for control of the *Provocation-Response Nexus*. Experimental data allow us to control as many contextual and phonotactic variables as possible to determine the specific contribution of a) modal conversational backgrounds (expectations, desires, etc.) and b) relative polarity (agreement and disagreement). This strategy is pursued in Chapter 6.

A combination of methods requires a selection of points of interest, since not all possible combinations of discourse context, illocutionary mood, at-issue and non-at-issue Discourse Commitment can be explored at once. In the following chapters, I will concentrate on the way assertive speech acts prosodically express mirativity and obviousness under different settings of relative polarity. Importantly, I thereby exclude interrogatives and directives from the scope of investigation.

Chapter 5 presents a way of obtaining these marked discourse moves in free dialogue corpora not specially designed for the purpose of investigating intonation and pragmatics. Chapter 6 describes the methodology and results of a laboratory production experiment designed for the purpose of answering the questions in (136).

5 Exploring corpora: Discourse particles and intonation

This chapter aims at exploring the distribution and some relevant features of mirative and obvious assertions detectable in spontaneous speech and thereby detecting possible intervening variables for the experimental investigation of their prosody. It also intends to sharpen the hypotheses derived from the model in §3.3 and from the literature by providing a basis of natural data observations. This is particularly important given that studies on natural corpus data (such as Cantero-Serena & Font-Rotchés 2007, Martín Butragueño & Vázquez 2018) have proven difficult to integrate into the laboratory speech based picture as presented by Hualde & Prieto (2015).

Statistically valid, quantitative phonetic and phonological comparison of highly marked intonation as laid out in §3.3 is close to impossible with lexically, syntactically, and contextually uncontrolled corpus data at the current state of the art. Questions (136a,b,c,d) about nuclear contours, their relation to relative polarity, and their interplay with phrasing and exclamative syntax can therefore not be answered solely by means of a corpus study. Yet qualitative observations such as those in §5.2 are important steps in developing intuitions about the contexts for such marked discourse moves. Moreover, question (136d) about the correlation between different markers of non-at-issue commitments can, and should, be tackled via spontaneous data. While we ultimately need *Laboratory Phonology* research in the sense of Cohn et al. (2012) to find out about the individual contribution of intonation (Chapter 6), we expect marked discourse moves to be signaled by intonation, discourse particles, and syntax in natural dialogue.[1]

Discourse particles share many traits with intonational markers. They are non-at-issue and can be broadly categorized as modal or discourse oriented, with many of them sensitive to anticipated context states, modality, and relative polarity (Waltereit 2006: 47–48). Zimmermann (2011: 2033–2034) goes so far as to

[1]Whether co-occurrences between e.g. mirative particles, mirative intonation, and mirative syntactic structures are cases of redundancy is an empirical question. The findings presented below indicate that partial semantic overlap could be a more appropriate interpretation of such co-occurrences, at least when we are not dealing with mere repetition.

say that "in the absence of particles, English resorts to other grammatical means for expressing speaker and/or hearer attitudes towards a proposition [which] comprise intonation […] and sentence-final tags". We will see in §5.1 that particles abound in marked Spanish utterances. Once we have established and understood their abundance, we can ask under which circumstances they occur with marked intonation (§5.2).

Turning the argument by Zimmermann around, we can see discourse particles as the lexical equivalent of marked intonation. This is why they are used prolifically in computer mediated discourse where prosody has to be replaced by other strategies (Landone 2012). I therefore propose to see discourse particles as an indicator of points of interest when searching for marked discourse moves, their function in natural dialogue, and their prosodic form. Most importantly for our current purpose, they allow us to explore possible caveats for the experimental investigation of marked intonation.

Marked discourse moves in the sense of the modalized Farkas and Bruce Model (§3.3) are expected to be rare in natural dialogue. A speaker who repeatedly marks the content of her declaratives as unexpected would undermine the very modal base she exploits to do so. If everything you are willing to defend as a belief is unexpected from the Common Ground, then either the previous commitments of you and your interlocutors are false, or your assertions are. Both cases would undermine the main goal of conversation as defined in our model: to expand the Common Ground. Likewise, a speaker who repeatedly marks the content of her provocations or responses as expectable would come across as either a wiseacre or odd, because her assertions would *sensu stricto* not fulfill their typical function of putting commitments up for agreement and assessment.

Rare phenomena require large corpora for a sufficient number of occurrences. Large natural dialogue corpora of Spanish that include both audio recordings and textual transcriptions are few and far between. Two such corpora are the PRESEEA Corpus (PRESEEA 2014–2020) and the C-ORAL-ROM Corpus (Cresti & Moneglia 2005). The sub-corpus PRESEEA Madrid Barrio de Salamanca (published in three volumes: Cestero Mancera et al. 2012, Molina Martos et al. 2014, Paredes García et al. 2015) contains informal dialogues with residents of the Salamanca neighborhood.[2] After cleaning the corpus from annotations and headers, approximately 500k word tokens can be counted (approx. 33k turns). The C-ORAL-ROM Corpus for Spanish contains both public and private conversations and monologues from 410 speakers, primarily from the Castilia region (Cresti & Moneglia 2005: 9). Its size is appr. 200k word tokens.

[2]In the following, I cite the entire corpus (PRESEEA 2014–2020) as a shorthand for the three volumes. No other sub-corpora were used here.

Neither corpus has fine grained prosodic annotation, only some general perceptional tagging of lengthening and prosodic breaks plus an intuitive use of exclamation and interrogation marks. Given that each corpus was transcribed by a series of transcribers which did not agree on criteria for exclamation and interrogation mark placement, these can only be used heuristically.

The PRESEEA Madrid Salamanca Corpus has several advantages compared to the C-ORAL-ROM Corpus. It has been recorded with a high level of sociolinguistic control, achieving complete gender and education-level balance and recording only residents of one neighborhood of Madrid. It is a series of interviews that follow a list of topics such as perceived levels of crime, perceived changes in the neighborhood, style of living, family, political opinions on climate change, personal experiences of danger, vacations, etc. The length and depth of the conversations, held in the interviewee's homes, allows for intimate and natural dialogue, yet maintains a high level of explicitness through its semi-formal style. The C-ORAL-ROM Corpus has been recorded non-systematically in different situations of daily personal life, which greatly reduces the accessibility of expectations, states of knowledge, and other social dynamics. I therefore use the PRESEEA Corpus as my primary source of observations, only occasionally drawing on examples from C-ORAL-ROM and other, purely textual corpora (e.g. Corpus del Español News on the Web, Davies 2012-2019) for side-notes or individual arguments.

§5.1 establishes the precise meanings of the relevant discourse particles *hombre*, *claro*, *anda*, and *vaya*. Based on collocation analysis and context interpretation, I corroborate the proposal that both *hombre* and *claro* encode obviousness and differ in terms of their relative polarity functions. Moreover, I show that *anda* and *vaya* are also specified for acceptance of proffered propositions, with *anda* and *vaya* differing in the kind of modal evaluation of the accepted proposition.

§5.2 presents the observations about intonation that can be made based on corpus examples detected via a search of semantically related discourse particles. The examples show that turns with *claro* and *hombre* both frequently show L* HL% intonation in contexts where a proffered proposition is confirmed and marked as necessary from the CG. Moreover, turns with *claro* also show L+H* L!H% intonation in contexts where the truth of a proposition deemed necessary from the CG has been called into question. §5.2 also discusses the problem of H– phrasing in turns preceded by *hombre* L* HL%, which tends to violate syntactic mapping constraints in favor of a long rise to a late H– before the nuclear contour. For *anda* and *vaya*, results are less consistent. While turns with *anda* show mostly L+H* L% or L+¡H* L% nuclear contours, turns with *vaya* almost exclusively receive L* L% prosodic marking. §5.3 draws some conclusions from these

corpus-based observations and formulates the tasks for experimental investigation, which follows in Chapter 6.

5.1 Functions of discourse particles: *hombre*, *claro*, *anda*, *vaya*

As mentioned in §2.3.4, §3.2 and §3.3.1, literature on statements of the obvious in Spanish makes recurrent reference to particles such as *claro* and *hombre*. Some of the examples we have seen in the respective sections are also preceded by *pues* or a combination of several particles. In a similar fashion, mirative readings of exclamatives are often disambiguated by adding discourse particles such as *anda* or *vaya*, much as mirative exclamatives in the literature on English or German are often disambiguated via *Wow!* or *Mensch!* 'man/human' (Grosz 2012). The sparse literature on *anda* and *vaya* hints at a tendency for these markers to indicate mirative meaning (de Toledo y Huerta 2001/2002: 52, Borreguero Zuloaga 2015: 161). In the only large-scale corpus study on these particles, Tanghe (2016: 125) attributes *asombro* 'astonishment/wonder', *sorpresa* 'surprise', and *incredulidad* 'incredulity' to *anda* in 62.2% ($N = 164$) of cases and to *vaya* in 37.6% ($N = 85$) of cases. She tacitly takes these meanings to be mutually exclusive with cases of *desacuerdo* 'disagreement' and *rechazo* 'rejection'. In the model presented here, modal values are not automatically determined by relative polarity and vice versa. It is therefore necessary to explicitly test this assumption.

As discussed in §3.3.2, the *Diccionario de partículas discursivas del español* presents two entries for both *claro* and *hombre*. For *claro*, it proposes a more frequent *acuerdo* 'agreement' function and a less frequent *sobreentendido* 'obviousness' function (Pons Bordería 2011a). For *hombre*, Briz & Villalba (2011a) and Briz (2012: 32–40) distinguish two uses which differ in intonation (falling vs. rising) and communicate agreement or disagreement, respectively. The analysis is based on native-speaker intuition and the comparison of corpus examples. Such subjective evaluation of particle functions has been the main (if not only) approach pursued in research on Spanish discourse particles to date. It is seen as an "inevitable heuristic prerequisite" (Tanghe 2016: 114, see also Ghezzi & Molinelli 2014: 14).

Semantic categorization is a delicate issue. Individual examples can create the illusion of a highly specific meaning by ignoring the variability of meanings in different contexts. Yet a large number of case-by-case interpretations is a method that is difficult to replicate and therefore almost incontestable. Tables 5.1 and 5.2 show that *anda* and *vaya* are less frequent by one order of magnitude than *hombre* and *claro*.[3] Given their high frequency, *claro* and *hombre* allow for statistical

[3]I could easily distinguish from non-particle matches by lack of syntactic integration. Non-

investigation of their collocations using association measures. These serve to detect affinities a) among particles and b) between particles and other, semantically more transparent lexical items such as verbs and adverbs. In the following paragraphs, I make use of the fact that collocations, if mathematically implemented in the form of association measures (Evert 2005: 75–118, Bartsch & Evert 2014), can supplement intuitions by objectively showing the importance of "lexically and/or pragmatically constrained co-occurrences of at least two lexical items" (Bartsch 2004: 76).[4]

Table 5.1: Number of query matches and particle tokens for expectation related particles from PRESEEA Corpus Madrid Barrio de Salamanca

Query	Matches	Particles
claro	2026	1901
hombre	962	897
anda	71	69
vaya	83	31

Table 5.2: Number of query matches and particle tokens for expectation related particles from C-ORAL-ROM Spanish (Cresti & Moneglia 2005)

Query	Matches	Particles
claro	646	614
hombre	201	156
anda	58	56
vaya	48	18

Table 5.3 shows the most frequent collocations of *claro* in the PRESEEA Madrid Salamanca Corpus, obtained with AntConc (Anthony 2018). They are ranked by Mutual Information (MI) as calculated over token frequencies obtained within a symmetric 7 word search window (3 left, 1 node, 3 right). MI as used in corpus linguistics is a measure that compares the observed probability O of a co-occurrence between a *node* word and its co-occurring *collocate* in a corpus of size N with the expected probability E of the two words co-occurring by chance in the same corpus. AntConc uses the formulas as laid out in Stubbs (1995), repeated in (137) for convenience.[5]

particle uses of *hombre* are nouns (*el hombre* 'the man/the human'). Non-particle uses of *claro* are adverbs (*tener algo claro* 'be sure about sth.', *claro que XP* '(it's) clear that XP'). No adjectival uses were attested. Non-particle uses of *anda* 'walk' and *vaya* 'go$_{SUBJV}$' are verbs.

[4]The underlying argument is that you "should know a word by the company it keeps" (Firth 1957: 11). This insight is of course not mine, but rather the foundation of distributional semantics (Lenci 2018). I only propose that you might get to know an intonational contour by the company it keeps, too.

[5]See Church & Hanks (1990), Evert (2005: 35–40), and Evert (2004–2010) for additional explanations.

(137) a. $O = \frac{\text{frequency(node,collocate)}}{N}$

b. $E = \frac{\text{frequency(node)}}{N} \cdot \frac{\text{frequency(collocate)}}{N}$

c. $\text{MI}(n,c) = \log_2 \frac{O}{E} = \log_2 \frac{f(n,c) \cdot N}{f(n) \cdot f(c)}$

MI cannot be used fruitfully without a frequency threshold (or a secondary ordering of significant collocations by frequency, as in Davies 2012-2019), since low frequency data will receive overly high MI scores due to sampling errors (Evert & Krenn 2001, Evert et al. 2017).[6] Church & Hanks (1990: 24) propose a frequency threshold of 5 when calculating over a 5 word window. Ideal window sizes and frequency thresholds depend on the phenomenon under investigation. In the case of particles, the frequent succession of several particles before the beginning of the core sentence suggests a larger window size going beyond what has been called the *pre-front field* (Auer 1996, Schröder 2006) and into the main sentence of the adjacent turns.[7] The standard setting in AntConc is a symmetric 11 word window (5L,5R), which I consider to be on the upper end of reasonable window sizes in spoken interaction. With increasing window size, the frequency threshold should also be increased. Since a lower limit for a frequency threshold is not universally defined, it needs to be related to the number of collocate types. For *claro* (3L,3R), a frequency threshold of 50 reduces the number of collocate types by two orders of magnitude (from 2009 to 42), which means that the

[6] To explain this a little more in detail, let us have a closer look at the formula in (137c). There are several ways for the MI score to increase. The numerator can increase either by a larger corpus size N, or by a larger count of co-occurrences. We can assume for an increase in N to increase both $f(n)$ and $f(c)$, thereby lowering the MI score. A larger corpus therefore should not yield unwarranted high MI scores. A larger count of co-occurrences also increases MI, particularly if either $f(n)$ or $f(c)$, or both, are low. This is just what we want, given that a high number of co-occurrences of infrequent forms should be less likely due to chance. Finally, a small denominator can lead to a high MI score if there are some (possibly coincidental) instances of co-occurrence. This is the case we want to avoid by applying a frequency threshold. Every natural corpus will contain some infrequent, coincidental co-occurrences of infrequent forms. Imagine a 10k word corpus in which node a and collocate b co-occur 4 times ($f(a,b) = 4$), with $f(a) = 10$ and $f(b) = 10$. The numerator would be 40k, the denominator 100, yielding $\log_2(400) = 8.64$. Now imagine the frequent collocate c with $f(c) = 500$ and $f(a,c) = 10$. This yields $\log_2(20) = 4.32$. We see here that the low-frequency collocation receives an overly high score. Therefore, each comparison of MI scores should be seen as a ranking between forms of similar frequency above the threshold.

[7] Research on German has developed a somewhat richer terminology for these syntactically non-integrated discourse related phenomena. However, Wiltschko (2021: 72) makes the claim that these positions are universally provided by the *interactional structure* as part of the *Interactional Spine*.

1967 least frequent collocations have been excluded from the ranking. MI > 3 is commonly seen as significant attraction between two collocates (Desagulier 2017: 206), which here includes the twelve top ranked types.[8] In Table 5.3, I show these top twelve significant associations, plus *no* and the cut-off frequency threshold.[9]

Table 5.3: High-frequency collocations of *claro* in PRESEEA Corpus Madrid Barrio de Salamanca (3 left to 3 right, threshold 50)

			Frequency		
Rank	Collocate	MI	Total	Left	Right
1	claro	5.39	330	165	165
2	entonces	3.99	128	67	61
3	porque	3.88	210	126	84
4	hombre	3.85	54	32	22
5	sí	3.52	440	236	204
6	eso	3.44	135	36	99
7	pero	3.25	190	102	88
8	es	3.23	341	103	238
9	todo	3.22	74	41	33
10	hay	3.16	67	18	49
11	también	3.16	53	27	26
12	como	3.02	67	17	50
…	…	…	…	…	…
21	no	2.72	430	221	209
…	…	…	…	…	…
42	o	1.78	74	26	48

Table 5.3 contains several insights. First and foremost, repeated uses of *claro* are frequent, both within one turn and in short successions of turns (138).[10] The

[8] Note that the notion of significance should be taken as necessary, but not sufficient for an informed reading of the tables presented here. Above a certain frequency threshold, the ranking among collocates is more informative than absolute MI score. This is why I present ranked tables instead of mere MI values.

[9] The particle *no* is shown due to its importance for polarity. The values in Table 5.3, Table 5.5, and Table 5.6 pass an additional Log-Likelihood $p < 0.05$ test as implemented in AntConc.

[10] All following examples from the PRESEEA corpus are presented without XML markup, without hesitation and laughter, with stretches of simultaneous or unintelligible conversation omitted, and with added boldface emphasis. Omission of speech is marked with …, both within and between turns.

frequency of *claro* in successive turns is of some interest. If *claro* in examples such as (138) communicated nothing but agreement, we would have a hard time arguing that agreement is unmarked and mostly happens tacitly (Farkas & Bruce 2010). Yet I would argue that *claro* is often used to go beyond agreement and to underline the expectability of the proposition that the interlocutors agree upon, which is a separate non-doxastic commitment and can therefore be negotiated separately, prompting such successive mutual reassurances. Such uses of *claro* will correlate with specific intonational contours, which cannot be extracted from textual transcription.

(138) (Interview 37, PRESEEA 2014–2020)

A: ¿…si yo le pregunto que si se va a otra ciudad?
'…if I ask you if you would go to another city?'

…

B: hombre yo me hubiera adaptado …pero / es distinto ¿no? *claro* aquí es que estoy me encuentro bien es que *claro* ¡es que he nacido aquí! / y *claro* es muy fuerte ¡*claro* lo!
'Man, I would have adapted …but, it's different, right? *Sure*, the thing is here I'm – I feel good. It's that, *sure*, it's that I was born here! And *sure*, it's very hard, *sure* it!'

…

A: *claro claro claro* que
'*sure, sure, sure* that'

B: ¡*claro*! las raíces de aquí son
'*sure*, the roots are from here'

A: *claro*
'*sure*'

In Table 5.3, we also see that *claro* is frequently used together with causal conjunctions such as *porque* 'because' and *entonces* 'then/therefore'. The standard context for these sequences are within longer turns that narrate a complex succession of events, where *entonces claro* or *porque claro* mark the plausibility or expectability of a conclusion based on what has been introduced so far. On the other hand, *hombre* as a collocate of *claro* occurs mostly in successions of provocations and responses where stances are negotiated between interlocutors. These are the very contexts that are best covered by the Farkas and Bruce Model, and these are also the points of interest when searching for marked prosody with modal functions.

(139) (Interview 44, PRESEEA 2014–2020)

A: ¿te molesta …empiezas tratando de usted a alguien el otro te trate de tú / o al revés?

'Does it annoy you …you start addressing someone with usted and the other addresses you with tú – or vice versa?'

B: no …molestar no me molesta

'No. …It doesn't really bother me.'

…

A: mientras sea con respeto ¿verdad?

'As long as it's respectful, right?'

B: hombre *claro* / efectivamente

'Man *sure*, effectively.'

(140) (Interview 23, PRESEEA 2014–2020)

A: …¿volverías a estudiar?

'…Would you study again?'

B: ¡ah / *claro*! / sí sí ¡hombre! / si volviese a repetir / volviese a nacer otra vez / por supuesto / hubiese aprovechado …

'Ah! *Sure*! Yes, yes! Man! If I'd get to repeat – get to be born again, obviously I would have taken the opportunity. …'

(141) (Interview 23, PRESEEA 2014–2020)

A: ¿tú has oído que haya ocurrido algo por aquí eeh / algún robo / alguna violación / o algo?

'Did you hear about anything going on round here eeh – some robbery, some rape, or anything?'

B: hombre robos sí / *claro* / nos ha fastidiado …

'Man! Robbery yes. *Sure*. It has bothered us…'

Claro shows a significant (MI > 3) association with *sí* and does not reach significance for *no* (MI < 3). Under the assumption that we are dealing primarily with relative polarity uses, this would be an argument for an agreement function. Since *sí* and *no* are ambiguous between relative and absolute polarity uses, case-by-case investigation is necessary. Inspecting contextualized individual examples gives direct access to relative polarity, modal meaning, and punctuation. Even though punctuation is not standardized in the two corpora under investigation, it gives an indication of the subjective impressions of the annotators about

prosodic markedness. This could in turn give some indications about prosodic effects of particular combinations of modality and relative polarity, which then need to be corroborated by audio data (§5.2).

I took the direct-adjacency-subset of occurrences of *sí* and *no* in the context of *claro* to be particularly relevant for determining a possible relative polarity function of *claro*. For *sí*, there are 170 cases of direct adjacency,[11] 106 left, 57 right, and 7 cases of the sequence *sí, claro, sí*. For *no*, there are 152 cases of direct adjacency, 82 left, 68 right, and 2 cases of the sequence *no, claro, no*.[12] Table 5.4 shows the results of case-by-case investigation of the direct adjacency subsets of co-occurrences of *claro* as node with either *sí* or *no* as collocates.

Table 5.4: Number of provocations, (dis)agreeing responses, modalities of commitment, and exclamation marks in turns containing *claro* adjacent to *sí* or *no* in the PRESEEA Madrid Salamanca corpus

				Uses in ...				Modality		
Node	Collocate (1L-1R)	Matches	Particles	Provocations	Responses	- Same	- Reverse	Obvious	Mirative	Other/unclear
claro	no	154	152	55	97	97	0	152	0	0
claro	sí	172	170	4	166	166	0	159	0	11
Total		326	322	59	263	263	0	311	0	11

Table 5.4 fully corroborates the agreement function of *claro*, with virtually no exceptions among responding moves. As is to be expected from the distribution of *sí* and *no*, co-occurrences with *claro* are mostly found in responses. The higher tendency for co-occurrences with *no* in provocations is also expected, given that Spanish *no* is ambiguous between relative and absolute polarity (English *no* and *not*).[13]

Similarly, almost all uses of *claro* occurred in an assertion or confirmation in which expectability or obviousness was the most plausible reading of the context.

[11] Discounting 2 adjectival cases in constructions such as *lo tengo claro, sí*.

[12] Again discounting 2 adjectival uses.

[13] Verum focus with preverbal *sí* did not occur in the data.

Examples (142), (143), (144), and (146) illustrate the consistency across speakers in the use of this particle when they want to confirm a previous biased question, and also want to indicate the necessity of this confirmation from the perspective of the previously existing CG. Without being obligatory, a combination of *sí* and *claro* is the adequate response to a polar question that puts into question whether the interlocutor partakes in the most common festivity in the community: Christmas.

(142) (Interview 43, PRESEEA 2014–2020)

A: ¿preparáis algo o alguna comida especial o alguna …?
'You prepare something or some special food or some …?'

B: *sí claro*
'*Yes. Sure.*'

C: bueno sí / *sí claro*
'Well yes *yes sure*.'

B: sí hombre ¿qué le gusta a fulano? …
'Yes man. What does anybody like?'

(143) (Interview 39, PRESEEA 2014–2020)

A: ¿y el el día de de Navidad hacían alguna cena especial o alguna …?
'And on Christmas you did some special dinner or something …?'

B: *sí* / *claro* // bueno la cena como siempre se suele hacer en Navidad
'*Yes, sure*. Well, the dinner as it is always commonly done on Christmas'

(144) (Interview 49, PRESEEA 2014–2020)

A: eeh/¿que lo celebráis con un / hay algún menú especial en Nochebuena?
'Um / that you celebrate it with a / is there a special Christmas Eve menu?'

B: pues pues / sí sí *sí claro* eso por supuesto y además …
'Well well/ yes, yes, *yes, sure*, obviously this and moreover …'

(145) (Interview 03, PRESEEA 2014–2020)

A: …¿las celebráis en familia o / cómo? / ¿qué soléis hacer?
'You celebrate them in family or / how? / what do you commonly do?'

B: *sí / claro* / las celebramos en nochebuena …
'*yes, sure*, we celebrate them on Christmas Eve …'

(146) (Interview 12, PRESEEA 2014–2020)

A: …¿qué soléis hacer vosotros en navidad? ¿os reunís todos?
'What are you doing for Christmas? Are you all coming together?'

B: *sí ¡claro!* / pues nos juntamos mm determinados días de las navidades …
'*yes, sure*! so we come together um certain days of Christmas …'

In some cases, *claro* is used to reassure the interlocutor of a shared assumption about possibilities in the face of a disagreement. Apart from absolute and direct relative polarity, there seems to be a kind of indirect relative polarity that targets expectations and assumptions about possibilities. In example (147), A has established the position that immigration is a problem if some specific migrants use resources and ask for medical services. B, trying to object without explicitly pointing out the xenophobia, raises the point that immigrants also work, and A confirms this objection (positive relative polarity concerning a proffered proposition), reaffirms it as a general rule, and objects to the conversational implicature that his previous commitment 'they are eating us' is inconsistent with the fact that they are working (negative relative polarity concerning a conversational implicature). After this negation via *no*, the use of *claro* reassures the interlocutor of a shared set of assumptions about possible worlds in which it is true that the migrants work. Note that he thereby does not commit to this world being the actual world, justifying his stance towards immigrants by restricting his agreement to possible worlds in which the one who gets medical treatment or has children is also the one who works.

(147) (Interview 44, PRESEEA 2014–2020)

A: porque nos están comiendo / y no sólo comiendo sino además exigiéndonos …porque yo conozco tres o cuatro muchachas y lo primero a parir aquí / para tener hijos y que les den los papeles / y otros que si se tienen que operar del hígado otros se tienen que operar de otra cosa / o sea que vienen / …
'because they are eating us / and not only eating but also demanding from us …because I know three or four girls and the first thing they do is give birth here / to have children so that they give them papers / and others if they need a liver operation others need a different operation / so they come …'
…

B: pero por otra parte también están trabajando ¿no? …
'but on the other hand they also work, right? …'

A: exactamente // *sí sí no claro* por supuesto / el que el que está trabajando …
'exactly // *yes yes no sure* obviously / the one who the one who works …'

Another exception from clear-cut obvious uses are cases in which one interlocutor reminds the other of something and once the memory returns, *claro* marks the acknowledgment of this fact having been in the CG at some point. Finally, there are in total three cases of an insistent use of *claro* which is not warranted by shared expectations. These may either be signs of the possibility to use *claro* as a marker of certainty or with evidential, rather than expectational, meaning. To illustrate this, see (148), in which A casually mentions that she has been robbed in her elevator. B responds with an incredulous question, to which B responds with *sí claro*. Given the incredulity of A, B cannot base her use of *claro* on shared expectations. While infrequent among the total number of cases, we see here the possibility for non-obvious uses of *claro*.

(148) (Interview 48, PRESEEA 2014–2020)

A: …pues a lo mejor te encuentras en el ascensor / y te atracan como a mí me atracaron
'…so perhaps you find yourself in the elevator / and they rob you like they robbed me'

B: ¿sí aquí en el ascensor?
'Really, here in the elevator?'

A: …*sí ¡claro!* ¡yo qué sabía! se metió un chaval en el ascensor y y y me atracó
'*yes sure*! little did I know! a boy got into the elevator and and and robbed me …'

Among the highly frequent collocations of *claro* (Table 5.6), there are no modal expressions. Yet MI can also help us to compare between the wide range of mid-frequency collocations. The same low-frequency bias should apply to all collocations above the frequency threshold alike. When applying a (still relatively high) threshold of 9 to *claro* (5L,5R), the number of collocate types is reduced by one order of magnitude (from 2823 to 248). This means that the 2575 least frequent collocations have been excluded, yet a range of mid-frequent collocations is still

part of the calculation. Table 5.5 shows the resulting mid-frequency collocations in the PRESEEA Madrid Salamanca Corpus. We see here a corroboration of the proposal by Pons Bordería (2011a) to attribute an obviousness function to *claro*, given that *lógico* 'logical', *lógicamente* 'logically', *por supuesto* 'obviously', and *evidentemente* 'evidently' all indicate communicative intentions beyond agreement. All in all, I take these statistical associations as evidence for the double nature of *claro*: polar and modal.

Table 5.5: Mid-frequency collocations of *claro* in PRESEEA Corpus Madrid Barrio de Salamanca (5 left to 5 right, threshold 9)

			Frequency		
Rank	Collocate	MI	Total	Left	Right
1	lógico	6.79	9	6	3
2	lógicamente	6.56	11	3	8
3	distinto	6.04	10	7	3
4	claro	5.69	406	203	203
5	supuesto	5.49	12	4	8
6	evidentemente	5.40	9	1	8
7	habrá	5.32	11	5	6
8	efectivamente	5.24	11	2	9
9	fuerte	5.06	11	9	2
10	encima	4.93	14	7	7
…	…	…	…	…	…
248	esta	1.91	9	8	1

Turning to *hombre*, the picture becomes a bit more complex. Table 5.6 shows the collocations of *hombre* in the PRESEEA Madrid Salamanca Corpus. They are again ranked by MI as calculated over token frequencies obtained within a symmetric 11 word search window (5 left, 1 node, 5 right).[14] The argumentative and modal nature of *hombre* is clearly visible in its collocations. *Creo* 'I believe', *si* 'if/but/well' and *claro* score highest in terms of MI. For the modalizing function of *hombre*, the strong association with *claro* is particularly important. Instances of *si* include conditionals and insubordinates, only the latter of which have expectational meaning (Schwenter 2016, Elvira-García 2016, §2.3.4). The collocations

[14]The lower frequency of *hombre* requires a larger window to reach a sufficiently large sample. All values in Table 5.6 again pass an additional log-likelihood $p > 0.05$ test. Note further that t-score over a 1L-1R window, which has a more stable and quite different recall curve compared with MI (Evert et al. 2017: 537), also produces high scores for *pues* (score 10.58, rank 1), *sí* (score 7.94, rank 2), *no* (score 7.77, rank 3), *si* (score 6.31, rank 5) and *claro* (score 5.47, rank 6).

sé 'I know' and *creo* indicate that epistemic and doxastic modalities are also compatible.

Table 5.6: High-frequency collocations of *hombre* in PRESEEA Corpus Madrid Barrio de Salamanca (5 left to 5 right, threshold 45)

			Frequency		
Rank	Collocate	MI	Total	Left	Right
1	creo	4.78	59	13	46
2	si	4.52	111	22	89
3	claro	4.42	80	31	49
4	también	4.31	58	20	38
5	pues	4.17	216	112	104
6	yo	4.05	181	34	147
7	ahora	4.00	56	24	32
8	sí	3.93	278	169	109
9	sé	3.73	46	18	28
10	no	3.73	410	233	177
…	…	…	…	…	…
30	bueno	3.02	48	35	13
…	…	…	…	…	…
37	y	2.54	214	149	65

Both *sí* and *no* are associated with *hombre*. Since *sí* and *no* are ambiguous between relative and absolute polarity uses, case-by-case investigation was again necessary. I took the direct-adjacency-subset of occurrences of *sí* and *no* in the context of *hombre* to be particularly relevant for determining a possible relative polarity function of *hombre*. For *sí*, there are 93 cases of direct adjacency, 63 left, 27 right, and 3 cases of the sequence *sí, hombre, sí*. For *no*, there are 108 cases of direct adjacency, 55 left, 49 right, and 4 cases of the sequence *no, hombre, no*. Table 5.7 shows the results of case-by-case investigation of the direct adjacency subsets of co-occurrences of *hombre* as node with either *sí* or *no* as collocates.

Much as with *claro*, co-occurrences of *sí* and *no* with *hombre* are mostly found in responses. *No* co-occurs more often with *hombre* in provocations than *sí*. This is due to the fact that absolute polarity *no* 'not' is quite frequent, whereas verum focus with preverbal *sí* did not occur in the data. Differently from *claro*, *hombre* does occur in reversals. Still, the tendency for agreement uses is very clear. A prevalence of agreement responses over reversals is a default assumption of the

Table 5.7: Number of provocations, (dis)agreeing responses, modalities of commitment, and exclamation marks in turns containing *hombre* adjacent to *sí* or *no* in the PRESEEA Madrid Salamanca corpus

				Uses in …				Modality		
Node	Collocate (1L-1R)	Matches	Particles	Provocations	Responses	- Same	- Reverse	Obvious	Mirative	Other/unclear
hombre	no	108	103	27	76	57	19	97	0	5
hombre	sí	93	90	14	76	68	8	75	1	14
Total		201	193	41	152	125	27	172	1	19

Farkas and Bruce model, also corroborated by empirical research (Bögels et al. 2015). When comparing the agree-reverse distribution of *no* (57 to 19) with the agree-reverse distribution of *sí* (68 to 8), we actually find a significant association of *no* with reversals; $\chi^2(1, N = 152) = 5.44$, $p = 0.02$; Cramér's V of 0.19 (small to medium effect, Cohen [1988] 2013: 222); adjusted standardized residuals of 2.33, $p < 0.05$. This indicates that the relatively few instances of reversals tend to be reactions to assertions with positive absolute polarity, making *no* a more likely candidate for reversals than *sí*.

A frequent case, which I will call the expectational realignment use, is that *no* marks a reversal and the following *hombre* introduces an agreeing assertion at the level of expectations that underlie the provocation. This is a case that perfectly illustrates to which point the use of a seemingly expendable particle can be close to obligatory under certain pragmatic conditions. Examples (149–153) illustrate the amount of consistency across speakers in the use of this particle when they want to assert a reversal of a previous biased question, yet also want to indicate the validity of the expectation underlying the bias.

(149) (Interview 15, PRESEEA 2014–2020)

A: …¿hay otros problemas en el barrio violencia?

'…Are there other problems in the neighbourhood – violence?'

B: no // yo creo que no / *hombre* Juan Bravo es una zona de copas y eso pero

'No. I think no. *Man* Juan Bravo is a nightlife area and such but.'

(150) (Interview 36, PRESEEA 2014–2020)

A: oye y el barrio / ¿cómo es de seguro? ¿hay delincuencia o?
'Listen and the neighbourhood. Is it safe? Is there crime or …?'

B: no
'No.'

A: ¿se oyen cosas?
'One hears things?'

B: no // no // *hombre* / robos / atracos / me imagino que como en todos lo lados
'No. No. *Man* robberies, hold-ups, I imagine just as everywhere.'

(151) (Interview 17, PRESEEA 2014–2020)

A: y ¿por aquí no se oyen así cosas de delincuencia ni?
'And round here one doesn't hear about crime nor …?'

B: no / *hombre* a lo mejor por la noche / eeh
'No. *Man* perhaps at night, right?'

(152) (Interview 37, PRESEEA 2014–2020)

A: …delincuencia por ejemplo hay?
'…is there crime for example?'

B: no no aquí no este barrio es muy tranquilo ¡*hombre*! no quiere decir que a uno / a cualquiera venga un desalmado y ¡no no no! / aquí inclusive
'No, no, here this neighbourhood is very calm. *Man* doesn't mean that one, anyone could be approached by a soulless person and no, no, no! Even here.'

(153) (Interview 01, PRESEEA 2014–2020)

A: ¿hay problemas de droga? …// ¿de delincuencia?
'Are there problems with drugs? …With crime?'

B: hay menos que en otros sitios
'There's less than elsewhere.'

A: ¿sí?
'Really?'

B: *hombre* siempre hay en todos los lados ¿no?
'*Man* it everywhere always exists, right?'

Examples (149–153) show that *hombre* often introduces conversational moves that are difficult to classify as either provocations or responses, because the function of *hombre* can be to acknowledge the fact that a reversal of proffered content is limited by a set of general, shared assumptions that generate expectations regarding the QUD (nightlife areas are not completely safe, some hold-ups happen in the best neighborhoods, etc.). In this sense, *hombre* here reassures the interlocutor(s) that a reversal concerning one proposition leaves a set of shared expectations about related propositions untouched. While somewhat similar to the much rarer phenomenon of indirect positive relative polarity with *claro* exemplified in (147), this use of *hombre* is special in that there is no overt provocation requesting reassurance about shared assumptions.

(154) shows an example where *hombre* introduces a turn that agrees with a previous non-at-issue commitment. The provocation *p* asserts that A often walks home from Casa de Campo park. B's reaction does three things at the level of the discourse context: it asserts the proposition *q* that the distance is quite far, tacitly accepts *p*, and marks *p* as unexpected. This indicates that a walk from Casa de Campo is further than B would have thought possible, based on what has been established between A and B up to the previous assertion (CG_i). After a few turns illustrating that A does indeed walk a lot, A returns to B's expectational non-at-issue commitment and explicitly reassures B that some of his expectations regarding B's walking-habits are still valid, stating that he would not go so far as to walk home all the way from El Escorial. This reassurance of shared expectations is introduced by *hombre*.

(154) (interview 20, PRESEEA 2014–2020)

A: …y yo muchas veces me iba de la Casa de Campo a mi casa andando
'…and I often went from Casa de Campo to my home by foot'

B: ¡es un buen paseo!
'That's quite a walk!'
…

A: *¡hombre!* no me voy a ir desde el Escorial a mi casa andando / eso se sería ya ¡vamos!
'*Man*! I wouldn't walk home from El Escorial. That would be quite, come on!'

(155) shows a typical example of a use of *hombre* in an agreeing assertion. Here, *hombre* is used repeatedly in an agreement, underlining the fact that the agreement is in line with some shared expectations related to male heterosexuality in the 1990s.

(155) (Interview 21, PRESEEA 2014–2020)

A: eeh ¿tienes algún tipo de? yo supongo que sí ¿no? algún // tipo de de mujer ideal o de

'Eeh, do you have a sort of – I assume you do, right? – a sort of of ideal women, or of …'

B: *hombre* pues sí ¡*hombre*! / ¡la mujer ideal Sharon Stone!

'*Man*, well yes, *man*! The ideal woman Sharon Stone!

Summing up Table 5.7, we see that among the total of 193 occurrences of the particle *hombre* directly adjacent to the polarity particles *sí* and *no*, only 27 are part of a reversal. Use of *hombre* in provocations is more common with 41 cases, but still relatively infrequent compared with the 125 cases of confirming responses. I interpret this as a strong preference for confirmations.

The possibility of using *hombre* in reversals is a crucial difference between *hombre* and *claro*. *Claro* is pragmatically inappropriate in cases of reversal, whereas *hombre* only indicates that the disagreement does not originate in the set of shared expectations (156). This insight seems important for research on intonation, since specific tonal configurations might also be more or less specified for relative polarity.

(156) A: ¿Tienes hijos?

'Do you have children?'

a. B: *Hombre*, aún no. Pero un día obviamente sí.

'*Man*, not yet. But one day obviously yes.'

b. B: # *Claro*, aún no. Pero un día obviamente sí.

'*Of course*, not yet. But one day obviously yes.'

Before we turn to the treatment of *anda* and *vaya* as markers of agreement and mirativity, some brief remarks on *pues*. It has been described as a marker of *new* information, given that it cannot occur without assertion (157).

(157) (Porroche Ballesteros 2011)

A: ¿Qué impresión le daba?

'What did you think of it?'

a. B: *Pues* me sentía con mucha ilusión.

'*Well* I was really looking forward to it.'

b. B: # *Pues* ¿puedes repetirme la pregunta?

'*Well* could you repeat the question?'

At first glance, frequent combinations such as *pues claro* 'well sure' (144, 146), *pues hombre* 'well man' (155), or *pues por supuesto* 'well of course' seem to run counter to the idea of an obviousness commitment of the respective conversational moves. Something new should not be expected. Yet this is a misunderstanding that only arises if we fail to distinguish between the commitment itself (consisting of a proposition and its modal evaluation, in this case an expectation) and the CG update that takes place once the commitment is either asserted (*at-issue*) or directly added to CG (*non-at-issue*). A direct CG update as in (104) is still an update and thereby "new" from the perspective of the input discourse context K_i. Only if no such update is advanced does the use of *pues* become ungrammatical.[15]

Anda and *vaya* seem similar to *hombre* and *claro* in their relative polarity function, yet different in their modal evaluative function. A closer look at them reveals some further differences. *Anda* and *vaya* are one order of magnitude less frequent than *claro* and *hombre*, both in the PRESEEA Madrid Salamanca corpus (Table 5.1) and in C-ORAL-ROM (Table 5.2). Moreover, while *hombre*, *claro*, and *anda* are almost exclusively used as particles, *vaya* is only rarely used as a particle since the majority of uses has some sort of syntactic integration.

There is also a key difference between *anda* and *vaya*, namely that *vaya* is used to mark acceptance of a negatively evaluated proposition, whereas *anda* does not communicate a bouletic evaluation. This raises the question if the mirative meaning of *vaya*, firmly acknowledged in the literature, is part of its meaning or rather a conversational implicature. (158) is cited by de Toledo y Huerta (2001/2002: 52) to show that *vaya* is a discourse particle "enriched with additional meanings, particularly of surprise about a situation".[16]

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[15]This is why, when searching for sequences of the form <*¿ pues WH-PRONOUN*> in the Corpus del Español News on the Web (Davies 2012-2019), many instances are rhetorical questions that do proffer a context update, as in (i).

(i) Si los funcionarios se trasladan en aviones privados, *¿pues cuándo* van a conocer el estado de las carreteras?: ¡Nunca!
'If the officials move around in private jets, *well when* will they get to know the state of the highways?: Never!'

One desirable outcome of such a context-update-perspective on the particle *pues* 'well' is that it links it with the causal conjunction use (*pues* 'because/so') common in turn-internal position in longer monological sections of text and speech, which is also impossible if it does not introduce a context update.

[16]"Un marcador discursivo que se irá enriqueciendo con significados adicionales, particularmente el de sorpresa ante una situación." (de Toledo y Huerta 2001/2002: 52)

(158) Monserrate: De manera que dices que Ruçafa no tiene madre, sino que la muger es hija de Ruçafa, y la hija que está mala ha de traer el bollo mantecada.
'So you are saying that Ruçafa doesn't have a mother, but that the woman is the daughter of Ruçafa, and the bad daughter has to bring the pound cake.'
Coladilla: Que no, sino qu'en Ruçafa está una muger mala, y ha de venir su hija a traer dos reales y el bollo mantecada para entrambos.
'But no, rather that Ruçafa is a bad woman, and her daughter has to come bring two reales and the pound cake for both of them.'
Monserrate: ¡Vaya! Sea como fuere; venga el bollo mantecada.
'Damn! Be it as it may; let the pound cake come.'
Lope de Vega, *Ursón y Valentín*, 1588–1595, *apud* CORDE (Real Academia Española)

Following Kratzer (2012), I take every modal to denote only one modal base. In the case of *vaya*, the negative bouletic interpretation is also present in adjectival use as in *vaya mierda* 'damn shit' or *vaya coche roto* 'damn broken car'. The mirative interpretation, on the contrary, is dependent on *vaya* evaluating the acceptance of a proposition or state of affairs. It therefore seems that the mirative meaning of *vaya* is actually a conversational implicature of the (degree of) negative evaluation of a proposition. Further research, possibly using the semantic differential technique (Osgood et al. 1967, Kohler 2005) or the GRID technique (Fontaine et al. 2013), is necessary to check if this interpretation holds in different contexts.

For *anda* and *vaya*, low frequency in the two oral corpora under investigation impedes computing collocations based on association measures. Case-by-case evaluation is therefore the most fruitful approach. Table 5.8 shows the global results for *anda* and *vaya*. While almost all instances of *anda* are particles, only 31 out of 83 uses of *vaya* are particles. Among the particle uses, *anda* and *vaya* occur in both provocations and responses. There is a tendency toward responses, which only reaches statistical significance for *anda*; $\chi^2(1, N = 69) = 5.232$, $p = 0.02$. Yet among the responding moves, we find almost exclusively agreeing responses.

Only 5 out of 25 cases of particle uses of *anda* in provocations encode mirativity, all based on visual or direct evidence for something unexpected. (159) is one of the rare examples for provocation miratives. This small group is consistently marked with exclamation marks. The 21 remaining uses of *anda* in provocations introduce greetings, exhortatives, conclusions, and reformulations.

Table 5.8: Number of query matches, particles, provocations, (dis)agreeing responses, modalities of commitment, and exclamation marks for *anda* and *vaya* in the PRESEEA Madrid Salamanca corpus

	Query	
	anda	*vaya*
Matches	71	83
Particles	69	31
Provocations	25	14
Responses		
Total	44	17
Same	40	17
Reverse	4	0
Modality		
Obvious	0	0
Mirative	45	0
Other/unclear	24	31
Excl. marks	25	8

(159) (Interview 48, PRESEEA 2014–2020)

A: la climatología ha cambiado mucho porque yo / me acuerdo que cuando era jovencita bueno pues / cuando llegaba San José / nosotros enseñábamos ya los trajes de / de entre tiempo

'the climatology has changed a lot because I / remember that when I was young well so / when Saint Joseph's Day came / we already put out the light clothes'

B: claro

'sure'

A: el abrigo de entretiempo / los trajes de chaqueta de entretiempo / ¡pero *anda*! hoy el día de San José / estaba nevando

'the light coat / the light jackets / but *wow*! today on Saint Joseph's Day / it was snowing'

40 out of 45 responding moves with *anda* are agreements. Among them, 37 out of 40 are miratives, which suggests that mirative *anda* primarily has a double function of accepting a proffered provocation and marking it as unexpected. (160) and (161) give examples of this prototypical function.

(160) (Interview 10, PRESEEA 2014–2020)

A: has estado fuera me has dicho un tiempo…fin de semana
'you have been outside you said once…weekend'

B: este primero no / el último estuve yo soy scout …
'this first one no / the last one I have I'm a scout …'

A: *anda* / eres scout
'*wow* / you're a scout'

(161) (Interview 42, PRESEEA 2014–2020)

A: …mi padre le han operado // hace cuatro años también // de un cáncer de laringe
'…my father had an operation // four years ago as well // of a laryngeal cancer' …

B: y está / la traqueotomía
'and there is / the tracheotomy'

A: ¡no!
'no!'

B: ¿no?
'no?'

A: se lo / lo cogieron muy bien
'they got it out really well'

B: *¡anda!*
'*wow*!'

Vaya differs from the other particles seen so far in that the majority of matches are non-particle uses (verbs). *Vaya* is also different in that it is not specified for either provocation or response use. The ratios of particle uses with exclamation marks for *vaya* is lower than for *anda*, foreshadowing the findings in §5.2.3 and §5.2.4 that show L+¡H* L% to be the nuclear contour of choice in turns containing *anda* and L* L% in turns with *vaya*. (162), (163), and (164) give examples of the use of *vaya* in accepting responses of previous provocations.

(162) (Interview 34, PRESEEA 2014–2020)

A: mi padre murió en un accidente de coche
'my father died in a car accident'

B: ¿ah sí? / *vaya*
'oh really? / *damn*'

(163) (Interview 11, PRESEEA 2014–2020)

A: …y nada luego pues lo que pasa es que la mayoría de la gente con la que yo iba acababa aprobando y yo suspendía
'and so then the thing is that the majority of people I went with ended up passing (the exam) and I failed'

B: ¡ah *vaya*!
'ah *damn*!'

(164) (Interview 47, PRESEEA 2014–2020)

A: pues mira mi marido ya no está pero……sus hijos han salido a su padre
'so look my husband isn't with us any more but……his children look like him'

B: ¿los tres?
'all three?'

A: los tres
'all three'

B: ¡*vaya*! ¡y ninguno a ti!
'*damn*! and none like you!'

As mentioned above, *vaya* has a more negative connotation than *anda*. Recent deaths of close relatives are always evaluated with *vaya* as an agreement particle. Similarly, *vaya* used as an adjectival modifier would usually precede nouns referring to commonly dispreferred referents such as *vaya enfermedad* 'damn illness', *vaya palo* 'damn bummer', etc. On the contrary, *anda* cannot be used as an adjective. This observation may be linked with a second observation, namely that *anda* as an unexpectedness marker, which is the vast majority of tokens, is used exclusively by female speakers or male speakers reporting speech of a female. This seems to indicate that male speakers in the community represented by the corpus largely abstain from conventionally implicating that they did not expect something, but rather resort to a strongly negative evaluation that then conversationally implies unexpectedness.[17] The proposal to see the mirative meaning of *vaya* as derived from its negative bouletic meaning via conversational implicature might seem *ad hoc*. Yet in 28 out of 31 cases, this implicature seemed present in the corpus examples. Moreover, even though conversational implicatures are usually thought of as less consistently present and more context dependent than

[17] If a similar restriction holds for intonational marking of mirativity, this may heavily influence experimental results.

conventional implicatures or lexical meaning, large written databases corroborate the consistency of the counterexpectational use of *vaya* when used as an adjectival modifier in NP-exclamatives. Table 5.9 shows the four most frequent significant collocations of the form *vaya* + NOUN in the 7.2 billion words Corpus del Español News on the Web (Davies 2012-2019).[18] While written and mostly monological, the database still shows the tendency for *vaya* to relate to surprise. *Vaya sorpresa* 'damn surprise' and *vaya paradoja* 'damn paradox' are two uses with clear counterexpectational meaning. *Vaya tela*, an idiom best translated as 'wow', also shows that *vaya* seems on track to include the mirative conversational implicature into the lexical meaning. Only *vaya mierda* still maintains a clear bouletic evaluative function.[19]

Table 5.9: Most frequent MI > 3 noun-type collocations of *vaya* in the Corpus del Español News on the Web (0 left to 1 right)

Rank	Collocate	Frequ.	MI
1	sorpresa	464	5.05
2	paradoja	372	8.55
3	mierda	312	6.83
4	tela	300	7.65

Turning to the use of exclamation marks as added by the transcribers of the PRESEEA Madrid Salamanca corpus, we can ask whether relative polarity or modality correlates with the presence of such punctuation. Table 5.10 shows the ratios of exclamation marked particles in provocations and (dis)agreeing responses.[20] In general, not more than a third of particle uses are marked with exclamation marks. Since transcribers did not receive acoustic criteria for such marking, we cannot expect this to faithfully represent the amount of prosodically marked uses. Yet it is a way of getting a broad idea of the ratios of uses that were sufficiently marked prosodically so as to lead to a transcription with exclamation marks. The clearest result for exclamation marks is that responses are more often marked than provocations.

[18] I excluded the non-nominal *ir preso/presa* 'to go to jail'. Note that Davies (2012-2019) applies a significance threshold (MI > 3) and then sorts results by frequency. This is an alternative to applying a frequency threshold and then sorting by MI, as done by AntConc.

[19] Future research should investigate if male speakers avoiding *anda* are leading language change toward a mirative use of *vaya*.

[20] For *claro* and *hombre*, again only the direct adjacency subsets with *sí* and *no* were considered to maintain a constant sample.

Table 5.11 shows the ratios of exclamation marked particles according to evaluative modality (mirativity, obviousness) or other, non-modal meaning. Miratives seem more prone to be marked for exclamation than obviousness uses, but both uses receive exclamation marks in a number of cases. The crucial questions regarding the intonational reality behind these exclamation marks are a) whether the particles themselves receive different intonational marking for the respective uses and b) whether sentences introduced by these particles receive a particular form of intonational marking.

Table 5.10: Ratios of exclamation marked particles *hombre*, *anda*, and *vaya* by provocations and (dis-)agreeing responses in the PRESEEA Madrid Salamanca corpus

		Exclamation marks in uses marking …			
Particle	Excl. marks	Provoc.	Resp.	Same	Rev.
claro	31/322	2/59	29/263	29/263	0/0
hombre	38/193	7/41	31/152	25/125	6/27
anda	24/69	7/25	17/44	17/40	1/4
vaya	8/31	1/14	7/17	7/17	0/0

Table 5.11: Ratios of exclamation marked particles *hombre*, *anda*, and *vaya* by modalities of commitment in the PRESEEA Madrid Salamanca corpus

		Exclamation marks in uses marking …		
Particle	Excl. marks	Obviousness	Mirativity	Other
claro	31/322	27/253	0/0	4/11
hombre	38/193	35/172	1/1	2/19
anda	25/69	0/0	22/45	3/24
vaya	8/31	0/0	0/0	8/31

In a nutshell, this exploration of discourse particle functions in the PRESEEA Madrid Salamanca corpus has paved the way for an answer to question (136e) regarding correlations between intonation and other non-at-issue markers in Spanish. The categories developed in §3.3 readily lend themselves to categorizing the functions of *claro*, *hombre*, *anda*, and *vaya*. All particles under investigation occur in provocations and responses, yet with a clear tendency toward responses.

Within responses, they are also all specified for positive relative polarity, some categorically (e.g. *claro*, *vaya*), some gradually (e.g. *hombre*, *anda*).

For question (136e) regarding correlations between intonation and other non-at-issue markers in Spanish, the important insight is that prosodic marking represented by exclamation marks is present in both obvious and mirative uses of particles. The nature of this prosodic marking needs to be investigated based on audio-files, which is the topic of §5.2.

5.2 Intonation and discourse particles

The particles investigated in §5.1 are all two-syllable words with the typical Spanish lexical stress on the penultimate syllable. They often receive their own prosodic phrase, yet the status of the prosodic break between a particle and a following sentence can range from a simple word boundary over an a intermediate phrase boundary (marked with the minus sign − in Sp_ToBI) to an intonational phrase boundary (marked with the percent sign % in Sp_ToBI).[21] In terms of prosodic independence, the simplest case are one-word turns. As seen in §5.1, many particles do not occupy a position preceding a full sentence. Rather, "bare" particles are often used in turns that do not contain inflected verbs and full sentences, precisely because the proposition under investigation is already given and accessible for anaphoric reference. Provocation uses are more likely to overtly assert the propositional content, yet, as seen in many examples in §5.1, some responses also do. When there is an overt assertion in a confirming turn, exact repetition of the entire provocation is the least economical strategy, violating the Maxim of Manner due to unnecessary prolixity (Grice 1975: 46).[22] In some cases, such as (138), additional assertions sum up previous provocations instead of confirming them. In other cases, such as (141), they indicate that even a stronger claim than the one that has been proffered would have received confirmation. A case very similar to true repetition of a provocation is when a provocation is confirmed and then reasserted in other words, as in (140). Actual repetition of a provocation in a confirmation is also possible, but seems more common with particles that are not obligatorily specified for positive relative polarity, such as *anda* in (160).

As already mentioned in §3.3.2, the particles themselves can have different prosodic realizations. We have seen that Briz (2012) distinguishes two *hombre*

[21]The two studies that investigate the prosodic integration of Spanish particles replace this three-way distinction of breaks with a two-way distinction (± inclusion in the intonational phrase) (Cabedo Nebot 2013: 208, Tanghe 2015: 138).

[22]In languages that confirm via partial repetition of the provocation (e.g. Portuguese), a full repetition of the provocation (including arguments) is still not economical. Repetitions of one-word provocations are of course an exception.

particles, one with falling or low intonation (Figure 3.8) and one with low-rise-falling intonation (Figure 3.9). For *claro*, we could extract one example from Pons Bordería (2011a) showing a low-rise-fall intonation similar to the one reported in Torreira & Grice (2018). We do not know if other prosodic realizations of *claro* do occur. For *anda* and *vaya*, we do not have any ToBI analysis.[23] In an attempt to evaluate the degree to which full sentences are marked prosodically so as to add intonational meaning beyond information structure, particles are a small start. As one-word phrases, they cannot have a focus-background partition. Yet they allow us to test some assumptions of the model developed in §3.3 and identify points of interest for the investigation of sentences including verbs with overt arguments. Taking discourse particles as indicators for points of interest for prosodic investigation has the advantage of dramatically reducing the amount of possible target turns. Moreover, they indicate sections of dialogue in which both discourse commitments and modal expectations are negotiated.

The PRESEEA Madrid Salamanca Corpus was not designed for intonation research. The quality of the recordings often impedes investigation of intonation, and the spontaneous nature of interactions often leads to simultaneous speech or interruption by laughter or hesitation. Unfortunately, statistical comparison between the frequencies of intonational contours in the corpus can therefore not achieve internal validity. Factors such as simultaneous speech have a stronger influence on marked obvious uses of *claro* than on unmarked agreement uses. If a provocation is seen as unnecessary and the response as expectable, the response is more likely to be uttered before the previous turn has come to an end, leading to simultaneous speech. While excluding these phonetically non-transparent cases would seem like a simple reduction of noise in the data, it would actually cause a selection bias in favor of modally unmarked utterances. Another factor that adds to this problem is the relative prevalence of laughter and hesitation in cases of obviousness, which is probably due to the face-threatening potential of obviousness in responding moves. I therefore postpone any statistical comparison between contours to the experimental investigation in Chapter 6. Instead, I attempt a qualitative exploration of the intonation of corpus examples containing *claro*, *hombre*, *anda*, and *vaya*, giving only tentative indications with regard to the prevalence of certain contours in the sample.

Qualitative "close readings" of individual examples, while no replacement for quantitative examination, are a useful and necessary step to illustrate the sen-

[23] Tanghe (2015), which investigates the prosody of *anda* and *vaya* among other verb-based particles, only takes into consideration mean F_0 values of the entire word, neglecting alignment differences.

sitivity of intonation to differences in discourse meaning. A closer look at individual examples also helps us to avoid the impression that particles have one prototypical intonational form from which speakers deviate only due to performance or frequency effects. We do expect the semantic affinity between particle meaning and intonational meaning to cause a correlation between specific nuclear contours and certain particles.[24] Yet such a correlation should not obscure the functional load of prosodic form. As will become clear below, all particles under investigation here allow for categorically different prosodic realizations under the right pragmatic conditions.

Before we turn to the prosodic investigation, let's recapitulate the open questions based on the state of the art and the model of discourse meaning as formulated in §3.3.3. Concerning the difference between L* L% and L+H* L%, both Tables A.1 and 1.2 assume "free" variation.[25] L* HL% is only mentioned in Table A.1, and associated there with either contrastive focus or contradiction. We have seen in §2.3.4 and §2.3.5 that this contradiction contour is frequently interpreted as obviousness, yet is supposed to be different from the obviousness contour L+H* L!H% in Table A.1. To date, we do not know what factors condition the selection between L* HL% and L+H* L!H%. In fact, to my knowledge, the L+H* L!H% contour has not yet been observed in spontaneous dialogue data at all.

For exclamatives, the picture in the literature is somewhat clearer. "In words in intonational phrase-final position, exclamatory force (including correction focus) is conveyed by expansion of tonal range [...] and durational increase." (Hualde & Prieto 2015: 368) While durational increase is not transcribed in Sp_ToBI, expansion of tonal range is indicated via an inverted exclamation mark. The trade-off between range expansion and durational increase remains unclear.[26] While I could not find any intonationally explicit examples with *anda* and *vaya* in the literature, exclamative L+¡H* L% intonation as indicated in Table A.1 is what we would expect to find on the prosodically marked uses.

[24] We can also expect an association between lexemes and the phonetic detail of pitch accents as shown for Germanic languages by Schweitzer et al. (2015).

[25] Hualde & Prieto (2015: 364) mention, and reject, the idea that narrow focus is responsible for the selection between L+H* L% and L* L%. Neither they nor any other publication I know of discusses the possibility that givenness or accessibility is the relevant criterion (see Baumann (2006) for such an explanation for German).

[26] Moreover, it remains an open question if durational increase of lexically accented syllables in exclamations with L+H* L% contours is interpreted differently from the lengthening of lexically accented syllables in L* L% assertions, which are supposed to convey verum focus (Escandell-Vidal 2011). I leave this problem to future research.

In §5.1, we have seen that *claro*, *hombre*, *anda*, and *vaya* occur in provocations and responses, with a clear tendency toward responses. Within responses, they are also all specified for positive relative polarity. Yet there is a difference between *claro* and *vaya* on the one hand, which occur only in agreeing responses, and *hombre* and *anda*, which occur in a small number of reversals as well. The fact that *claro* is not used for reversals in our sample is helpful in ruling out the possibility that the difference in meaning between L+H* L% and L* HL% is purely a question of relative polarity. Some analyses in the literature actually suggest just that.

> [In varieties] where both nuclear contours [L+H* L% and L* HL%] are found, L* HL% carries a greater emphatic, contradictory force. (Hualde & Prieto 2015: 369)

Yet other publications, notably Estebas-Vilaplana & Prieto (2008: 279), Elvira-García (2016), and Torreira & Grice (2018), indicate that L* HL% is rather related to obviousness than contradiction. And in fact there are many examples of L* HL% on *claro*. As already reported in Torreira & Grice (2018), some realizations of *claro* with a low tone on the lexically accented syllable and a rise on the post-tonic do not end in a low tone, but either end on a high tone or only in a small dip at the end of the rise. According to Torreira & Grice (2018: 16), the two realizations L* HL% and L* H(L)% "strike the attentive native listener as functionally equivalent at the intonational level." To get an idea of different possible realizations of a low-rise with more or less pronounced falls at the end, we can have a closer look at some contextualized examples.

5.2.1 Turns with *claro*

5.2.1.1 L* HL%

Figure 5.1 from the context (165) is an example of *claro* with an L* HL% realization. Here, A has listed a series of seven places in the mountainous area of Asturias that he likes to visit with his family, to which B replies with the assertion that they like the mountains. A reacts with a hesitant *bueno*, followed by three relative polarity particles *claro sí sí* indicating not only the acceptance of the provocation as true, but also the relative expectability of this agreement. While there seems to be no "contradictory force" (Hualde & Prieto 2015: 369), presupposing the expectability of a commitment conversationally implicates that the person that requested this commitment violated the first part of Grice's conversational sub-maxim of Quantity "Make your contribution as informative as required (for the current

purposes of the exchange)." (Grice 1975: 45)[27] While such a conversational implicature is not a contradiction, it is similarly prone to be face-threatening and therefore easily confused with it.

In (165), the provocation by B is responsible for the violation of this maxim. In terms of the model in §3.3.3, A does not "contradict" B in (165). Rather, we are dealing with a modally marked assertion confirmation, in which the confirmation is prosodically marked as necessary from the perspective of the input Common Ground. Since the model assumes that the goal of conversation is to increase the Common Ground, such a move is impolite or uncooperative in the sense that it indicates the lack of such an update.

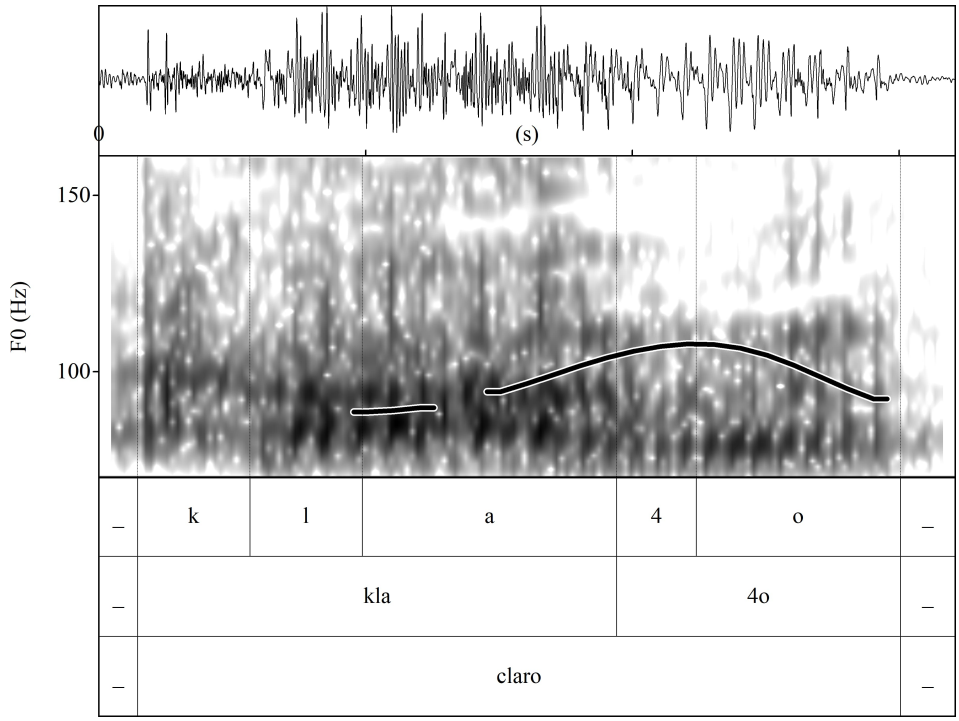


Figure 5.1: L* HL% on *claro* in context (165)

[27]This violation then forces the responding interlocutor to violate the second part of Grice's conversational sub-maxim of Quantity: "Do not make your contribution more informative than is required".

(165) (Interview 49, PRESEEA 2014–2020)

A: …de ahí tiramos para Llanes tiramos para Arriendas / tiramos para Cangas de Onís para Covadonga / o tiramos para Tazones o

'…from there we go to Llanes we go to Arriendas / we go to Cangas de Onís to Covadonga / or we go to Tazones or'

B: os gusta la montaña

'you like the mountains'

A: bueno *claro* sí sí

L* HL%

'well *sure* yes yes'

Another example of a L* HL% contour is Figure 5.2 from the context (144), repeated for convenience in (166). As seen in §5.1, *claro* is the common way of responding to the biased question about whether or not Christmas festivities involve having something special for dinner. In (166), the two turn-initial *pues* signal hesitation and the intention to perform a context update,[28] which then resolves into a series of four relative polarity particles *sí sí sí claro* followed by an additional explicit explanation of the hesitant reaction with the adverb *por supuesto* 'obviously'. Again, we see how the idea of a "contradictory force" can arise in examples in which an obviousness contour can be understood as challenging the validity of formulating the provocation as a question, given the expectability of the answer. In terms of our pragmatic model, B does not contradict A in (166). Rather, we are dealing with a modally marked polar question confirmation, in which the confirmation is prosodically marked as necessary from the perspective of the input Common Ground.[29]

(166) (Interview 49, PRESEEA 2014–2020)

A: eeh/¿que lo celebráis con un / hay algún menú especial en Nochebuena?

'Um / that you celebrate with a / is there a special Christmas Eve menu?'

B: pues pues / sí sí sí *claro* eso por supuesto y además …

L* HL–

'Well well/ yes, yes, yes, *sure*, obviously this and moreover …'

[28] See (157) and the respective discussion.

[29] I will not attempt a full integration of intonationally marked obviousness into a theory of compliance with Gricean Maxims. Intonational Compliance Marking theory (Westera 2017, 2018) seems readily extendable in this direction.

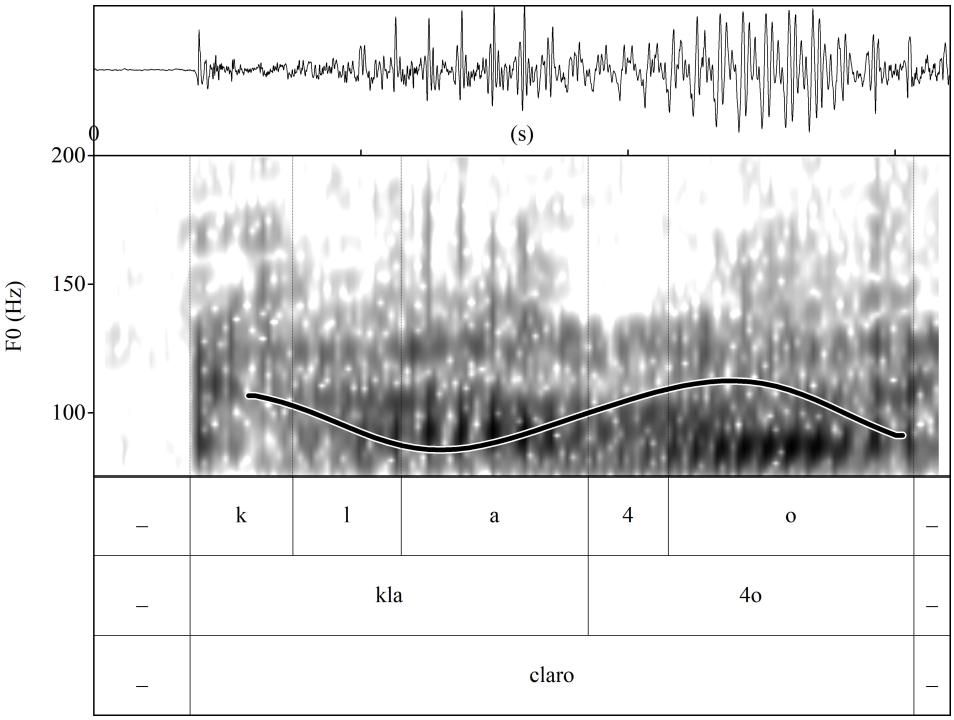


Figure 5.2: L* HL– on *claro* in context (166)

Figure 5.3 from the context in (167) shows that in successions of *hombre* and *claro*, the low-rise-fall need not occur on both.[30] Here, A asks B whether she believes in the environmental problems that are all over the media. After a short vocalized hesitation, B agrees using *hombre claro*, followed by *sí* and a confirmation-seeking tag question. The pattern of hesitation and obvious agreement is visible in all three examples of *claro L* HL%* discussed so far, which can count as a further sign that speakers hesitate to use a marked, possibly impolite form.[31]

(167) (Interview 05, PRESEEA 2014–2020)

A: ¿y tú crees que es verdad eso del fenómeno del niño y de la niña / de la capa de ozono y todo eso?

'And do you think it's true this whole phenomenon of El niño and La niña / and of the ozone layer and such?'

[30]Whether there is a (rising) pitch accent on *hombre* will not be decided here.

[31]See Kendrick & Torreira (2015) for the findings that marked responses (what they call "Dispreferred Formats" or "qualified" responses) are preceded by longer breaks between turns and that very late responding actions (after breaks longer than 700 ms) are almost always dispreferred moves (e.g. negative relative polarity or face-threatening acts).

B: mmm // *¡hombre claro!* sí ¿no? …
L* HL%
'mmm *man sure*! it is, right? …'

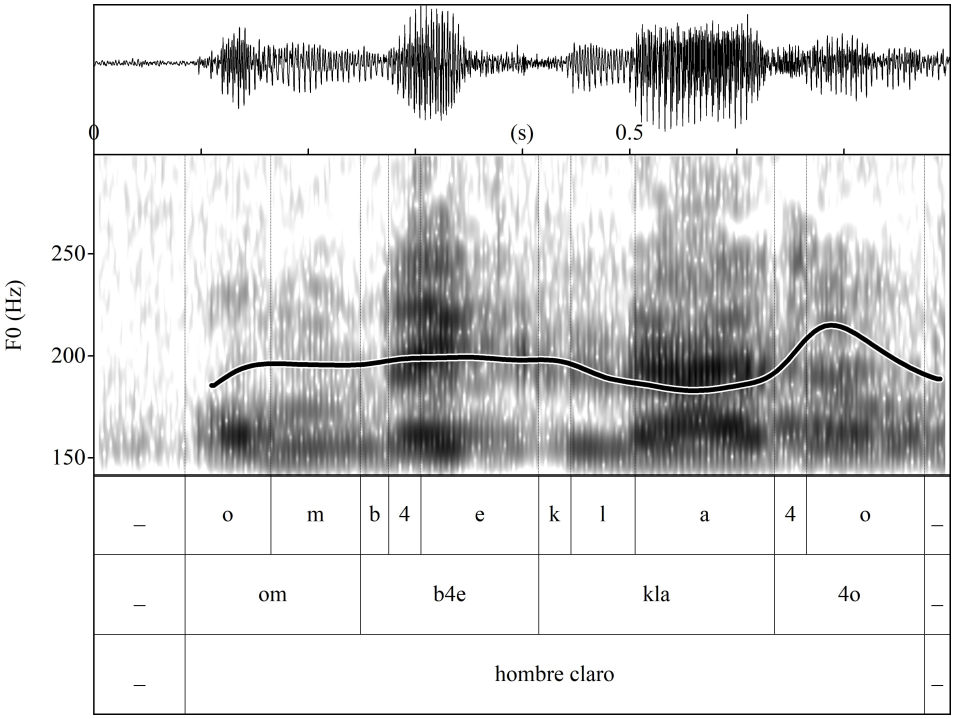


Figure 5.3: *hombre claro* L* HL% in context (167)

According to Torreira & Grice (2018), native speakers of Spanish should truncate the final fall in one-word examples of *claro L* HL%*. The examples presented so far do not show such tonal truncation.[32] Figure 5.4 from the context in (168) shows a truncated L* H(L)– realization of *claro*. Here, A assures B that fainting is not as exceptional as her husband might think, to which B agrees with a succession of markers showing that her previous assertion did not call into question the mutually shared assumption that fainting can sometimes happen.

(168) (Interview 41, PRESEEA 2014–2020)
A: tu marido ¿qué decía?
'Your husband, what did he say?'

[32] Perceptually, the final falls are nevertheless very subtle, as can be appreciated by listening to the audio-files.

B: lloraba amargamente …
'he was weeping bitterly …'
A: mm / pero es es son normales / las lipotimias esas ¿sabes?
'mm / but it's it's they're normal / these faintings, you know?'
B: *claro* / hombre que sí claro
L* H(L)–
'*sure* man, yes, sure'

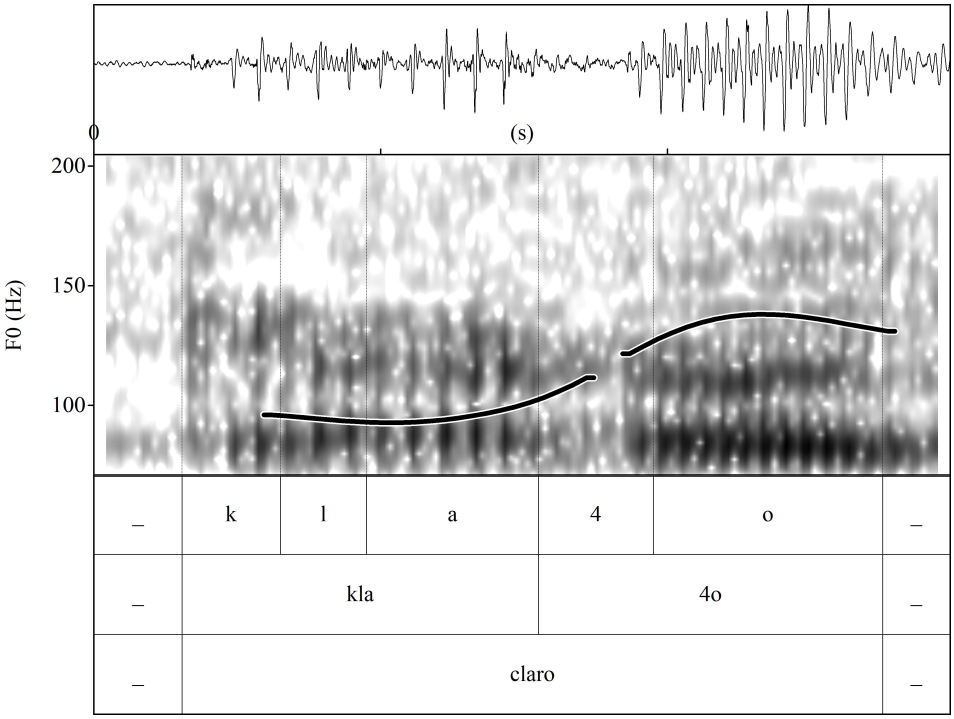


Figure 5.4: L* H(L)– on *claro* in context (168)

Figure 5.5 from the context in (169) is a rare example of an obvious assertion confirmation with an inflected verb. A asserts that the thought of death without afterlife is hard, and B agrees with a succession of particles and the sentence *duro es* 'it's hard'. The first particle, *sí*, is dramatically lengthened to accommodate a low-rise-fall contour, which is repeated on *claro* and *hombre*. Since the sentence ends in a one-syllable word, we again do not know if the nuclear contour is a final low-rise L* H% or a truncated low-rise-fall L* H(L)%.

The pragmatic equivalence between truncated and non-truncated examples of the low-rise-fall indicates that the phonetic difference does not encode a meaningful distinction. This leaves phonological processes as an explanation for truncation, yet a word-level analysis as attempted in Torreira & Grice (2018) cannot account for the variability in one-word examples. Rather, the examples presented here point to the possibility that weaker prosodic boundaries between a particle and the following prosodic constituent, as well as the positioning of the lexical accent on the ultimate (tonal crowding), favor a reduced fall realization.

(169) (Interview 41, PRESEEA 2014–2020)

A: es algo en lo que queremos pensar porque sólo pensar en / te mueres y / y te entierran y se acabó todo / ya no eres tú ya no hay nadie eso es muy duro ¿no?

'It's something we like to think because to only think that / you die and / and they bury you and it's all over / you're not you anymore there's nobody anymore that's very hard, right?'

B: pues sí *claro* hombre duro es …

L* H(L)–

'well yes *sure* man it's hard …'

Figure 5.6 from the context in (170) illustrates that L* HL% intonation can be limited to one particle within a sequence of particles. Here, A has asked repeatedly if B can give a broad estimate of her household income, to which B has replied that she has only recently started working again. A replies with the question 'your husband didn't have income this year either?' introduced by the adversative conjunction *pero* 'but' and marked with a high plateau intonation that I interpret as incredulity, implicating that her husband must have had income for the household to survive. B agrees with this implicature, adding a non-at-issue commitment of obviousness to her agreement to indicate the expectability of her husband having income. When comparing this sequence with Figure 5.5, we see that speakers can choose freely whether to mark obviousness on one or several intermediate phrases in a turn.

(170) (Interview 11, PRESEEA 2014–2020)

A: pero / ¿tu marido no ha tenido ingresos este año tampoco?

'but / your husband didn't have income this year either?'

B: *¡sí / claro! / mi marido sí*

L* HL–

'*yes / sure ! mi husband yes*'

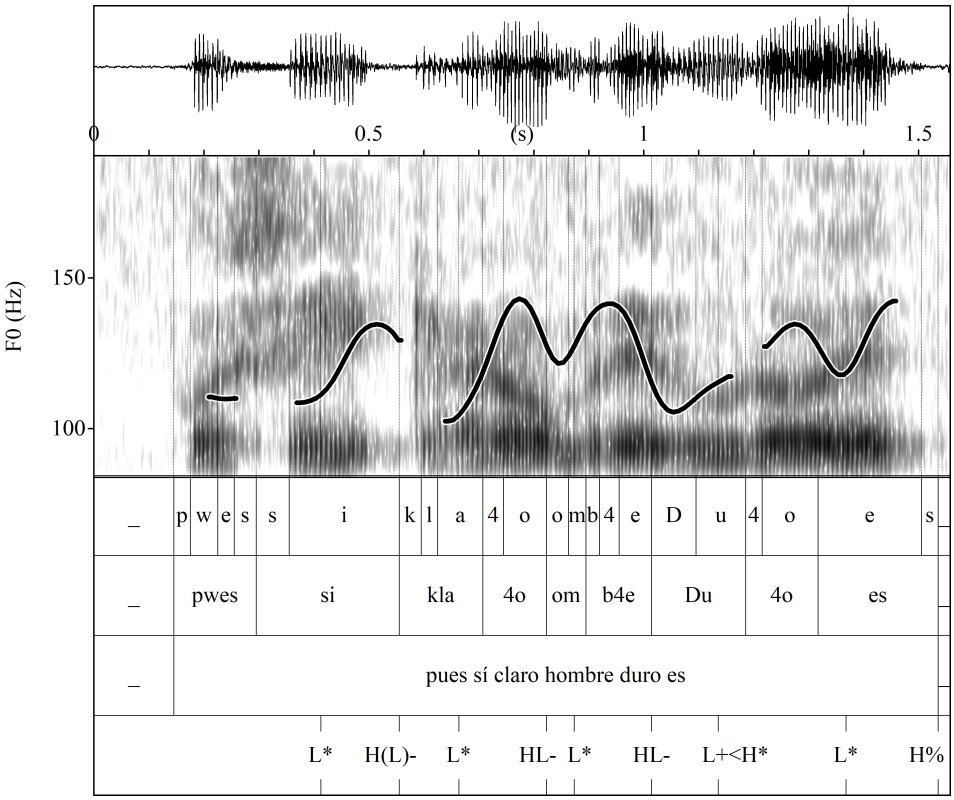


Figure 5.5: L* H(L)– on *claro* in context (169)

In sum, we see that *claro* does often receive L* HL% prosodic marking. Given that *claro* is the only Madrid Spanish discourse particle that is obligatorily specified for positive relative polarity,[33] this rules out the possibility that the function of L* HL% is to deny or reverse a proffered proposition. This becomes even more apparent in cases where *claro* is not used for confirmation, but rather to introduce an expectable assertion as part of an explanation. Figure 5.7 from the context in (171) is an example of a truncated low-rise-fall on *claro* used within a longer turn.[34] Here, this contour is mirrored at the end of the assertion, indicating that *claro* is in a discourse-cataphoric relationship with the following sentence.

[33]There are no particle uses of *cierto* in the PRESEEA Madrid Salamanca corpus. Neither are there uses of *eso/esto* as an agreement particle, a phenomenon restricted to some American varieties (e.g. Antioquia Colombia).

[34]Again, prenuclear pitch accents are omitted here, partly because the signal is less clear on *coger* than on *agachabas*. This seems not only due to the segmental makeup, but hints at the relative prominence of the nuclear accent.

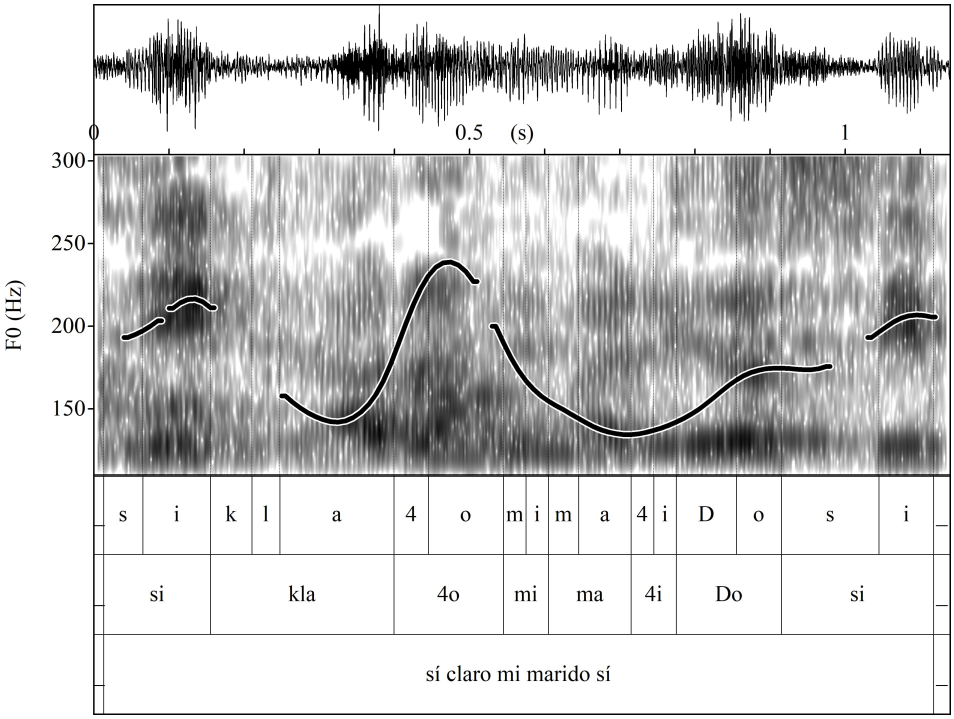


Figure 5.6: L* HL– on *claro* in context (170)

Such prosodic congruence is different from prosodic question-answer congruence, as investigated for example by Roettger et al. (2019), since the first *claro* L* H(L)– constitutes an anticipation of a non-at-issue commitment by the same speaker. The intonational contour is not licensed by narrow focus on either *claro* or *nieve*, but rather by the assumption of shared expectations about how children behave in the snow.

(171) (Interview 41, PRESEEA 2014–2020)

A: …¿qué te parece a ti el tiempo que estamos teniendo últimamente?
'…What do you think of the weather we're having lately?'

B: pues hombre / … ha evolucionado mucho el tiempo en Madrid / yo me acuerdo de pequeña que me encantaba ya por estas fechas / …/ nevaba / yo recuerdo unas nevadas …/ pero esas nevadas de Madrid que yo me acuerdo de / venir del colegio con la capa / chorreando / y mi madre / darme / de cachetes porque *claro* L* H(L)– *te agachabas a coger nieve* L* HL% / …

'well man / … it has changed a lot the weather in Madrid / I remember as a kid I loved it on these dates / …/ it snowed / I remember some snowstorms …/ but these snowstorms of Madrid I remember / coming home from school with the coat / dripping / and my mother / spanking me because *sure you ducked down to catch some snow* / …'

A: claro
'sure'

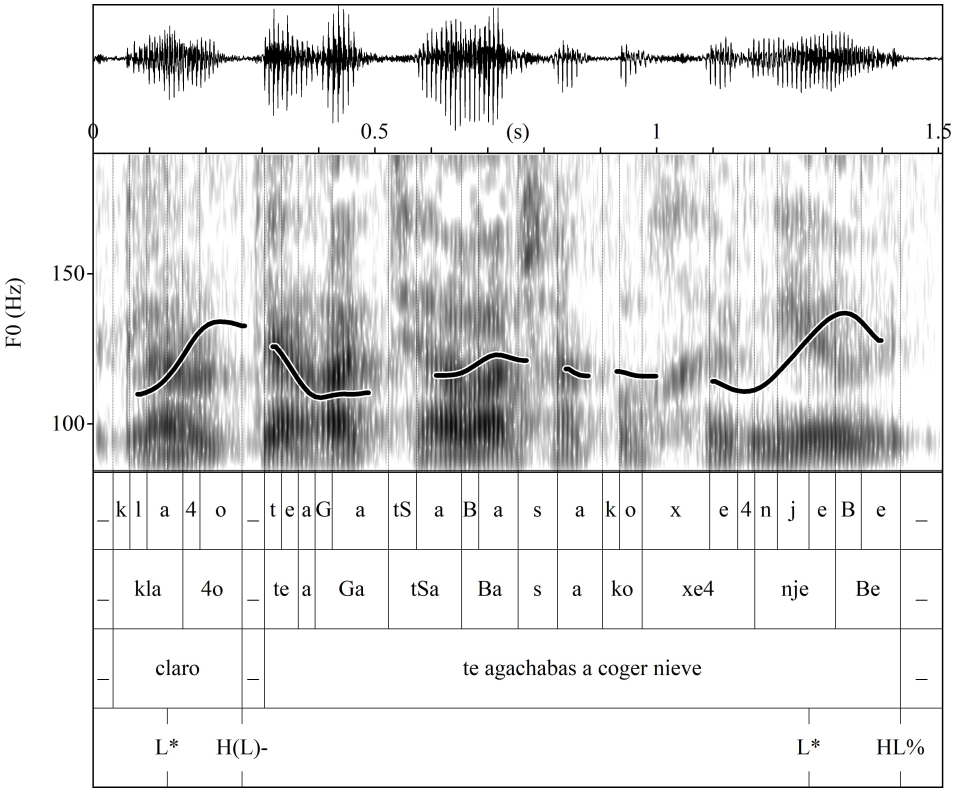


Figure 5.7: L* H(L)– on *claro* and L* HL% on sentence in context (171)

5.2.1.2 L+H* L!H%

Much rarer than the L* HL% contour on *claro* is the L+H* L!H% contour. Figure 5.8 from the context in (172) shows the contour identified by Table A.1 as the

expression for obviousness. As in the other interviews, the speakers do not know each other very well before the interview, which is visible in that A addresses B in the formal third person singular. B has just stated that she doesn't have the money to travel, to which A reacts by stating that she wonders whether they will win the lottery this year. A thereby presupposes that B plays the lottery as well. B agrees with this statement by repeating it. Nevertheless, A now explicitly asks whether the presupposition of the previous two assertions is actually true, to which B reacts with *claro* L+H* L!H%.

Determining the difference between (172) and the aforementioned examples with L* HL% from context alone can only be a first approximation, and needs to be supplemented by *Laboratory Phonology* research in the sense of Cohn et al. (2012) (Chapter 6). Nevertheless, some contextual cues are present. In (172), A calls into question the presupposition of an assertion that has just been confirmed. This goes beyond asserting (or inquiring about) a proposition that is necessary from the perspective of the input Common Ground, because the proposition is part of the CG. If B were to respond negatively to the question, this would constitute a highly marked retraction from a Discourse Commitment. *Claro* L+H* L!H% can therefore be seen as a complex case of obvious insistence, in which the speaker expresses a) a polar question confirmation, b) the necessity of this confirmation from the input CG, and c) the insistence on a commitment.

(172) (Interview 42, PRESEEA 2014–2020)

A: bueno a ver si nos toca la lotería / este año
'well let's see if we win the lottery / this year'

B: bueno a ver si nos toca
'well let's see if we win'

A: y vamos ¿juega a la lotería?
'and so do you play the lottery?'

B: ¡sí *claro*! / hay que jugar
L+H* L!H%
'yes *sure*! / you have to play'

While L+H* L!H% marking on *claro* is very rare, *sí* before sentence-adverbial use of *claro que* can be lengthened so as to accommodate a low-rise-fall-rise contour, as in Figure 5.9 from the context in (173). Here, B has stated that she doesn't play the lottery, to which A reacts by asking if B doesn't believe in chance or luck. B commits to believing in luck, only to start digressing into a lengthy explanation about her belief in destiny being predetermined. A reacts by repeating

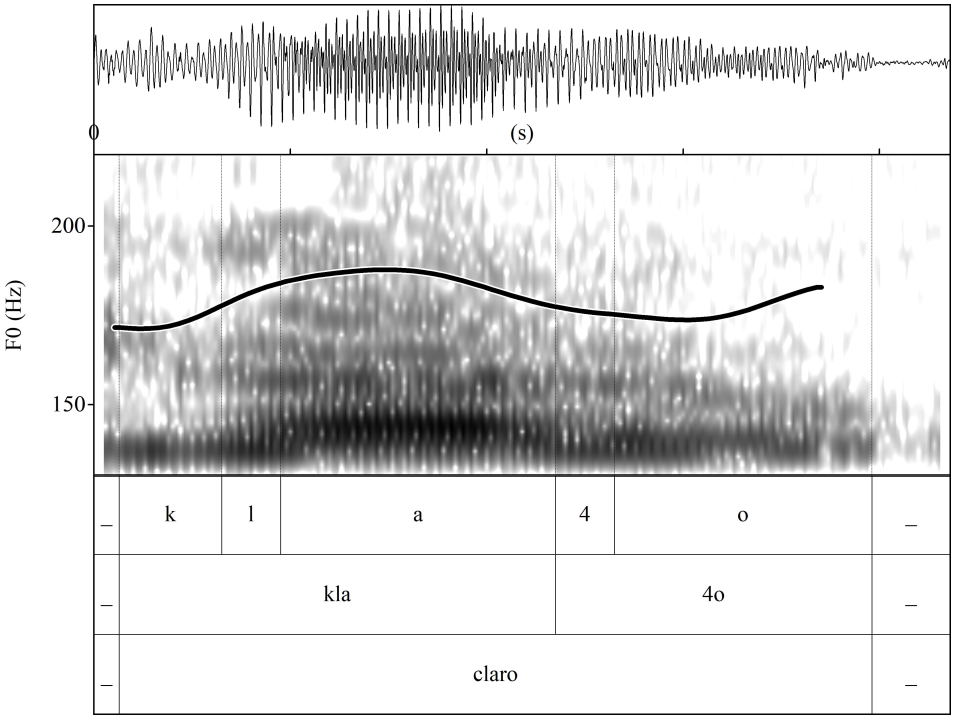


Figure 5.8: L+H* L!H% on *claro* in context (172)

her polar question whether or not B believes in chance, to which B reacts by re-asserting her previous commitment with *sí* L+H*L¡H%.[35] This examples parallels example (172) in many ways. Again, A calls into question a recently established commitment, prompting B to a) confirm the polar question, b) presuppose/conventionally implicate the necessity of this confirmation from the input CG, and c) insist on her previous commitment. Note that the scaling of the final rise is much higher here, a problem already mentioned with regard to Figure 3.3 from Hualde (2014: 278) and Figure 3.4 from Hualde & Prieto (2015: 379). The naturally occurring examples presented here indicate an even greater variability in scaling on the final high target, with upstepped final rises greatly exceeding the pitch accents in range. Nevertheless, the context-update in terms of expectability and

[35]Note that this kind of annotation is only justified by comparison with examples that allow us to separate pitch accent from boundary tone via a syllable boundary. If this was the only example we had, we could as well label it LHL¡H% or L+H*+L ¡H%. Penultimate stress is the default in Spanish. If we assume that the inventory of contours remains the same in phrases irrespective of the stress position of the words they contain, then phrases with penultimately stressed words in nuclear position should be the main point of comparison in intonational phonology.

insistence remains the same. One way of dealing with this evidence would be to treat such scaling differences as non-categorical. Yet we would still need to explain why the scaling differences concern only the final rise, and not also the previous pitch accent. An analysis purely in terms of emphasis would predict all tonal targets equally to be scaled higher or lower with higher or lower emphasis. We come back to this issue when dealing with mirative intonation, where scaling differences affect pitch accents instead of boundary tones.[36]

(173) (Interview 41, PRESEEA 2014–2020)

A: ¿no crees en el azar y en?
'you don't believe in chance and in?'

B: no no sí sí creo hombre / pero lo que te digo que es que tenemos un destino escrito y hagas lo que hagas por mucho que hagas por traerlo / como no lo tengas no lo tienes
'no no yes yes I believe man thing is / but what I'm telling you is that we have a written destiny and for whatever you do no matter how much you do for bringing it upon you / if you don't have it you don't have it …'

…

A: bueno y entonces ¿no crees en el azar o sí crees en el azar?
'well and so do you not believe in chance or do you believe in chance?'

B: *sí* */ claro que creo en el azar*
L+H* LH% L* H%
'*yes of course I believe in chance*'

Turning to the question of whether L* HL% and L+H* LH% can be combined, natural examples show no restrictions. Figure 5.10 from the context in (174) starts with *claro* L* H(L)-, but ends with a highly lengthened one syllable *ya* L+H* LH%. Here, B asserts that she will not leave her parents' place once she starts working, to which A reacts with an incredulous acceptance that calls into question the veracity of this prediction. B goes on to reassert her commitment with *sí* and to set a lower limit on the time scale for which this commitment holds. Finally, she explicitly states the reason for why her commitment is to be expected, formulating it using the depersonalized passive voice which frames it as a universal truth

[36] I abstain from analyzing the final boundary tone in Figure 5.9 as a reduced L* H(L)% since there is not even an indication of a low target in this lengthened syllable and the rise continues up to the end of the word. Moreover, I abstain again from marking prenuclear pitch accents, not only because of the relatively small excursion after the first *claro*, but particularly because annotating *creo* with H*+L would neglect the continuous fall towards *azar* L* H%.

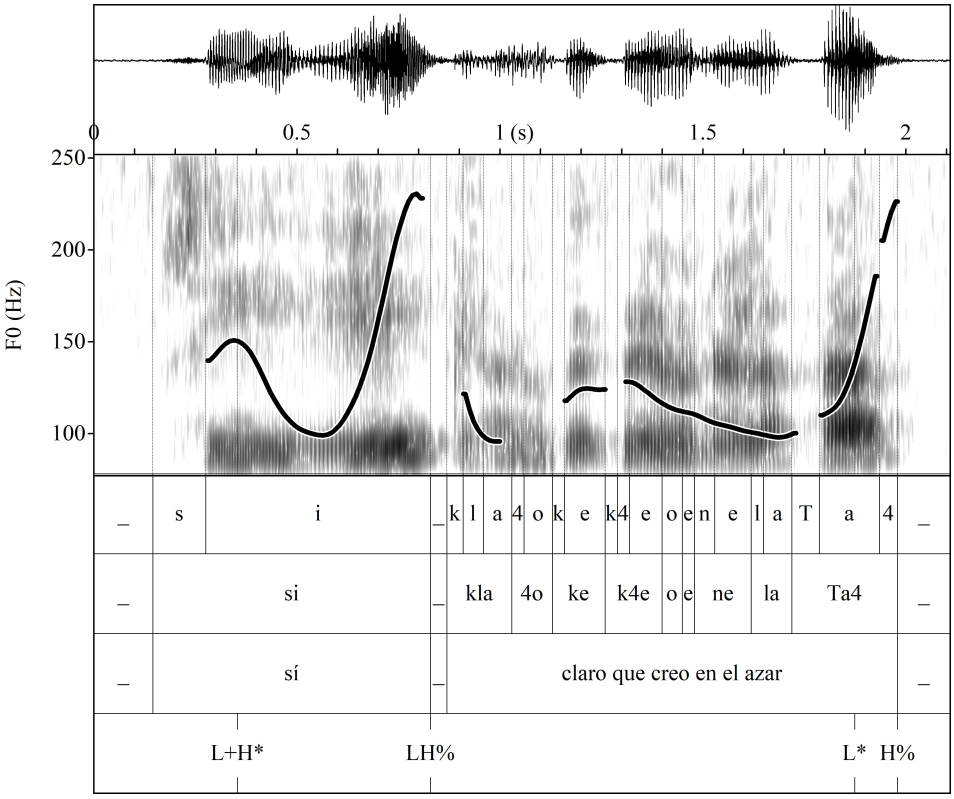


Figure 5.9: L+H* LH% on *sí* in context (173)

that one lives well at one's parents' place. Here, again, B expresses a) a polar question confirmation, b) the necessity of this confirmation from the input CG, and c) the insistence on a commitment that has been called into question.

(174) (Interview 05, PRESEEA 2014–2020)

A: ¿y cómo te imaginas tú entonces que va a ser o qué sería tu vida // si / …hubieras empezado ya a estudiar lo que quieres estudiar / …?

'and how do you picture your life to be // if / if you …had already started to study what you want to study / …?'

B: pues yo creo que muy parecida / porque / me pondría a trabajar de eso // y lo demás / seguiría viviendo en casa de mis padres

'well I think very similar / because / I'd work and such // and apart from that / I'd continue living at my parents' place' …

A: ¿sí?
'really?'

B: sí // *y ¡claro no me voy a ir el año que viene ya!* / vamos / ¡con lo bien que se vive en casa de los padres!
'yes // *and I'm obviously not going to leave next year already!* / come on / given how good one lives at one's parents' place!'

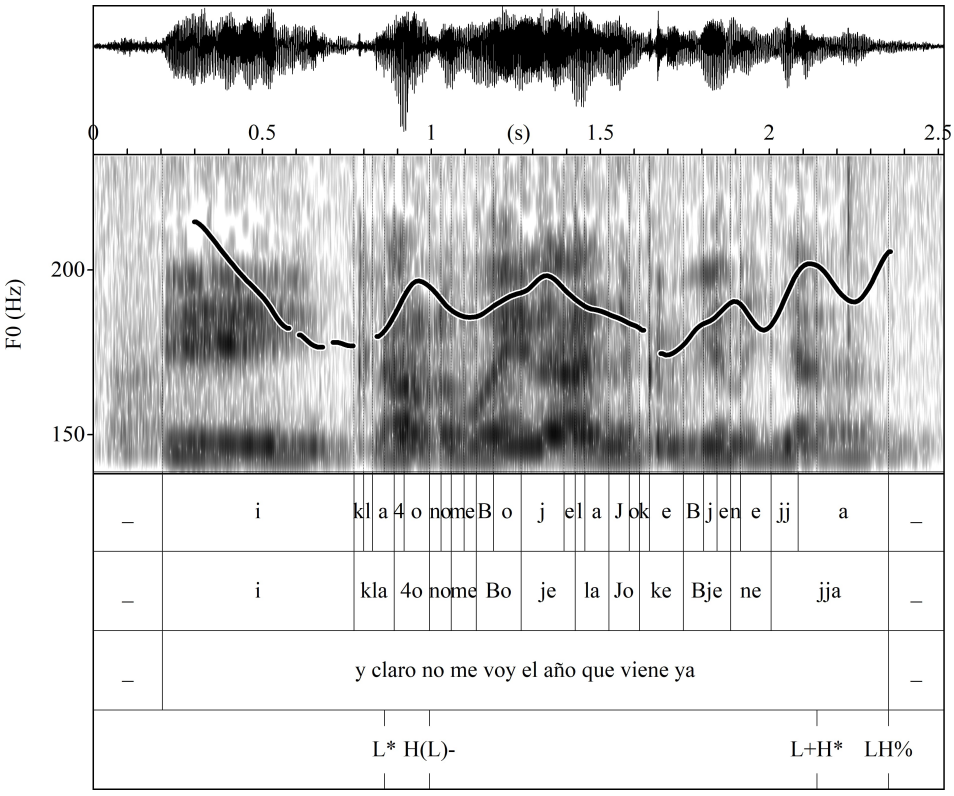


Figure 5.10: L+H* LH% in context (174)

5.2.1.3 L* L%

It is important to stress that use of marked intonational contours is far from obligatory in any pragmatic context, even ones in which commitments are challenged and expectations are negotiated. The L* L% contour is very frequent on *claro*. Figure 5.11 from the context in (175) shows an example that is similar to

(174) in that A challenges the veracity of the previous assertion. B responds with *claro* and then adds an explanation, acknowledging that A was lacking information that would have allowed him to rule out the alternative answer. Apart from the falling intonation on *claro*, note the L+H* L% nuclear configuration on the explanatory addition. B asserts that he has known his physician for years, without presupposing this to be expectable.

(175) (Interview 06, PRESEEA 2014–2020)

A: ¿tú hay alguien en especial que trates de usted y alguien en especial que trates de tú? / por ejemplo a tú médico ¿cómo lo tratas? / ¿de tú o de usted?

'you is there someone in particular that you address with *usted* and someone you address with *tú*? / for example your doctor how do you address him / with *tú* or *usted*?'

...

B: al médico de cabecera lo trato de tú

'the general physician I address with *tú*'

A: ¿sí?

'really?'

B: *claro* / *después de varios años*

L* L% L+H* L%

'*sure / after several years*'

Based on this example, I want to briefly reflect on the difference between unmarked L* L% and marked L* HL%. (176a) gives the actual attested sentence, (176b,c) are hypothetical alternative responses. All are complex discourse updates. In (176a), *claro* confirms the polar question and prosody does not add any commitments, since L* L% is unmarked. The second part of the turn commits B to her having addressed the physician for several years now. This is a new commitment proffered for acceptance (assertion), which receives L+H* L%. In (176b), the L+H* L% on this assertion stays the same, while the L* HL% on *claro* adds the commitment that the truth of the confirmed proposition would be necessary from the input CG. While the context would have licensed such a commitment (and the lexical meaning of *claro* is highly compatible with it), it would have created a conflict with the following assertion that B has been addressing her physician for several years now. This conflict arises between the conventional implicature triggered by L* HL% (It is expectable from the input CG that I address my general physician with *tú*) and the conversational Q-implicature that arises

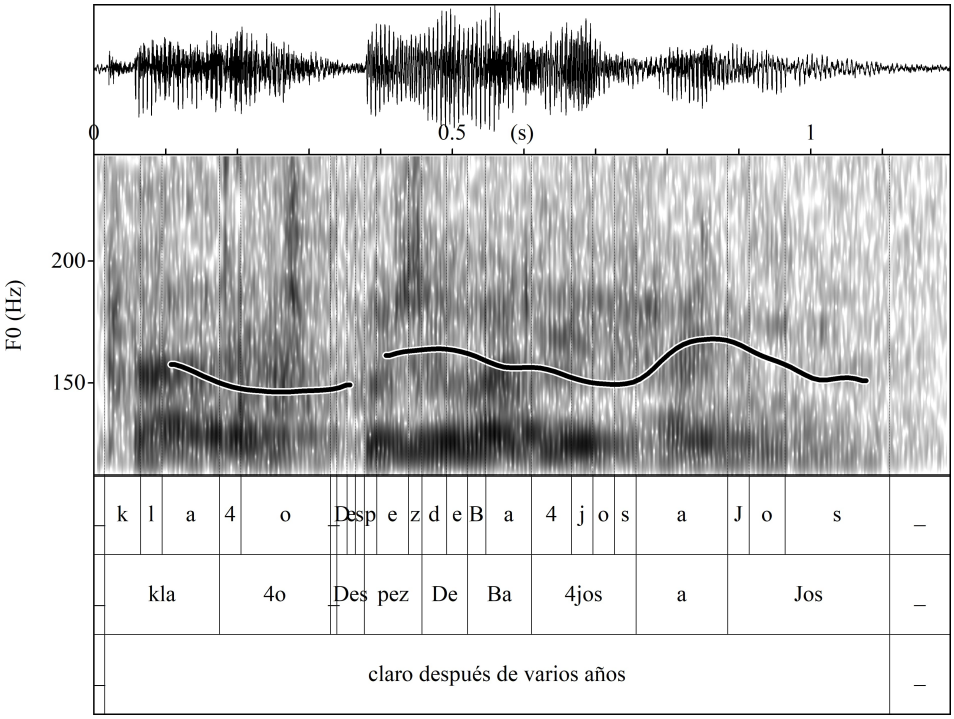


Figure 5.11: L* L% on *claro* and L+H* L% on *años* in context (175)

through a new assertion directly pertinent to the expectations exploited by L* HL% (I am being informative when I tell you that I know him for several years). At the beginning of the turn, the CG does not contain the information about the longstanding relationship between B and her physician. Marking *claro* as obvious and then asserting the reason for the expectability of *claro* would violate the Maxim of Quantity (Grice 1975, Horn 2010). Finally, (176c) would commit B to the expectability of both commitments. This would again be consistent, yet a bold claim given that A does not have information about the relationship between B and her physician.[37]

(176) A: ¿sí?
‘really?

[37]Note that only the “artificial” interview setup allows us to be certain about this lack of shared information. When observing conversation without information about the epistemic relation between interlocutors, intonation is only predictable if you are a mind reader (Bolinger 1972).

a. B: claro / después de varios años
L* L% L+H* L%
'sure / after several years'

b. # B: claro / después de varios años
L* HL% L+H* L%
'sure / after several years'

c. B: claro / después de varios años
L* HL% L* HL%
'sure / after several years'

Coming back to corpus examples, we find that successions between two particles can stand in a downstep relation to one another, as visible in Figure 5.12 from the context in (177). Here, no common assumptions have been called into question. Instead, the provocation by B mainly sums up the previous assertion of A. By using *claro* L* L%, A accepts the proffered proposition without additional modal non-at-issue commitments. Phonologically, a downstep relation between two successive instances of *claro* indicates that there is no intermediate boundary between the two that would license a pitch reset.

(177) (Interview 20, PRESEEA 2014–2020)

A: cortar arizónicas limpiar la parcela regarlo lo otro lo otro y / luego quitar las hiervas que es que salen muchas hiervas allí ¿no? // y eso da mucho trabajo

'cut cypresses clean the plot water this that and / then remove weeds it's that there come out many weeds, right? // and that demands a lot of work'

B: o sea que eso lo conoces bien

'so this is something you know well'

A: *claro claro*
L* L* L%

'*sure sure*'

5.2.1.4 L+H* L%

L+H* L% on *claro* is rare, yet should still be noted as a possibility. To get an idea of the type of context this contour appears in, see (178) and Figure 5.13. Here, again, B sums up a lengthy argument by A, to which A reacts with a succession

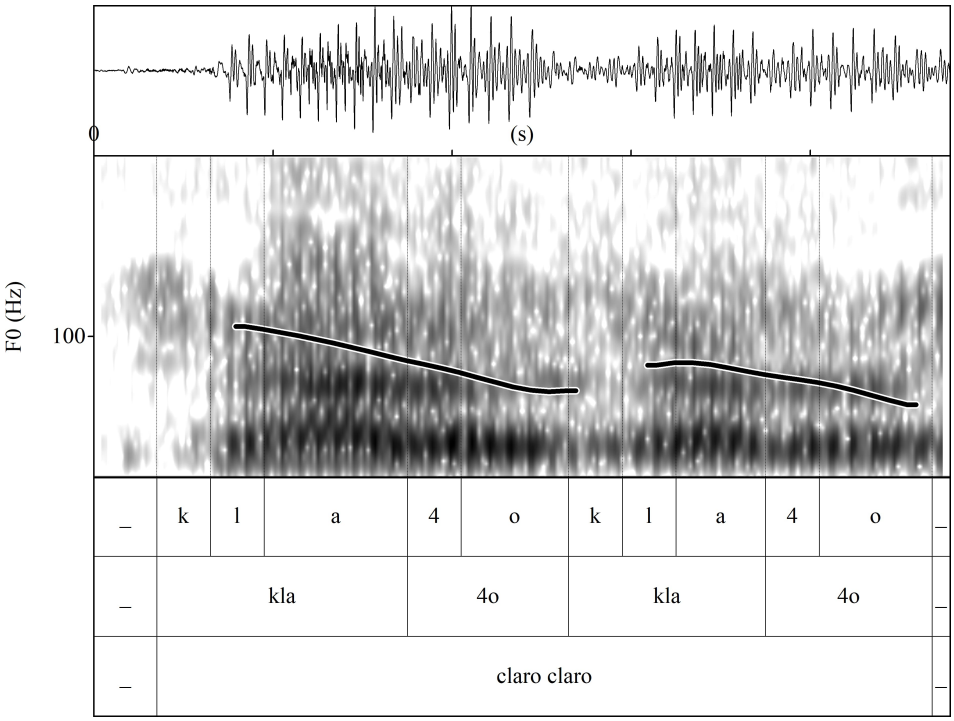


Figure 5.12: Downstep from *claro* L* to *claro* L* L% in context (177)

of four particles. One reason I see for A to use an L+H* L% contour instead of an L* L% contour is the fact that B introduces his provocation by *pero*, thereby framing his assertion as a reversal. Irrespective of the question whether B's assertion actually reverses anything that A stated, the use of *pero* now puts A in the position of having to either insist on or retract from an commitment.[38] L+H* L% on *claro* can therefore be seen as marking contrastive focus on the particle denoting confirmation, which is one way for A to acknowledge the contrast and still communicate agreement.

(178) (Interview 03, PRESEEA 2014–2020)

A: por ejemplo puede ser / un amigo mío / éramos de del barrio / …// como hermanos / vamos / en cambio / no es lo mismo otro que era del barrio que he estado jugando con él al / al fútbol / muchas veces / que me he ido por ahí de juerga / sí / …pero / no es lo mismo que este

[38]Note that this insistence differs from (172,173,174) in that it is not combined with an additional commitment to expectability from the CG.

otro .../ no es la misma confianza esa / claro

'for example say / a friend of mine / we were from the same neighborhood / .../// like brothers / like / in turn / it's not the same another one that was from the neighborhood I was playing soccer with him / often / I went to party there / yes ...but / it's not the same like the other one .../ it's not the same trust / sure'

B: sí pero habéis llegado a / a compenetraros

'yes but you got to empathize with each other'

A: sí / *claro* claro claro

'yes *sure* sure sure'

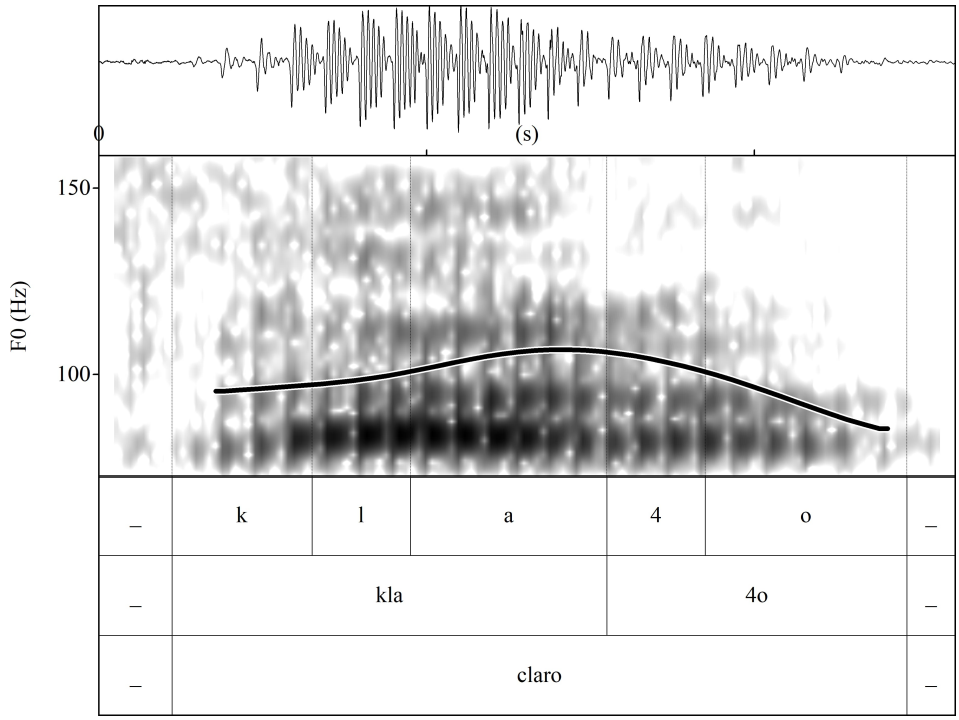


Figure 5.13: L+H* L% on *claro* in context (178)

5.2.2 Turns with *hombre*

Figures 3.8 and 3.9 from Briz (2012), already discussed in §3.3.2, show that *hombre* can have a high-falling intonation and a low-rise-falling intonation. While

the low-rise-fall realization is the same L* HL% pattern also discussed for *claro* above, the high-falling realization could either be a tonal (L)+H* L% apheresis of the L+H* L% contour due to the lack of onset in the first syllable of *hombre*, or it could be an H* L% contour not mentioned in Tables A.1 and 1.2. I will first lay out some forms and contexts of this high-falling contour, and then proceed to argue in favor of an analysis in terms of allophony between L+H* L% and tonal apheresis (L)+H* L% on *hombre*. The fact that turn-initial *hombre* (L)+H* L% precedes assertions with either L* L% or L+H* L% is in line with the general view in the literature that L* L% is in free variation with L+H* L% in unmarked statements.[39] I end this section with some remarks on H– phrasing in turns preceded by *hombre* L* HL%, illustrating a puzzle in need of experimental investigation.

5.2.2.1 (L)+H* L%

The high-falling contour is the typical contour on a turn-initial *hombre*. Figure 5.14 from context (179) shows a realization of *hombre* that starts high and then falls approximately 40 Hz towards the end of the one-word intermediate phrase. The context shows that we are dealing with the expectational realignment use of *hombre*, already discussed in §5.1, in which the speaker reassures the interlocutor of shared expectations after having asserted something unexpected. A explains his recipe for carbonara. When B states that he has never tried it with eggs, A states the modal necessity of carbonara containing egg. When B puts this up for discussion again, he first reaffirms his statement, only to then proceed with an expectational realignment use of *hombre* and the assertion that it is possible that some people might do it with cream. The intonational contour is what Briz (2012: 32) calls the "pseudo-agreement" use of *hombre*. From the context in (179), we can see that agreement in the sense of Farkas & Bruce (2010) is achieved via *sí*. In contrast, *hombre* in (179) can be seen as a modal concessive: it accepts a possibility that would justify B's stance (*perhaps they use cream*). A then continues with a second concessive *pero* that would usually introduce a contrasting commitment (Couper-Kuhlen & Thompson 2000) but remains without argument.[40]

[39] As laid out in §3.3.3, unmarked means here that neither an at-issue reversal nor non-at-issue commitments are marked intonationally.

[40] A does not continue after *pero*, abstaining from re-asserting that pasta with cream would not be a carbonara. This could be interpreted as *agreeing to disagree* in terms of Farkas & Bruce (2010).

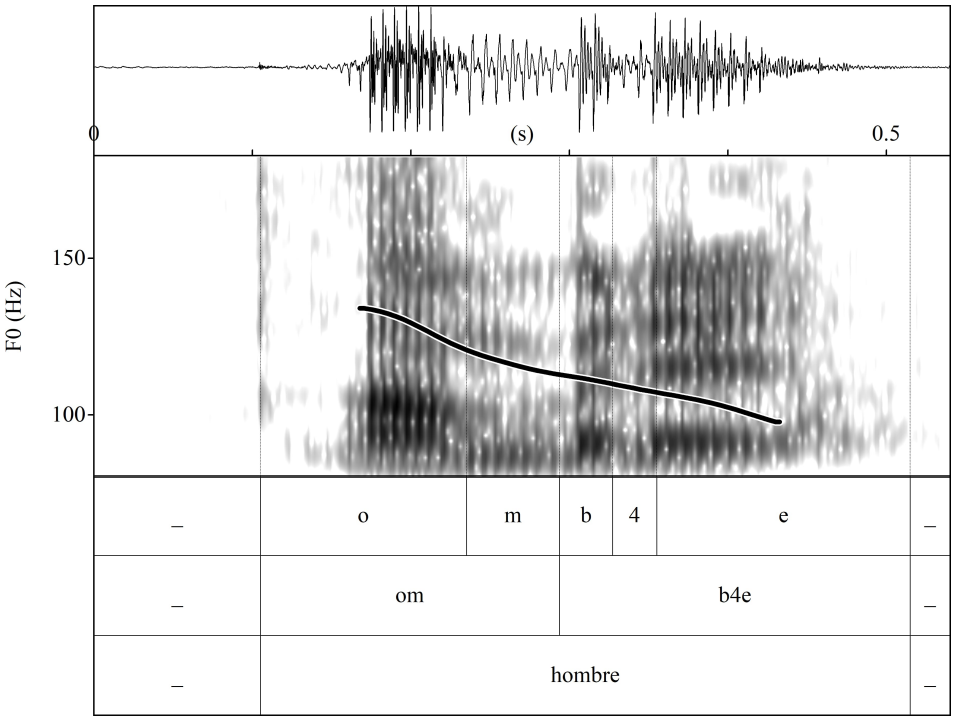


Figure 5.14: Falling intonation on *hombre* in context (179)

(179) (Interview 33, PRESEEA 2014–2020)

A: ¿no los has comido nunca?
'you never tried them?'

B: yo he he probado pero no así no así con yo por ejemplo no le no lo he probado con huevo
'I have have tried but not like this not like this with I for example I didn't didn't try it with egg'

A: ¡ah! ¿no?
'oh! really?'

B: no
'no'

A: pues la carbonara tiene que ser con huevo
'well the carbonara must be with egg'

B: con huevo / ¿sí?
'with egg / really?'

A: sí // *hombre* quizá lo hagan solo con nata y tal pero
'yes // *man* perhaps they do it just with cream and such but'

Figure 5.15 from context (180) is another example of falling intonation on *hombre*. Responding to an unbiased alternative question is similar to responding to a polar question, with the difference being that instead of a proposition and its negation the projected set contains two distinct, yet incompatible propositions. The use of *hombre* with falling intonation in (180) introduces an unmarked assertion, which itself ends with an L* L% contour.

(180) (Interview 33, PRESEEA 2014–2020)

A: ¿y de irte / que os iríais al campo o a una ciudad pequeña?
'and leaving / you'd leave to the countryside or a small town?'

B: *hombre yo intentaría una ciudad pequeña*
'*man I'd try a small town*'

Comparing these examples with combinations of *sí* and *hombre* adds further evidence to an unmarked assertive function of falling intonation on discourse particles. Figure 5.16 from context (181) shows a steeply falling intonation on *sí*, with *hombre* receiving a flat low intonation.

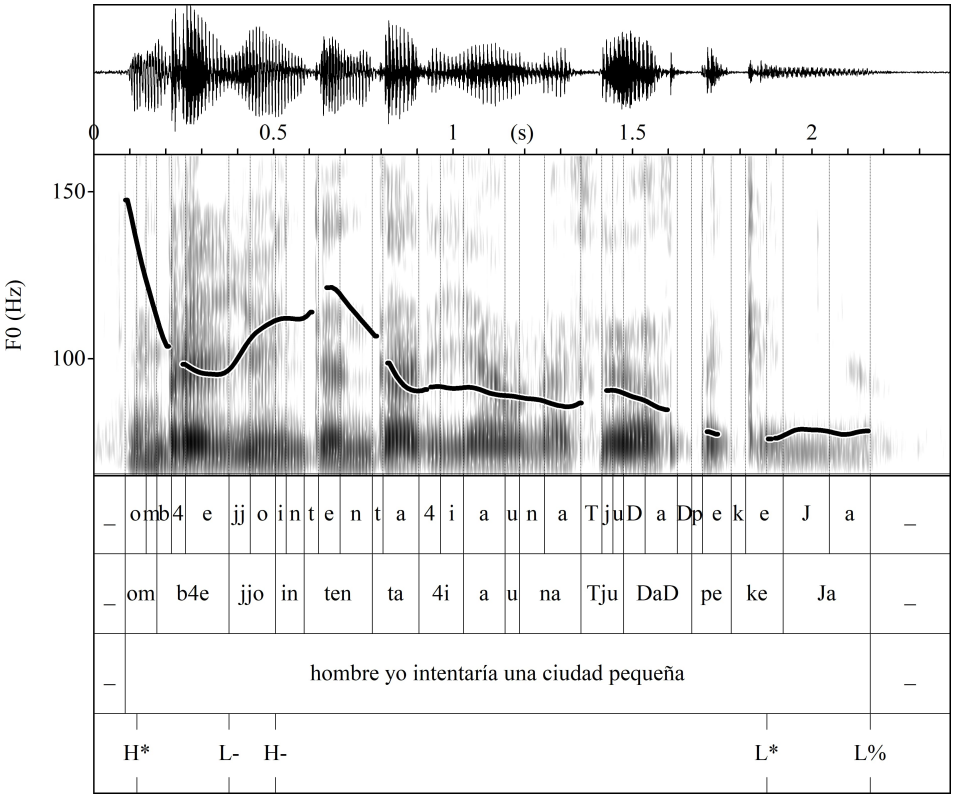


Figure 5.15: Falling intonation on *hombre* in context (180)

(181) (Interview 25, PRESEEA 2014–2020)
A: el Beatriz Galindo tiene buena fama / de siempre
'The Beatriz Galindo has a good reputation / since forever'
B: *sí sí hombre* / es un instituto que está bien
'*yes yes man* / it's a good institute'

The high tonal target remains initial when phrasing *hombre* and *pues* together, as in Figure 5.17 from context (182).[41] To get at the phonology behind the falling intonation on *hombre*, we can make use of the fact that both *hombre pues* and *pues hombre* are possible successions of particles. *Pues*, when used as a discourse particle and not as a causal conjunction, does not receive lexical stress (Alarcos Llorach 1994: 47). It therefore does not associate with tonal targets to form its

[41]Figure 5.17 also shows a rise from *pues* to the second syllable of *heterogeneo*, a phenomenon that will be discussed in §5.2.2.3 as well as §6.3.4. Note particularly Figure 6.10.

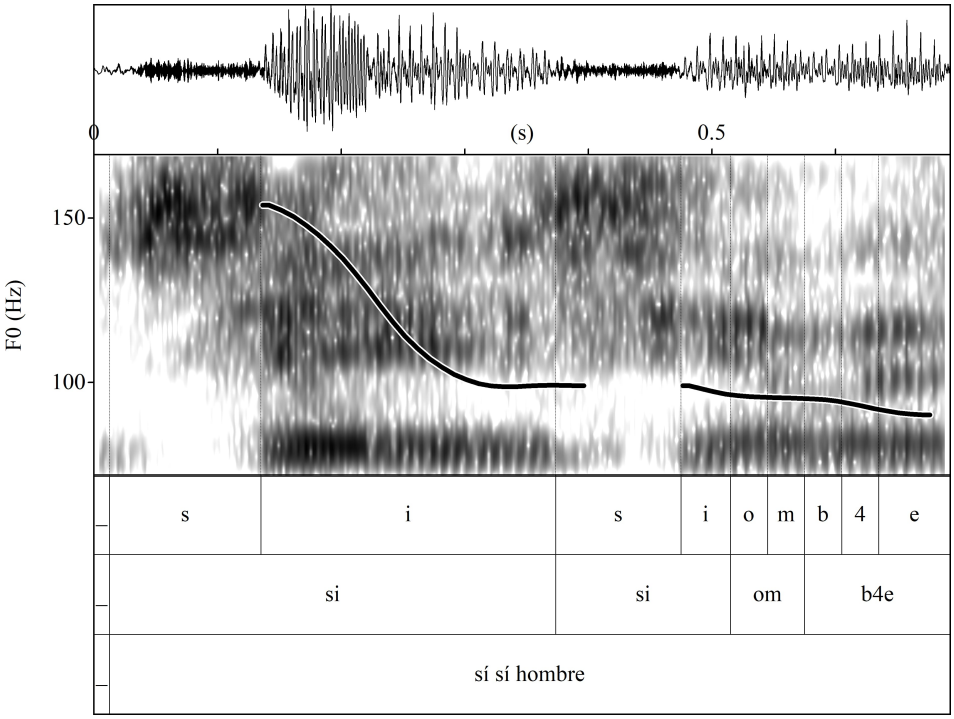


Figure 5.16: Falling intonation on *sí* and L* L% on *hombre* in context (181)

own pitch accent, but can allow a complex bitonal L+H* contour associated with the following syllable to surface fully. Figure 5.18 from context (183) shows that in *pues hombre*, the high tonal target still remains on the first syllable of *hombre*, yet with a rise through the previous syllable [pwes]. I take this as evidence for an analysis in terms of an L+H* pitch accent, followed by either a low phrase accent or a low boundary tone. In other words, I treat cases of falling intonation on *hombre* as a tonal apheresis (L)+H* L%, allophonic to cases that show a rising-falling L+H* L% intonation, such as Figure 5.19 from context (184).

(182) (Interview 33, PRESEEA 2014–2020)

A: hh muy bien / oye háblame un poco de / de tu barrio / ¿cómo es? /
'hh alright / listen tell me a little bit about / about your neighborhood / what is it like?'

B: hh ts ¿mi barrio? // ts *hombre pues mi barrio es muy heterogéneo*
'hh ts my neighborhood? // ts *man well my neighborhood is very heterogeneous*'

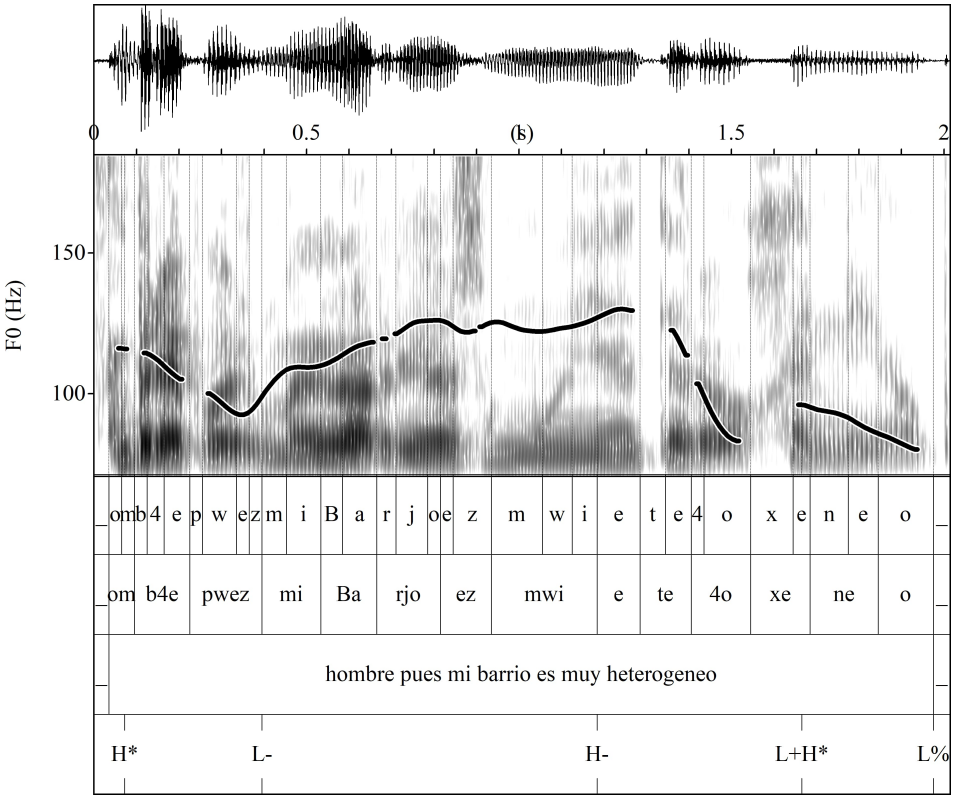


Figure 5.17: Falling intonation on *hombre pues* in context (182)

(183) (Interview 47, PRESEEA 2014–2020)

A: ¿qué lugar elegirías para vivir fuera de / que no fuera en Madrid?
'What place would you choose to live out of / that wouldn't be Madrid?'

B: ¡*pues hombre* mira Vizcaya me gusta mucho!
'*Well man* look I like Biscay a lot!'

In Figure 5.19 from context (184), we see a fully fledged L+H* rise on the first syllable of *hombre*. Given that the entire rise occurs within one syllable, tonal apheresis on (L)+H* L% seems to be optional.

(184) (Interview 41, PRESEEA 2014–2020)

A: lo pongo nada unos minutillos en la olla porque ahora con las ollas rápidas se hace la verdad mucho más rápido / se nos ha simplificado mucho la vida

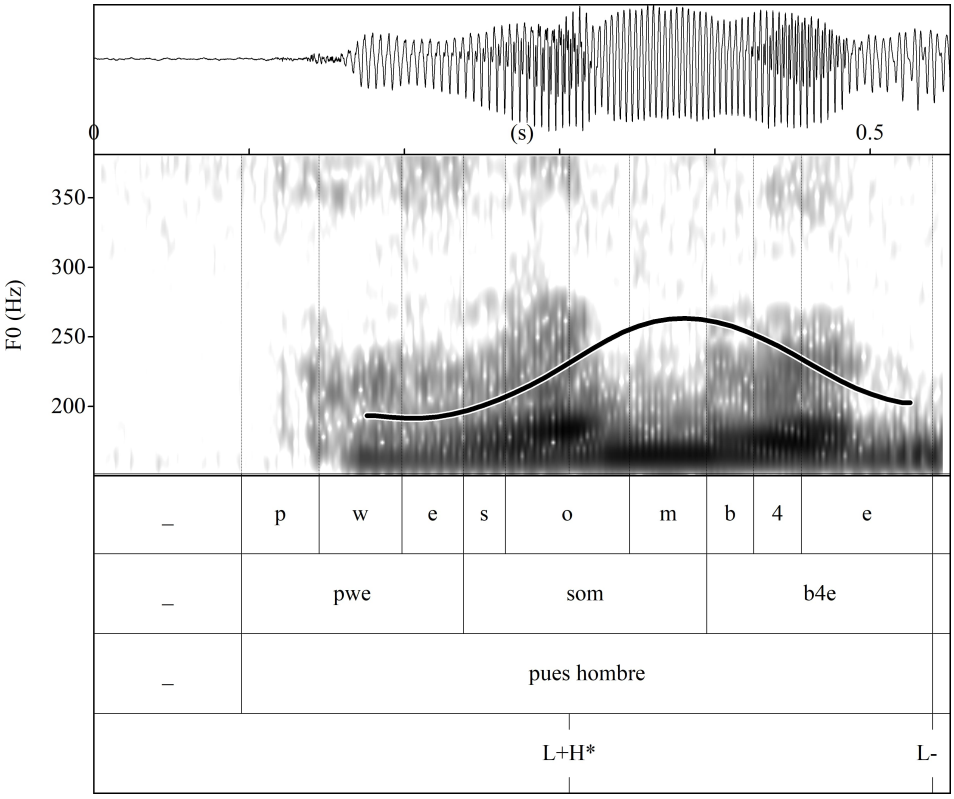


Figure 5.18: L+H* L– on *hombre* in context (183)

'I put it in the pot for just a few minutes because now with the pressure cookers it gets done much faster in truth / it has made our lives much easier'

B: sí
'yes'

A: *hombre mi madre tampoco lo ha tenido mal ¿no?* / pero yo recuerdo la primera lavadora que entró en mi casa …
'*man my mother didn't have it all that bad, right*? but I do remember the first washing machine that came to my house …'

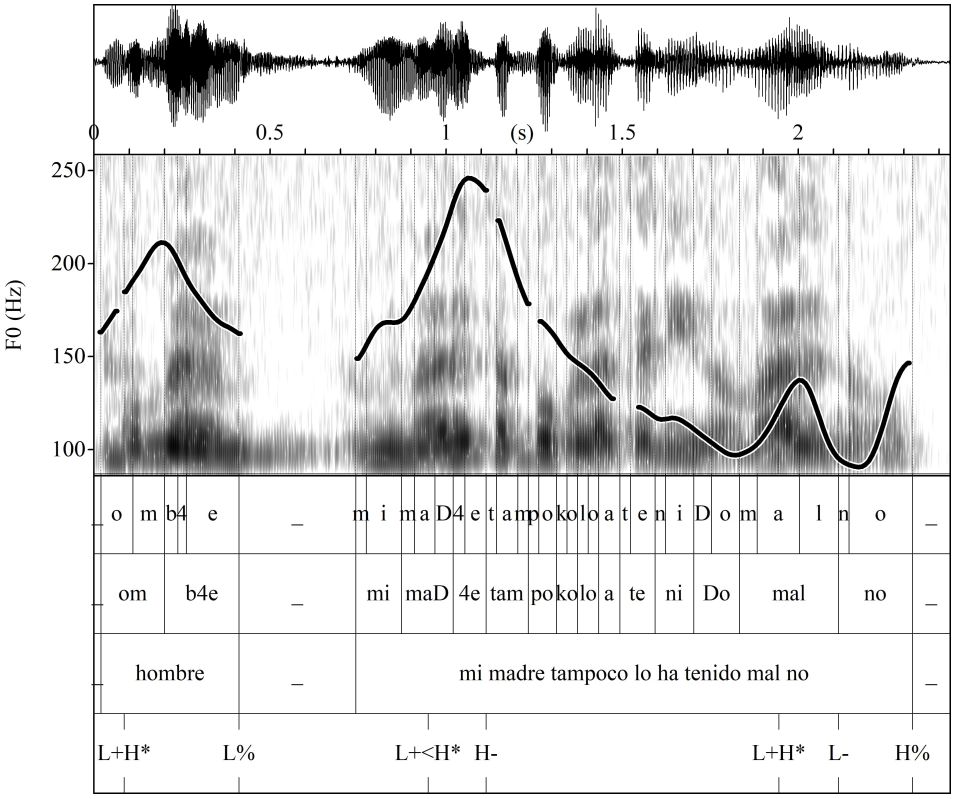


Figure 5.19: L+H* L% on *hombre* in context (184)

5.2.2.2 L* HL%

Already discussed at length for *claro*, the L* H(L)% is also present on *hombre*. Figure 5.20 from context (185) shows an instance of *hombre* L* HL%. Here, A affirms that he received part of his father's pension before and after his father's death. B asks why, to which A reacts by repeating the question instead of answering it. When B insists on the QUD, A starts with *hombre* L* HL% and then affirms that he was dependent on his father, ending the turn with falling intonation on *claro*. The use of *hombre* L* HL% here does not serve to contradict the provocation. Rather, it introduces the assertion of an expectable proposition.

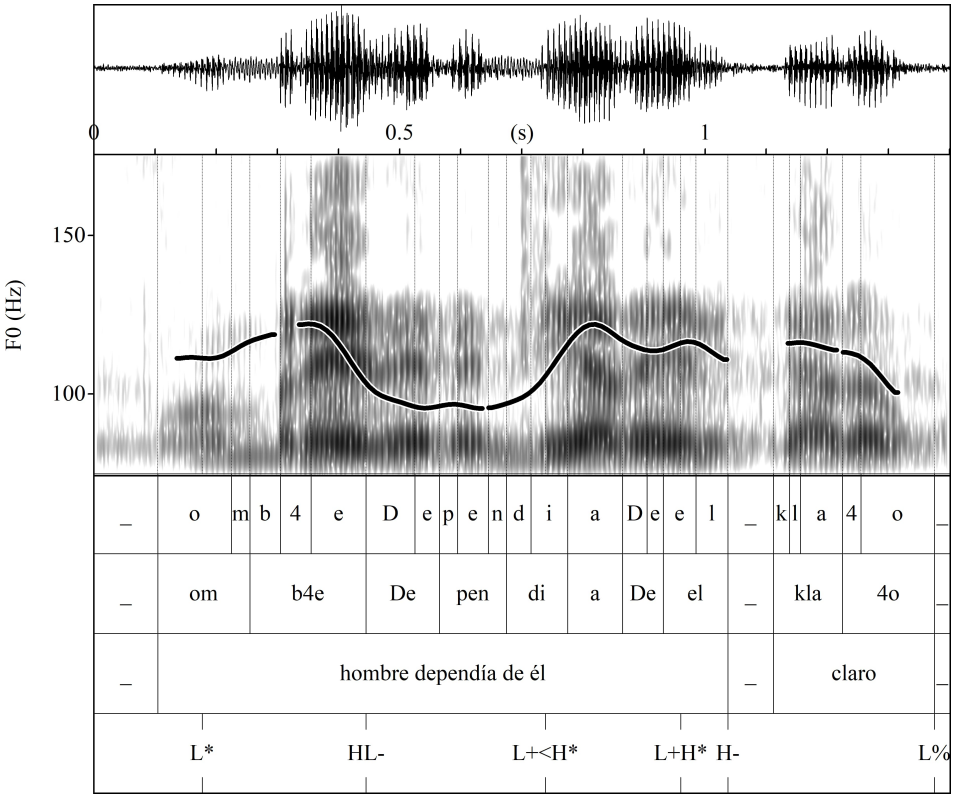


Figure 5.20: L* HL% on *hombre* in context (185)

(185) (Interview 20, PRESEEA 2014–2020)

A: instituto de la Seguridad Social / fui allí a pedir una / en el momento que murió mi padre / porque yo cobraba de la pensión de mi padre
'Social Security Institute / I went there to ask for a / the moment my father died / because I received from my father's pension'

B: uhum
'uhum'

A: me dieron una / una pensión
'they gave me a pension'

B: sí sí / ¿pero por qué cobrabas por la / por la pensión de tu padre? eso no no es decir
'yes yes / but why did you receive from / from the pension of your father? that's not not to say'

A: ¿por qué cobraba la pensión?
'why did I receive the pension?'

B: hm
'hm'

A: *¡hombre! dependía de él ¡claro!*
'*man! I depended on him, sure!*'

Figure 5.21 from context (186) shows that, just as with *claro*, the final fall can be reduced to L* H(L)-. Here, again, *hombre* is used in an assertion confirmation, yet with the additional non-at-issue commitment to the expectability of the assertion. A knows, and has committed to the fact, that B has four children, with an age difference of sixteen years between oldest and youngest. When B shows A photos of her children, A reacts with surprise about the difference between the two, to which B responds with the use of *hombre* L* HL%, the confirmation *pues sí*, and a reminder of the age difference.

(186) (Interview 28, PRESEEA 2014–2020)

A: tienes cuatro / el mayor de veinticuatro …¿ocho años el pequeño? …o sea que tienes una buena diferencia entre el mayor y el pequeño
'you have four / the oldest twentyfour …eight years the small one? so you have quite a difference between the oldest and the small one'

B: sí sí muchísima diferencia …mira este es el pequeño
'yes yes a lot of difference look this is the small one'

A: ¡ay qué mono!
‘oh how beautiful!’
B: este es el mayor
‘that’s the older one’
A: jopé qué diferencia ¿eh?
‘wow what a difference, right?’
B: *¡hombre! pues sí* // esta es la de veinte años
‘*man! well sure* // this is the twenty year old one’

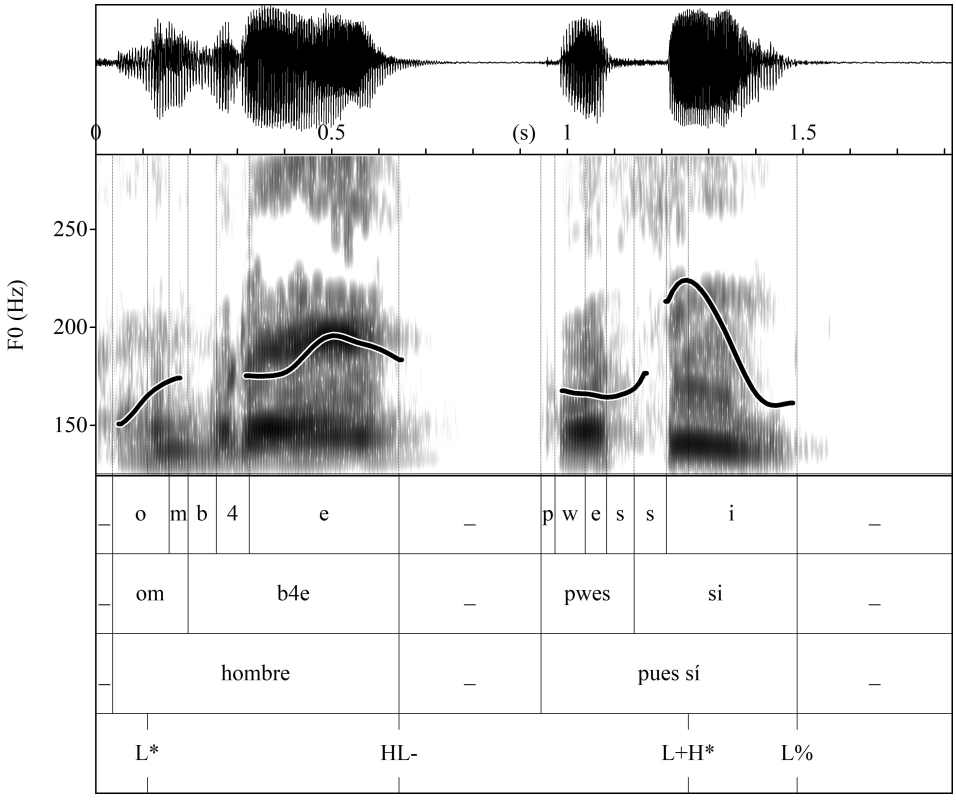


Figure 5.21: L* HL% on *hombre* in context (186)

5.2.2.3 The problem of H–

Turns with *hombre* L* HL% are particularly prone to introducing assertive provocations confirming shared assumptions (as opposed to proffered content). Given that these assertions are provocations, they are usually sentences (not just particles) that may also show internal phrasing at the level of the intermediate phrase. Coming back to the problem outlined in §2.2, these examples illustrate the fact that some phrasing patterns require reference to discourse meaning, as opposed to syntactic mapping or eurhythmicity, in order to become the optimal candidate.

Figure 5.22 from context (187) shows an example of such a provocation that serves to reassure the interlocutor of a shared assumption.[42] A has asked B how friends can hurt him the most. B responds that it bothers him the most if friends lie to him. In an attempt to restrict the meaning of lying to malicious mischief, he starts a provocation with *hombre* L* HL–, then reassures A that a friend can play tricks on you without losing the quality of being a friend. The F_0 contour of the main sentence starts low after the intermediate phrase boundary and rises continuously until an H– boundary after the inflected verb. It then falls to the low pitch accent, ending in an HL% final boundary tone.[43]

Why does the H– fall on *puede*? Table 1.2 proposes four different functions for H–: a) delimitation of presupposed prefocal material, b) continuation in coordinate structures, c) syntactic disambiguation, and d) separation of left-peripheral *topic* constituents. I argue that the H– in Figure 5.22 serves to delimit presupposed prefocal material. Inverting the (supposedly universal) sentential downtrend and letting the F_0 rise through the sentence up to the inflected modal verb allows the speaker to not only mark their context update as expectable from the CG via L* HL%, but also to presuppose the modal matrix sentence.

(187) (Interview 13, PRESEEA 2014–2020)

A: ¿qué es lo que más te duele a ti que te hagan / los que consideras amigos?

'what hurts you the most for those you consider your friends to do to you?'

B: a mí eeh ¡uf! // …a mí lo que más me duele es que la gente mienta // o sea / y que / si alguien tiene algo que decirlo que decirte que te lo diga

[42] Figure 5.22 is another example for the difficulty of analyzing prenuclear pitch accents in cases of prolonged prenuclear rises to H–. While there is no doubt about the presence of rises on *amigo*/*puede* and of a fall on *hacer*, annotating L+H* or H+L*, respectively, would disregard the continuity of both rise and fall.

[43] The syllabification in this example is phonetically ['fai̯.na], not /fa.'e.na/ as transcribed phonologically.

pero no que se calle / y luego vaya por detrás diciendo "mira / tal" no sé a mí eso es lo que más me molesta // porque / no sé / *hombre / un amigo te puede hacer una faena* // y te puede doler / pero lo que me parece absurdo es callarte y ir cizañeando por detrás

'to me uh, phew! // …what hurts me the most is that people lie // say / and that / if someone has something to say to say to you he should say it but not stay silent / and then go behind your back saying "look / so and so" I don't know to me that is what bothers me the most // because / I don't know / *man / a friend may play a trick on you* // and it can hurt you / but what I find absurd is to stay silent and sow discord from behind'

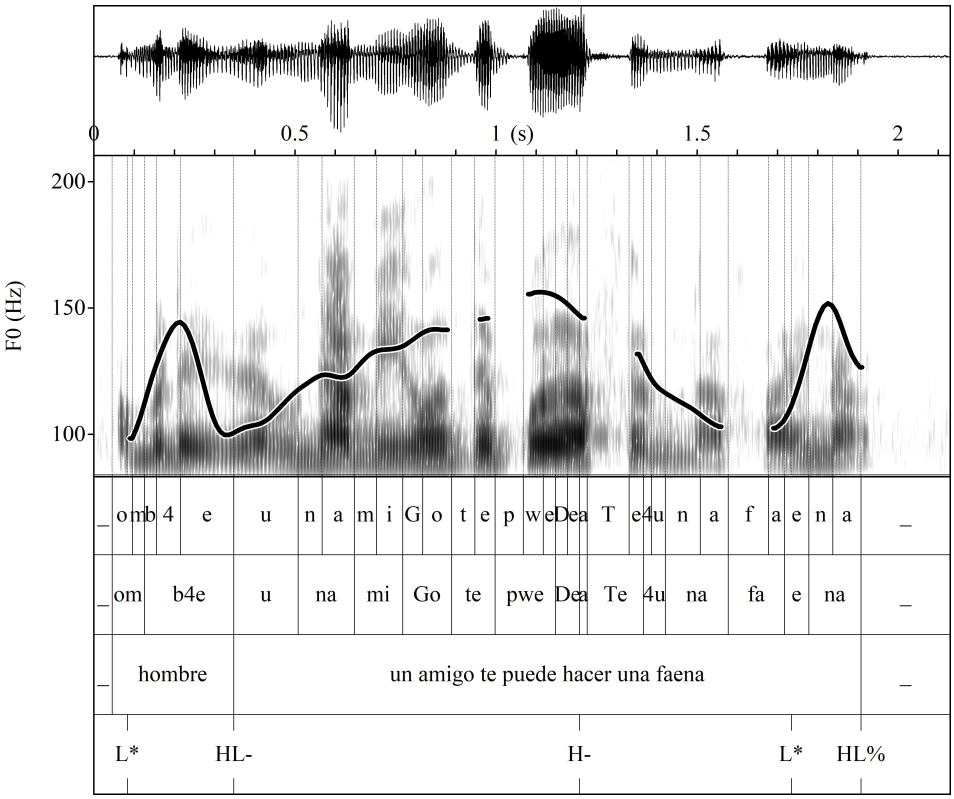


Figure 5.22: L* HL– on *hombre* and H– phrasing in context (187)

Figure 5.23 from context (188) shows another case of H– phrasing after *hombre* L* HL–. It groups *mucho*, which is part of the reduced small clause *(que) los inviernos (eran) mucho mas fríos* (Stowell 1981: 239–294), together with the matrix sentence.[44] Here, again, prosodic phrasing does not follow syntactic mapping constraints. Rather, the prenuclear rise extends rightward up to the point at which the L* pitch accent requires the F_0 to fall. Phonologically, this seems to be a case of rightward tonal alignment which is not limited by syntactic mapping (association with the edge of a prosodic constituent that would correspond to a syntactic constituent), but only by tonal crowding with the pitch accent associated with the last stressed syllable in the intonational phrase. The function of such right alignment is to mark as much of the sentence as possible as presupposed, only to then mark the answer to the current QUD (the Table) as expectable via L* HL%. This double strategy is difficult to capture within the model presented in §3.3.3, since it requires a distinction between presupposition and conventional implicature so that both can be present in one conversational move. Modeling this would require two levels of non-at-issue meaning, one requiring a presupposition to be in the input CG and one adding a modal non-at-issue commitment to the output CG. Nevertheless, an analysis of the prolonged rise to H– in terms of presupposed prefocal material at least provides some sort of explanation, whereas analyses in terms of continuation or syntactic disambiguation simply fail to explain the phrasing structure.

Note that separation of left-peripheral *topic* constituents can account for H– phrasing as in Figures 5.19 and 5.15, but not for the phrasing in Figure 5.17, since *mi barrio es muy*$_{H–}$ is not a constituent, let alone one identifying an "entity under which the information expressed in the comment constituent should be stored in the common ground content" (Krifka & Musan 2012: 28).

(188) (Interview 36, PRESEEA 2014–2020)

A: oye ¿y tú has observado // que ha habido un cambio de tiempo // de tiempo
'listen and did you observe // that there has been a change of weather // of weather'

B: ¿climático? …yo creo que sí
'of climate? …I think yes'

A: ¿en qué sentido?
'in which sense?'

[44] Many thanks to Silvio Cruschina for advice on this analysis.

B: pues que hace más calor cada vez // vamos / a mí me parece que cada vez o más raro o eso pero / pero ya

'well that it's always getting hotter // say / to me it seems that always or more bizarre or that but / but so'

A: ¿y cuando tú eras pequeña por ejemplo / durante ¿cómo eran los inviernos y cómo son ahora?

'and when you were young for example / during how used to be the winters and how are they now?'

B: *¡hombre! yo recuerdo los inviernos mucho más fríos*

'*man! I remember the winters a lot colder*'

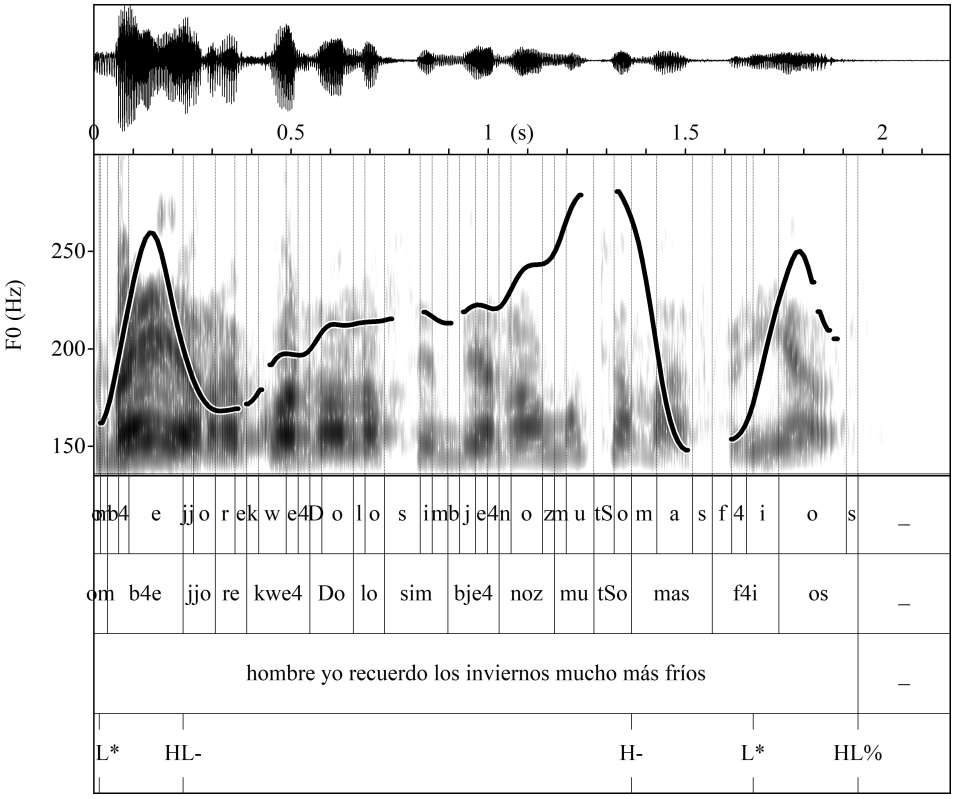


Figure 5.23: L* HL– on *hombre* and H– phrasing in context (188)

In sum, these corpus examples indicate that quantitative laboratory investigation should be able to confirm question (136d). Obvious, non-contrastive assertions not only show an L* HL% nuclear configuration, but can also include a

prolonged rise to an H–, phrasing subject, verb, and even (parts of) verbal complements into one intermediate phrase. We return to this point in Chapter 6, focusing our exploration of corpus examples now on turns preceded by the discourse particles *anda* and *vaya*.

5.2.3 Turns with *anda*

As already discussed for *hombre*, the lack of a syllable onset on *anda* can cause tonal apheresis on the (L)+H* pitch accent. Nevertheless, examples such as Figure 5.24 from context (189) show that L+H* rises can be fully realized even in one-word utterances.

(189) (Interview 52, PRESEEA 2014–2020)
A: mi foto con P con P D que es / uno de mis ídolos
'my photo with P with P D which is / one of my idols'
B: ¡ay por favor! a ver / que no se caiga esto
'oh please! let's see / that it doesn't fall down'
A: y ahí tengo otra que es A A
'and here I have another one which is A A'
B: *¡anda!*
'*wow!*'

Lack of tonal apheresis may be due to L+¡H* L% tonal scaling on the pitch accent. Yet the decision about a categorical upstep cannot be made without taking the average tonal range as a point of comparison. While transcription with exclamation marks can be seen as indicative of perceived tonal upstep, comparison between speakers and examples is best done under experimental conditions (Chapter 6).[45] The best natural dialogue corpus evidence on scaling is a comparison between rising pitch accents by one speaker and within one turn. Here, differences in scaling cannot be attributed to differences in speaker style or speech rate. Figure 5.25 from context (190) shows a case of assertion confirmation with *anda*, together with mirative intonation on *a Bruselas*. While no exclamation marks are used, the question marks on *¿a Bruselas?* indicate that the transcriber noticed an additional, non-assertive intonational meaning in this part of the utterance. Comparing the tonal span of the pitch accent on *Bruselas* with that of the pitch accent on *anda* warrants a distinction between (L)+H* L% and L+¡H* L%.

[45] Contextually controlled experiments also have the advantage of giving us complete access to "functional or semantic criteria [which] provide a sounder basis for this determination than [...] formal or phonetic ones." (Ladd 1980: 112)

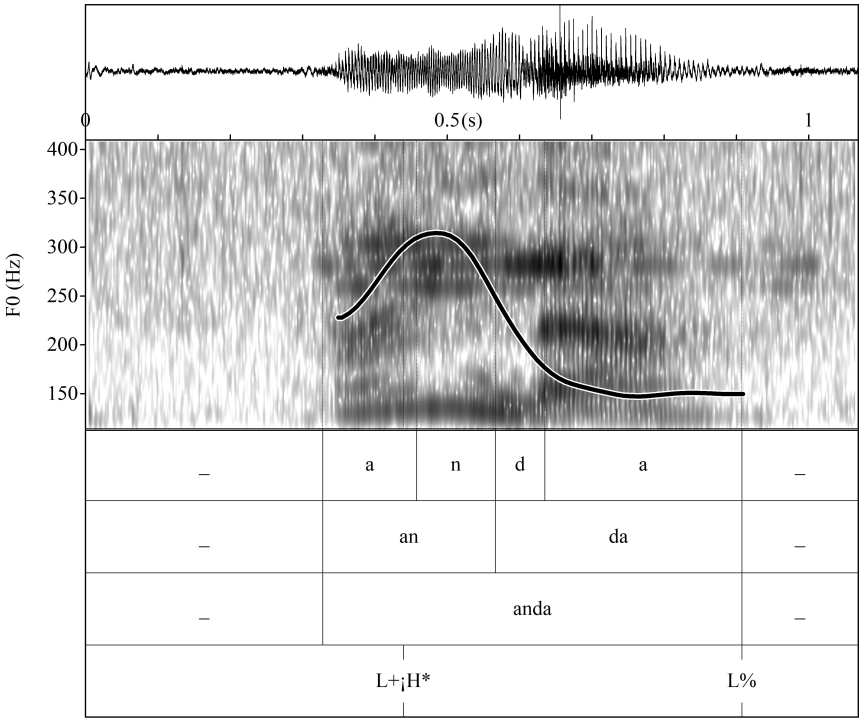


Figure 5.24: L+¡H* L% on *anda* in context (189)

(190) (Interview 34, PRESEEA 2014–2020)

A: ¿cuáles son tus planes?
'what are your plans?'

B: pues no lo sé si me quedaré en Madrid
'well I don't know if I'm going to stay in Madrid'

A: hm
'hm'

B: o me iré a Bruselas / no lo sé
'or I'll go to Brussels / I don't know'

A: *ah ¿a Bruselas? anda*
'*ah to Brussels? wow*'

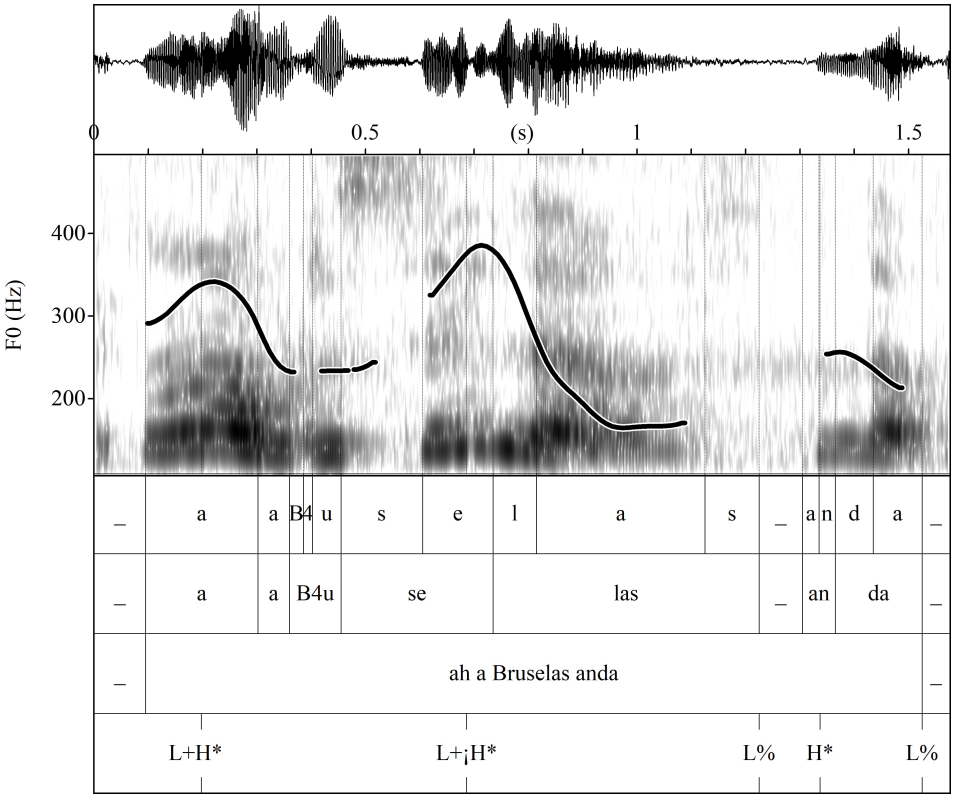


Figure 5.25: (L)+H* L% on *anda* and L+¡H* L% on PP in context (190)

Similar to what has been found for declarative speech acts in Madrid Spanish in general, variation between L+H* and L* on *anda* seems not restricted by any apparent constraint.[46] Figure 5.26 from context (191) shows a repetitive use of *anda* L+H* L% that is akin to the repetitive use of English *whoa.*[47] American English *whoa* differs from *wow* in that it has become its own strongest collocation according to the Corpus of Contemporary American English (Davies 1990–2019).[48] *Whoa whoa*, much as *anda anda*, is used to ask the interlocutor to slow down. It doesn't mark what should be slowed down, so interlocutors need to deduce this from the context. In (191), a reasonable interpretation of *anda anda anda*

[46]If this variation is actually free should be further investigated.

[47] *Whoa* is etymologically derived from the exclamation *ho*, used to halt horses (Skeat 1896).

[48]With MI=8.24 and a total of 1020 co-occurrences, *whoa* actually has only itself as a collocation, which shows that it cannot be used as a syntactically integrated part of speech.

is to reduce the pace of reduction of the set of possible worlds (the shrinking of the context set, Stalnaker 1978), or to assert propositions that are more in line with the CG. Figure 5.27 from context (192) is another example of this repetitive use. In (192), the conversational implicature of *anda anda* is to stop the action of handing over money for participation in an interview. The contextual similarity between (191) and (192) leaves little functional load to the prosodic difference between L+H* in Figure 5.26 and L* in Figure 5.27.

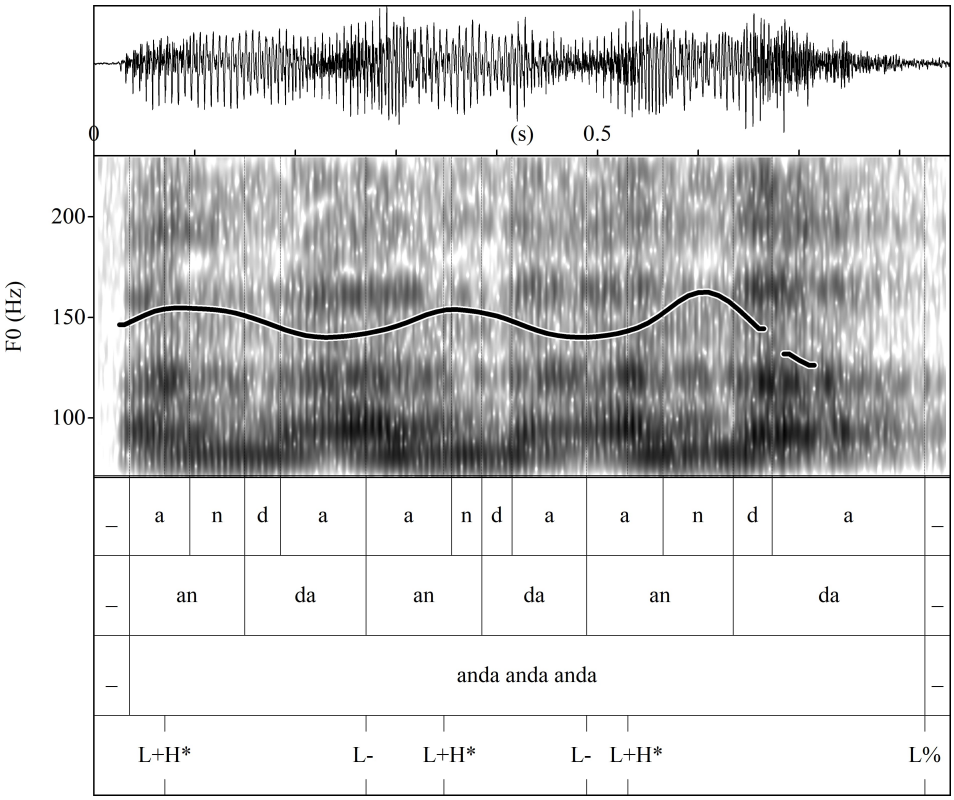


Figure 5.26: L+H* L% on repeated *anda* in context (191)

(191) (Interview 06, PRESEEA 2014–2020)

A: gente como una chica el otro día en Estados Unidos que no sé cuánto le habrá tocado / pero vamos es una burrada más de doce mil millones de pesetas

'people like a girl in the US the other day where I don't know how much she'll have won / but hell it's a shitload more than twelve thousand million pesetas'

B: una cosa impresionante
'something extraordinary'

A: yo dudo que esa chica algún día diga / "ay qué pena / me podía haber tocado algo más" // pero al que le tocan quinientos hoy en día // que se puede hacer // con doscientos o trescientos millones te compras una casa / pues sí // quinientos millones ya no son nada
'I doubt that this girls will one day say / "oh what a shame / I could have won some more" // but who wins five-hundred today // what can you do // with two hundred or three hundred million you buy a house / well yes // five-hundred million are nothing anymore'

B: *anda anda anda*
'*whoa whoa whoa*'

(192) (Interview 35, PRESEEA 2014–2020)

A: muchas gracias por todo [entrega dinero]
'many thanks for everything' [hands over money]

B: uy hija // venga / *anda anda*
'oh child // come on / *whoa whoa*'

A: sí que me has contado muchas cosas
'you did tell me many things'

B: no me las des // uh pues ni la mitad
'don't give them to me // oh well not half of it'

Complex discourse updates containing both *anda* and *claro* again show the limits of the model presented in §3.3. Figure 5.28 from context (193) is a case of reported dialogue between a mother and her daughter. The daughter, having recently had a spiritual awakening, is characterized as firmly knowledgeable about the Bible and therefore expected to perform well in a test on biblical texts. When her mother tells her that she expects her to have performed well, the daughter humbly marks her acceptance of such high expectations with *anda* (L)+H* L–, only to then confirm her having lived up to these expectations with obvious *claro* L+H* L!H%. The context-update potential of *claro* L+H* L!H% can be represented as assertion confirmation with a non-at-issue update adding the modal necessity of the proposition to the CG. Yet the fact that this does not conflict with previous *anda* L+H* L– can only be explained by the fact that the provocation contains a non-at-issue proposition (*dirás tal cual* 'you'll say it as it is') and an at-issue modal evaluation (*me imagino* 'I imagine'), the latter of which can be accepted

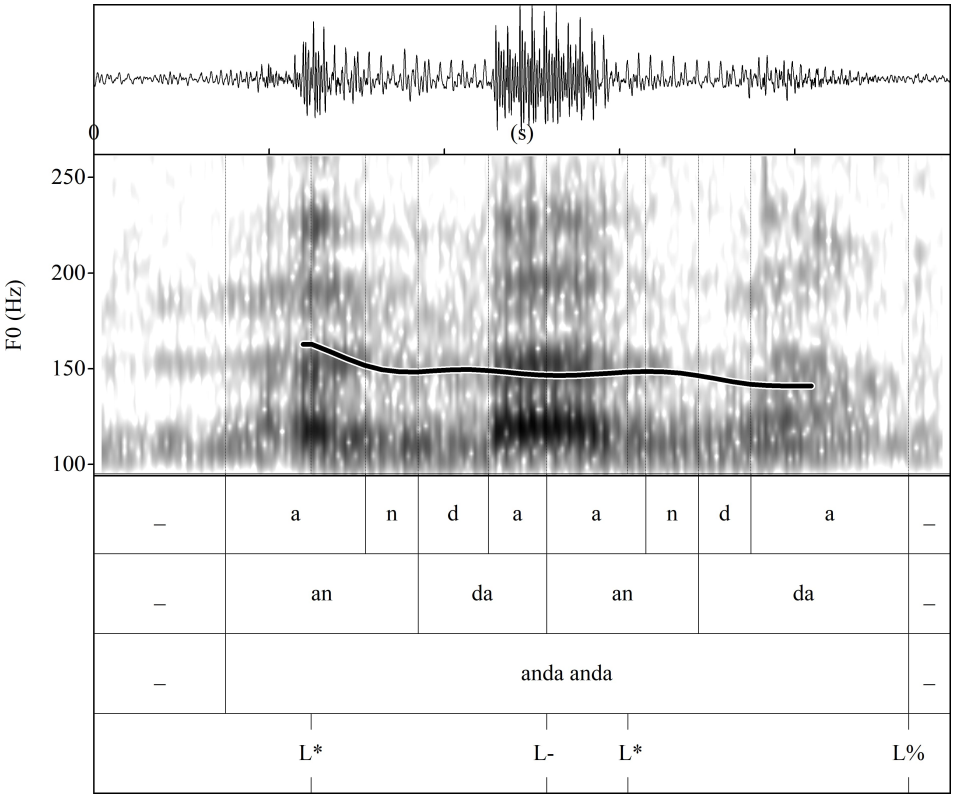


Figure 5.27: L* L% on repeated *anda* in context (192)

and marked as surprising (I did not expect you to think this way, but I accept it) independently of the former (of course I said it as it is). The difference between confirmation of an at-issue modal matrix sentence and subsequent confirmation of the embedded, non-at-issue proposition would require an extension of the model in §3.3 that I leave to future research.

(193) (Interview 23, PRESEEA 2014–2020)

A: al día siguiente se lo contó a una amiga // y la regaló una biblia pequeñita // es el único regalo que mi hija ha tenido // …a continuación / pues / no sé si ese mismo año / o / o al año siguiente // una profesora / eeh / mandó hacer una redacción / de su primera comunión …/ y entonces vino a casa y me dice "mamá me han dicho que tengo que hacer una redacción de la primera comunión" // digo / "me imagino que dirás tal cual" *dice "¡anda claro!"* // y lo hizo en sucio

'the following day she told a friend // who gave her a small bible as a gift // it's the only gift my daughter has had // ...then / well / I don't know if this very year / or / or the following year // a teacher / aah / had her do a draft of her first communion .../ and so she came home and says "mama they have told me that I have to do a draft of the first communion" // I say // "I imagine you'll say it as it is" *she says "whoa sure!"* // and she did a first sketch'

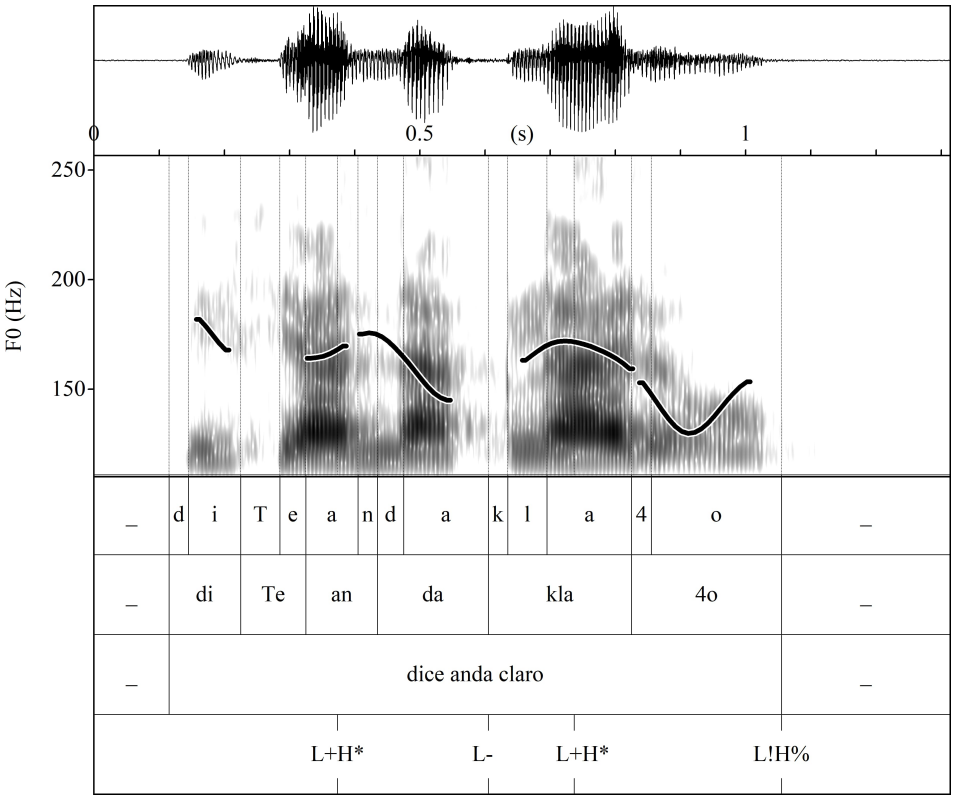


Figure 5.28: L+H* L– on *anda* and L+H* L!H% on *claro* in context (193)

5.2.4 Turns with *vaya*

As discussed in §5.1, *vaya* is used for assertion confirmation and negative evaluation, often in combination with a conversational implicature of unexpectedness. Accordingly, the PRESEEA Madrid Salamanca corpus contains no instances of

vaya with either L* HL% or L+H* L!H% intonation. Instead, we find almost exclusive use of L* L%, with one instance of L+H* L%. Figure 5.29 from context (194) shows a typical use of *vaya* L* L%.

(194) (Interview 38, PRESEEA 2014–2020)
A: hemos seguido tan felices hasta que ha llegado la desgracia esta
'we went on so happy until this tragedy came'
B: ¿y hace mucho tiempo que falta o?
'and has he been gone for long or?'
A: hace dos años y un mes ha hecho ahora
'since two years and one month it has been now'
B: *vaya*
'*damn*'

As already discussed in §5.1, there is not a single instance of a male speaker using *anda* as a marker of surprise in the PRESEEA Madrid Salamanca Corpus. *Vaya* can be seen as a way of indirect communication of mirativity by conversational implicature from negative bouletic evaluation. Figure 5.30 from context (195) shows a use of *vaya* L* L% acknowledging the fact that the house of a famous Spanish entrepreneur was taken down and seized.

(195) (Interview 25, PRESEEA 2014–2020)
A: pues ahí había una casa // había una casa / grande / una casona / que / eso me parece que era luego de Gil Stauffer / estaba vallada // y la tiraron para hacer esto // y luego esto debió ser embargado por el ayuntamiento / o algo así
'so there used to be a house // there used to be a big house / a mansion / which / I think it was then Gil Stauffer's / it was fenced / and they took it down to do this // and then it must have been seized by the municipality / or something like that'
B: *vaya*
'*damn*'

The one example I found of *vaya* with L+H* L% intonation is represented in Figure 5.31 from context (196). As is the case for Madrid Spanish intonation in general, context does not indicate a difference in context update potential between *vaya* L* L% and *vaya* L+H* L%. And while (196) is a case of transcription with exclamation marks, Figure 5.32 from context (163), repeated for convenience in (197), indicates that exclamation marks need not correspond to a rising pitch accent.

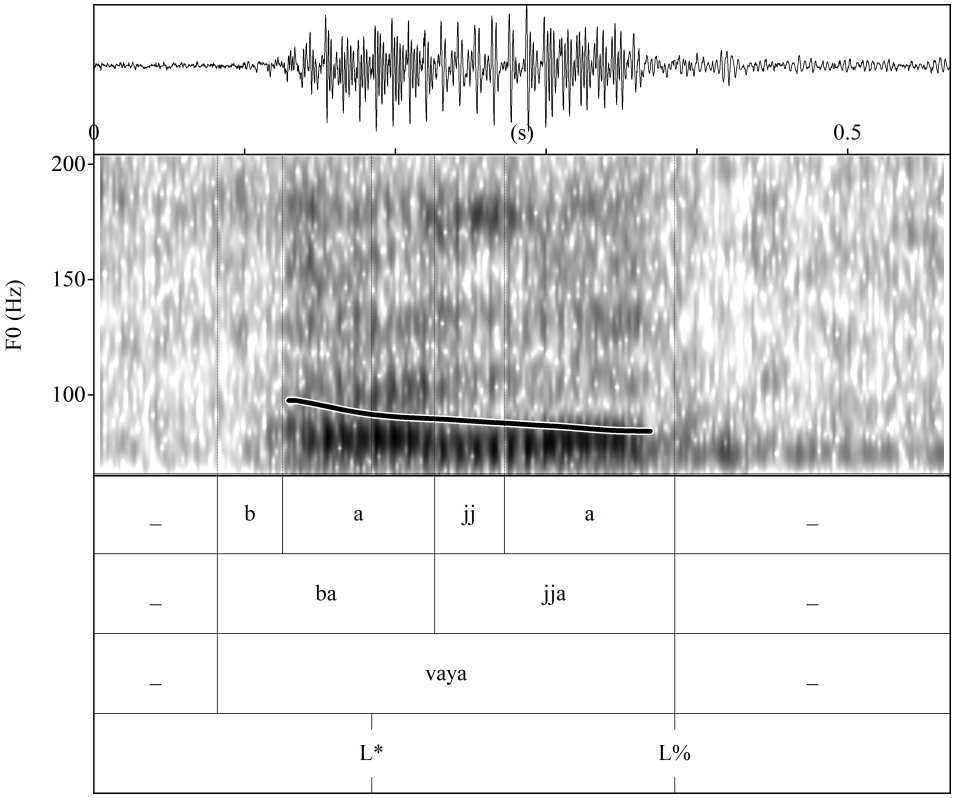


Figure 5.29: L* L% on *vaya* in context (194)

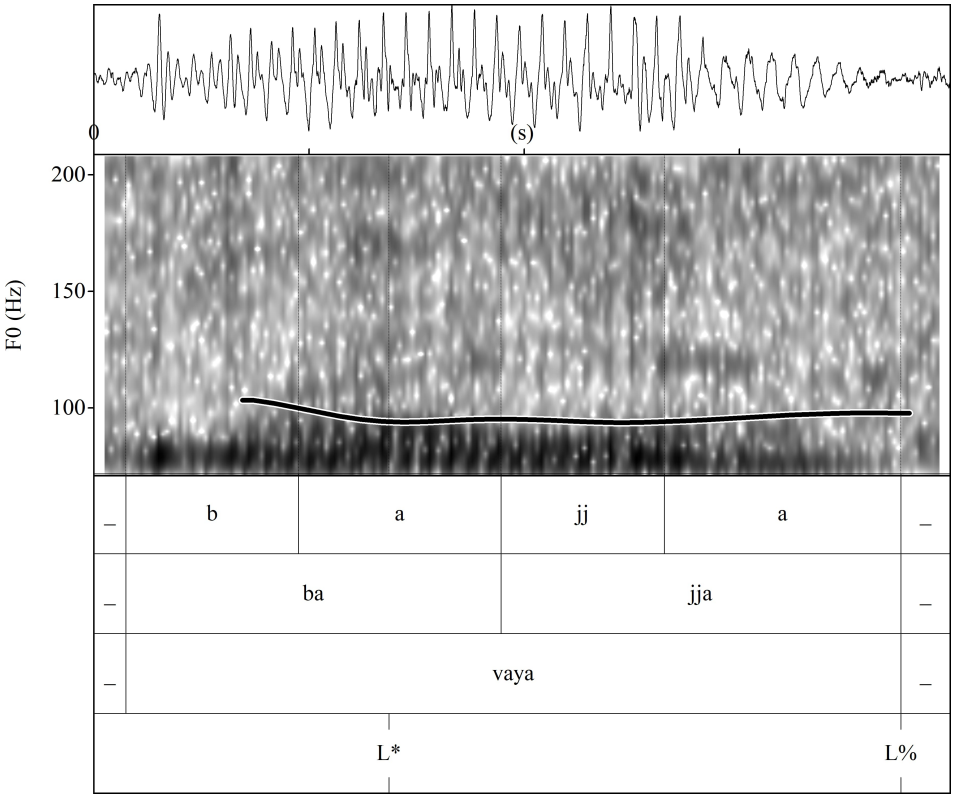


Figure 5.30: L* L% on *vaya* in context (195)

(196) (Interview 34, PRESEEA 2014–2020)

A: ¿mi madre? …mide uno ochenta …un problema // para su época …
'my mother? …is one eighty tall …a problem // for her time …'

B: no encontraría pareja ni para el baile … eso le ocasionaba un problema?
'she wouldn't even find a partner for the dance … that caused her problems?'

A: sí
'yes'

B: *¡vaya!*
'*damn!*'

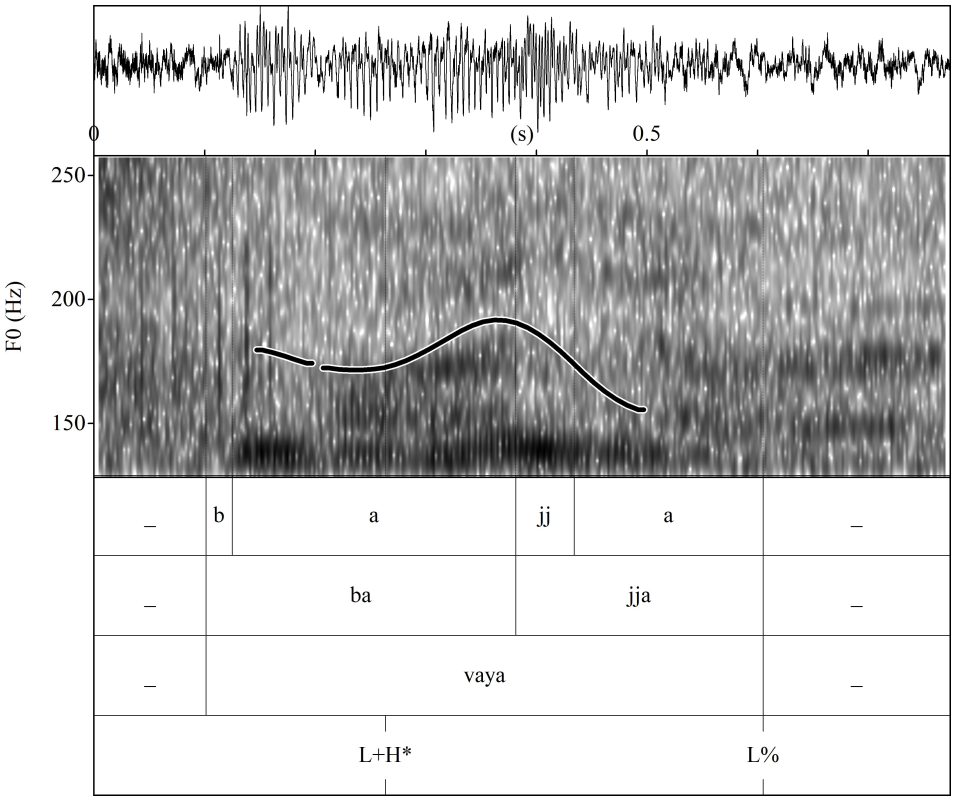


Figure 5.31: L+H* L% on *vaya* in context (196)

(197) (Interview 11, PRESEEA 2014–2020)

A: …y nada luego pues lo que pasa es que la mayoría de la gente con la que yo iba acababa aprobando y yo suspendía

'and so then the thing is that the majority of people I went with ended up passing (the exam) and I failed'

B: *¡ah vaya!*

'*ah damn!*'

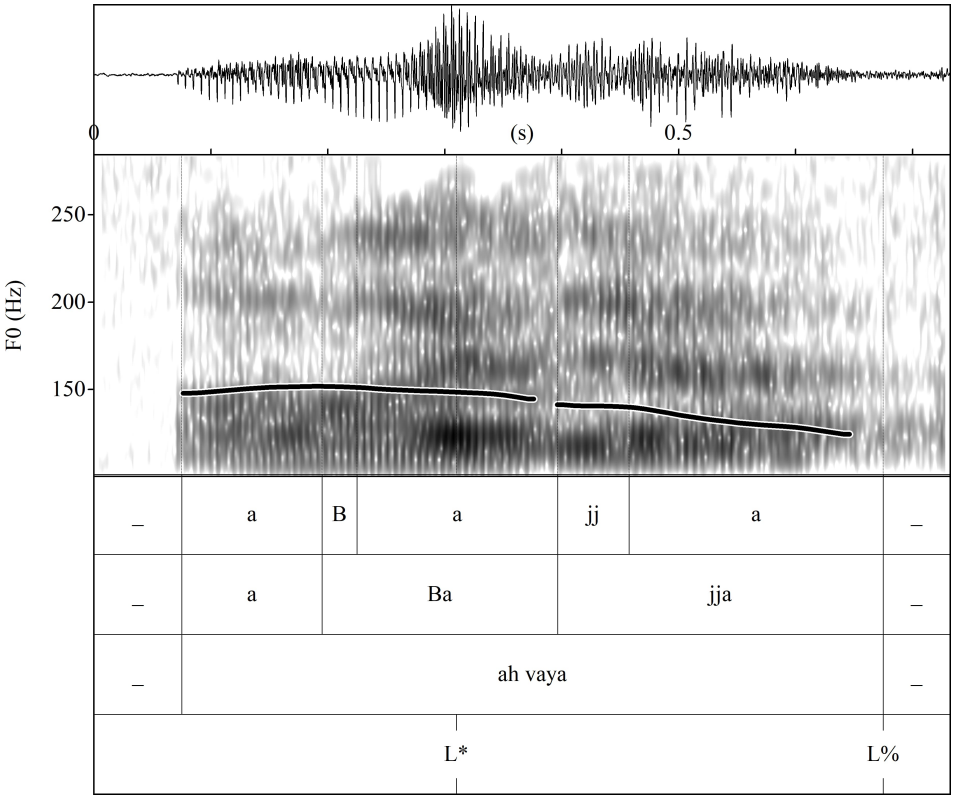


Figure 5.32: L* L% on *vaya* in context (197)

5.3 Preliminary conclusions and experimental tasks

Having used discourse particles as an indicator for marked discourse moves in the sense of §3.3, we have seen in Chapter 5 that discourse particles which are specified for both a relative polarity function and a modal evaluative function occur with intonational contours that mirror these functions. While the corpus examples presented in §5.2 are not sufficient to fully disentangle the individual contribution of intonation, the fact that *anda* and *vaya* do not occur with nuclear contours associated with obviousness in the literature, while *hombre* and *claro* do, supports the hypothesis that modal non-at-issue meaning has an impact on the distribution of the respective nuclear contours. *Anda* L+H* LH% or *vaya* L* HL% are unlikely combinations because a context in which the meaning of *anda* and *vaya* would be compatible with the intonational meaning associated with the respective contours will almost never occur.[49] Moreover, the fact that *anda* co-occurs with upstepped L+¡H* pitch accents, while *vaya* is almost categorically associated with L* pitch accents, mirrors the difference in the modal accessibility relation in the meaning of the two particles established in §5.1. Chapter 5 does not provide a final proof of the association of specific intonational forms with specific modal meanings. Yet it illustrates the usefulness of a model that combines a perspective on the negotiation of discourse commitments and CG updates with a perspective on modal evaluative meaning. Experimental investigation needs to tackle the individual contribution of intonation on the sentence level, taking into account both "prenuclear" and "nuclear" intonation. The comparison between *anda* and *vaya* has shown the difficulty in distinguishing between a modal evaluation of a proposition as epistemically unexpected or bouletically unwanted. In the case of *vaya*, Madrid Spanish may even be undergoing language change lexicalizing the conversational implicature of unexpectedness often associated with strongly negative evaluation.[50] Experimental investigation needs to take this into account by avoiding contextual ambiguity between these two meanings. Similarly, experimental investigation needs to allow for sentence-internal prosodic phrasing, given that turns with *hombre* L* HL% seem to also resort to H– phrasing that cannot be explained by syntactic mapping constraints. Finally, corpus examples such as (193) show the importance of controlling the exact form of the provocation when investigating responding moves. The *Provocation-Response Nexus* needs to be incorporated into task designs, particularly the Discourse Completion Task. Chapter 6 is an attempt at incorporating these preliminary insights into one experiment.

[49] Notwithstanding oxymoronic and ironic uses.

[50] Possibly a link in the semantic maps of epistemicity and bouletic modality (Anderson 1986, Boye 2010).

6 Production experiment: Intonation only

This chapter presents and discusses the methodology and results of an audio-enhanced Discourse Completion Task (DCT) experiment designed to investigate the prosodic similarities and differences between neutral statements, mirative statements, *wh*-exclamatives, obvious statements, obvious confirmations, and obvious reversals. It is designed to test the hypotheses derived from the model in §3.3.3 which are summed up in (136a,b,c,d), and to test whether the corpus findings from Chapter 5 can be generalized to sentences without discourse particles. After laying out the methodology in §6.1, results are presented and evaluated in §6.2.

The results show significant associations of neutral, mirative, and obvious declaratives with distinct nuclear configurations. We can therefore affirm the question in (136a) about the reproducibility of findings on mirative and obvious statements beyond individual examples. Questions (136b) and (136c) are also affirmed by the results. We find that exclamatives need not be miratives and that negative polarity has a significant effect on obvious declarative intonation. Obvious declaratives also show a distinct prenuclear rise, which could be interpreted as an influence of obviousness on H− phrasing (136d). The chapter concludes in §6.3 by discussing the implications of the results for the intonational phonology of Madrid Spanish.

6.1 Methodology

6.1.1 Methodological background

The DCT, originally developed in the fields of cross-cultural pragmatics and second language acquisition (Blum-Kulka et al. 1989, Billmyer & Varghese 2000, Félix-Brasdefer 2010), is a common elicitation method in laboratory research on intonational pragmatics in Romance languages. It is a questionnaire designed to elicit the production of a turn in dialogue (Kasper & Dahl 1991). DCTs always provide participants with the description of a situation containing an interlocutor

and a communicative goal. The types of DCTs developed to date vary according to the parameters in (198) (based on Vanrell et al. 2018: 195–196).

(198) DCT design variables

a. *Situational detail:* Since Blum-Kulka et al. (1989) invented the DCT, researchers have struggled to balance the need for control of confounding variables via detailed situational description with the processing capacity of the participants. Moreover, the need to attribute differences in responses to specific differences in the elicitation material limits the amount of situational detail that may change between different stimuli.

b. *Turn adjacency:* While most DCTs require participants to react verbally, they differ as to whether the reaction is a response to a given provocation, a provocation to a given response, a provocation without a given response, or underspecified in this regard.

c. *Variability of stimuli and responses:* There is a varying degree of control over the exact form of stimuli presented, ranging from purely textual presentation (constant between experiments), over a combination of text and oral presentation by the experimenter (varying prosodically according to the theatrical talent of the experimenter), to purely oral administration of stimuli (again varying prosodically, but possibly also on the lexical level, e.g. if the experimenter uses tags). Depending on the stimulus format, responses can also be primed textually, orally, or not at all.

As mentioned already in §3.2 and partially exemplified in (72), both the fruitfulness and the difficulty of using DCTs in research on the pragmatics of intonation can be seen in the way Spanish statements of the obvious have been investigated so far. (199) shows the stimulus and a range of responses obtained with the Spanish questionnaire for the Interactive Atlas of Romance Intonation.[1] While diatopic variation is certainly responsible for some of the variability (e.g. turn-final *pues* in Quito Spanish), differences in the interpretation of the precise discourse context seem evident. (199a) is not a response to the question *¿De quién está embarazada?* 'Whom is she pregnant by?', but rather to a provocation such as *¿Está embarazada de Guillermo?* 'Is she pregnant by Guillermo?'.

[1]Questionnaires for México and Quito added the preposition *en* in *una amiga en común*. Moreover, the indicated target sentence as presented to the experimenters (and perhaps, but not necessarily the participants) changed from *¡Sí, mujer, de Guillermo!* to *¿De quién va a ser? ¡De Guillermo!*. As becomes apparent from the American examples, the experimenters for the American varieties did not force their participants to use this target sentence.

(199) Estás con una amiga y le cuentas que María, una amiga (en) común, está embarazada. Ella te pregunta que de quién está embarazada y tú te extrañas mucho de que no lo sepa porque todo el mundo sabe que es de Guillermo, su novio de toda la vida. ¿Qué le dices?

'You're with a friend and you tell her that María, a mutual friend, is pregnant. She asks you whom she is pregnant by and you're astonished that she doesn't know because everybody knows that it's by Guillermo, her life-long boyfriend. What do you tell her?'

a. **Madrid:** ¡Sí, mujer, de Guillermo!
L+H* L!H%
'Yes, woman, by Guillermo!'

b. **Ciudad de México:** Pues…¡de Guillermo!
L+H* H%
'Well…by Guillermo!'

c. **Quito:** ¡De Guillermo, pues! ¿De quién más va a ser?
L+H*L- L+H* L%
'By Guillermo, duh! Who else would it be by?'

d. **Lima:** ¡De Guillermo, su novio!
L+H*L- L+H* L%
'By Guillermo, her boyfriend!'

The standard DCT, while having played a vital role for the pioneering advancements into the field of intonational pragmatics made by the Interactive Atlas of Romance Intonation and similar projects, seems prone to a high degree of variability of stimuli.[2] Given the importance of the *Provocation-Response Nexus* for intonational meaning, full control over the form of provocations seems necessary to gain further insights into the meaning of intonation in responding moves. In research on speech act pragmatics not primarily focused on intonation, computer-based multimedia-elicitation DCTs have been used to increase the degree of construct validity. Yet Félix-Brasdefer (2010: 47) concludes that "despite efforts to elicit oral data in one turn under highly controlled conditions which ensures comparability, these instruments cannot capture the dynamics of social (face-to-face) interaction that allow us to examine speech act sequences across multiple turns".

In Chapters 3 and 5, I have tried to show that intonation cannot be understood without reference to sequences of turns. If Félix-Brasdefer's conclusions

[2]See also Uth (2014: 95) for a similar criticism of picture elicitation tasks.

remained unchallenged, construct validity for Laboratory Phonology research on intonation would be beyond reach. Aware of the difficulties encountered by Félix-Brasdefer (2007, 2010), I therefore developed a multimedia-elicitation DCT that allows for a higher degree of control over the relevant independent contextual variables as determined by the model in §3.3.3, while still ensuring comparability between elicitation results. Table 6.1 lists some relevant independent contextual variables for an investigation of intonational variability. This list is surely not exhaustive, but can be helpful in discussing the range of possibilities in stimulus construction.[3] Moreover, it illustrates that some variables are dependent on others: only responding moves are specified for relative polarity, and the focus scope in responding moves should usually depend on the inquisitive structure of the provocation. Finally, it has been argued that an assertion that does not specify the degree of expectability (e.g. via mirative or obvious intonation) presupposes that the assertion is possible (not necessary or impossible) from the perspective of the input CG ($\Diamond p$) (Reich 2018). In Table 6.1, I opt to see such cases as underspecified with regard to the expectability of the asserted proposition.[4]

Table 6.1: Overview of independent contextual variables in the elicitation of neutral, obvious, and surprise intonation (subscript indices indicate dependencies)

Variable	Levels
Turn adjacency	provocation$_i$, response$_{ii}$
Focus$_i$	broad, narrow
Relative polarity$_{ii}$	same, reverse
At-issue commitment	assertive, interrogative, directive
Non-at-issue commitment	none (neutral), $\Box p$, $\Box\neg p$

I did not pursue an investigation of all possible combinations of turn adjacency, focus-background partition, relative polarity, at-issue and non-at-issue commitments and modalities, partly because such combinatorics would have rendered the experiment unmanageably long and partly because the observations laid out

[3]Note that Table 6.1 does not mention contrastive topics, which is primarily due to the fact that I exclude multiple-*wh*-questions (Dayal 2006, Kellert 2015) from the range of provocations considered. Moreover, I did not include topic shifts in the experimental conditions, partly because I assume that they occur in provocations.

[4]Though unmarked prosody might conversationally implicate that the content is neither surprising nor obvious.

in Chapters 3 and 5 suggest some particular points of interest. Based on the contours detectable in natural dialogue corpora, we expect obvious intonation to be sensitive to relative polarity, whereas the main question regarding mirative intonation is whether it differs from neutral declaratives in some generalizable way independent from exclamative syntax. In other words, decomposing exclamatives and statements of the obvious in Madrid Spanish requires different experimental setups: mirative declaratives have to be compared with *wh*-exclamatives and neutral declaratives, whereas statements of the obvious need to be compared with obvious confirmations, obvious reversals, and again neutral declaratives.[5]

To allow for a comparison between nuclear configurations as required by our research questions (136a,c), stimuli need to control for focus-background partition of the target sentences and for lexical stress position within the phonological words that make up the focused constituents. I decided to keep these variables constant in all stimuli. Question (136d) about the relation between ip-phrasing and modal non-at-issue commitments moreover requires a minimum utterance length of three prosodic words. Most, but not all of the stimuli were designed to follow this criterion.[6] The brief discussion of (199) shows that social and geographical variables should be kept constant to disentangle the contribution of contextual variables from dialectal variation. I therefore restricted my investigation to Madrid Spanish. In §6.1.2, I lay out my choice of materials, participants, and procedures in detail. §6.1.3 explains the software, the annotation procedure, and the scripts tailored to extract relevant phonetic and phonological information from the sample.

6.1.2 Materials, participants, and procedure

The DCT used in this experiment is inspired by the ones used for the Interactive Atlas of Romance Intonation and Frota & Prieto (2015). It differs in that it presents participants with written dialogues which can be studied in advance and planned as if they were scripted role-plays. It also differs in that it requires participants to interact with a pre-recorded voice rather than with the experimenter.[7] Finally, it differs from many experimental setups in linguistics in that participants are made aware of the goal of the experiment. I propose to see informed (as opposed to naive) participants as advantageous in Laboratory Phonology research on intonational meaning. As shown in Chapter 5, spontaneous dialogue data is the

[5]Moreover, statements of the obvious seem to occur primarily in responses, whereas miratives seem distributionally less restricted.

[6]Exceptions were due to the difficulty of keeping the variables in Table 6.1 controlled.

[7]Note that such pre-recorded stimuli have already been used in a study by Face (2002: 78).

locus for hypothesis building and for corroboration of the naturalness of certain prosodic forms. Embracing the experimental situation as non-natural can help to get participants involved in the process of exploration of the range of possibilities associated with one specific channel of communication, in this case intonation. Crucially, speakers need not be surprised to utter a mirative assertion. Neither do speakers need to be bored or annoyed to mark a reversal as obvious. What they do need is a precise communicative intention and a fully fledged representation of the interlocutor's informational state, even if it is imagined, as in play acting.

The DCT presents participants with short context descriptions that always contain a fictitious friend as an interlocutor and vary along three dimensions: firstly, the degree of expectability of the target sentence's proposition relative to the CG content, with target sentences being either highly expectable (obviousness), unexpected (mirativity), or underspecified in this regard (neutral). Secondly, the kind of relation between the target sentence and the bias of the previous turn (confirmation, reversal, unbiased or empty projected set). Finally, while five out of six target sentences have declarative syntax, one out of six experimental conditions employs *wh*-exclamative syntax. As mentioned above, the aim of the experiment is to compare mirative declaratives with *wh*-exclamatives and neutral declaratives, whereas statements of the obvious are compared not only with neutral declaratives, but also with obvious confirmations and obvious reversals.

The experiment consisted of six thematic blocks each containing one neutral declarative, one mirative declarative, one *wh*-exclamative, one obvious declarative responding to an alternative or unbiased question, one obvious confirmation, and one obvious reversal, for a total of six target sentences. Within each block, dialogues focused on one specific word that remained constant within the block: *limonada* 'lemonade', *gobierno* 'government', *alemana* 'German$_{\text{FEM.}}$', *mandarina*/*mandarino* 'tangerine/tangerine tree', *Bilbao* 'Bilbao', *vegana* 'vegan$_{\text{FEM.}}$'. I opted against using proparoxytone words as main target words.[8] This decision was partly based on the need to construct six reasonable and meaningful contexts for each target word, which appeared more difficult with words such as *Bárbara*, *Álvaro*, *libélula* 'firefly', and *Málaga*.[9] Another reason for the choice of

[8] A common strategy in research on the intonation of languages such as Spanish (Gabriel et al. 2011) or Italian (Gili Fivela et al. 2015) to enable a more straightforward identification of boundary tones.

[9] This concern was due to the impression that referents about which participants already have background assumptions would reduce the amount of explicit context information required for enacting the scene. Having run the experiment, it actually seems that some participants are capable of fully adopting the perspective of the speaker in the imagined context, partly refuting this initial concern.

words with paroxytone stress was that they constitute the vast majority in the Spanish lexicon. It can be argued that intonational configurations of a language with a strong tendency towards penultimate lexical stress should be consistently present in this prototypical stress pattern to be viable from an acquisition perspective.

For each thematic block, I constructed 6 context descriptions with a short dialogue leading up to the respective target turn. They were constructed so as to maintain narrow focus on the one thematically central word which always occurred at the end of all target utterances, yet vary according to the expectability of the target proposition, the adjacency status of the target turn, and the relative polarity of the target turn. Narrow focus in responding moves was achieved with provocations such as *wh*-questions and alternative questions. (200) shows a stimulus for a neutral declarative sentence. (201) shows a stimulus for a mirative declarative sentence. (202) shows a stimulus for an exclamative sentence. (203) shows a stimulus for an obvious assertion. (204) shows a stimulus for an obvious confirmation. (205) shows a stimulus for an obvious reversal. In each such context, the last turn by B elicits the target sentence.[10]

(200) Con una amiga estás resolviendo un crucigrama. Te pregunta de dónde viene Adidas.

'You're solving a crossword puzzle with a friend. She asks you where Adidas is from.'

A: ¿Oye, de dónde es Adidas? 🔊
'Listen, where is Adidas from?'

B: Adidas es una empresa alemana.
'Adidas is a German company.'

(201) Con una amiga estas resolviendo un crucigrama. Buscáis una empresa alemana de automóviles con cuatro letras. Queréis poner Audi, pero no entra con el resto del crucigrama. Buscas en línea y te das cuenta de que Seat forma parte del grupo Volkswagen. Esto no te lo esperabas.

'You're solving a crossword puzzle with a friend. You're looking for a German automotive company with four letters. You want to write down Audi,

[10] See Appendix C for a list of all stimuli texts. Note that presentation was done in the form of PowerPoint slides with some illustrative pictures of the objects under discussion and a slide in between the introduction and the training phase showing opening red curtains to evoke a theatrical performance. The function of these illustrations was partly to loosen up the experimental situation and encourage vivid performance, and partly to indicate points at which new sections of the experiment started.

but it doesn't fit with the rest of the puzzle. You search online and become aware that Seat is part of the Volkswagen Group. You didn't expect that.'

A: Audi no entra. Y Seat no puede ser.
'Audi doesn't fit. And it can't be Seat.'

B: Espera, lo busco en internet.
'Wait, I'll check online.'

A: Vale.
'OK.'

B: ¡Seat es una empresa alemana!
'Seat is a German company!'

(202) Con una amiga quieres ir a Múnich para el Oktoberfest. Cuando queréis ir al aeropuerto, ella llega vestida de trajes típicos bávaros, con sombrero y todo.
'With a friend, you want to go to Munich for the Oktoberfest. When you want to go to the airport, she arrives dressed in typically Bavarian clothes, with a hat and all.'

A: ¿Te gusto así?
'Do I look good to you like this?'

B: ¡Qué buena alemana!
'What a great German!'

(203) Sale en las noticias que viene Merkel a Madrid. Una amiga tuya siempre se cree la más lista de todos y se comporta como un verdadero sabelotodo. Te pregunta si es de Inglaterra o de Alemania, aunque todo el mundo lo sabe. Dile de dónde es y hazle sentir que debería saberlo.
'It's in the news that Merkel is coming to Madrid. A friend of yours always thinks she's the smartest of all and behaves like a real know-it-all. She asks if Merkel's from England or Germany, even though everbody knows that. Tell her where she's from and let her feel that she should know that.'

A: Oye, ¿Merkel es inglesa o alemana?
'Listen, is Merkel English or German?'

B: Merkel es alemana.
'Merkel is German.'

(204) Sale en las noticias que viene Merkel a Madrid. Una amiga tuya siempre se cree la más lista de todos y se comporta como un verdadero sabelotodo.

Cuando quiere asegurarse de que Merkel es alemana, le haces sentir que debería saberlo.

'It's in the news that Merkel is coming to Madrid. A friend of yours always thinks she's the smartest of all and behaves like a real know-it-all. When she wants to make sure that she's German, you let her feel that she should know that.'

A: Oye, Merkel es alemana, ¿verdad? 🔊

'Listen, Merkel is German, right?'

B: Merkel es alemana.

'Merkel is German.'

(205) Sale en las noticias que viene Merkel a Madrid. Una amiga tuya siempre se cree la más lista de todos y se comporta como un verdadero sabelotodo. Tu amiga piensa que Merkel es del Reino Unido, aunque todo el mundo sabe que es alemana. Hazle sentir que debería saberlo.

'It's in the news that Merkel is coming to Madrid. A friend of yours always thinks she's the smartest of all and behaves like a real know-it-all. Your friend thinks that Merkel is from Great Britain, even though everybody knows she's German. Give her the feeling that she should know that.'

A: Merkel es inglesa, ¿sabes? 🔊

'Merkel is English, you know?'

B: Merkel es alemana.

'Merkel is German.'

My experimental setup was such that I started with a training phase, in which participants learned to interact with the pre-recorded voice. The stimuli (speaker **A** in the examples above) were recorded by a fellow researcher native to the Comunidad de Madrid.[11] This training also served to illustrate the goal of the study in non-scientific parlance, namely to investigate "ways of saying the same sentence with different communicative intentions". It also accustomed participants to the habit of asking for clarification, taking pauses as required, and repeating trials in case they felt that they had not succeeded in naturally enacting the scene with the audio-voice or needed to see the textual input again. I also encouraged additional trials with different lexical or syntactic choices, though speakers rarely changed the script by more than a discourse particle or an omission of an occasional overt subject.[12] I remotely controlled the audio stimuli from VLC

[11]Heartfelt thanks to María Sancho Pascual.

[12]Some overt subjects were introduced to compare between phrasings such as (VO), (V)(O), (SVO), (S)(VO), and (SV)(O).

player, played over a Bose Soundlink Mini speaker into a sound isolation booth equipped with a video screen and a tripod-mounted Zoom H4n audio recorder. The text-input of the experiment was presented as a PowerPoint slide show that I controlled remotely with a Logitech R400 wireless presenter. While the use of pre-recorded turns liberates the experimenter from the burden of non-variable repetition of stimuli, it requires a high attention to audio-playback to allow for dialogue timing similar to real interaction. I solved the issue of instant playback by cutting the audio-files at the precise onset of the respective turns in Audacity (Audacity Team 2020), whilst adding silent stretches to the end of the file to avoid unintended automatic playback of the upcoming sequence.

The data obtained is both more and less natural than the data obtained from other DCTs. It is less natural in that it suggests full sentences to participants, thereby restricting lexical and syntactic choices. It is more natural in that participants interact with a voice that does not belong to the experimenter, but to a third person as present in the context description. Still, it shares with more standard DCTs the caveat that provocations might contain unwanted or poorly understood prosodic cues that have an impact on the form of responding moves. Yet, compared to an experimental setup in which provocations are prosodically vacuous or vary according to the theatrical talent of the experimenter(s),[13] pre-recorded dialogical turns allow for a posterior detection of these intervening factors, be it by the investigator(s) themselves or by the scientific community.

Participants were all native to the Comunidad de Madrid and were remunerated for their time. They were contacted at the Universidad de Alcalá (network and convenience sampling) and consisted mostly of students, non-academic university staff (secretaries and janitors), and friends of participants. A total of 26 participants took part in the experiment (age ranging from 17 to 51 years, mean approx. 24 years). It became clear throughout the recording process that some teenage participants (age ≤ 19 years) were too intimidated by the experimental setup to comfortably enact scenes including obvious-reversal-intonation in front of a microphone.[14] I therefore opted to exclude 7 recordings with teenage participants. I also excluded one interview due to alcohol-induced articulation problems, leaving a total of 18 recordings for investigation. Age range in the remaining sample was 18 to 51 years, with a mean of approx. 27 years.

[13] In fact, prosodically vacuous provocations might actually be impossible due to implicit prosody (Speer & Foltz 2015, Breen 2015).

[14] Future research should focus on participants that are older (or at least not younger) than the experimenter to avoid politeness and bashfulness issues. Moreover, pre-recording different scenes with different voice-actors would have the benefit that participants would not fear that they might irritate their interlocutor with several highly impolite obviousness-reversal responses (see §3.2).

6.1.3 Measurements, annotation, and software

Recordings were stored as WAV-files (44.1kHz; 16Bit) and 648 target turns (18 participants × 6 conditions × 6 target turns) were extracted using Audacity (Audacity Team 2020).[15] They were then loaded into Praat (Boersma & Weenink 2017) and transcribed at the level of the phoneme (tier 1), the syllable (tier 2), and the utterance (tier 3). The utterance was transcribed manually in the form of plain text, from which the syllable and phoneme transcription were automatically generated using EasyAlign (Goldman 2011).[16] These were then manually checked and completed for each segment at all levels of annotation. I also manually added a tier for break indices (tier 4).[17] The resulting files were then prosodically annotated following Sp_TobI (Beckman et al. 2002, Estebas-Vilaplana & Prieto 2008, Hualde & Prieto 2015), first automatically and then manually. Automatic annotation was done using a modified version of Eti_ToBI (Elvira-García et al. 2016).[18] The main modification to the original Eti_ToBI script consisted in changing the pitch analysis part of the script so as to create a pitch-object using the command 'To pitch (ac)...' with voicing threshold at 0.6, which results in a pitch track analysis less influenced by consonantal pitch with an intensity too low to have an impact on intonational perception (microprosody). For the same purpose, the modified script also includes a loop that allows for the transitions between particular phones and their adjacent phones to be unvoiced. The unvoicing window reaches 10ms into adjacent intervals and was applied to the following phones: [p, t, k, ð, f, s, z, x, ʃ, r]. The treatment of [ɾ] and [ɣ] was difficult, since the amount of microprosodic perturbation differed greatly between instances. I decided to apply unvoicing of transitions between these two cases and adjacent voiced segments selectively, excluding them from the unvoicing loop in cases where perturbations were minor and adjacent voiced stretches of speech would have been lost to analysis.

Labeling settings in Eti_ToBI were set so as to include a maximum number of possible pitch accent and boundary tone categories.[19] The idea behind this

[15] In case speakers had added sentences that were prosodically separate from the target sentence, I extracted a shorter file containing only the target sentence for ease of comparison. In cases where a participant had chosen to repeat a scene, I followed the choice of the participant regarding their most natural performance. This was possible because participants were trained and constantly reminded to report their opinion on their own performances.

[16] A word level and utterance level phonemic transcription, which are also generated by EasyAlign, are omitted in the following figures for the sake of brevity.

[17] See discussion below for problems of break annotation.

[18] Modifications are presented in Appendix D.

[19] Allowing for upstep of H tones in both rises (L+¡H*) and falls (¡H+L*), for L trailing tones (H*+L), for late rises (LH%), as well as for the so-called *Argentinean Tritonal pitch accent* (L+H*+L) (Gabriel et al. 2010). As expected for data from Madrid, no instance of this Argentinean pitch accent was detected.

amount of flexibility in Eti_ToBI annotation was to use the automatic and manual labeling as a point of departure for an inductive process of step-wise reduction of categories. I decided to proceed in this fashion because Eti_ToBI, while capable of recognizing some pitch accents and boundary tones very consistently, has difficulties in dealing with rises that start in one syllable, but reach their maximum in a following syllable, particularly if the part of the rise that already occurs in the first syllable does not include a turning point (or F_0 maximum) and still exceeds 1.5 st in pitch span. This problem is not really solvable within the algorithm, because Eti_ToBI reduces the information contained in the pitch objects (the F_0 curve as obtained by Praat) to a few pitch values per syllable. This is done by dividing the duration of the respective syllables by 6 (non-final accented syllable) or 12 (final syllable) and obtaining F_0 values for all those time values obtained this way where this is possible (i.e. that mark voiced portions). The longer the respective syllables, the coarser the phonetic representation obtainable via this algorithm. F_0-movements that cross segmental boundaries cannot be adequately captured in an algorithm that does not use concepts such as F_0 peaks, valleys, elbows, and shoulders. This would require a macromelodic model that takes into account the characteristics of target points and transitions, e.g. as proposed by Hirst (2011). While these limitations require a comparison with manual annotations and possibly a reduction of categories, the main advantage of Eti_ToBI is its use of categories that are readily comparable with the phonological discussion presented so far. I therefore opted for a combination of automatic preliminary labeling (both manual and via Eti_ToBI) and subsequent manual revision.[20]

Eti_ToBI creates a total of three annotations: a superficial annotation that is meant to closely resemble the phonetics of the F_0 curve (tier 5), an intermediate level of phonological abstraction (tier 6), and a phonological level that reduces the number of categories to the ones currently included in Sp_ToBI (tier 7). Finally, I added manual annotation on tier 8. Figure 6.1 (a), (b), and (c), all from context (228), show examples of the output of this process. The question mark under the second pitch accent and possible phrase accent indicate that I did not succeed in consistently labeling level 3 breaks. This was due to the fact that in most cases the only phonetic correlate of internal phrasing was a rise to an intermediate H–, the maximum (and turning point) of which does not consistently coincide with a word- or phrase-boundary. It can therefore easily be interpreted as part of a neighboring pitch accent, e.g. L+<H* in Figure 6.1 (a) or H+L* in

[20] Analyzing the same data with MOMEL (LPL, Laboratoire parole et langage – UMR 7309 2008) would be an interesting project for future research, though.

Figure 6.1 (b) and (c).[21] We see in Figure 6.1 (c) that Eti_ToBI recognizes such prolonged rises in the surface transcription H+(L*+H) (tier 5), yet reinterprets the nuclear configuration as L* HL% at the highest level of abstraction (tier 7). I took the most abstract annotation (tier 7) as final Eti_ToBI output and as the point of comparison for my own annotation. In Figure 6.1 (b) and (c), my manual annotation agrees with this abstract level (tier 8), differing only in the interpretation of prenuclear pitch accents. Figure 6.1 (a), on the other hand, shows a case of disagreement between the highest level of phonological abstraction in Eti_ToBI (tier 7) and my annotation (tier 8). The reason for this divergence is the fact that the rise in the lexically accented syllable of the final prosodic word surpasses the threshold for upstepped rises in Eti_ToBI (standardly set at 6 st). Given that the algorithm does not recognize the continuation of the rise on the nasal at the onset of the final syllable, this leads to an interpretation as a case of L+¡H* L%. Problems such as these will be discussed in detail after the presentation of the main results in §6.2.

Another modification I made to Eti_ToBI was an algorithm to store all pitch objects as a basis for data extraction. This ensures that the same pitch data forms the basis of the phonological ToBI transcriptions, the phonetic data, and also the figures presented here. To extract phonetic and phonological data beyond Sp_-ToBI transcriptions, I wrote a praat script called EasyLogger (Fliessbach 2023). It logs prosodic information in a format that is centered around the last pitch accent of the respective sentence. In the case of my data, this was always the nuclear accent of the phrase. Data extracted for each file were: duration (utterance, syllables), ± stress (syllables), mean / max. / min. F_0 in st and Hz (utterance, syllables), time of max. / min. F_0 (utterance, syllables). The tab-separated file created by EasyLogger was then loaded into R (R Core Team 2019) for statistical analysis.

6.2 Results

As mentioned in §6.1, my approach was to start with automatic and manual labeling and then proceed to a reduction of categories based on phonological abstraction. I maintain the distinction between automatic and manual annotation because I see it as informative both in the points of agreement and disagreement. Before we turn to the results according to the experimental conditions, some

[21] But a comparison between a large number of examples, as done in §6.3.4 (see Figure 6.7), shows that in some pragmatic conditions there are clear and subtle tendencies regarding prenuclear rises up to the nuclear configuration.

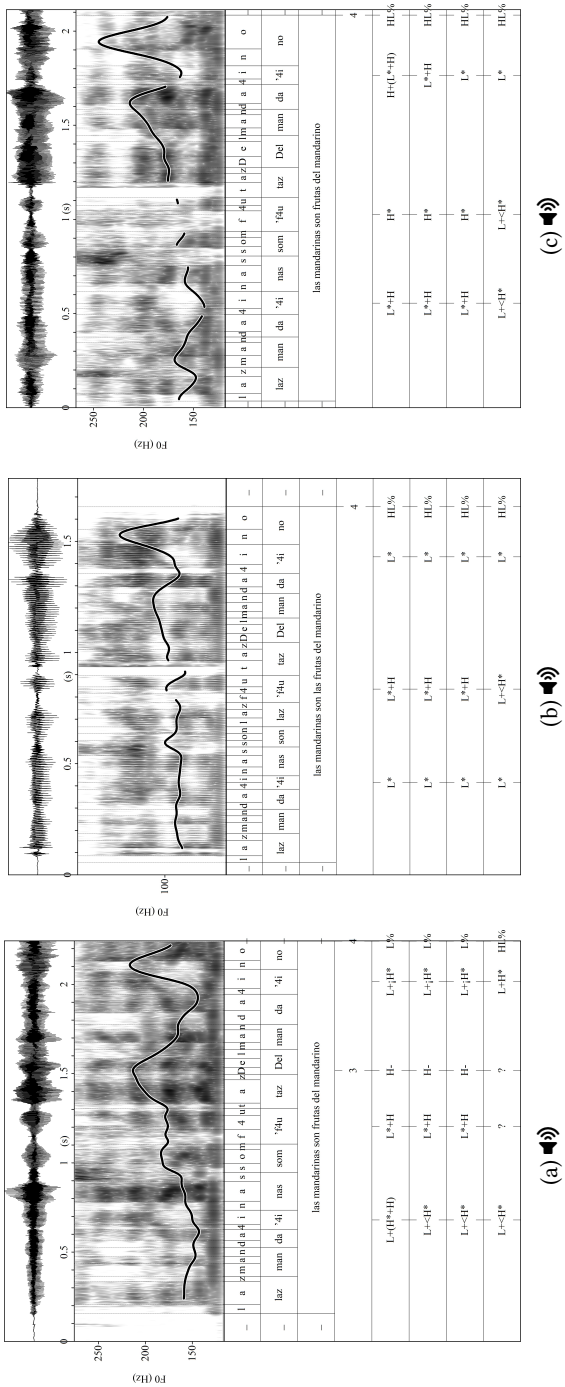


Figure 6.1: Eti_ToBI (tier 5–7) and manual (tier 8) annotation of examples from context (228)

remarks on the amount of agreement are in order. There is 72.4% agreement between automatic and manual annotation for entire nuclear configurations. This yields a Cohen's Kappa of 0.679 ($z = 45.5$), or "substantial" agreement (Landis & Koch 1977: 165).[22] If we consider pitch accents and boundary tones individually, we see that there is more agreement in the labeling of pitch accents (86.1%; Kappa = 0.777; $z = 27.5$) than in the labeling of boundary tones (81%; Kappa = 0.695; $z = 27.8$). Table 6.2 shows the points of overlap and divergence between the automatic and the manual annotation. We see divergence in the interpretation of a) falls towards low pitch accents as either H+L* or L*, b) final rise-falls as either L+H* HL%, L+H* L%, or L* HL%, and c) the interpretation of relatively low boundary tones after rises (L+H* H% vs. L+H* L%). Of the 30 nuclear configurations that received H+L* labeling from Eti_ToBI (with either !H%, H!H%, or L% boundary tone), only 15 were manually labeled with H+L*, whereas 14 received an L* manual annotation. Of the 129 sentences that received L+H* HL% from Eti_ToBI, 24 were manually labeled as L+H* L%, 22 as L* HL%, and 7 as L+¡H* L%. Conversely, of the 104 sentences that Eti_ToBI labeled with L+H* L%, 13 were manually labeled as L+H* HL%. Of the 62 cases that Eti_ToBI labeled L+H* H%, 20 were manually labeled as L+H* L%. I will return to the reasons for the points of disagreement in the discussion of individual findings. For now, suffice it to say that a "substantial" agreement between the automatic and the manual annotation is important because ToBI-labeling is by no means an uncontroversial issue and automatic labeling should be a goal for the entire research community to allow for comparable results.

As we now turn to the results according to the experimental conditions, we will see that the substantial agreement leads to similar, though not identical correlations. Table 6.3 shows the distribution of nuclear configurations according to the experimental conditions as obtained via the automatic and manual annotation process. It includes a total of 18 configuration types with total numbers of occurrence ranging from 1 to 147. The large number of configuration types, some of which with low token numbers, is due to the decision to allow for the broadest possible set of tone-labels as included in the Sp_ToBI labeling system (and therefore also in the Eti_ToBI praat script). Starting from this surface-oriented annotation, I collapsed the nuclear configuration variable from 18 to 9 levels based on the following grouping procedure.

[22] I used the function `agree()` and `kappa2()` from the `irr` package (Gamer et al. 2019). Please note that the Cohen's Kappa should not be used for comparison with degrees of inter-rater reliability of procedures in which raters are completely naive about the other annotators' labeling process, given that I had knowledge about the script and its limitations in handling the data. Rather, we can use this value as a point of reference when measuring if further phonological abstractions increase or reduce agreement.

Table 6.2: Automatic by manual annotation output

auto \ manual	H* L%	H+L* !H%	H+L* H!H%	H+L* L%	L* !H%	L* H!H%	L* H%	L* HL%	L* L!H%	L* L%	L+¡H* L!H%	L+¡H* H!H%	L+¡H* L%	L+H* !H%	L+H* H%	L+H* HL%	L+H* L!H%	L+H* L%	Sum
H* L%	1	0	0	0	0	0	1	3	0	4	0	0	0	0	0	1	0	1	11
H+L* !H%	0	1	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	5
H+L* H!H%	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
H+L* L%	1	0	0	12	0	0	0	3	0	6	0	0	0	0	0	0	0	0	22
L* !H%	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	0	0	1	5
L* H!H%	0	0	0	0	0	7	3	1	0	0	0	0	0	0	0	0	0	0	11
L* H%	0	0	0	0	0	1	19	0	0	0	0	0	0	0	0	0	2	1	23
L* HL%	0	0	0	0	0	0	2	27	0	0	0	0	0	0	0	2	0	0	31
L* L!H%	0	0	0	0	0	0	0	0	8	2	0	0	0	0	0	0	3	0	13
L* L%	0	0	0	0	0	1	1	7	0	131	0	0	0	1	0	0	0	9	150
L+¡H* H!H%	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	1	0	0	5
L+¡H* L!H%	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
L+¡H* L%	0	0	0	0	0	0	0	0	0	0	0	1	51	0	0	2	0	2	56
L+H* !H%	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	6
L+H* H%	0	0	0	0	0	1	2	0	0	1	0	0	0	2	31	2	3	20	62
L+H* HL%	0	0	0	0	0	0	0	22	0	0	0	0	0	7	0	1	75	0	129
L+H* L!H%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	9
L+H* L%	1	0	0	0	0	0	0	3	0	0	0	0	2	0	0	13	0	85	104
Sum	3	1	2	12	2	14	29	68	8	144	3	4	60	7	33	96	15	147	648

I grouped L* HL% and L* H!H% under the category L* HL%, thereby disregarding the scaling of high-falling boundary tones after low pitch accents. I grouped L+¡H* L% and L+¡H* H!H% under the category L+¡H* L%, thereby disregarding the scaling of falls after upstepped rising pitch accents. I grouped L* !H%, L* H%, and L* L!H% under the category L* H%, thereby disregarding the timing and scaling of rising boundary tones after low pitch accents. I grouped L+H* L% and L+H* !H% under the category L+H* L%, disregarding the scaling of relatively low boundary tones after rising pitch accents. I grouped H+L* !H%, H+L* H!H%, and H+L* L% under the category H+L* X%, thereby disregarding boundary tone type after pitch accents falling to low.[23] Finally, I grouped the infrequent configurations L+H* L!H%, L+¡H* L!H%, and H* L% as *other*. These abstractions slightly increased the amount of agreement between automatic and manual annotation (72.8%, Kappa = 0.681; $z = 43$). Table 6.4 shows the distribution of the collapsed nuclear configurations according to the experimental conditions.

Table 6.3: Nuclear configurations by condition (preliminary).

nuc. config.	annotation	neut. decl.	mir. decl.	wh-excl.	obv. decl.	obv. confir.	obv. rev.	sum
H* L%	auto	2	0	1	3	1	4	11
	manual	1	0	0	0	0	2	3
H+L* !H%	auto	1	0	0	3	1	0	5
	manual	1	0	0	0	0	0	1
H+L* H!H%	auto	0	0	0	1	1	1	3
	manual	0	0	0	1	1	0	2
H+L* L%	auto	3	0	3	4	7	5	22
	manual	1	0	2	1	5	3	12
L* !H%	auto	0	1	1	0	2	1	5
	manual	0	0	1	0	1	0	2
L* H!H%	auto	1	0	0	3	4	3	11

[23] I will show below that what was analyzed as H+L* pitch accents are actually L* pitch accents preceded by an H– that stretches into the syllable preceding the lexically accented syllable of the IP-final word. Given the low percentage of H+L* pitch accents (4.6% of automatic annotations, 2.3% of manual annotations), these annotation errors should not change the overall picture substantially.

nuc. config.	annotation	neut. decl.	mir. decl.	wh-excl.	obv. decl.	obv. confir.	obv. rev.	sum
	manual	0	0	0	3	7	4	14
L* H%	auto	5	1	1	3	8	5	23
	manual	7	0	1	7	7	7	29
L* HL%	auto	2	2	2	15	6	4	31
	manual	3	0	3	39	11	12	68
L* L!H%	auto	2	0	0	3	6	2	13
	manual	1	0	0	0	5	2	8
L* L%	auto	29	7	37	21	26	30	150
	manual	33	4	37	19	25	26	144
L+¡H* H!H%	auto	1	1	0	1	1	1	5
	manual	0	1	0	0	1	1	3
L+¡H* L!H%	auto	2	0	0	0	0	1	3
	manual	2	0	0	1	0	1	4
L+¡H* L%	auto	6	27	14	3	4	2	56
	manual	5	36	13	1	4	1	60
L+H* !H%	auto	0	3	2	0	1	0	6
	manual	2	3	0	1	1	0	7
L+H* H%	auto	15	12	9	6	12	8	62
	manual	8	9	4	4	6	2	33
L+H* HL%	auto	18	33	16	25	14	23	129
	manual	9	22	5	17	17	26	96
L+H* L!H%	auto	2	1	0	3	1	2	9
	manual	2	0	0	4	5	4	15
L+H* L%	auto	19	20	22	14	13	16	104
	manual	33	33	42	10	12	17	147
Sum	auto	108	108	108	108	108	108	648
	manual	108	108	108	108	108	108	648

Table 6.4: Nuclear configurations by condition with collapsed categories.

nuc. config.	annotation	neut. decl.	mir. decl.	wh-excl.	obv. decl.	obv. confir.	obv. rev.	sum
L* H%	auto	7	2	2	6	16	8	41
	manual	8	0	2	7	13	9	39
H+L* X%	auto	4	0	3	8	9	6	30
	manual	2	0	2	2	6	3	15
L* HL%	auto	3	2	2	18	10	7	42
	manual	3	0	3	42	18	16	82
L* L%	auto	29	7	37	21	26	30	150
	manual	33	4	37	19	25	26	144
L+H* H%	auto	15	12	9	6	12	8	62
	manual	8	9	4	4	6	2	33
L+H* HL%	auto	18	33	16	25	14	23	129
	manual	9	22	5	17	17	26	96
L+¡H* L%	auto	7	28	14	4	5	3	61
	manual	5	37	13	1	5	2	63
L+H* L%	auto	19	23	24	14	14	16	110
	manual	35	36	42	11	13	17	154
Other	auto	6	1	1	6	2	7	23
	manual	5	0	0	5	5	7	22
Sum	auto	108	108	108	108	108	108	648
	manual	108	108	108	108	108	108	648

Table 6.5: Adjusted standardized residuals of Pearson's Chi-squared test on cross-tabulation of nuclear configurations by conditions. * $p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, (*) significance based on $n_{\text{row}} < 30$. Annotations: A – auto, M – manual.

nuc. config.	annotation	neut. decl.	mir. decl.	wh-excl.	obv. decl.	obv. confir.	obv. rev.
L* H%	A	0.07	−2.09*	−2.09*	−0.36	3.97***	0.51
	M	0.67	−2.88**	−1.99*	0.22	2.88**	1.11
H+L* X%	A	−0.50	−2.51*	−1.00	1.51	2.01*	0.50
	M	−0.35	−1.75	−0.35	−0.35	2.45(*)	0.35
L* HL%	A	−1.71	−2.14*	−2.14*	4.71***	1.28	0.00
	M	−3.38***	−4.33***	−3.38***	8.98***	1.37	0.74
L* L%	A	1.00	−4.50***	3.00**	−1.0	0.25	1.25
	M	2.28*	−5.07***	3.30***	−1.27	0.25	0.51
L+H* H%	A	1.67	0.58	−0.48	−1.55	0.60	−0.84
	M	1.20	1.68	−0.72	−0.72	0.24	−1.68
L+H* HL%	A	−0.92	3.04**	−1.45	0.92	−1.98*	0.40
	M	−2.01*	1.78	−3.26**	0.30	0.30	2.97**
L+¡H* L%	A	−1.14	6.44***	1.38	−2.23*	−1.87	−2.59**
	M	−1.96*	9.43***	0.89	−3.38***	−1.96*	−3.02**
L+H* L%	A	0.19	1.31	1.59	−1.22	−1.22	−0.66
	M	2.31*	2.56*	4.05***	−3.63***	−3.14**	−2.15*
other	A	1.23	−1.61	−1.61	1.23	−1.04	1.80
	M	0.78	−2.13(*)	−2.13(*)	0.78	0.78	1.94

Table 6.4 forms the basis for Table 6.5, which shows the adjusted standardized residuals of two χ^2-tests, one for the automatic and one for the manual annotation.[24] We see in Table 6.5 that all 6 experimental conditions are significantly positively associated with at least one nuclear configuration. Of the 8 nuclear configurations that are not grouped as *other*, 7 are significantly positively associated with at least one experimental condition.[25] Yet only 3 out of 7 associations are biunivocal: L+¡H* L% with mirative declaratives, L* HL% with obvious declaratives, and L+H* HL% with obvious reversals.[26] Of the three biunivocal associations, the finding for L+H* HL% is in disagreement between the automatic and the manual annotation, a problem discussed in detail in §6.3.3.

The two nuclear contours H+L* X% and L* H% are univocally associated with obvious confirmations. This finding is supported both by the automatic and the manual annotation, and discussed in §6.3.4. Moreover, while L* L% is very highly significantly associated with *wh*-exclamatives in both the automatic and the manual annotation, it is also significantly associated with neutral declaratives in the manual annotation. Likewise, L+H* L% is significantly associated with all non-obvious conditions in the manual annotation, but not the automatic one. Finally, obvious reversals show a tendency towards positive association with the nuclear configurations grouped as *other*, though the adjusted standardized residual of 1.94 does not surpass the quantile function value of 1.96 for significance at $\alpha = 0.05$.[27]

6.3 Discussion

I take the results presented in §6.2 as evidence for four findings, which are discussed individually below. Firstly, the results show significant prosodic differ-

[24] χ^2-tests calculated using the `chisq.test()` function with Monte Carlo simulation (Hope 1968). Automatic annotation: $\chi^2 = 156.83$, $p < 0.001$, Cramér's V = 0.22 (strong effect according to Cohen [1988] 2013: 222). Manual annotation: $\chi^2 = 306.17$, $p < 0.001$, Cramér's V = 0.31 (very strong effect). Adjusted standardized residuals calculated using the `CrossTable()` command from the `gmodels` package (Warnes et al. 2018) as described in Field et al. (2012: 812–828) and developed by Haberman (1973). While many of the adjusted standardized residuals would pass a Bonferroni corrected significance threshold (3.31 for $\alpha = 0.05$), I abstain from such a conservative measure to avoid inflating Type II errors (Armstrong 2014).

[25] I will use *association* for *positive association* below, and explicitly note whenever *negative association* is discussed.

[26] I define a biunivocal association as a significant positive association of one contour with one condition.

[27] The quantile function values corresponding to the significance levels are: 1.96 for $\alpha = 0.05$; 2.58 for $\alpha = 0.01$; 3.29 for $\alpha = 0.001$.

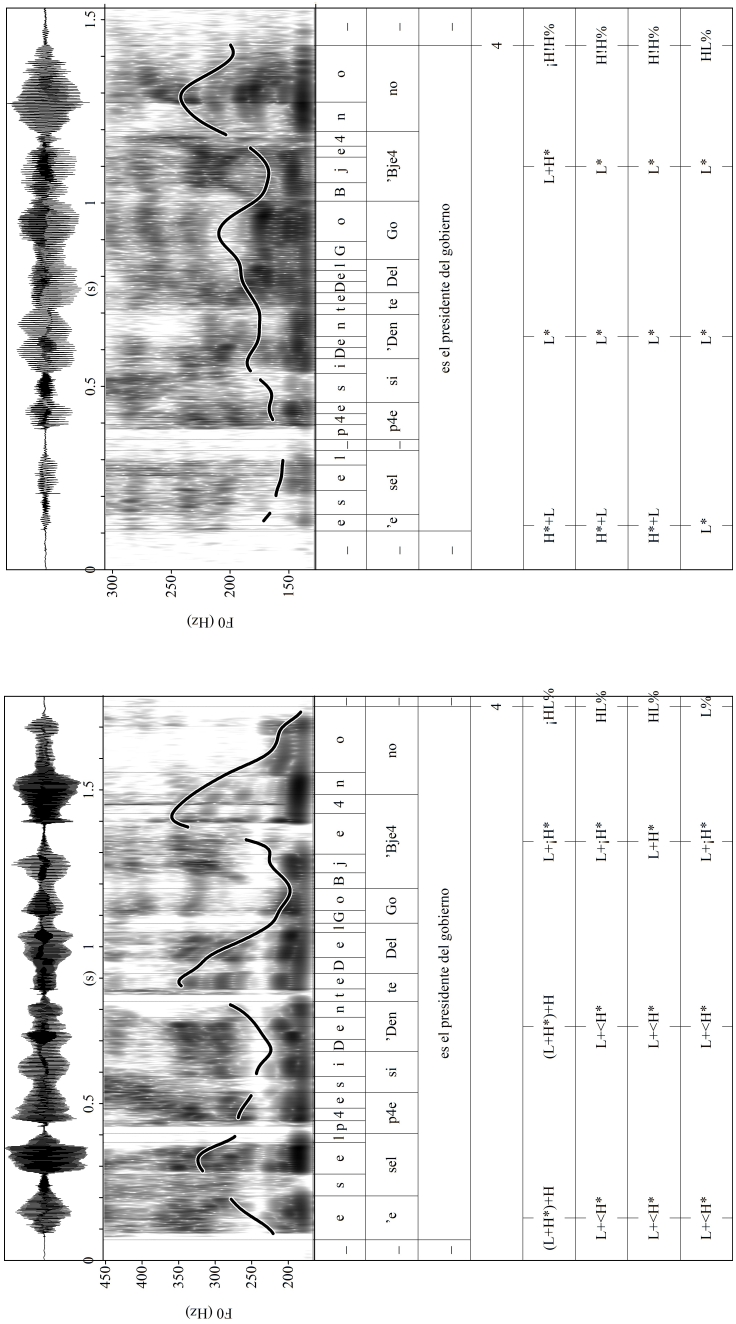
ences between neutral declaratives, mirative declaratives, and obvious declaratives (§6.3.1). Secondly, *wh*-exclamatives need not be miratives, which adds evidence to the need for prosodic explicitness in the discussion of syntactic categories (§6.3.2). Thirdly, relative polarity has an impact on the form of obvious declaratives. They receive L* HL% when responding to unbiased alternative questions. But they take an L+H* HL% contour when reversing previous assertions, an intermediate form that shares the HL% boundary tone with obvious declaratives and the L+H* pitch accent with all non-obvious declaratives (§6.3.3). Moreover, obvious confirmations are associated with the L* (H)H% rising declaratives form typically associated with questions. In §6.3.4, I argue that they are still differentiable from questions via their prenuclear intonation. I conclude the discussion of the results in §6.3.5 by reflecting upon the results grouped under *other* in Table 6.5, most notably the L+H* L!H% and L+¡H* L!H% contours.

6.3.1 On neutral, mirative, and obvious declaratives

The biunivocal associations of mirative declaratives with L+¡H* L% and of obvious declaratives with L* HL% in both the automatic and the manual annotation are two findings perfectly in line with the observations made in Chapter 5. They corroborate that even when keeping narrow focus position constant and irrespective of contradiction (negative relative polarity), mirative and obvious declaratives are prosodically different from neutral declaratives. This confirms research question (136a), but still leaves questions about the role of exclamative syntax, relative polarity, and ip-phrasing unanswered. Moreover, the association of both L* L% and L+H* L% with neutral declaratives in the manual annotation corroborates a point of agreement between Tables A.1 and 1.2, namely the seemingly free variation between these two nuclear configurations in neutral declaratives.

The fact that Table 6.5 only reports nuclear configurations omits a second fact about mirative declaratives. As visible in Figure 6.2a, they include prenuclear rising pitch accents at all lexical stress positions in the respective sentences.[28] The upstepped L+¡H* pitch accent in nuclear position could therefore also be interpreted as a strategy to maintain highest prominence at the focus position relative to the prenuclear L+<H* pitch accents. Obvious declaratives, on the contrary, are characterized by a prolonged prenuclear rise (Figure 6.2b). This feature is characteristic for all obvious conditions and is further discussed in §6.3.4.

[28]This is in line with recent findings by Rett & Sturman (2020) for English miratives and could be a strategy employed by many intonation languages.



(a) (b)

Figure 6.2: Eti_ToBI (tier 5–7) and manual (tier 8) annotation of a mirative (a) and an obvious declarative (b).

6.3.2 *Wh*-exclamatives need not be miratives

The association of L* L% with *wh*-exclamatives answers the questions about the relation between *wh*-exclamative syntax and intonation. *Wh*-exclamatives are not necessarily miratives. *Wh*-exclamative is a syntactic category, not a prosodic or semantic one. Speakers can assign different degrees of expectability to a proposition, and *wh*-exclamatives are compatible both with propositions that are impossible from the perspective of the input CG (miratives) and with propositions that are unmarked in this regard. Moreover, the fact that they are significantly negatively associated with L* HL% in our results should not be mistaken to mean that they are ungrammatical with such intonation or with other markers of obviousness. Rather, it shows that there were no contexts in the elicitation material that would have triggered such intonation. Such contexts are difficult to construct, because the provocation would need to raise a QUD to which one can respond with a factive presupposition and a scalar implicature, both triggered by *wh*-exclamative syntax, and an evaluation of at-issue content of the speech act as necessary from the input CG, encoded by obvious intonation. The elicitation material in this study did not systematically test for obvious *wh*-exclamatives,[29] but included contexts that elicit non-mirative intonation on *wh*-exclamatives. Much as with insubordinates (Elvira-García 2016), controlling for a syntactic category will favor certain intonational categories. Discourse particles, syntactic structures, and intonational configurations can be collocations as much as any two lexical entries, simply because their respective meanings are compatible. But this should not be confused with a categorical rule binding one to the other.

6.3.3 On obvious reversals

The findings for L+H* L% and L+H* HL% are a point of disagreement between automatic and manual annotation. In the following, I will attempt to explain this disagreement. This explanation is also an argument for the validity of the manual annotation, and should be read as such. I see two reasons for the divergence between automatic and manual annotation of rise-falls. One lies at the foundations of the ToBI system, the other can be found in the particular way Eti_ToBI implements this system. The ToBI system focuses on the synchronization of tonal targets with segmental boundaries (strict segmental anchoring) irrespective of the shape or relative prominence of the intonational movements. Niebuhr et al. (2011) have shown that pitch shape can distinguish between different rises in German

[29] Which would have been a much more difficult task.

and Italian. Moreover, Albert et al. (2018: 804) argue that "the link between acoustic and perceptual representations of intonation [has been] weakened by the over-reliance on the F_0 trajectory [to the detriment of periodic energy, which] reflects the degree to which pitch is intelligible, a higher value representing a stronger F_0 signal that is consequently more easily perceived".[30] Both of these findings are important for cases in which turning points of the F_0-trajectory do not coincide with syllable nuclei, but rather with the boundaries between lexically stressable syllables and neighboring syllables. Figure 6.3a shows an example of disagreement about the labeling of a final rise-fall. Cases such as Figure 6.3a, in which the peak of a rise was reached right at the boundary between the penultimate and the ultimate syllable, are quite frequent in the data. In such cases, additional information is needed to decide if there are two high tonal targets, one associated with the rising pitch accent and another one associated with the boundary tone (L+H* HL%), or if the fall is an interpolation towards a low boundary tone (L+H* L%). Figure 6.3b shows an example of agreement about the labeling of a final rise-fall. Again, the turning point is reached in the beginning of the syllable onset of the final syllable. Yet the final fall differs slightly from the one in Figure 6.3a. This may be due to the fact that the turning point of the final rise-fall is the F_0-maximum of the entire utterance in Figure 6.3b, but not in Figure 6.3a. Yet periodic energy seems to play a role as well. Figures such as Figure 6.3a and b show a 2-dimensional F_0 display (F_0 over time) in which intensity is binary (F_0 present or absent). Even though syllabic annotation and spectrogram-shading enrich the representation, periodic energy cannot be seen in such a format. The spectrogram shows the amplitude of frequencies from 0 to 5k Hz. Given that the nuclei of the two last syllables in Figure 6.3a and Figure 6.3b are the same vowel, differences in both the oscillogram and the spectrogram point towards not only lower intensity, but also lower periodic energy in the final vowel of Figure 6.3a, compared to the prefinal one. Unfortunately, the fact that periodic energy in non-identical phones is impossible to compare visually in spectrograms requires us to resort to more established correlates of pitch prominence.

One way to quantify the degree to which the disagreement between automatic and manual annotation of final falls after L+H* as either HL% or L% corresponds to a significant difference in the shape and timing of the fall is to subtract the mean F_0 in the penultimate syllable from the mean F_0 in the ultimate syllable and compare the results according to congruent and incongruent annotation subsets. While mean F_0 ignores the F_0 trajectories within the respective syllables

[30] Periodic energy is a relative measure that puts the energy contained in a pitch-privileged bandwidth between approx. 50 and 600 Hz in relation to the energy above approx. 600 Hz (Albert et al. 2018: 805).

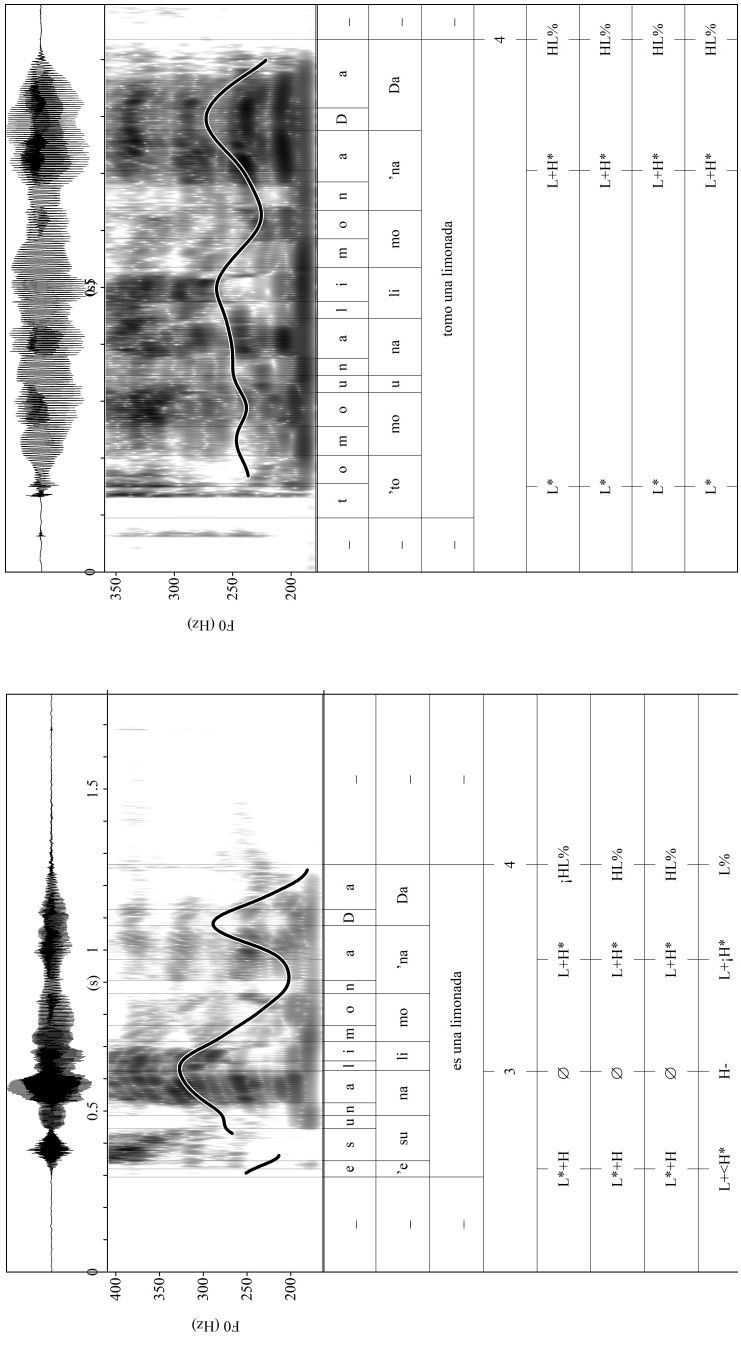


Figure 6.3: Disagreement (a) and agreement (b) between Eti_ToBI (tier 5–7) and manual (tier 8) annotation of a rise-fall.

(and again periodic energy), the fact that the automatic annotation has selected an L+H* pitch accent and an HL% boundary tone ensures that we are dealing with rises and falls that span at least 1.5st. We can create three subsets among sentences with automatic L+H* HL% annotation: congruent manual L+H* HL% annotation (75), incongruent manual L* HL% annotation (22), and incongruent manual L+H* L% annotation (24). Figure 6.4 illustrates the distribution of differences between mean F_0 in final and penultimate syllables across these three subsets. A Kruskal–Wallis test with manual annotation as independent variable and difference in mean F_0 between the ultimate and the penultimate syllable as dependent variable shows a significant effect [$H(2) = 33.523$, $p < 0.0001$]. Post hoc comparisons of the mean ranks between groups are all significantly different.[31] While this is still no proof of a perceptually salient difference, these systematic differences would not be captured if we were to assume only a single tonal representation, as done by the automatic annotation.

Disagreements between automatic L+H* HL% annotation and manual L* HL% annotation are mostly due to the fact that Eti_ToBI does not take turning points into account. Figure 6.5 shows two examples of disagreement about the labeling of final low-rise-falls. The rises in the accented syllables exceed the 1.5st threshold at which Eti_ToBI assigns an L+H* pitch accent. Yet the turning points of the F_0 curve are reached well within the final syllable. This explanation aims at one conclusion: for L+H* HL% and the two neighboring configurations L+H* L% and L* HL%, only the manual annotation results should be taken as valid when there is disagreement in Table 6.5. And the results for manual L+H* HL% annotation show a highly significant, biunivocal association with obvious reversals.

6.3.4 On prenuclear and final rises in obvious confirmations

The results that are perhaps most challenging to explain in Table 6.5 are the association of both the L* H% and the H+L* X% configuration with obvious confirmation. L* H% is the pattern typically associated with neutral interrogative

[31] Kruskal–Wallis and post hoc tests were performed following Field et al. (2012: 674–684). Observed differences are: 32.40 for L* HL% to L+H* HL% (20.22 critical difference for statistical significance), 59.41 for L* HL% to L+H* L% (24.58), 27.00 for L+H* HL% to L+H* L% (19.56). Non-parametric tests were chosen to ensure robust results. Note that Levene's test was non-significant, F(2,117) = 1.043, p = .35, indicating homogeneity of variance, and a Shapiro-Wilk test showed significant non-normality only for the L+H* HL% subgroup, $W = 0.954$, $p < 0.01$. Note also that variation in speakers' F_0 baselines introduces far less variance in a variable obtained by computing differences between syllables in one utterance than in a variable with raw F_0 measurements. This would require a mixed model with speaker as random effect, visible in §6.3.5.

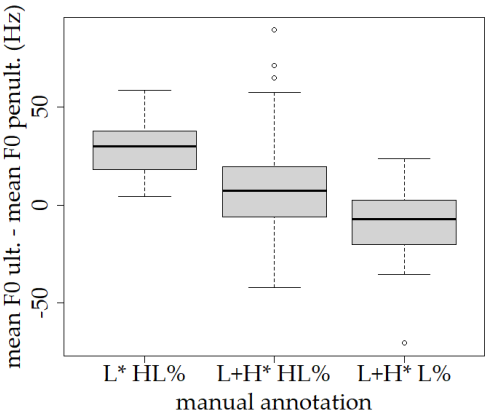


Figure 6.4: Boxplot of mean F_0 difference between final and penultimate syllables within automatically annotated L+H* HL%, grouped according to manual annotation.

sentences in Madrid Spanish (Escandell-Vidal 1998, 1999). So are obvious confirmations actually questions? In the following, I argue that it is their different prenuclear intonation that distinguishes them from prototypical questions. Face (2007) has shown that a final rise from a low pitch accent is the strongest cue to question-hood, though there are at least three other cues that prosodically differentiate questions from statements in Castilian Spanish.

> "1. the initial F_0 peak is higher in absolute interrogatives than in declaratives; 2. in medial position absolute interrogatives most commonly have no F_0 rise while declaratives do; 3. during the final stressed syllable absolute interrogatives have a low F_0 while declaratives have an F_0 rise; 4. the F_0 rises to the end of absolute interrogatives while it falls to the end of declaratives." (Face 2007: 194)

Figure 6.6 is an illustration of the respective contours from Face (2007: 199), divided into four gates (I-IV) according to the aforementioned cues. Based on the finding in Face (2005) that there are two prenuclear gates of sentence-type detection in Castilian Spanish interrogatives,[32] he tests the relative importance of each gate by having participants choose between declarative and interrogative interpretation based on 1 to 4 gates with either congruent or conflicting

[32] In sentences with two prenuclear prosodic constituents corresponding to overt subjects and verbs.

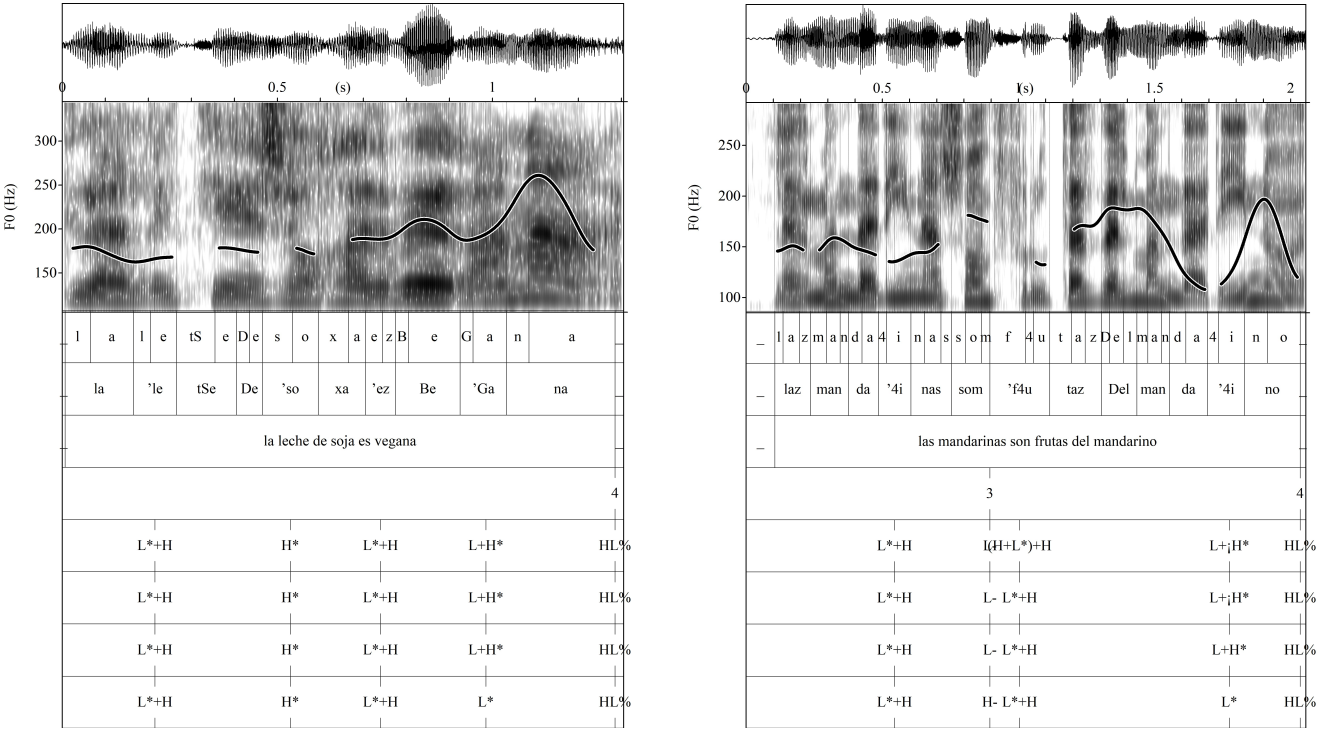


Figure 6.5: Disagreement between Eti_ToBI (tier 5–7) and manual (tier 8) annotation of a low-rise-fall.

cues. While isolated low rises in gate I (on the subject) allow hearers to detect declaratives with 100% accuracy, and high rises in gate I allow question identification with 75% accuracy, conflicting stimuli show that gate II (the verb) overrides cues in gate I and III. Moreover, gate IV overrides all previous gates. The fact that gate I cues can be easily overwritten seems unproblematic in the light of Spanish pro-drop syntax. On the other hand, the primacy of gate II over gate III deserves special attention, given that gate III contains the nuclear pitch accent. Face (2007) discusses the examples neither in terms of syntactic constituents nor of ToBI labels. Yet the higher scaling of the gate I rise in interrogatives, together with the absence of any rising pitch accents after the initial rise, could be seen as an argument in favor of an analysis in terms of intermediate $(\text{S})_{H-}(\text{VO})_{L*H\%}$ phrasing.

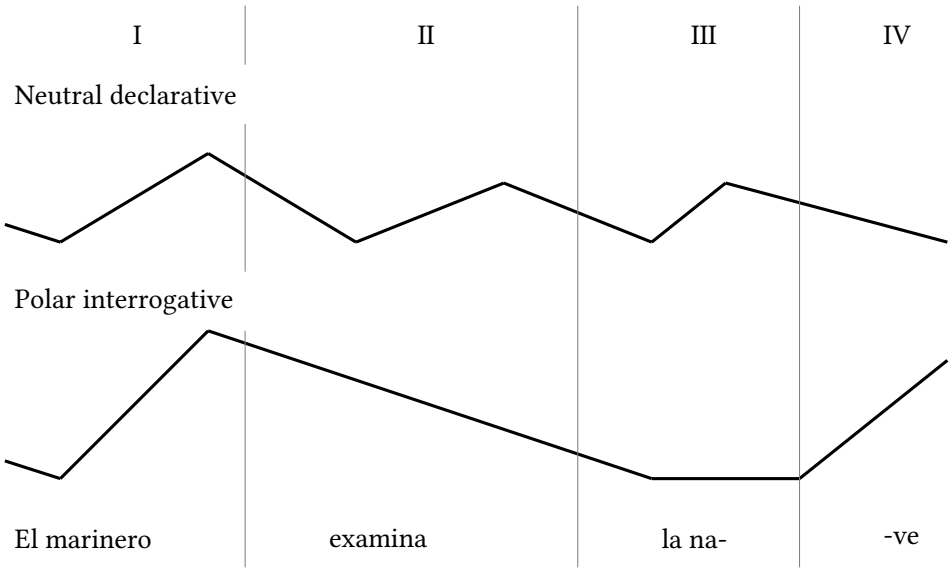
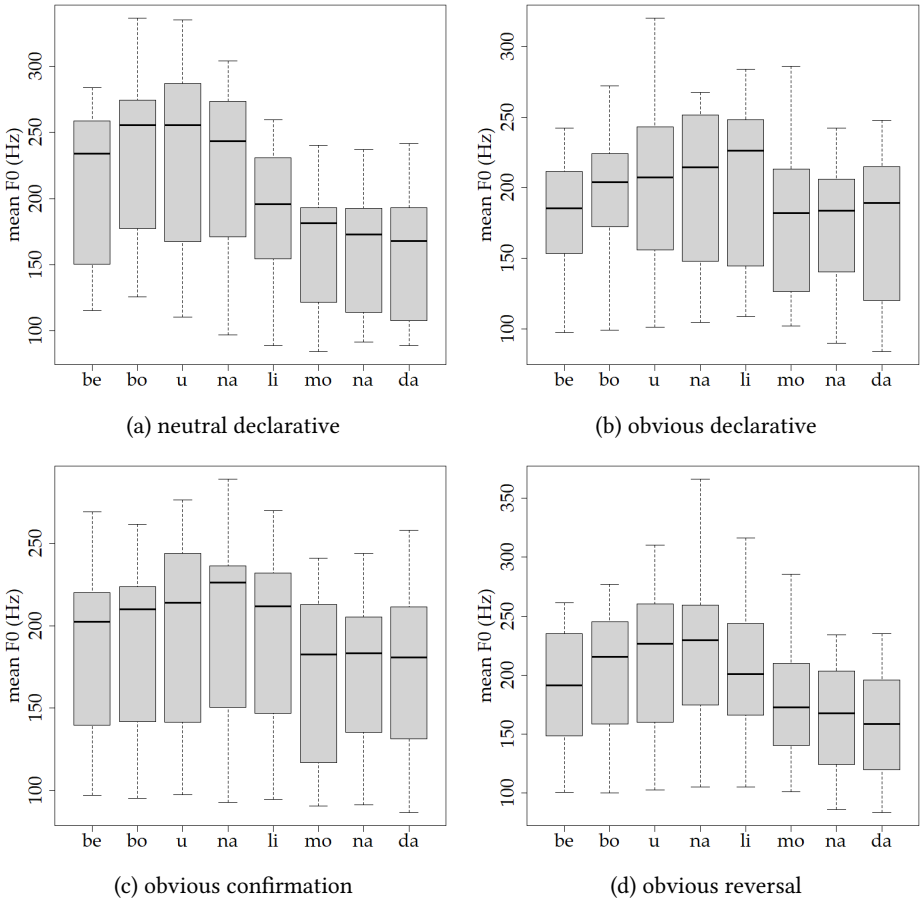


Figure 6.6: Gated perspective on declaratives and interrogatives.

While our findings for obvious confirmations share the L* H% nuclear contour of interrogatives, they differ in that they lack an initial F_0 peak in gate I. Rather, the first peak is reached right before the nuclear pitch accent, which is the end of gate II or the beginning of gate III. $(\text{SV})_{H-}(\text{O})$ phrasing is far from uncommon in Spanish declaratives. $(\text{V})_{H-}(\text{O})$ phrasing is even more common, given that covert subjects are the norm in a variety of contexts. The present experiment did not test for interrogative intonation. But comparison between neutral declarative and obvious intonation shows that even in VO sentences, there is still a differ-

ence in alignment of the prenuclear peak. Figure 6.7 compares the distribution of mean F_0 values (in Hz) over the syllables in the sentence *Bebo una limonada* between neutral declaratives, obvious declaratives, obvious confirmations, and obvious reversals. Figure 6.7 takes the 18 realizations of the sentence obtained in each experimental condition and presents a boxplot for each syllable showing the quartiles of the distribution of mean F_0 values measured on the respective syllabic position. Mean F_0, while too coarse a measure to differentiate intra-syllabic tonal movement, can give us an idea of prolonged prenuclear pitch movements spanning various syllables.



(a) neutral declarative

(b) obvious declarative

(c) obvious confirmation

(d) obvious reversal

Figure 6.7: Boxplots of mean F_0 (Hz) for each syllable in *Bebo una limonada* according to condition.

If we follow the trajectory of the median value for each distribution, we see that both neutral and obvious conditions include initial rises. The crucial difference between Figure 6.7a on the one hand, and Figure 6.7b,c,d on the other hand, can be observed in the differences between mean F_0 values on the syllables 2 /bo/ and 4 /na/. Subtracting the mean F_0 values on syllable 2 /bo/ from the value on syllable 4 /na/, we can see that syllable 4 /na/ is significantly higher than syllable 2 /bo/ in all obvious contexts, but not in neutral declarative contexts (Figure 6.8). A Kruskal–Wallis test with condition as independent variable and difference in mean F_0 between syllable 4 /na/ and 2 /bo/ as dependent variable shows a significant effect [$H(3) = 24.648$, $p < 0.0001$]. Post hoc comparisons of the mean ranks between groups are significantly different when comparing the neutral declarative condition with all three obvious conditions.[33] However, differences between obvious conditions are not significant. In other words, the rise ends at the boundary between verb and direct object in the neutral declarative condition, but continues at least two syllables further into the following constituent in obvious conditions.

We can also see in Figure 6.7 that the fall from the initial peak in neutral declaratives occurs throughout a three-syllable window (4 /na/, 5 /li/, 6 /mo/). In obvious conditions, on the other hand, it is more abrupt and initiates only after syllable 4 /na/ in obvious reversals and even after syllable 5 /li/ in obvious declaratives and confirmations. Subtracting the mean F_0 values on syllable 5 /li/ from the value on syllable 4 /na/, we can see that syllable 4 /na/ is significantly higher than syllable 5 /li/ in neutral declarative contexts, but not in the three obvious contexts (Figure 6.9). A Kruskal–Wallis test with condition as independent variable and difference in mean F_0 between syllable 4 /na/ and 5 /li/ as dependent variable shows a significant effect [$H(3) = 26.537$, $p < 0.0001$]. Post hoc comparisons of the mean ranks between groups are significantly different when comparing the neutral declarative condition with all three obvious conditions.[34]

[33] Observed differences from the neutral declarative condition are: 29.43 for obvious declaratives (18.19 critical difference for statistical significance), 25.83 for obvious confirmations (17.64), 26.35 for obvious reversals (17.90). Non-parametric tests were chosen to ensure robust results. Note that Levene's test was non-significant, $F(3, 65) = 0.130$, $p = 0.94$, indicating homogeneity of variance, and Shapiro-Wilk test showed significant non-normality only for the obvious reversal subgroup, $W = 0.64$, $p < 0.0001$.

[34] Observed differences from the neutral declarative condition are: 34.25 for obvious declaratives (18.16 critical difference for statistical significance), 19.56 for obvious confirmations (17.90), 24.67 for obvious reversals (18.16). Non-parametric tests were chosen to ensure robust results. Note that Levene's test was non-significant, $F(3, 66) = 0.655$, $p = 0.58$, indicating homogeneity of variance, and Shapiro-Wilk test showed significant non-normality only for the obvious reversal subgroup, $W = 0.75$, $p < 0.001$.

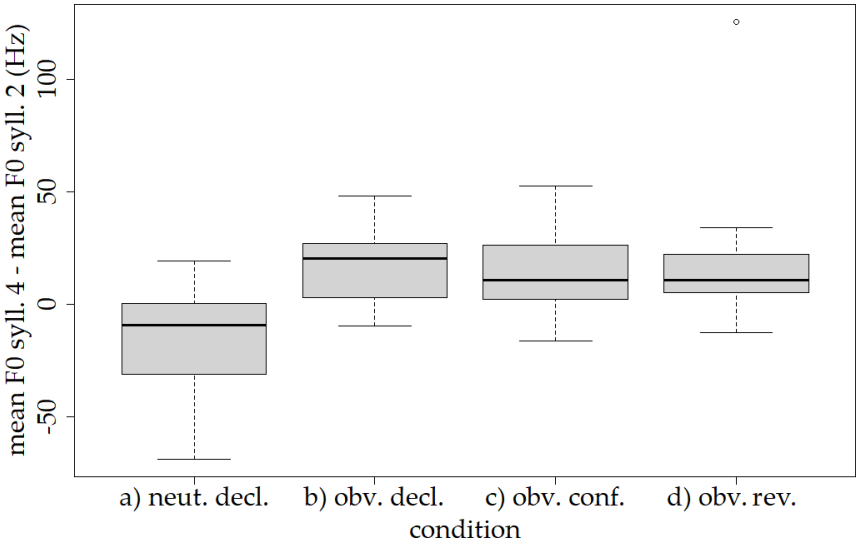


Figure 6.8: Boxplot of difference in mean F_0 between syllable 4 /na/ and 2 /bo/ of *Bebo una limonada* according to condition.

Differences between obvious conditions are again not significant. In other words, the fall from the initial peak occurs before syllable 5 /li/ in the neutral declarative condition, but not in obvious conditions.

Taken together, these observations indicate that even in the absence of an overt subject, speakers create a prolonged prenuclear rise in obvious conditions. Coming back to the gated perspective of intonational cues in Spanish as proposed by Face (2007), these observations can be combined with the results on nuclear configurations to get an idea of the similarities and differences between obvious conditions, neutral declaratives, and interrogatives. Figure 6.10 is an illustration of the similarities and differences between the different obvious conditions, projected onto an overt-subject sentence to allow comparison with Figure 6.6.[35]

What remains unclear, though, is the question if this prolonged prenuclear rise should still be seen as an instance of H– phrasing indicating an (S)$V_{H_}$O prosodic structure, or if the H tone becomes part of an H+L* nuclear pitch accent. Figure 6.11 shows examples in which Eti_ToBI assigns an H+L*, yet comparison with Figure 6.1 and with the examples in §5.2.2.3 suggests L* HL% as the

[35]Figure 6.10b shows a final rise that is less pronounced than the one in Figure 6.6b. This is based on my interpretation of the results obtained in the present experiment. Given that I did not include interrogatives, the postulated difference between upstepped final rises (variously transcribed as L* HH% or L* ¡H%) and less pronounced L* H% in rising declaratives still needs to be tested independently.

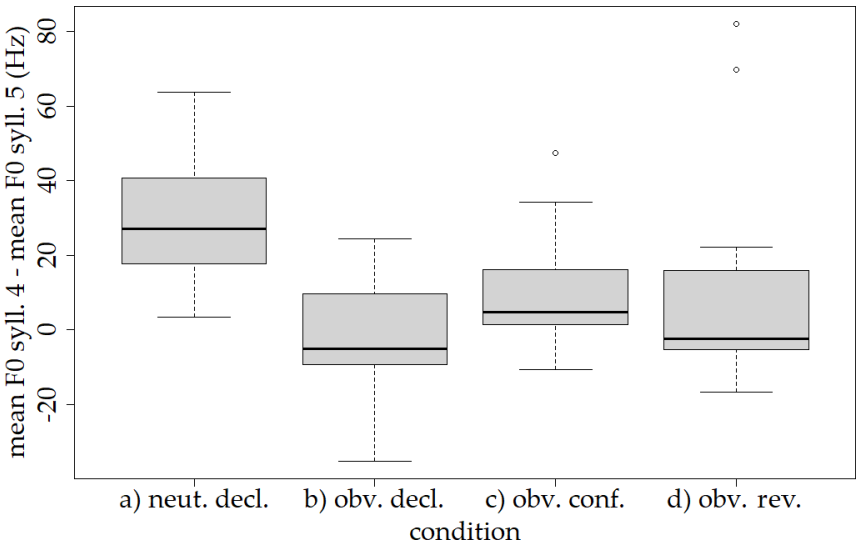


Figure 6.9: Boxplot of difference in mean F_0 between syllable 4 /na/ and 5 /li/ of *Bebo una limonada* according to condition.

nuclear configuration. More fine-grained analysis of the variability in tonal alignment relative to the number of syllables in the last prosodic word is necessary to decide on this issue. I propose to see the univocal association of obvious confirmations with both H+L* X% and L* H% as two transcriptions of one underlying phonological reality.[36]

6.3.5 Remaining puzzles

The process of collapsing the 18 nuclear configuration types visible in Table 6.3 to 9 types in Table 6.4 was based on similarities in the form of the respective configurations and mainly abstracted away from several scaling differences. For three infrequent contours I did not achieve an integration into any broader category and therefore grouped them as *other*: L+H* L!H%, L+¡H* L!H%, and H* L%. Any other assignment would have ignored key parts of their phonological form. L+H* L!H% and L+¡H* L!H% share a high final boundary with L* H%, L* !H%, and L* L!H%. Yet they differ in the presence of a rising pitch accent. H* L% is the only configuration with an H* pitch accent. Moreover, there is only one case of congruent automatic and manual H* L% labeling among a total of 11 automatic and 3 manually assigned labels (Table 6.2).

[36]Note that Table A.1 associates H+L* L% with insistence. The problem laid out in this section probably pertains to this analysis as well.

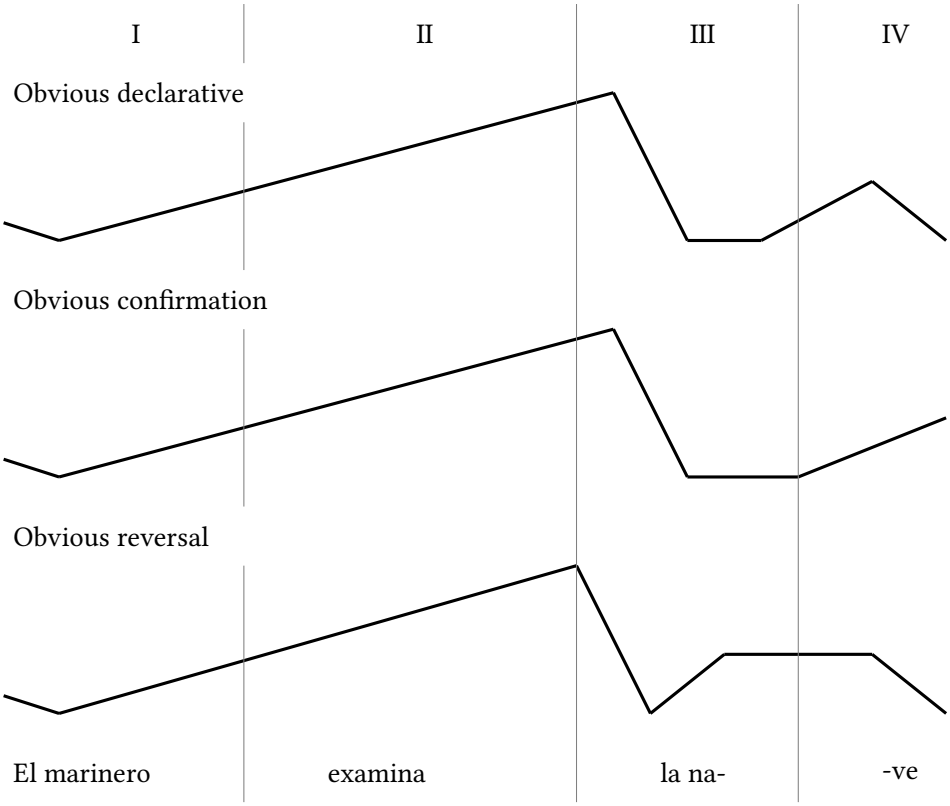


Figure 6.10: Gated perspective on obvious declaratives.

The relatively low frequency of these contours, together with a considerable degree of inconsistency between automatic and manual annotation, could lead us to dismiss them as artifacts of phonetic measurement. Yet there are some clear examples in which not only phonetic measurement and visualization, but also auditive impression indicate possible additional meaning encoded in the intonation. Figure 6.12 show examples that have received congruent manual and automatic annotation as rise-fall-rises. While scaling differences are apparent, the overall contours are quite similar.

We should bear in mind that, according to Hualde & Prieto (2015) (see Table A.1 in Appendix A), L+H* L!H% is the nuclear configuration for statements of the obvious. While our data indicates that the picture is much more complex, the one reliable finding we can state about the rise-fall-rise contour is that it did not occur in mirative contexts or on *wh*-exclamatives (Table 6.4). And the few instances of rise-fall-rises in nuclear contexts can be attributed to an ambiguous elicitation

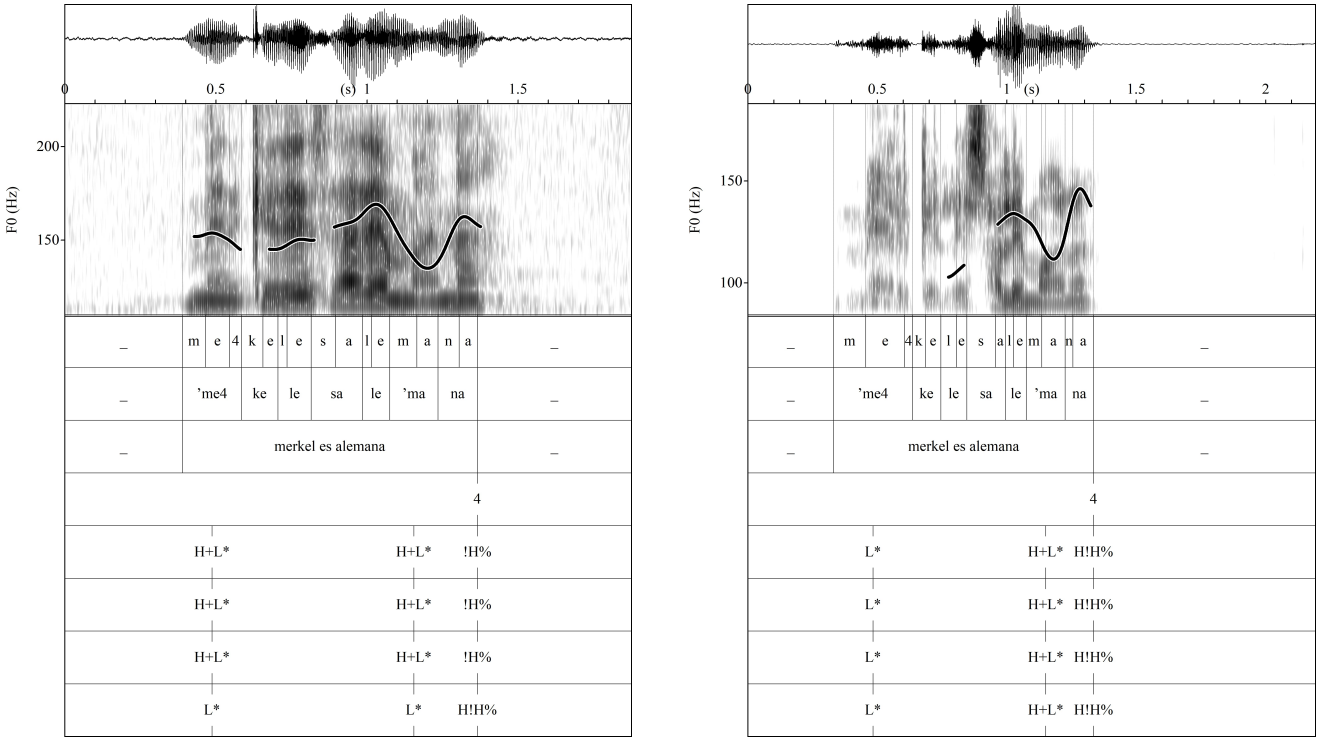
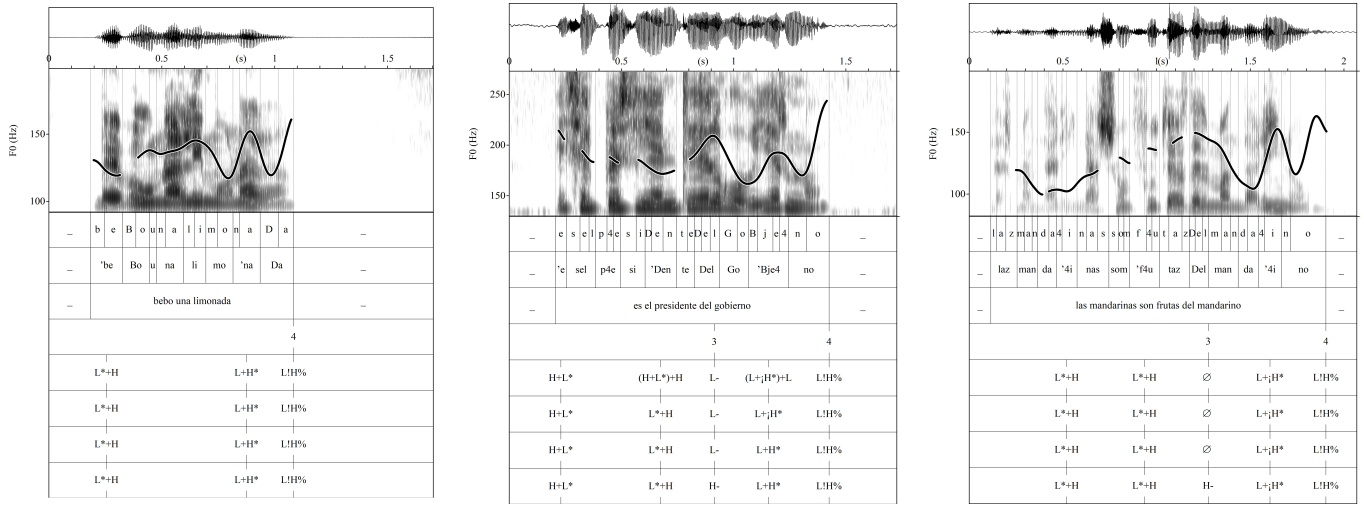


Figure 6.11: Eti_ToBI (tier 5–7) and manual (tier 8) annotation of H before L*.



(a) (b) (c)

Figure 6.12: Eti_ToBI (tier 5–7) and manual (tier 8) annotation of rise-fall-rises.

context (206) that triggered obvious interpretation in several participants due to the expectability of the response.[37] Elicitation context (206), while clearly a non-optimal stimulus from the perspective of the intended neutral declarative condition, is also particularly informative about the degree to which obviousness differs not only in terms of prosodic form, but also communicative intention. When confronted with the voice of an interlocutor that has already earned a "reputation" for asking questions about propositions that necessarily follow from shared background knowledge, contextual information about reduced knowledge about a certain topic (Spanish politics) is insufficient for some participants to allow for a prosodically neutral answer. From a methodological perspective, we can conclude that a dialogical setup with a pre-recorded interlocutor should therefore ideally record a different voice for each stimulus.[38]

(206) Hablas con una amiga tuya que ha vivido parte de su vida en otro país y por eso no puede saber todos los detalles sobre la política de España. Ella tiene una pregunta.

'You're talking to a friend of yours who has lived part of her life in another country and therefore cannot know all the details of Spanish politics. She has a question.'

A: Oye, tengo una pregunta. 🔊
'Listen, I have a question.'

B: **Sí, dime.**
'Yes, tell me.'

A: ¿Quién es Pedro Sánchez? 🔊
'Who's Pedro Sánchez?'

B: **Es el presidente del gobierno.**
'(He) is the prime minister.'

A fine-grained perceptual investigation seems necessary to check for the amount of semantic overlap between the rise-fall-rise contour and the low-rise-fall contour. Similarly, the gated perspective on obvious declaratives put forward

[37] When asked about their satisfaction with their performance in enacting the scene, some participants noted that the context gave conflicting cues by having the interlocutor be from Spain and therefore giving grounds to a reply that indicates the obviousness of the response. The fact that participants had to enact two turns might have overcharged their capacity to still remember the contextual detail of reduced knowledge about Spanish politics when enacting the target turn.

[38] It also seems as if shared socio-indexical features triggers an assumption of shared background knowledge difficult to erase via contextual information.

in Figure 6.10 should be tested in an experimental setup that also includes the declarative and interrogative contour shown in Figure 6.6, ideally with both SVO and VO syntax given the marked status of overt subjects in Spanish.

Finally, less symbolic (more iconic) features of marked prosody should also be either investigated or controlled for in perception experiments. Figure 6.13 shows that mean F_0 at the level of the entire utterance follows a progression from obvious confirmations over obvious declaratives, obvious reversals towards mirative declaratives. To put this observation into perspective, the final question I want to answer in the discussion of the results obtained from this production experiment is whether experimental condition significantly affects mean sentence F_0. Since mean sentence F_0 is an absolute rather than a relative measure,[39] we expect the mean sentence F_0 measurements to form a data structure that is nested according to speaker (which is a proxy for speaker baseline or size of the larynx). I tested this assumption by fitting a robust linear mixed model.[40] The variance in the model due to speaker (S^2 = 3132.0; SD = 55.96) greatly exceeds the variance due to condition (S^2 = 245.2; SD = 15.66), so we can expect the effect of condition to be more noticeable than we would expect from Figure 6.13. And in fact the fixed effects shown in Table 6.6 indicate that, apart from *wh*-exclamatives, all conditions differ significantly from neutral declaratives, with mirative declaratives having 27.61 Hz higher mean sentence F_0 on average. On the other hand, all obvious conditions have significantly lower mean sentence F_0 than neutral declaratives.[41]

[39] We do not subtract the mean F_0 value of one syllable from another one in the same utterance, but take the entire utterance.

[40] To ensure that such a complex model was indeed necessary, I first fitted a baseline model (generalized least squares by maximum likelihood) with mean sentence F_0 as intercept (with neither fixed nor random effect) using the `gls` function from the `nlme` package (Pinheiro et al. 2020) following Field et al. (2012: 895–896). I then fitted a linear mixed-effects model by maximum likelihood with random intercepts according to *speaker* using the `lme` function from the `lme4` package (Bates et al. 2015). A −2log-likelihood comparison showed a significant improvement of the model by inclusion of speaker ($\chi^2(1) = 997.893$, $p < 0.0001$). Given this confirmation of nested data structure, I added *condition* as a fixed effect to the model, which again resulted in a significant improvement of the model ($\chi^2(5) = 330.711$, $p < 0.0001$). Standard linear mixed models assume normality of the residuals. A QQ-plot of the model residuals obtained with the `qqmath` function from the `lattice` package (Sarkar 2008), shown in Appendix E, indicated a non-negligible amount of outliers among the residuals, which required a model in which outliers were weighted down according to their robustness as indicated in Figure E.2 in Appendix E. It was fitted with the `rlmer` function from the `robustlmm` package (Koller 2016). Note that results differ only marginally from the non-robust model.

[41] Note that *p*-values are calculated by applying Satterthwaite's approximation from the `lmerTest` package (Kuznetsova et al. 2017) to a non-robust model to obtain approximated degrees of freedom and then using them in combination with the t-values of the robust model.

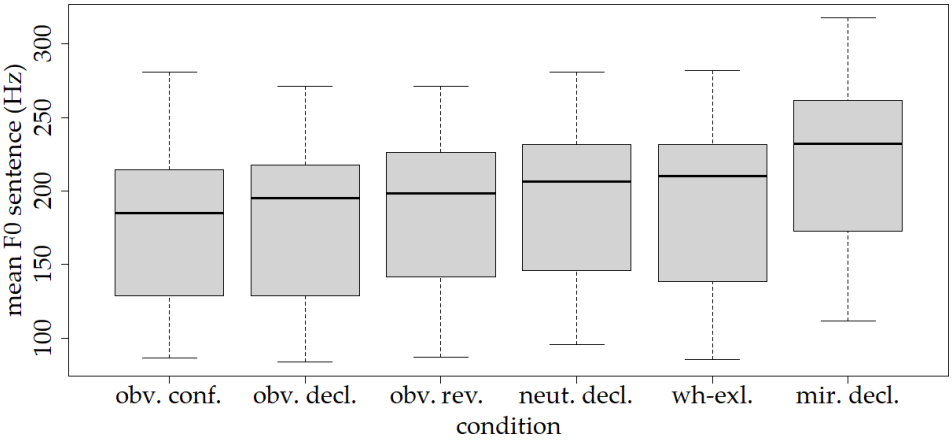


Figure 6.13: Boxplot of mean F_0 at utterance level by condition.

Table 6.6: Fixed effects for robust mixed model of mean sentence F_0 by condition with random effect speaker. Intercept estimate = 193.94, SE = 13.62, t = 14.24.

Predictor (Condition)	Estimate (Coefficient)	SE	t	p
mir. decl.	27.61	2.19	12.63	<0.0001
wh-excl.	−1.41	2.19	−0.64	0.52
obv. decl.	−12.00	2.19	−5.49	<0.0001
obv. conf.	−16.22	2.19	−7.42	<0.0001
obv. rev.	−7.88	2.19	−3.60	<0.001

Table 6.6 once again demonstrates that *wh*-exclamatives in our sample are in many ways prosodically non-distinct from neutral declaratives. The significant effects of condition on the mean F_0 levels indicates that not only intonation proper (in the sense of Ladd 2008: 4), but also prosodic features that are not linguistically structured might serve to disambiguate intonational meaning. We have seen throughout our discussion that mean F_0 at the sentence level misses most of the information necessary to distinguish meaningful prosodic signs. Yet the iconicity of low or high pitch excursion or low or high mean pitch, and the potential of grammaticalization of the Frequency Code, should still be acknowledged (Gussenhoven 2004: 80–84).

> Cross-linguistically, both local and global pitch scaling have often been reported to be significantly different for questions and statements with questions generally exhibiting higher pitch [...] Finnish has been reported to exhibit higher initial pitch values in questions than in statements. [Swedish and Morrocan Arabic] have higher pitch peaks in questions than in corresponding statements [...]. In Hausa, the last lexical high tone in the utterance is raised in questions [, and] Bengali has been reported to have both raised pitch peaks as well as greater pitch excursions for the corresponding rises in questions. (Roettger 2017: 65)

Mean F_0 may well help interlocutors in distinguishing between obvious confirmations and questions in Madrid Spanish.[42] The results obtained from the present production experiment show the amount of structured variability we find in declaratives with narrow final focus by varying only the expectability of an asserted answer from shared background knowledge. Many of the remaining puzzles nevertheless indicate that a full picture can only emerge by including questions into the picture.

[42]Note, however, that an interpretation of higher pitch as a marker of *uncertainty* and questionhood (Gussenhoven 2004: 82) is able to accommodate mirative declaratives.

7 Conclusions

7.1 Recapitulation

I started my investigation of Spanish intonation by noting that the state of the art is inconsistent, not only with regard to the expression of contrastive focus, but also with regard to the kind of meanings encoded by intonation. In Chapter 2, I outlined how different perspectives on prosody are shaped by assumptions about the possible meanings encoded by intonation. Investigations that take the notions of information structure and syntactic constituency as a point of departure will focus on the delimitative functions of prosody. I then argued that Castilian Spanish seems to allow for paradigmatic choices at the level of pitch accents and boundary tones that serve distinctive functions not captured by the notions of focus or contrast. In Chapter 3, I revisited much of the literature on statements of the obvious and *wh*-exclamatives in Spanish. I argued for a perspective that separates syntax from prosody and attributes specific meaning to each of the two. I also argued that the term *wh*-exclamative can lead to the erroneous belief that *wh*-syntax would be responsible for a mirative interpretation. To remedy this, I proposed to acknowledge the mirative import of the L+¡H* L% nuclear configuration in Spanish *wh*-exclamatives, just as in sentences with declarative syntax. I then revisited examples in which a nuance of obviousness was attributed to *si*- and *que*-insubordinates as well as particles such as *claro*, and found that these examples showed either L* HL% or L+H* L!H% intonation. To capture the difference between contrasting stances (disagreement) and contrasts between expectations and propositions, I concluded Chapter 3 with a commitment-based model of dialogue meaning that allows for modal non-at-issue commitments that evaluate the at-issue meaning relative to the input Common Ground of a context update.

Chapter 4 posed a set of empirical questions derived from the previous discussion of the literature on Castilian Spanish intonation and formal pragmatics. Chapter 5 was dedicated to an exploration of a spontaneous dialogue corpus in search of evidence for prosodic variability attributable to the negotiation of expectations about propositions. Taking a corpus based approach was partly motivated by the fact that much of the literature on Castilian Spanish intonation

is based on laboratory speech. An investigation of spontaneous data was necessary to find evidence for the naturalness of supposedly marked intonational forms. Using the association measure Mutual Information, I established modal and polar meaning components of four discourse particles: *hombre*, *claro*, *anda*, and *vaya*. While *claro* and *anda* showed lexical collocations with meanings related to obviousness and surprise, respectively, collocations for *hombre* and *vaya* pointed to additional or divergent meanings, with *hombre* linked to expectational realignment and *vaya* linked to negative bouletic evaluation. An investigation of the prosodic form of turns containing these particles showed that some prosodic contours do not occur with some discourse particles. Notably, L* HL% and L+H* LH% occurred with *hombre* and *claro*, but not with *anda* and *vaya*. Moreover, the L+¡H* L% nuclear configuration is frequent with *anda*, whereas *vaya* occurs mostly with L* L% intonation. I took these results as evidence for a correlation between certain marked context updates, which are specified for relative polarity and include modal non-at-issue commitments, and intonational configurations in the variety of Spanish under investigation.

Given that observations about Castilian Spanish intonation are often based on individual examples, the next task was to check for the quantitative reproducibility of these observations. Chapter 6 therefore developed an audio-enhanced Discourse Completion Task that includes target sentences with neutral assertions, mirative assertions, *wh*-exclamatives, obvious assertions, obvious confirmations, and obvious reversals. Focus position was kept constant and utterance final in all conditions to ensure that prosodic variability would not be due to differences in focus scope. Results for neutral declaratives were consistent with the observations in both Tables 1.1 and 1.2, yielding associations with both L+H* L% and L* L%. The L+¡H* L% contour was significantly associated with mirative conditions, though not with *wh*-exclamatives. This result is consistent with the proposal in §3.1 and should be seen as an indication that *wh*-exclamative syntax is independent of exclamative intonation. The main departure from Table 1.1 concerns statements of the obvious. Here, I found that obvious declaratives reacting to an unbiased alternative question are significantly associated with L* HL% intonation, indicating that the so-called *matiz de obviedad* 'obvious nuance' proposed by Estebas-Vilaplana & Prieto (2008: 277–279) need not combine with the rejection of a previous commitment to trigger such a contour. Instead, obvious reversals in the data are associated with the L+H* HL% contour described as insistent call in Table A.1.

7.2 Open questions and outlook

The experimental setup in Chapter 6 does not test all factors that can have an influence on the intonation of statements. A complete picture would need to include a cross-classification of a much larger set of provocation types (assertive, inquisitive, biased) with different response types (assertion, confirmation, reversal), different evaluative commitments (necessity and impossibility of the at-issue commitment), and different accessibility relations (epistemic, bouletic, deontic, etc.).

What remains valid is that we need a "full integration of intonational meaning into dynamic and multidimensional models of meaning" (Prieto 2015: 371) to be able to answer the questions surrounding intonational form. Results for the interplay between obviousness and relative polarity indicate that my model, while dynamic, still does not incorporate a sufficient number of dimensions. The fact that obvious assertions differ from obvious confirmations in the choice of boundary tone reminds us that not only the expectability of a commitment and (dis)agreement about a commitment, but also the epistemic gradient (Heritage 2012: 32) between interlocutors has an impact on the nuclear intonation of Spanish utterances. Obvious assertions and obvious reversals end on a low target, whereas obvious confirmations end high. This renders their nuclear intonation similar to that of polar questions, which differ in prenuclear peak alignment.

Standard questions are defined by "ignorance on the part of the speaker and a presumption of knowledge on the part of the addressee" (Dayal 2016: 289). While none of the categories investigated here include ignorance on the part of the speaker, elicitation contexts for obvious confirmations may trigger a presumption of knowledge on the part of the addressee.[1] Dayal (2016: 284) assumes that such a speech act will become a "higher order assertion, one which taps into the very obviousness of the answer". In other words, the non-at-issue commitment might be elevated to at-issue relevance, prompting an explicit negotiation of expectations. In pursuing an account of intonational variation in declaratives, I have left much of the variability within questions unaccounted for. I hope that some of the notions and methods developed here will help future endeavors to include questions into the broader picture. Importantly, production experiments and corpus investigations should remain conscious of the *Provocation-Response Nexus*, which requires us to situate every dialogical turn in a context that takes into account previous conversational steps as well as the amount of shared assumptions between interlocutors.

[1] As opposed to the presumption that p should be entailed from the Common Ground.

A remaining puzzle concerning declaratives is the role of the L+H* L!H% contour in Madrid Spanish. Even in a production experiment with 348 contexts eliciting obvious statements, this contour is marginally too infrequent to statistically associate it with obviousness. Nevertheless, it does occur in both natural data and laboratory speech. An investigation via perception experiments would be the logical next step to address this issue. The gated perspective on prolonged prenuclear rises in obvious statements presented in Figure 6.10 is another result that should be subjected to a gated perception experiment of the sort used in Face (2007), ideally in comparison with the perception of polar interrogatives. As we have seen in §6.3.5, the stimuli design for such an experiment will have to take mean sentence F_0 into account, pointing to the possibility that iconic strategies exploiting the Frequency Code (Gussenhoven 2004) help speakers disambiguate between the possible functions of prenuclear rises in Castilian Spanish.

The investigation of intonational meaning in Spanish is often hampered by the finding that "the linguistic code may allow for what appear to be one-to-many mappings between meaning and intonational form, so that slightly or radically different contours may express the same meaning; conversely, the same contour may also serve to express a number of different meanings" (Hualde & Prieto 2015: 390). Intonational form-function mappings are variable in the sense that categorically definable phonological events associate only probabilistically with specific functions, but they can also show gradient variability in the sense that a phonetic parameter is modulated gradually so as to encode gradual changes in (scalar) meaning. To make matters worse, "often it remains unclear where to draw the line between gradual and discrete distinctions" (Roettger 2017: 145).

What I have tried to show is that part of the apparent variability found in studies on the intonation of categories such as focus (Face 2001b, 2002, 2003, Gabriel 2007) or insubordinates (Elvira-García 2016) can be explained by a dynamic and multidimensional model of meaning in discourse. Likewise, variation in the interpretation of written *wh*-exclamatives (Grosz 2012) can be due to an underspecification of the prosodic dimension by punctuation. The finding in §6.2 that automatic and manual annotation of a corpus of highly marked intonational forms can reach a substantial level of inter-rater agreement shows that variability in Castilian Spanish intonation does not impede investigation. And finally, the amount of (bi-)univocal associations between nuclear configurations and experimental conditions presented in Table 6.5 shows that probabilistic association is far from random. Most importantly, though, we have seen that the paradigmatic choice between different nuclear configurations cannot be reduced to the presence or absence of (contrastive) focus and the question-answer dichotomy. Modal

evaluative meanings such as mirativity and obviousness are associated with specific nuclear configurations and can vary independently of (dis)agreement between interlocutors. Taking these kinds of intonational meaning into account is important for understanding the paradigmatic choices at the level of both pitch accents and boundary tones in Spanish. Prosody both reflects and implements the pragmatic objectives of the interlocutors (Martín Butragueño 2015: 260). The Stalnakerian idea that interlocutors strive to reduce the context set by agreeing on shared assumptions that exclude possibilities certainly captures the main driving force behind much of conversation. Yet the realm of possibilities can further be structured. Such a perspective on the notion of Common Ground leads to a view "that also takes into account the change of epistemic and deontic stances towards propositions through time" (Reich 2018: 204). The dimension of time was already integrated into modality through the notion of a stereotypical ordering source by Kratzer (1981). Dynamic and commitment based perspectives on discourse meaning give it an even more central role. It's about time.

Appendix A: Previous findings on Castilian intonation

Table A.1: Previous findings on nuclear intonation by sentence type in Castilian Spanish according to Prieto et al. (2010–2014) and Estebas-Vilaplana & Prieto (2010) with revised notation by Hualde & Prieto (2015). Indices for convenience of reference.

Sentence type	NI	Index
Statements		
Broad focus statements	L* L% / L+H* L%	a/k
Contrastive focus/contradiction statements	L* HL%	b
Exclamative statements	L+¡H* L%	c
Dubitative/uncertainty statements	L+¡H* !H%	d
Statement of the obvious	L+H* L!H%	e
Insistent explanation	H+L* L%	f
Yes-no questions		
Information seeking yn-questions	L* (H)H%	g
Confirmation seeking yn-questions	H+L* L%	f
Imperative yn-questions	H+L* L%	f
Wh-questions		
Information seeking wh-questions	L* L%	a
Imperative wh-questions	H+L* L%	f
Echo questions		
Echo yn-questions	L+¡H* L%	c
Echo wh-questions	¡H* L% / L* HH%	h
Counterexpectational (wh-)echo questions	L+H* HH%	i
Imperatives		
Order	L+H* !H%	j
Request	L+H* L%	k
Vocatives		
Vocative chant	L+H* !H%	j
Insistent call	L+H* HL%	l

Appendix B: Supplementary materials

Chapter 1

Example 1: https://osf.io/9wfsq/, https://osf.io/wk46m/, https://osf.io/ghcbu/

Example 2: https://osf.io/xcvfh/

Example 3: https://osf.io/5z7f4/

Example 4: https://osf.io/kqvn2/

Example 5: https://osf.io/jbuv4/

Example 6: https://osf.io/97bys/

Example 7: https://osf.io/627hp/

Example 8: https://osf.io/cjbev/

Chapter 3

Figure 3.5:

- http://prosodia.upf.edu/atlasentonacion/enquestes/espanol/madrid/frases/mp3/10.mp3
- http://prosodia.upf.edu/atlasentonacion/enquestes/espanol/madrid/index.html

Figure 3.8: http://www.dpde.es/#/entry/hombre1

Figure 3.9: http://www.dpde.es/#/entry/hombre2

Figure 3.10 & Figure 3.12: http://www.dpde.es/#/entry/claro1

Chapter 5

Figure 5.1: https://osf.io/uv86f/

Figure 5.2: https://osf.io/8f4sn/

Figure 5.3: https://osf.io/56v78/

Figure 5.4: https://osf.io/5qgxy/

Figure 5.5: https://osf.io/5paqg/

Figure 5.6: https://osf.io/4rknm/

Figure 5.7: https://osf.io/9r84u/

Figure 5.8: https://osf.io/fty73/

Figure 5.9: https://osf.io/y38tf/

Figure 5.10: https://osf.io/tmzs7/

Figure 5.11: https://osf.io/96fnk/

Figure 5.12: https://osf.io/38q4m/

Figure 5.13: https://osf.io/2q7ht/

Figure 5.14: https://osf.io/9e73y/

Figure 5.15: https://osf.io/n7g4c/

Figure 5.16: https://osf.io/qbnc6/

Figure 5.17: https://osf.io/brn9z/

Figure 5.18: https://osf.io/d368j/

Figure 5.19: https://osf.io/v97bu/

Figure 5.20: https://osf.io/9bvg4/

Figure 5.21: https://osf.io/46jmb/

Figure 5.22: https://osf.io/ut5rc/

Figure 5.23: https://osf.io/jwtbf/

Figure 5.24: https://osf.io/kqvn2/

Figure 5.25: https://osf.io/pvwf2/

Figure 5.26: https://osf.io/ptc69/

Figure 5.27: https://osf.io/cjbev/

Figure 5.28: https://osf.io/c4zrk/

Figure 5.29: https://osf.io/jzn9c/

Figure 5.30: https://osf.io/d862v/

Figure 5.31: https://osf.io/kvt7j/

Figure 5.32: https://osf.io/r9juv/

Chapter 6

Example 200: https://osf.io/f6m5g/

Example 201: https://osf.io/nxywh/, https://osf.io/bgezq/

Example 202: https://osf.io/ghxn2/

Example 203: https://osf.io/bx2hw/

Example 204: https://osf.io/juzy8/

Example 205: https://osf.io/ctxg3/

Figure 6.1a: https://osf.io/e8qv9/

Figure 6.1b: https://osf.io/x86ad/

Figure 6.1c: https://osf.io/25bvx/

Figure 6.2a: https://osf.io/pwgh5/

Figure 6.2b: https://osf.io/9wfsq/

Figure 6.3a: https://osf.io/uwmjs/

Figure 6.3b: https://osf.io/6y2ud/

Figure 6.5a: https://osf.io/cu62f/

Figure 6.5b: https://osf.io/wm6h9/

Figure 6.11a: https://osf.io/t64sz/

Figure 6.11b: https://osf.io/4tdev/

Figure 6.12a: https://osf.io/s8n9u/

Figure 6.12b: https://osf.io/xc8ay/

Figure 6.12c: https://osf.io/p9rq7/

Example 206a: https://osf.io/whnsu/

Example 206b: https://osf.io/3uw7x/

Appendix C

Example 207: https://osf.io/jpx7c/

Example 208: https://osf.io/acrdh/, https://osf.io/a2xsu/

Example 209: https://osf.io/bsyq3/

Example 210: https://osf.io/vf4m2/

Example 211: https://osf.io/m6q4j/

Example 212: https://osf.io/6te3x/

Example 213: https://osf.io/whnsu/, https://osf.io/3uw7x/

Example 214: https://osf.io/6ytnk/, https://osf.io/92hp4/

Example 215: https://osf.io/uz4dc/

Example 216: https://osf.io/zan4g/

Example 217: https://osf.io/qjt98/

Example 218: https://osf.io/3mxry/

Example 219: https://osf.io/f6m5g/

Example 220: https://osf.io/nxywh/, https://osf.io/bgezq/

Example 221: https://osf.io/ghxn2/

Example 222: https://osf.io/bx2hw/

Example 223: https://osf.io/juzy8/

Example 224: https://osf.io/ctxg3/

Example 225: https://osf.io/yvxm8/

Example 226: https://osf.io/6n8ep/, https://osf.io/quhsx/

Example 227: https://osf.io/awczv/

Example 228: https://osf.io/v63xk/

Example 229: https://osf.io/ay4n7/

Example 230: https://osf.io/6bzmt/

Example 231: https://osf.io/5mf47/, https://osf.io/qm5x6/, https://osf.io/svjb6/

Example 232: https://osf.io/574vu/

Example 233: https://osf.io/rbm56/, https://osf.io/y47r3/

Example 234: https://osf.io/h23ce/

Example 235: https://osf.io/rk4ue/

Example 236: https://osf.io/x3jse/

Example 237: https://osf.io/pgj25/, https://osf.io/cx62t/, https://osf.io/34n76/

Example 238: https://osf.io/hb5ty/, https://osf.io/dth58/

Example 239: https://osf.io/c6qgx/

Example 240: https://osf.io/c5f26/

Example 241: https://osf.io/4u3tc/

Example 242: https://osf.io/c9zym/

Appendix C: Stimuli

(207) Una camarera te pregunta qué quieres beber.
'A waitress asks you what you want to drink.'
A: ¿Qué te pongo? 🔊
'What can I bring you?'
B: **Bebo una limonada.**
'I'm having a lemonade.'

(208) Te has pedido una caipiriña en un bar. Una amiga tuya se ha pedido una limonada. Cuando llegan las bebidas, te das cuenta que parecen ser iguales. Pruebas las dos y son iguales. Esto no te lo esperabas.
'You've ordered a caipirinha at a bar. A friend of yours has ordered a lemonade. When the drinks arrive, you notice that they look the same. You try them both and they actually are the same. You didn't expect that.'
B: **Tienen pinta similar. Es un poco raro, ¿no?**
'They seem similar. That's a little weird, right?'
A: Pues, da igual. El tuyo contiene alcohol. Esto no se ve. ¡Salud! 🔊
'Well, no matter. Yours has alcohol in it. That can't be seen. Cheers!'
B: **¡Salud!**
'Cheers!'
...
A: ¿Y qué tal tu caipiriña? 🔊
'And how's your caipirinha?'
B: **¡Es una limonada!**
'(It) is a lemonade!'

(209) Una amiga te ofrece una limonada. Normalmente no te gusta mucho la limonada, pero esta es fantástica. Díselo a tu amiga.
'A friend offers you a lemonade. Normally you don't like lemonade that much, but this one is fantastic. Tell your friend.'

A: ¡Toma! Es mi nueva receta.
'Here! That's my new recipe.'

B: **¡Qué buena limonada!**
'What a great lemonade!'

(210) En tu café preferido siempre bebes limonada. Llega la camarera que te conoce desde hace años y que es buena amiga tuya. Te pregunta qué quieres beber, aunque debería saberlo. Dile que bebes limonada, y hazle notar francamente que debería saberlo.

'You always drink lemonade in your favorite cafe. The waitress arrives who has known you for years and is a good friend of yours. She asks you what you would like to drink, even though she should know. Tell her that you drink lemonade, and make her be aware openly that she should know that.'

A: ¿Qué te pongo?
'What can I bring you?'

B: **Bebo una limonada.**
'I'm having a lemonade.'

(211) Estás en una fiesta con un grupo de amigos y te encargaste de llevarlos en el coche. Una amiga te ve bebiendo algo que podría ser una caipiriña. Aunque todo el mundo sabe que no bebes ni gota cuando conduces, te pregunta si es una limonada. Dile que bebes una limonada, y hazle notar francamente que debería saberlo.

'You're at a party with a group of friends and you are the designated driver. A friend sees you drinking something that could be a caipirinha. Even though everybody knows that you don't drink even a single drop when driving, she asks if it's a lemonade. Tell her that you're having a lemonade, and make her be aware openly that she should know that..'

A: Es una limonada lo que tomas, ¿verdad?
'You're having a lemonade, right?'

B: **Bebo una limonada. (¿Qué va a ser si no?)**
'I'm having a lemonade. (What else should it be?)'

(212) Estás en una fiesta con un grupo de amigos y te encargaste de llevarlos en el coche. Un amigo te ve bebiendo una limonada, pero piensa que es una caipiriña, aunque todo el mundo sabe que no bebes ni gota cuando conduces. Dile que bebes una limonada, y hazle notar francamente que debería saberlo.

'You're at a party with a group of friends and you are the designated driver. A friend sees you drinking a lemonade, but thinks that it's a caipirinha, even though everybody knows that you don't drink even a single drop when driving. Tell her that you're having a lemonade, and make her be aware openly that she should know that..'

A: Es una caipiriña lo que tomas, ¿verdad? 🔊

'You're having a caipirinha, right?'

B: **Bebo una limonada.**

'I'm having a lemonade.'

(213) Hablas con una amiga tuya que ha vivido parte de su vida en otro país y por eso no puede saber todos los detalles sobre la política de España. Ella tiene una pregunta.

'You're talking to a friend of yours who has lived part of her life in another country and therefore cannot know all the details of Spanish politics. She has a question.'

A: Oye, tengo una pregunta. 🔊

'Listen, I have a question.'

B: **Sí, dime.**

'Yes, tell me.'

A: ¿Quién es Pedro Sánchez? 🔊

'Who's Pedro Sánchez?'

B: **Es el presidente del gobierno.**

'(He) is the prime minister.'

(214) Una amiga te invita a una fiesta en una fundación. Un hombre en el bar parece estar borracho. Dice que es el presidente. Tu amiga pregunta si es el presidente de la fundación, y vas al bar para hablarle y a lo mejor llamarle un taxi. Cuando llegas, te das cuenta de que es el presidente del gobierno. Esto no te lo esperabas.

'A friend invites you to a party at a foundation. A man at the bar seems to be drunk. He says that he's the president. Your friend asks if he's the president of the foundation, and you go to the bar to talk to him and perhaps call him a cab. When you arrive, you become aware that he's the prime minister. You didn't expect that.'

A: ¿Viste al tipo este? Parece ser el presidente de la fundación.

'Did you see that guy? He seems to be the president of the foundation.' 🔊

B: **Déjame ver si le puedo ayudar …**
'Let me see if I can help him …'
…

A: ¿Y le hablaste? ¿De verdad es el presidente de la fundación?
'And did you talk to him? Is he really the president of the foundation?'

B: **¡Es el presidente del gobierno!**
'(He) is the prime minister!'

(215) Sale en las noticias un escándalo de corrupción. Le dices a una amiga:
'There's a corruption scandal on the news. You tell a friend:'

B: **¡Qué horror de gobierno!**
'What a horrible government!'

A: Sí, son unos sinvergüenzas.
'Yes, they're shameless.'

(216) En la tele ponen una entrevista con el presidente del gobierno de España. La amiga que está mirando la tele contigo siempre se cree la más lista de todos. Ella te pregunta quién es, aunque todo el mundo lo conoce. Dile quien es y hazle sentir que debería saberlo.
'They're showing an interview with the prime minister of Spain on TV. The friend who's watching TV with you always thinks of herself as the smartest of all. She asks you who is it, even though everybody knows him. Tell her who he is, and give her the feeling that she should know that.'

A: ¿Quién es este hombre?
'Who is that man?'

B: **Es el presidente del gobierno. ¿Cómo que no lo conoces?**
'(He) is the prime minister. How come you don't know him?'

(217) En la tele ponen una entrevista con el presidente del gobierno de España. La amiga que está mirando la tele contigo siempre se cree la más lista de todos. Ella te pregunta si sabes quién es, aunque todo el mundo lo conoce.
'They're showing an interview with the prime minister of Spain on TV. The friend who's watching TV with you always thinks of herself as the smartest of all. She asks you if you know who it is, even though everybody knows him.'

A: Sabes quién es, ¿verdad?
'You know who he is, right?'

B: **Es el presidente del gobierno.**

'(He) is the prime minister.'

(218) En la tele ponen una entrevista con el presidente del gobierno de España. La amiga que está mirando la tele contigo siempre se cree la más lista de todos. Ella dice que no sabes quién es, aunque todo el mundo lo conoce.

'They're showing an interview with the prime minister of Spain on TV. The friend who's watching TV with you always thinks of herself as the smartest of all. She says you don't know who it is, even though everybody knows him.'

A: No sabes quién es ¿verdad?

'You don't know who he is, right?'

B: **Es el presidente del gobierno. ¿Cómo no lo voy a conocer?**

'(He) is the prime minister. How would I not know him?'

(219) Con una amiga estás resolviendo un crucigrama. Te pregunta de dónde viene Adidas.

'You're solving a crossword puzzle with a friend. She asks you where Adidas is from.'

A: ¿Oye, de dónde es Adidas?

'Listen, where is Adidas from?'

B: **Adidas es una empresa alemana.**

'Adidas is a German company.'

(220) Con una amiga estás resolviendo un crucigrama. Buscáis una empresa alemana de automóviles con cuatro letras. Queréis poner Audi, pero no entra con el resto del crucigrama. Buscas en línea y te das cuenta de que Seat forma parte del grupo Volkswagen. Esto no te lo esperabas.

'You're solving a crossword puzzle with a friend. You're looking for a German automotive company with four letters. You want to write down Audi, but it doesn't fit with the rest of the puzzle. You search online and notice that Seat is part of the Volkswagen Group. You didn't expect that.'

A: Audi no entra. Y Seat no puede ser.

'Audi doesn't fit. And it can't be Seat.'

B: **Espera, lo busco en internet.**

'Wait, I'll check online.'

A: Vale.

'OK.'

B: **¡Seat es una empresa alemana!**
'Seat is a German company!'

(221) Con una amiga quieres ir a Múnich para el Oktoberfest. Cuando queréis ir al aeropuerto, ella llega vestida de trajes típicos bávaros, con sombrero y todo.
'With a friend, you want to go to Munich for the Oktoberfest. When you want to go to the airport, she arrives dressed in typically Bavarian clothes, with a hat and all.'

A: ¿Te gusto así?
'Do I look good to you like this?'

B: **¡Qué buena alemana!**
'What a great German!'

(222) Sale en las noticias que viene Merkel a Madrid. Una amiga tuya siempre se cree la más lista de todos y se comporta como un verdadero sabelotodo. Te pregunta si es de Inglaterra o de Alemania, aunque todo el mundo lo sabe. Dile de dónde es y hazle sentir que debería saberlo.
'It's in the news that Merkel is coming to Madrid. A friend of yours always thinks she's the smartest of all and behaves like a real know-it-all. She asks if Merkel's from England or Germany, even though everbody knows that. Tell her where she's from and give her the feeling that she should know that.'

A: Oye, ¿Merkel es inglesa o alemana?
'Listen, is Merkel English or German?'

B: **Merkel es alemana.**
'Merkel is German.'

(223) Sale en las noticias que viene Merkel a Madrid. Una amiga tuya siempre se cree la más lista de todos y se comporta como un verdadero sabelotodo. Cuando quiere asegurarse de que Merkel es alemana, le haces sentir que debería saberlo.
'It's in the news that Merkel is coming to Madrid. A friend of yours always thinks she's the smartest of all and behaves like a real know-it-all. When she wants to make sure that Merkel's German, you give her the feeling that she should know that.'

A: Oye, Merkel es alemana, ¿verdad?
'Listen, Merkel is German, right?'

B: **Merkel es alemana.**

'Merkel is German.'

(224) Sale en las noticias que viene Merkel a Madrid. Una amiga tuya siempre se cree la más lista de todos y se comporta como un verdadero sabelotodo. Tu amiga piensa que Merkel es del Reino Unido, aunque todo el mundo sabe que es alemana. Hazle sentir que debería saberlo.

'It's in the news that Merkel is coming to Madrid. A friend of yours always thinks she's the smartest of all and behaves like a real know-it-all. Your friend thinks that Merkel is from Great Britain, even though everybody knows she's German. Give her the feeling she should know that.'

A: Merkel es inglesa, ¿sabes? 🔊

'Merkel is English, you know?'

B: **Merkel es alemana.**

'Merkel is German.'

(225) Con una amiga pasas el día en una finca. Os sentáis debajo de un árbol y ella te pregunta qué tipo de árbol será.

'You spend the day with a friend on an estate. You sit down under a tree and she asks you what kind of tree it might be.'

A: ¿Qué tipo de árbol será? 🔊

'What kind of tree might it be?'

B: **Es un mandarino.**

'(It) is a tangerine tree.'

(226) Con una amiga pasas el día en una finca. Desde lejos observáis tres caballos debajo de unos árboles. Parecen buscar algo en particular, porque no se comen el pasto. Te acercas para ver qué comen, y son mandarinas. Esto no te lo esperabas.

'You spend the day with a friend on an estate. From afar, you observe three horses under some trees. They seem to be looking for something, because they're not eating the grass. You get closer to see what they are eating, and it's tangerines. You didn't expect that.'

A: ¿Qué estarán comiendo ellos? 🔊

'What could it be that they're eating?'

B: **No sé. A ver si me puedo acercar.**

'I don't know. Let's see if I can get closer.'

A: Serán unas hierbas.

'Probably some herbs.'

B: **¡Comen mandarinas!**

'They're eating tangerines!'

(227) Una amiga te hace probar las mandarinas de su jardín. En tu vida has probado mandarinas tan buenas y jugosas.

'A friend lets you try the tangerines from her garden. You've never tasted tangerines this good and juicy.'

A: ¡Prueba estas! A ver si te gustan.

'Try these! Let's see if you like them.'

B: **¡Qué buenas mandarinas!**

'What tasty tangerines!'

(228) Estás haciendo una visita en un jardín botánico con unos amigos. Una amiga te pregunta si las mandarinas son frutas del mandarino o si son frutas jóvenes del naranjo. Hazle sentir que debería saberlo.

'You're visiting a botanical garden with some friends. A friend asks you if tangerines are the fruits of the tangerine tree or young fruits of the orange tree. Give her the feeling that she should know that.'

A: ¿Las mandarinas son frutas del mandarino o son naranjas pequeñas?

'Are tangerines fruits of the tangerine tree or small oranges?'

B: **Las mandarinas son frutas del mandarino.**

'Tangerines are fruits of the tangerine tree.'

(229) Estás haciendo una visita en un jardín botánico con unos amigos. Una amiga quiere asegurarse que las mandarinas son frutas del mandarino. Hazle sentir que debería saberlo.

'You're visiting a botanical garden with some friends. A friend wants to make sure that tangerines are the fruits of the tangerine tree. Give her the feeling that she should know that.'

A: Las mandarinas son frutas del mandarino, ¿verdad?

'Tangerines are fruits of the tangerine tree, right?'

B: **Las mandarinas son frutas del mandarino.**

'Tangerines are fruits of the tangerine tree.'

(230) Estás haciendo una visita en un jardín botánico. Una amiga no cree que las mandarinas son frutas del mandarino. Hazle sentir que debería saberlo.

'You're visiting a botanical garden. A friend doesn't believe that tangerines are fruits of the tangerine tree. Give her the feeling that she should know that.'

A: Las mandarinas son naranjas pequeñas. No son frutas del mandarino, aunque suena similar.

'Tangerines are small oranges. They aren't fruits of the tangerine tree, even though they sound similar.'

B: **Las mandarinas son frutas del mandarino.**

'Tangerines are fruits of the tangerine tree.'

(231) Quieres ir a Bilbao. Cuando sales de la casa, te encuentras con una amiga y ella te pregunta a dónde vas.

'You want to go to Bilbao. Upon leaving your house, you encounter a friend and she asks you where you're going.'

A: ¿Qué tal? ¡Cuánto tiempo!

'How are you? It's been a while!'

B: **Sí, ¿cómo estás? ¿Bien?**

'Yes, how are you? Good?'

A: Muy bien, gracias. ¿A dónde vas?

'Very good, thanks. Where are you going?'

B: **Voy a Bilbao.**

'I'm going to Bilbao.'

A: ¡Qué bonito! Feliz viaje entonces.

'How nice! Have a good trip then.'

(232) Con una amiga vas en tren a Bilbao. En el camino leéis vuestros libros y os dormís sin daros cuenta. Cuando se para el tren, os despertáis. Parecen haber pasado unos pocos minutos y tu amiga pregunta si ya habéis llegado a Burgos. Ves una señal en el andén que pone Bilbao. Esto no te lo esperabas.

'You are going with a friend to Bilbao by train. On the journey you read your books and fall asleep without noticing. When the train stops, you wake up. It seems as if a few minutes have passed and your friend asks if you have arrived at Burgos already. You see a sign on the platform that says Bilbao. You didn't expect that.'

A: ¿Dónde estamos? ¿Es Burgos?
'Where are we? Is it Burgos?'

B: **¡Ya hemos llegado a Bilbao!**
'We have already arrived at Bilbao!'

(233) Una amiga de Bilbao te manda una carta con fotos de tu última visita hace varios años. Sientes mucho no haber vuelto ahí desde hace tanto tiempo y la llamas por teléfono. Ella te pregunta:
'A friend from Bilbao sends you a letter with pictures from your last visit a few years ago. You're sorry not to have been back there for such a long time and you call her on the phone. She asks you:'

A: ¿Y te llegaron las fotos que te mandé?
'And did you receive the fotos I sent you?'

B: **Sí, son una maravilla.**
'Yes, they are wonderful.'

A: Me alegro.
'Happy to hear that.'

B: **¡Qué nostalgia de Bilbao!**
'How I miss Bilbao!'

(234) Una amiga tuya es un sabelotodo que siempre se cree la más lista de todos. Te pregunta en qué ciudad del país vasco está el Museo Guggenheim, aunque todo el mundo sabe que está en Bilbao. Hazle sentir que debería saberlo.
'A friend of yours is a know-it-all who always thinks she is the smartest of all. She asks you in which city of the Basque country the Guggenheim Museum is located, even though everybody knows it. Give her the feeling that she should know that.'

A: ¿En qué ciudad del país vasco está el Museo Guggenheim? ¿Vitoria-Gasteiz o Bilbao?
'In which city of the Basque country is the Guggenheim Museum? Vitoria-Gasteiz or Bilbao?'

B: **Está en Bilbao.**
'(It) is in Bilbao.'

(235) Una amiga tuya es un sabelotodo que siempre se cree la más lista de todos. Quiere asegurarse que el Museo Guggenheim está en Bilbao, aunque todo el mundo lo sabe. Hazle sentir que debería saberlo.

'A friend of yours is a know-it-all who always thinks she is the smartest of all. She wants to make sure the Guggenheim Museum is located in Bilbao, even though everybody knows it. Give her the feeling that she should know that.'

A: El Museo Guggenheim está en Bilbao, ¿verdad?

'The Guggenheim Museum is in Bilbao, right?'

B: **Está en Bilbao.**

'(It) is in Bilbao.'

(236) Una amiga tuya es un sabelotodo que siempre se cree la más lista de todos. Afirma que el Museo Guggenheim está en Vitoria-Gasteiz, aunque todo el mundo sabe que está en Bilbao. Hazle sentir que debería saberlo.

'A friend of yours is a know-it-all who always thinks she is the smartest of all. She states that the Guggenheim Museum is located in Vitoria-Gasteiz, even though everybody knows it is in Bilbao. Give her the feeling that she should know that.'

A: El Museo Guggenheim no está en Bilbao, ¿sabes? Está en la capital, Vitoria-Gasteiz.

'The Guggenheim Musuem is not in Bilbao, you know? (It) is in the capital, Vitoria-Gasteiz.'

B: **Está en Bilbao.**

'(It) is in Bilbao.'

(237) Te invitaron a una barbacoa vegana. Una amiga te llama por teléfono.

'You have been invited to a vegan barbecue. A friend calls you by phone.'

A: Hola, ¿qué tal?

'Hi, how are you?'

B: **Hola querida. ¿Cómo estás?**

'Hi dear. How are you?'

A: Bien, gracias. Escucho que estás con gente. ¿Hacéis una fiesta?

'Good, thanks. I can hear you're with people. Are you having a party?'

B: **Hacemos una barbacoa vegana.**

'We are having a vegan barbecue.'

A: ¡Qué rico!

'How tasty!'

(238) Una amiga y tú van a una barbacoa y traen hamburguesas y cerveza. Cuando llegáis, no hay ni carne ni salchichas. Cuando os preguntáis por qué es así, vuelves a leer la invitación y te das cuenta que es una barbacoa vegana.

'You and a friend are going to a barbecue and you bring hamburgers and beer with you. When you arrive, there is neither meat nor sausages. When you ask yourselves why, you read the invitation again and notice that it is a vegan barbecue.'

A: No veo carne en la mesa.

'I don't see meat on the table.'

B: **¿Estás segura de que era una barbacoa?**

'Are you sure that it was a barbecue?'

A: A ver qué dice la invitación. ¿La tienes aquí?

'Let's see what it says on the invitation. Do you have it with you?'

B: **Sí, espera.**

'Yes, wait.'

…

B: **¡Es una barbacoa vegana!**

'(It) is a vegan barbecue!'

(239) Una tienda en un mercado de alimentos orgánicos vende salsas. Te hacen probar varias. Todas son buenas, pero la vegana es increíble.

'A shop in an organic food market is selling sauces. They let you taste a few. They're all good, but the vegan one is incredible.'

A: ¿Ya probaste las salsas? ¿Te gusta alguna?

'Did you try the sauces already? Did you like one?'

B: **¡Qué buena la vegana!**

'How tasty the vegan one (is)!'

(240) Una amiga tuya trabaja en una tienda vegana pero no está segura si la leche de soja es vegana porque lleva el nombre de leche. Hazle sentir que debería saberlo.

'A friend of yours works at a vegan retailer but isn't sure if the soy milk is vegan because it's called milk. Give her the feeling that she should know that.'

A: En mi tienda vendemos leche de soja. ¿Es vegana o es leche de verdad?

'At my shop we are selling soy milk. Is it vegan or is it real milk?'

B: **La leche de soja es vegana. Es solamente el nombre.**

'Soy milk is vegan. It's just the name.'

(241) Una amiga tuya trabaja en una tienda vegana pero quiere asegurarse que la leche de soja es vegana porque lleva el nombre de leche. Hazle sentir que debería saberlo.

'A friend of yours works at a vegan retailer but wants to make sure that soy milk is vegan because it's called milk. Give her the feeling that she should know that.'

A: En mi tienda vendemos leche de soja. Se llama leche, pero es vegana, ¿no?

'At my shop we are selling soy milk. It's called milk, but it's vegan, right?'

B: **La leche de soja es vegana. Es solamente el nombre.**

'Soy milk is vegan. It's just the name.'

(242) Una amiga tuya trabaja en una tienda vegana pero cree que la leche de soja no es vegana porque lleva el nombre de leche. Hazle sentir que debería saberlo.

'A friend of yours works at a vegan retailer but believes that soy milk isn't vegan because it's called milk. Give her the feeling that she should know that.'

A: En mi tienda vendemos leche de soja. Se llama leche, entonces no puede ser vegana, ¿sabes?

'At my shop we are selling soy milk. It's called milk, so it can't be vegan, you know?'

B: **La leche de soja es vegana. Es solamente el nombre.**

'Soy milk is vegan. It's just the name.'

Appendix D: Changes to the Eti_ToBI script

This Appendix shows the changes applied to Eti_ToBI v.6.2 (Elvira-García et al. 2016). The modified script differs from the original Eti_ToBI in that it can handle data with voiceless consonants. The changes (see list below) all intend to minimize the impact of microprosody on the analysis or to facilitate usage. All changes were made in the first section of the script, and only this section is presented here. See the Eti_ToBI Website for the current version of the full script.

```
# CHANGES COMPARED TO Eti-ToBI v.6.2
#
# Change 1: The pitch-objects are created with the command 'To pitch
#           (ac)...' and a voicing threshold at 0.6, which reduces
#           the amount of consonantal pitch with an intensity too
#           low to have an impact on intonational perception.
#           (Many thanks to Paul Boersma for corroborating in
#           personal communication the applicability of this
#           mechanism, and also in general for the unflagging
#           support via the praat-users group.)
#
# Change 2: The script unvoices phonemes (preferably consonants) of
#           your choice (unvoicing reaches 10ms into adjacent
#           intervals).
#
# Change 3: The script allows for manual inspection of tracking
    errors,
#           alternative pitch candidates, and microprosody
#           in the pitch object.
#
# Change 4: The pitch-object files are stored and can be used
#           afterwards to export phonetic pitch data together with
#           the phonological ToBI-labels. easy_logger.praat is a
#           tool that allows such parallel data extraction.
#
```

```
# Change 5: Once a set of pitch-object files has been created (and
#           possibly corrected for microprosodic disturbances) it
#           can form the basis of a second run of
#           Eti_ToBI labeling.
#
# Change 6: The default 'marca de tónica' has been changed from the
#           IPA sign for accented syllables (U+02C8) to an
#           apostrophe, which is present on many keyboards.
#
# Change 7: Interpolation and removal of ocatve jumps are disabled.
#
# INSTRUCTIONS
#
# The script needs
#     a) a folder with sounds (one sentence in each wav)
#     b) textgrid with the same name as the sound file that contains
#        interval syllables and a mark for the stressed syllables
#     c) a folder to store and load pitch-objects
#

##### FORMULARIO ##########
form Eti-ToBI

comment WAVs and Textgrids
sentence carpeta_folder_wav C:\Users\USER\Desktop\

comment pitch files
sentence carpeta_folder_pitch C:\Users\USER\Desktop\

comment ¿En que número de tier está la marca de tonicidad?
integer Tier_tonicidad 2
word Marca_de_tonica '
comment ¿Quieres el etiquetaje en un nuevo tier?
boolean Nuevo_tier_Tones 1
comment ¿En qué número de tier quieres hacer la inserción de los
    tonos?
integer Tier_Tones 7
comment ¿Tienes marcados los break indexes?
boolean BI 1
```

```
comment ¿En qué número de tier?
integer Tier_BI 6
real umbral_(St) 1.5
real umbral_upstep_(St) 6.0
comment Elige los tipos de etiquetaje:
boolean Etiquetaje_superficial 1
boolean Etiquetaje_profundo 1
boolean Etiquetaje_normalizado 1
#comment Indica la lengua del etiquetaje fonológico:
optionmenu Lengua 2
option General
option Sp_ToBI
option Cat_ToBI
option Fri_ToBI
#option MAE_ToBI
#option It_ToBI

integer iniciar_en_archivo 1
boolean crear_figura 1

endform

######### BEGIN CHANGE_A_JF #########

beginPause: "Correcciones"

comment: "¿Quieres parar para corregir la microprosódia del pitch-
    object?"
optionMenu: "correccion_pitch", 1
option: "Quiero corregir."
option: "No quiero corregir."

comment: "En qué número de tier están los fonemas?"
integer: "tier_fonemas", 1

comment: "Marcas de fonemas a ensordecer (introducir sin espacios o
    signos de puntuación)"
sentence: "fonemas_a_ensordecer", "ptSksxTf_rz"
```

```
comment: "¿Quieres parar para corregir el etiquetaje?"
optionMenu: "correccion_eti", 1
option: "Quiero corregir."
option: "No quiero corregir."
comment ("Cuando acabes, clica Continuar para continuar")
clicked = endPause ("Continuar", 2)

######### END CHANGE_A_JF #########

if etiquetaje_profundo = 1

beginPause: "Tipo de etiquetaje"
comment: "¿Cuáles de estas etiquetas quieres que aparexcan en el
    etiquetaje profundo?"
optionMenu: "Displaced_prenuclear", 1
option: "L+<H*"
option: "L*+H"
optionMenu: "Upstep", 1
option: "L+¡H*"
option: "L+H*"
optionMenu: "Pretonica_upstep", 1
option: "¡H+L*"
option: "H+L*"
optionMenu: "Descenso_tonica", 1
option: "H*+L"
option: "H*"
optionMenu: "Ascenso_tardio", 1
option: "L* LH%"
option: "L* H%"
optionMenu: "Tritonal_Argentina", 1
option: "L+H*+L"
option: "no"

comment ("Cuando acabes, clica Continuar para empezar")
clicked = endPause ("Continuar", 2)
endif

############## VARIABLES ######################
folder$ = carpeta_folder_wav$
```

```
folderpitch$ = carpeta_folder_pitch$
rango$ = "60-600"
create_picture = crear_figura
from = iniciar_en_archivo
a = displaced_prenuclear
b = upstep
c = descenso_tonica
d = ascenso_tardio
f = tritonal_Argentina
g = pretonica_upstep

if etiquetaje_normalizado=1 and etiquetaje_profundo =0
pause La estandarización parte del etiquetaje profundo.
endif
if etiquetaje_profundo =1 and etiquetaje_superficial =0
pause El etiquetaje profundo parte del etiquetaje superficial.
endif

f0_max = extractNumber (rango$, "-")
f0_max$ = "'f0_max'"
f0_min$ = "'rango$'" - "'f0_max$'"
f0_min$ = "'f0_min$'" - "-"
f0_min = 'f0_min$'

numberOfLetras = 15
umbralnegativo = umbral - (2*umbral)
ultimatonica = 0
etiquetaprofunda$ = "* no"
etiquetatonoprofundo$ = " * aguda"
etiquetafinalprofunda$ = "\% "

############## BUCLE GENERAL ######################
# Crea la lista de objetos desde el string
#Create Strings as file list: "listWAV", folder$ + "/" + "*.wav"
Create Strings as file list: "listWAV", folder$ + "*.wav"

#Hace el bucle con ello
numberOfFiles = Get number of strings
```

```
######### BEGIN CHANGE_B_JF #########

# Crea la lista de objetos pitch desde el string
#Create Strings as file list: "listPITCH", folderpitch$ + "/" + "*.
    pitch"
Create Strings as file list: "listPITCH", folderpitch$ + "*.pitch"

#Hace el bucle con ello
numberofPitchfiles = Get number of strings

#advertencia / warning
if 'numberofPitchfiles' > 0
pauseScript: "There are pitch files in your pitch files folder.
Consider a backup before proceeding."
endif

######### END CHANGE_B_JF #########

#bucle archivos
for ifile from 'from' to numberOfFiles
echo Número de frase 'ifile'
select Strings listWAV
archivosonido$ = Get string: ifile
base$ = archivosonido$ - ".wav"
rutasonido$ = folder$ + archivosonido$

#lee el archivo de sonido
Read from file: rutasonido$

#lee el texgrid
archivogrid$ = base$ + ".TextGrid"
rutagrid$ = folder$ + archivogrid$
Read from file: rutagrid$

######### CREA OBJETOS ########

select Sound 'base$'
#elimina todas las frecuencias superiores a 900Hz
#para minimizar los Pitch de las fricativas
```

```
#que están a 2000 y 3000 Hz
Filter (stop Hann band): 900, 20000, 100
#sacar la gama
select Sound 'base$'_band

######### BEGIN CHANGE_C_JF #########

if 'numberofPitchfiles' = 'numberOfFiles'
mypitch = Read from file... 'folderpitch$''base$'.Pitch

else
select Sound 'base$'_band
mypitch = To Pitch (ac): 0.001, f0_min, 15, "no", 0.03, 0.60, 0.01,
    0.35, 0.14, f0_max
select Pitch 'base$'_band
Rename: base$
endif

# reduce microprosodic features of pitch object

if correccion_pitch = 1

select TextGrid 'base$'
number_of_phonemes = Get number of intervals... 'tier_fonemas'

for ifon from 1 to number_of_phonemes
select TextGrid 'base$'
fonlabel$ = Get label of interval... 'tier_fonemas' 'ifon'

if index_regex(fonlabel$,"['fonemas_a_ensordecer$']")
begin_fon = Get starting point... 'tier_fonemas' 'ifon'
end_fon = Get end point... 'tier_fonemas' 'ifon'
duration_fon = (end_fon - begin_fon) * 1000
intervalfon = Get interval at time... 'tier_fonemas' 'begin_fon
    '+0.0001

select Pitch 'base$'
View & Edit
editor: mypitch
```

```
Select: 'begin_fon'-0.01, 'end_fon'+0.01
Unvoice
Close
endif
endfor

select Sound 'base$'
plus TextGrid 'base$'
do ("View & Edit")

select Pitch 'base$'
do ("View & Edit")
pause ¿Quieres corregir?

endif

# save pitch object
select Pitch 'base$'
Save as text file: "'folderpitch$''base$'.Pitch"

######### END CHANGE_C_JF #########

printline frase 'base$'
f0medial = do ("Get mean...", 0, 0, "Hertz")
printline mediana de la frase: 'f0medial'
#minpitch = do ("Get minimum...", 0, 0, "Hertz", "Parabolic")
#maxpitch = do ("Get maximum...", 0, 0, "Hertz", "Parabolic")
#cuantiles teoría de Hirst (2011) analysis by synthesis of speach
    melody
q25 = Get quantile: 0, 0, 0.25, "Hertz"
q75 = Get quantile: 0, 0, 0.75, "Hertz"
minpitch = q25 * 0.75
maxpitch = q75 * 1.5

gama = maxpitch - minpitch

terciogama = gama/3
tercio1 = minpitch + terciogama
tercio2 = minpitch + (2*terciogama)
```

```
tercio3 = minpitch + (3*terciogama)

######### BEGIN CHANGE_D_JF #########
#do ("Kill octave jumps")
#do ("Interpolate")
######### END CHANGE_D_JF #########
do ("Down to PitchTier")

# for the full script, see
# http://stel3.ub.edu/labfon/amper/eti_ToBI/
```

Appendix E: Test assumptions

Figure E.1 gives an impression of the departure from normality of the residuals of the model `lme(meanF0_sentence ~condition, data = df, random = 1|speaker, method = "ML")`. Figure E.2 shows the weighted residuals of the robust model `rlmer(meanF0_sentence ~condition + (1|speaker), REML=FALSE, data=df)`, the results of which are reported in Table 6.6 in §6.3.5.

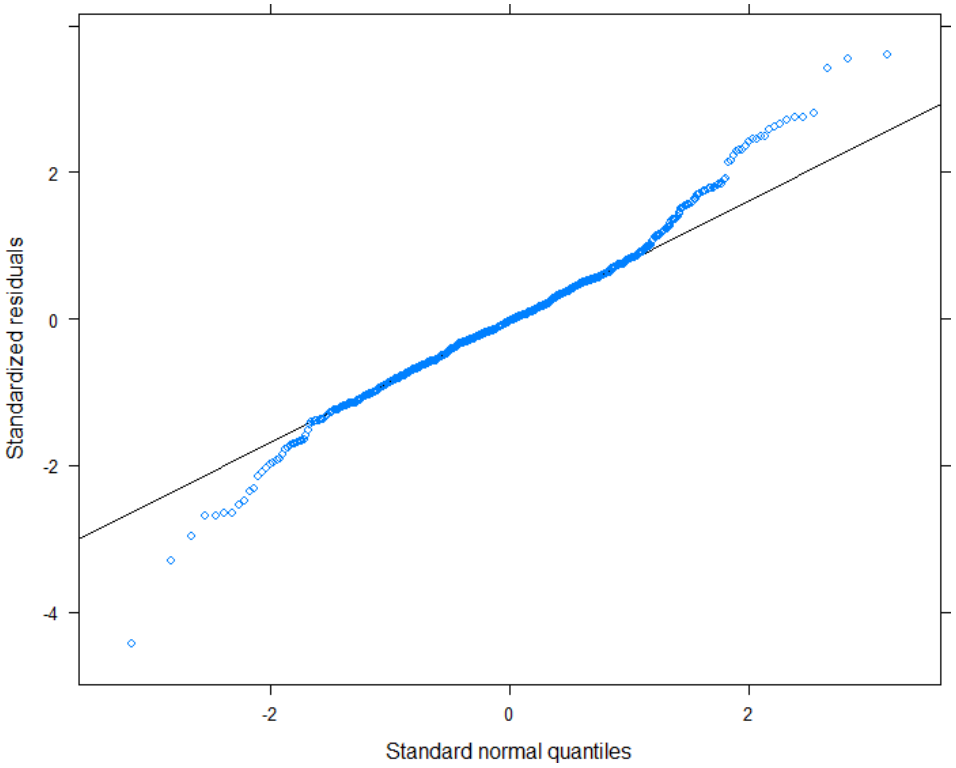


Figure E.1: QQ-plot for non-robust linear mixed model residuals.

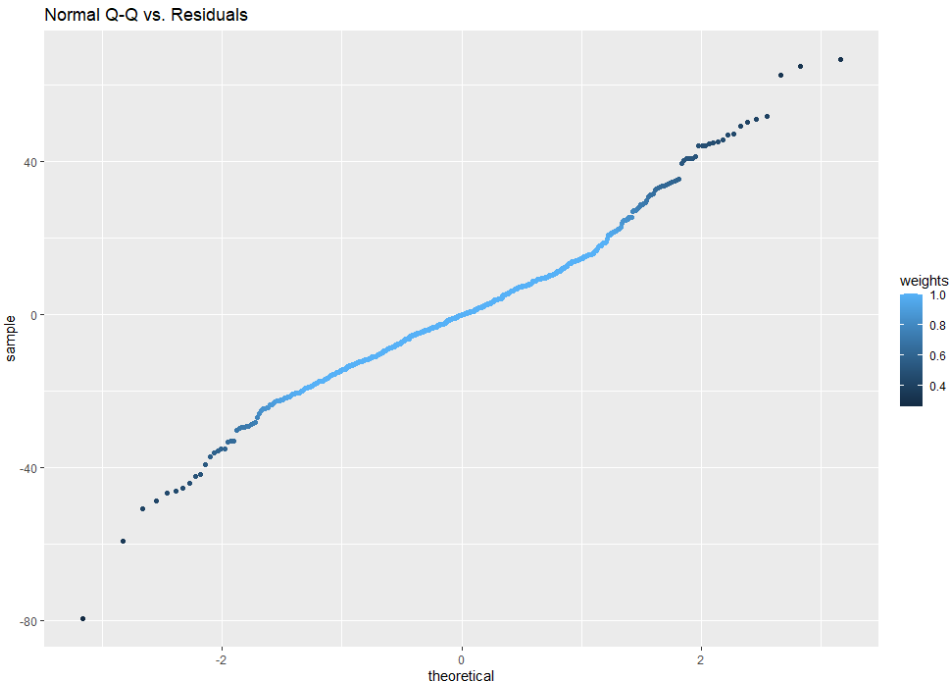


Figure E.2: QQ-plot for robust linear mixed model residuals.

References

Adelaar, Willem F. H. 2013. A Quechuan mirative? In Alexandra Aikhenvald & Anne Storch (eds.), *Perception and cognition in language and culture* (Brill's Studies in Language, Cognition and Culture 3), 95–109. Leiden: Brill.

Aguilar, Lourdes, Carme de-la Mota & Pilar Prieto. 2009. *Sp_ToBI. Training materials*. http://prosodia.upf.edu/sp_tobi/en/ (12 December, 2020).

Aikhenvald, Alexandra Y. 2012. Review of Diewald & Smirnova (2010): Linguistic realization of evidentiality in European languages. *Studies in Language* 36(2). 431–439. DOI: 10.1075/sl.36.2.07aik.

Alarcos Llorach, Emilio. 1994. *Gramática de la lengua española* (Colección Nebrija y Bello/Real Academia Española). Madrid: Espasa Calde.

Albert, Aviad, Francesco Cangemi & Martine Grice. 2018. Using periodic energy to enrich acoustic representations of pitch in speech: A demonstration. In *Proc. 9th International Conference on Speech Prosody 2018*, 804–808. Poznań, Poland.

Amaral, Patricia, Craige Roberts & E. Allyn Smith. 2007. Review of *The logic of conventional implicatures* by Chris Potts. *Linguistics and Philosophy* 30(6). 707–749. DOI: 10.1007/s10988-008-9025-2.

Anderson, Lloyd B. 1986. Evidentials, paths of change, and mental maps: Typologically regular asymmetries. In Wallace L. Chafe & Johanna Nichols (eds.), *Evidentiality: The linguistic coding of epistemology* (Advances in discourse processes), 273–312. Norwood, N.J.: Ablex Publishing.

Anscombre, Jean-Claude & Oswald Ducrot. 1977. Deux mais en français? *Lingua* 43(1). 23–40. DOI: 10.1016/0024-3841(77)90046-8.

Anthony, Laurence. 2018. *AntConc 3.5.7 [computer software]*. Tokyo, Japan. http://www.laurenceanthony.net/software (12 December, 2020).

Armstrong, Meghan E. 2017. Accounting for intonational form and function in Puerto Rican Spanish polar questions. *Probus* 29(1). 1–40.

Armstrong, Richard A. 2014. When to use the Bonferroni correction. *Ophthalmic and Physiological Optics* 34(5). 502–508. DOI: 10.1111/opo.12131.

Arvaniti, Amalia. 2012. Segment-to-tone association. In Abigail C. Cohn, Cécile Fougeron & Marie K. Huffman (eds.), *The Oxford handbook of laboratory phonology* (Oxford Handbooks in Linguistics), 265–275. Oxford: Oxford University Press.

Audacity Team. 2020. *Audacity®: Free audio editor and recorder*. Computer program, Version 2.2.1. https://www.audacityteam.org/download/ (12 December, 2020).

Auer, Peter. 1996. The pre-front field in spoken German and its relevance as a grammaticalization position. *Pragmatics* 6(3). 295–322.

Austin, John L. 1962. *How to do things with words*. Oxford: Clarendon Press.

Bartsch, Sabine. 2004. *Structural and functional properties of collocations in English: A corpus study of lexical and pragmatic constraints on lexical co-occurrence*. Tübingen: Narr.

Bartsch, Sabine & Stefan Evert. 2014. Towards a Firthian notion of collocation. In Lothar Lemnitzer & Andrea Abel (eds.), *Vernetzungsstrategien, Zugriffsstrukturen und automatisch ermittelte Angaben in Internetwörterbüchern* (OPAL: Online publizierte Arbeiten zur Linguistik), 48–61. Mannheim: Institut für Deutsche Sprache. https://pub.ids-mannheim.de/laufend/opal/pdf/opal2014-2.pdf (12 December, 2020).

Bates, Douglas, Martin Mächler, Ben Bolker & Steve Walker. 2015. Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67(1). 1–48. DOI: 10.18637/jss.v067.i01.

Baumann, Stefan. 2006. *The intonation of givenness: Evidence from German*. Tübingen: Niemeyer.

Baumann, Stefan & Arndt Riester. 2012. Referential and lexical givenness: Semantic, prosodic and cognitive aspects. In Gorka Elordieta & Pilar Prieto (eds.), *Prosody and meaning* (Interface Explorations 25), 119–162. Berlin & Boston: de Gruyter Mouton.

Beaver, David I., Craige Roberts, Mandy Simons & Judith Tonhauser. 2017. Questions under discussion: Where information structure meets projective content. *Annual Review of Linguistics* 3(1). 265–284. DOI: 10.1146/annurev-linguistics-011516-033952.

Beckman, Mary E., Manuel Díaz-Campos, Julia Tevis McGory & Terrell A. Morgan. 2002. Intonation across Spanish, in the tones and break indices framework. *Probus* 14(1). 9–36.

Beyssade, Claire & Jean-Marie Marandin. 2007. French intonation and attitude attribution. In *The Proceedings of the 2004 Texas Linguistic Society Conference: Issues at the Semantics-Pragmatics Interface*, 1–12.

Beyssade, Claire & Jean-Marie Marandin. 2009. Commitment: Une attitude dialogique. *Langue française* 162(2). 89–107. DOI: 10.3917/lf.162.0089.

Bianchi, Valentina, Giuliano Bocci & Silvio Cruschina. 2016. Focus fronting, unexpectedness, and evaluative implicatures. *Semantics and Pragmatics* 9(3). 1–54.

Billmyer, Kristine & Manka Varghese. 2000. Investigating instrument-based pragmatic variability: Effects of enhancing discourse completion tests. *Applied Linguistics* 21(4). 517–552.

Blum-Kulka, Shoshana, Juliane House & Gabriele Kasper. 1989. Investigating crosscultural pragmatics: An introductory overview. In Shoshana Blum-Kulka, Juliane House & Gabriele Kasper (eds.), *Cross-cultural pragmatics. Requests and apologies*, 1–34. Norwood (NJ): Ablex.

Boersma, Paul & David Weenink. 2017. *Praat: Doing phonetics by computer*. Computer program, Version 6.0.30. http://www.praat.org/ (12 December, 2020).

Bögels, Sara, Kobin H. Kendrick & Stephen C. Levinson. 2015. Never say No... How the brain interprets the pregnant pause in conversation. *PLoS ONE* 10(12). e0145474. DOI: 10.1371/journal.pone.0145474.

Bolinger, Dwight. 1972. Accent is predictable (if you're a mind-reader). *Language* 48(3). 633–644.

Boniface VIII., Pope. [1298] 1584. *Liber sextus decretalium D. Bonifacii Papae VIII.* Lugduni: De licentia Dom. Nostri Gregorii XIII. Pont. Max. http://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb10144450-0 (12 December, 2020).

Borreguero Zuloaga, Margarita. 2015. A vueltas con los marcadores del discurso: De nuevo sobre su delimitación y sus funciones. In Angela Ferrari, Letizia Lala & Roska Stojmenova (eds.), *Testualità: Fondamenti, unità, relazioni*, 151–170. Florence, Italy: Cesati.

Bosque, Ignacio. 2017. Spanish exclamatives in perspective: A survey of properties, classes, and current theoretical issues. In Ignacio Bosque (ed.), *Advances in the analysis of Spanish exclamatives* (Theoretical Developments in Hispanic Linguistics), 1–52. Columbus: Ohio State University Press.

Boye, Kasper. 2010. Semantic maps and the identification of cross-linguistic generic categories: Evidentiality and its relation to epistemic modality. *Linguistic Discovery* 8(1). 4–22. DOI: 10.1349/PS1.1537-0852.A.344.

Bradley, Raymond & Norman Swartz. 1979. *Possible worlds: An introduction to logic and its philosophy*. Indianapolis: Hackett Publishing Company.

Brandom, Robert. 1994. *Making it explicit: Reasoning, representing, and discursive commitment*. 4th printing (2001). Cambridge, MA: Harvard University Press.

Breen, Mara. 2015. Empirical investigations of implicit prosody. In Lyn Frazier & Edward Gibson (eds.), *Explicit and implicit prosody in sentence processing* (Studies in Theoretical Psycholinguistics 46), 177–192. Cham: Springer. DOI: 10.1007/978-3-319-12961-7_10.

Briz, Antonio. 2012. La definición de las partículas discursivas hombre y mujer. *Anuario de Lingüística Hispánica* XXVIII. 27–55.

Briz, Antonio & Gupo Val.Es.Co. 2002. *Corpus de conversaciones coloquiales* (Oralia Anejos 2). Madrid: Arco Libros.

Briz, Antonio & Cristina Villalba. 2011a. hombre[1]. In Antonio Briz, Salvador Pons Bordería & José Portolés (eds.), *Diccionario de partículas discursivas del español*. Valencia. http://www.dpde.es/#/entry/hombre1 (12 December, 2020).

Briz, Antonio & Cristina Villalba. 2011b. hombre[2]. In Antonio Briz, Salvador Pons Bordería & José Portolés (eds.), *Diccionario de partículas discursivas del español*. Valencia. http://www.dpde.es/#/entry/hombre2 (12 December, 2020).

Brown, Keith & Jim Miller. 2013. *The Cambridge dictionary of linguistics*. Cambridge & New York: Cambridge University Press. DOI: 10 . 1017 / CBO9781139049412.

Brown, Penelope & Stephen C. Levinson. 1988. *Politeness: Some universals in language usage* (Studies in Interactional Sociolinguistics 4). Cambridge: University Press.

Buchholz, Timo. 2021. *Intonation between accent and phrasing: Prosody in Huari Spanish and Quechua*. Berlin: Freie Universität Berlin. (Doctoral dissertation).

Büring, Daniel. 2013. Syntax, information structure, and prosody. In Marcel den Dikken (ed.), *The Cambridge handbook of generative syntax*, 860–896. Cambridge: Cambridge University Press. DOI: 10.1017/CBO9780511804571.029.

Büring, Daniel. 2016. *Intonation and meaning* (Oxford Surveys in Semantics and Pragmatics 3). Oxford: Oxford University Press.

Bussmann, Hadumod. 2006. *Routledge dictionary of language and linguistics*. London, New York: Routledge.

Cabedo Nebot, Adrián. 2013. Sobre prosodia, marcadores del discurso y unidades del discurso en español: Evidencias de un corpus oral espontáneo. *Onomázein* 28. 201–213. DOI: 10.7764/onomazein.28.11.

Cantero-Serena, Fancisco José & Dolors Font-Rotchés. 2007. Entonación del español peninsular en habla espontánea: Patrones melódicos y márgenes de dispersión. *Moenia* 13. 69–92.

Cestero Mancera, Ana María, Isabel Molina Martos & Florentino Paredes García. 2012. *La lengua hablada en Madrid: Corpus Preseea-Madrid (distrito de Salamanca). I. Hablantes de Instrucción Superior* (Monografías. Humanidades 42). Alcalá de Henares: Universidad de Alcalá.

Chen, Matthew Y. 1987. The syntax of Xiamen tone sandhi. *Phonology Yearbook* 4. 109–149. http://www.jstor.org/stable/4615413 (12 December, 2020).

Chen, Matthew Y. 2000. *Tone sandhi: Patterns across Chinese dialects* (Cambridge Studies in Linguistics 92). Cambridge, UK & New York: Cambridge University Press.

Chomsky, Noam & Morris Halle. 1968. *The sound pattern of English*. New York, Evanston & London: Harper & Row.
Church, Kenneth Ward & Patrick Hanks. 1990. Word association norms, mutual information, and lexicography. *Computational Linguistics* 16(1). 22–29. https://www.aclweb.org/anthology/J90-1003 (12 December, 2020).
Ciardelli, Ivano, Jeroen Groenendijk & Floris Roelofsen. 2019. *Inquisitive semantics* (Oxford Surveys in Semantics and Pragmatics 6). Oxford: Oxford University Press.
Clayman, Steven E. 2013. Turn – constructional units and the transition – relevance place. In Jack Sidnell & Tanya Stivers (eds.), *The handbook of conversation analysis* (Blackwell Handbooks in Linguistics), 150–166. Chichester, West Sussex & UK: Wiley-Blackwell.
Cohen, Jacob. [1988] 2013. *Statistical power analysis for the behavioral sciences*. 2nd ed. eBook. New York (Hoboken): Routledge (Taylor and Francis).
Cohn, Abigail C., Cécile Fougeron & Marie K. Huffman. 2012. Introduction. In Abigail C. Cohn, Cécile Fougeron & Marie K. Huffman (eds.), *The Oxford handbook of laboratory phonology* (Oxford Handbooks in Linguistics), 3–9. Oxford: Oxford University Press.
Comrie, Bernard, Martin Haspelmath, Balthasar Bickel & Max Planck Institute for Evolutional Anthropology. 2008. *The Leipzig Glossing Rules: Conventions for interlinear morpheme-by-morpheme glosses*. Leipzig: Max Planck Institute for Evolutionary Anthropology. https://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf (12 December, 2020).
Couper-Kuhlen, Elizabeth & Sandra A. Thompson. 2000. Concessive patterns in conversation. In Elizabeth Couper-Kuhlen & Bernd Kortmann (eds.), *Cause – condition – concession – contrast* (Topics in English Linguistics), 381–410. Berlin: De Gruyter. DOI: 10.1515/9783110219043.4.381.
Cresti, E. & Massimo Moneglia. 2005. *C-ORAL-ROM: Integrated reference corpora for spoken Romance languages* (Studies in Corpus Linguistics 15). Amsterdam & Philadelphia, PA: John Benjamins.
Croft, William. 2001. *Radical construction grammar: Syntactic theory in typological perspective*. Oxford: Oxford University Press.
Cruschina, Silvio. 2019. Focus fronting in Spanish: Mirative implicature and information structure. *Probus* 31(1). 119–146. DOI: 10.1515/probus-2018-0008.
Cruschina, Silvio. 2021. The greater the contrast, the greater the potential: On the effects of focus in syntax. *Glossa* 6(1). Article 3. DOI: 10.5334/gjgl.1100.
Crystal, David. 2008. *A dictionary of linguistics and phonetics*. 6th edn. Boston, MS/Malden, MS/Oxford, UK: Credo Reference/Blackwell Publishing.

D'Imperio, Mariapaola. 2012. Tonal alignment. In Abigail C. Cohn, Cécile Fougeron & Marie K. Huffman (eds.), *The Oxford handbook of laboratory phonology* (Oxford Handbooks in Linguistics), 275–287. Oxford: Oxford University Press.

D'Imperio, Mariapaola, Gorka Elordieta, Sónia Frota, Pilar Prieto & Marina Vigário. 2005. Intonational phrasing in Romance: The role of syntactic and prosodic structure. In Sónia Frota, Marina Vigário & Maria J. Freitas (eds.), *Prosodies. With special reference to Iberian languages* (Phonology and Phonetics 9), 59–98. Berlin: De Gruyter. DOI: 10.1515/9783110197587.

Davies, Mark. 2012-2019. *Corpus del español news on the web.* www . corpusdelespanol.org/now (12 December, 2020).

Davies, Mark. 1990–2019. *Corpus of contemporary American English.* https://www.english-corpora.org/coca/ (12 December, 2020).

Dayal, Veneeta. 2006. Multiple-Wh-questions. In Martin Everaert, Henk van Riemsdijk, Rob Goedemans & Bart Hollebrandse (eds.), *The Blackwell companion to syntax* (Blackwell Handbooks in Linguistics 3), 275–326. Malden, MA, Oxford, UK & Carlton: Blackwell.

Dayal, Veneeta. 2016. *Questions* (Oxford Surveys in Semantics and Pragmatics 4). Oxford: Oxford University Press.

de Toledo y Huerta, Álvaro S. Octavio. 2001/2002. ¿Un viaje de ida y vuelta? La gramaticalización de vaya como marcador y cuantificador. *Anuari de Filologia* 11/12. 47–71.

Dehé, Nicole & Bettina Braun. 2019. The prosody of rhetorical questions in English. *English Language and Linguistics* 77. 1–29. DOI: 10 . 1017 / S1360674319000157.

DeLancey, Scott. 1997. Mirativity: The grammatical marking of unexpected information. *Linguistic Typology* 1(1). 33–52. DOI: 10.1515/lity.1997.1.1.33.

DeLancey, Scott. 2012. Still mirative after all these years. *Linguistic Typology* 16(3). 529–564. DOI: 10.1515/lity-2012-0020.

Delattre, Pierre. 1966. Les dix intonations de base du français. *The French Review* 40(1). 1–14.

Desagulier, Guillaume. 2017. *Corpus linguistics and statistics with R.* Cham: Springer. DOI: 10.1007/978-3-319-64572-8.

Diewald, Gabriele & Elena Smirnova. 2010. Introduction: Evidentiality in European languages: The lexical-grammatical distinction. In Gabriele Diewald & Elena Smirnova (eds.), *Linguistic realization of evidentiality in European languages* (Empirical approaches to language typology), 1–14. Berlin & New York: De Gruyter Mouton.

Domaneschi, Filippo, Maribel Romero & Bettina Braun. 2017. Bias in polar questions: Evidence from English and German production experiments. *Glossa* 2(1). Article 26. DOI: 10.5334/gjgl.27.

Dreyer, Felix R. & Friedemann Pulvermüller. 2018. Abstract semantics in the motor system? An event-related fMRI study on passive reading of semantic word categories carrying abstract emotional and mental meaning. *Cortex* 100. 52–70. DOI: 10.1016/j.cortex.2017.10.021.

Dufter, Andreas. 2003. *Typen sprachrhythmischer Konturbildung* (Linguistische Arbeiten 475). Tübingen: Niemeyer.

Dufter, Andreas & Christoph Gabriel. 2016. Information structure, prosody, and word order. In Susann Fischer & Christoph Gabriel (eds.), *Manual of grammatical interfaces in Romance* (Manuals of Romance Linguistics), 419–455. Berlin & Boston: Mouton de Gruyter.

Elordieta, Gorka, Sónia Frota, Pilar Prieto & Marina Vigário. 2003. Effects of constituent weight and syntactic branching on intonational phrasing in Ibero-Romance. In M. J. Solé & Daniel Recasens i Vives (eds.), *Proceedings of the 15th international congress of phonetic sciences (IcPhs), Barcelona 3-9 August 2003*, 487–490. Barcelona: Universitat Autónoma de Barcelona.

Elordieta, Gorka, Sónia Frota & Marina Vigário. 2005. Subjects, objects and intonational phrasing in Spanish and Portuguese. *Studia Linguistica* 59(2-3). 110–143. DOI: 10.1111/j.1467-9582.2005.00123.x.

Elvira-García, Wendy, Paolo Roseano, Ana María Fernández-Planas & Eugenio Martínez-Celdrán. 2016. A tool for automatic transcription of intonation: Eti_ToBI, a ToBI transcriber for Spanish and Catalan. *Language Resources and Evaluation* 50(4). 767–792. DOI: 10.1007/s10579-015-9320-9.

Elvira-García, Wendy. 2016. *La prosodia de las construcciones insubordinadas conectivo-argumentativas del español*. Barcelona: Universitat de Barcelona. (Doctoral dissertation). https://www.tesisenred.net/handle/10803/400949 (12 December, 2020).

Elvira-García, Wendy & Paolo Roseano. 2014. *Create pictures with tiers v.4.1.* Praat script. https://github.com/wendyelviragarcia/create_pictures (7 March, 2023).

Escandell-Vidal, Victoria. 1998. Intonation and procedural encoding. In Villy Rouchota & Andreas H. Jucker (eds.), *Current issues in relevance theory* (Pragmatics & Beyond), 169–203. Amsterdam: John Benjamins. DOI: 10.1075/pbns.58.09esc.

Escandell-Vidal, Victoria. 1999. Los enunciados interrogativos: Aspectos semánticos y pragmáticos. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática descriptiva de la lengua española*, 3929–3991. Madrid: Espasa Calpe.

Escandell-Vidal, Victoria. 2011. Verum focus y prosodia: Cuando la duración (sí que) importa. *Oralia* 14. 181–201.

Estebas-Vilaplana, Eva & Pilar Prieto. 2008. La notación prosódica del español: Una revisión del sp_ToBI. *Estudios de fonética experimental* 17. 263–283.

Estebas-Vilaplana, Eva & Pilar Prieto. 2010. Castilian Spanish intonation. In Pilar Prieto & Paolo Roseano (eds.), *Transcription of intonation of the Spanish language* (LINCOM Studies in Phonetics), 17–48. Munich: LINCOM.

Evert, Stefan. 2005. *The statistics of word cooccurrences: Word pairs and collocations*. Stuttgart. (Doctoral dissertation).

Evert, Stefan. 2004–2010. *Computational approaches to collocations*. www . collocations.de (12 December, 2020).

Evert, Stefan & Brigitte Krenn. 2001. Methods for the qualitative evaluation of lexical association measures. In *Proceedings of the 39th Annual Meeting of the Association for Computational Linguistics*, 188–195. Toulouse, France: Association for Computational Linguistics. DOI: 10.3115/1073012.1073037.

Evert, Stefan, Peter Uhrig, Sabine Bartsch & Thomas Proisl. 2017. E-VIEW-alation: A large-scale evaluation study of association measures for collocation identification. In Iztok Kosem, Carole Tiberius, Miloš Jakubíček, Jelena Kallas, Simon Krek & Vít Baisa (eds.), *Electronic lexicography in the 21st century: Proceedings of the eLex 2017 conference*, 531–549. Brno: Lexical Computing CZ.

Face, Timothy L. 2001a. Focus and early peak alignment in Spanish intonation. *Probus* 13. 223–246.

Face, Timothy L. 2001b. *Intonational marking of contrastive focus in Madrid Spanish*. Columbus: The Ohio State University. (Doctoral dissertation).

Face, Timothy L. 2002. Local intonational marking of Spanish contrastive focus. *Probus* 14. 71–92.

Face, Timothy L. 2003. Intonation in Spanish declaratives: Differences between lab speech and spontaneous speech. *Catalan Journal of Linguistics* 2. 115–131.

Face, Timothy L. 2005. F0 peak height and the perception of sentence type in Castilian Spanish. *Revista internacional de lingüística iberoamericana : RILI* 3(2). 49–65.

Face, Timothy L. 2006. Narrow focus intonation in Castilian Spanish absolute interrogatives. *Journal of Language and Linguistics* 5(2). 295–311.

Face, Timothy L. 2007. The role of intonational cues in the perception of declaratives and absolute interrogatives in Castilian Spanish. *Estudios de Fonética Experimental* 16. 185–225.

Face, Timothy L. & Pilar Prieto. 2007. Rising accents in Castilian Spanish: A revision of sp_ToBI. *Journal of Portuguese Linguistics* 6(1). 117–146.

Farkas, Donka F. & Kim B. Bruce. 2010. On reacting to assertions and polar questions. *Language and Speech* 27(1). 81–118. DOI: 10.1093/jos/ffp010.

Farkas, Donka F. & Floris Roelofsen. 2017. Division of labor in the interpretation of declaratives and interrogatives. *Journal of Semantics* 34. 237–289. DOI: 10.1093/jos/ffw012.

Feldhausen, Ingo. 2010. *Sentential form and prosodic structure of Catalan* (Linguistik Aktuell/Linguistics Today 168). Amsterdam: John Benjamins.

Feldhausen, Ingo. 2014. *The intonation of left-dislocations in Spanish and other Romance languages: Experimental and theoretical studies on prosodic phrasing and inter-speaker variation*. Frankfurt: Goethe-Universität. (Habilitation thesis).

Félix-Brasdefer, J. César. 2007. Natural speech vs. elicited data: A comparison of natural and role play requests in Mexican Spanish. *Spanish in Context* 4(2). 159–185. DOI: 10.1075/sic.4.2.03fel.

Félix-Brasdefer, J. César. 2010. Data collection methods in speech act performance: DCTs, role plays, and verbal reports. In Alicia Martínez-Flor & Esther Usó-Juan (eds.), *Speech act performance* (Language Learning & Language Teaching 26), 41–56. Amsterdam: John Benjamins. DOI: 10.1075/lllt.26.03fel.

Féry, Caroline. 2017. *Intonation and prosodic structure* (Key topics in phonology). Cambridge: Cambridge University Press.

Field, Andy P., Jeremy Miles & Zoë Field. 2012. *Discovering statistics using R*. London & Thousand Oaks: Sage.

Filippi-Deswelle, Catherine. 2019. Encoding surprise in English novels: An enunciative approach. In Natalie Depraz & Agnès Celle (eds.), *Surprise at the intersection of phenomenology and linguistics* (Consciousness & Emotion Book Series 11), 59–75. Amsterdam: John Benjamins. DOI: 10.1075/ceb.11.04fil.

Firth, John Rupert. 1957. *Papers in linguistics, 1934–1951*. London: Oxford University Press.

Fleury, Damien. 2021. *Questions en comment de raison: La révision des attentes du locuteur*. Paris: Université de Paris/Université Paris Cité. (Doctoral dissertation). https://u-paris.fr/theses/detail-dune-these/?id_these=3458.

Fliessbach, Jan. 2023. *Easy_logger*. DOI: 10.5281/zenodo.7773945.

Fliessbach, Jan. Forthcoming. Mirativity, obviousness, and reversal as instances of contrast on different levels of meaning: Evidence from Spanish. In Jorina Brysbaert & Karen Lahousse (eds.), *On the place of contrast in information structure: Definition, types, encoding and annotation* (Trends in Linguistics. Studies and Monographs). Berlin: De Gruyter.

Fontaine, Johnny R. J., Klaus R. Scherer & Cristina Soriano (eds.). 2013. *Components of emotional meaning: A sourcebook* (Series in Affective Science). Oxford: Oxford University Press.

Foster, Erin D. & Ariel Deardorff. 2017. Open science framework (OSF). *Journal of the Medical Library Association* 105(2). 203–206. DOI: 10.5195/jmla.2017.88.

Frota, Sónia, Mariapaola D'Imperio, Gorka Elordieta, Pilar Prieto & Marina Vigário. 2007. The phonetics and phonology of intonational phrasing in Romance. In Pilar Prieto, Joan Mascaró & Maria-Josep Solé (eds.), *Segmental and prosodic issues in Romance phonology* (Current Issues in Linguistic Theory 282), 131–153. Amsterdam: John Benjamins. DOI: 10.1075/cilt.282.10fro.

Frota, Sónia & Pilar Prieto (eds.). 2015. *Intonation in Romance*. Oxford: Oxford University Press.

Gabriel, Christoph. 2007. *Fokus im Spannungsfeld von Phonologie und Syntax: Eine Studie zum Spanischen*. Frankfurt am Main: Vervuert.

Gabriel, Christoph, Ingo Feldhausen & Andrea Pešková. 2011. Prosodic phrasing in Porteño Spanish. In Christoph Gabriel & Conxita Lleó (eds.), *Intonational phrasing in Romance and Germanic: Cross-linguistic and bilingual studies*, 153–182. Amsterdam: John Benjamins.

Gabriel, Christoph, Ingo Feldhausen, Andrea Pešková, Laura Colantoni, Su-Ar Lee, Valeria Varana & Leopoldo Labastía. 2010. Argentinian Spanish intonation. In Pilar Prieto & Paolo Roseano (eds.), *Transcription of intonation of the Spanish language* (LINCOM Studies in Phonetics), 285–317. Munich: LINCOM.

Gabriel, Christoph, Natascha Müller & Susann Fischer. 2018. *Grundlagen der generativen Syntax: Französisch, Italienisch, Spanisch*. Berlin & Boston: De Gruyter.

Gamer, Matthias, Jim Lemon, Ian Fellows & Puspendra Singh. 2019. *Irr: Various coefficients of interrater reliability and agreement*. R package version 0.84.1. https://cran.r-project.org/package=irr (12 December, 2020).

García García, Marco. 2018. NP exclamatives and focus. In Marco García García & Melanie Uth (eds.), *Focus realization in Romance and beyond* (Studies in language companion series 201), 229–252. Amsterdam: John Benjamins. DOI: 10.1075/slcs.201.08gar.

Garro, Luisa & Frank Parker. 1982. Some suprasegmental characteristics of relative clauses in English. *Journal of Phonetics* 10(2). 149–161. DOI: 10.1016/s0095-4470(19)30954-4.

Ghezzi, Chiara & Piera Molinelli. 2014. Discourse and pragmatic markers from Latin to Romance languages: New insights. In Chiara Ghezzi & Piera Molinelli (eds.), *Discourse and pragmatic markers from Latin to the Romance languages* (Oxford Studies in Diachronic and Historical Linguistics), 1–9. Oxford: Oxford University Press.

Ghini, Mirco. 1993. ϕ-formation in Italian: A new proposal. *Toronto Working Papers in Linguistics* 12. 41–78.

Gili Fivela, Barbara, Cinzia Avesani, Marco Barone, Giuliano Bocci, Claudia Crocco, Mariapaola D'Imperio, Rosella Giordano, Giovanna Marotta, Michelina Savino & Patrizia Sorianello. 2015. Varieties of Italian and their intona-

tional phonology. In Sónia Frota & Pilar Prieto (eds.), *Intonation in Romance*, 140–197. Oxford: Oxford University Press.
Goldberg, Adele E. 2006. *Constructions at work: The nature of generalization in language*. Oxford: Oxford University Press.
Goldman, Jean-Philippe. 2011. EasyAlign: An automatic phonetic alignment tool under Praat. In *Proceedings of the 12th Annual Conference of the International Speech Communication Association 2011*, 3240–3243. Florence, Italy: Curran Associates.
Greenberg, Joseph Harold. 1966. *Language universals: With special reference to feature hierarchies*. Reprint 2005 (Janua linguarum – Minor 59). Berlin: Mouton de Gruyter.
Grice, Martine. 1995. Leading tones and downstep in English. *Phonology* 12(02). 183–233.
Grice, Martine & Michelina Savino. 2004. Information structure and questions: Evidence from task-oriented dialogues in a variety of Italian. In Peter Gilles & Jörg Peters (eds.), *Regional variation in intonation* (Linguistische Arbeiten), 161–190. Tübingen: Niemeyer.
Grice, Paul. 1975. Logic and conversation. In Peter Cole & J. L. Morgan (eds.), *Syntax and semantics 3*, 41–58. New York: Academic Press.
Grosz, Patrick Georg. 2012. *On the grammar of optative constructions* (Linguistik Aktuell/Linguistics Today 193). Amsterdam: John Benjamins. DOI: 10.1075/la.193.
Gussenhoven, Carlos. 2004. *The phonology of tone and intonation*. Cambridge: Cambridge University Press.
Gussenhoven, Carlos. 2016. Foundations of intonational meaning: Anatomical and physiological factors. *Topics in cognitive science* 8(2). 425–434. DOI: 10.1111/tops.12197.
Haberman, Shelby J. 1973. The analysis of residuals in cross-classified tables. *Biometrics* 29(1). 205–220.
Harris, Jesse A. & Christopher Potts. 2009. Perspective-shifting with appositives and expressives. *Linguistics and Philosophy* 32(6). 523–552. DOI: 10.1007/s10988-010-9070-5.
Haspelmath, Martin. 2006. Against markedness (and what to replace it with). *Journal of Linguistics* 42(1). 25–70. DOI: 10.1017/S0022226705003683.
Hedberg, Nancy, Juan M. Sosa, Emrah Görgülü & Morgan Mameni. 2010. The prosody and meaning of Wh-questions in American English. *Speech Prosody 2010*. paper 045. https://www.isca-speech.org/archive/speechprosody_2010/hedberg10_speechprosody.html (9 May, 2023).

Hengeveld, Kees & Hella Olbertz. 2012. Didn't you know? Mirativity does exist! *Linguistic Typology* 16(3). 487–503. DOI: 10.1515/lity-2012-0018.

Henriksen, Nicholas, Meghan E. Armstrong & Lorenzo García-Amaya. 2016. The intonational meaning of polar questions in Manchego Spanish spontaneous speech. In Meghan E. Armstrong, Nicholas Henriksen & Maria del Mar Vanrell (eds.), *Intonational grammar in Ibero-Romance* (Issues in Hispanic and Lusophone linguistics 6), 181–206. Amsterdam: John Benjamins. DOI: 10.1075/ihll.6.09hen.

Heritage, John. 2012. The epistemic engine: Sequence organization and territories of knowledge. *Research on Language & Social Interaction* 45(1). 30–52. DOI: 10.1080/08351813.2012.646685.

Hirst, Daniel. 2011. The analysis by synthesis of speech melody: From data to models. *Journal of Speech Sciences* 1(1). 55–83.

Hoot, Bradley. 2016. Narrow presentational focus in Mexican Spanish: Experimental evidence. *Probus* 28(2). 335–365. DOI: 10.1515/probus-2014-0004.

Hope, Adery C. A. 1968. A simplified Monte Carlo significance test procedure. *Journal of the Royal Statistical Society: Series B (Methodological)* 30(3). 582–598. DOI: 10.1111/j.2517-6161.1968.tb00759.x.

Horn, Laurence R. 2010. Implicature revisited: Problems and prospects in neo-Gricean pragmatics. *Studies in Pragmatics* 12. 69–94.

Hsieh, Chia-Ling. 2005. Modal verbs and modal adverbs in Chinese: An investigation into the semantic source. *UST Working Papers in Linguistics* 1. 31–58.

Hsieh, Chia-Ling. 2006a. A study on Chinese modal expressions in broad and narrow senses. *Chinese Teaching and Learning* 3. 1–25.

Hsieh, Chia-Ling. 2006b. The semantic categorization of Chinese modal expressions: A corpus-based analysis. *Zhongguo Yuwen Yanjiu* 21. 45–63.

Hualde, José Ignacio. 2002. Intonation in Spanish and the other Ibero-Romance languages: Overview and status quaestionis. In Caroline R. Wiltshire & Joaquim Camps (eds.), *Romance phonology and variation* (Current Issues in Linguistic Theory 217), 101–116. Amsterdam & Philadelphia: John Benjamins.

Hualde, José Ignacio. 2014. *Los sonidos del español: Spanish language edition*. Cambridge: Cambridge University Press.

Hualde, José Ignacio & Pilar Prieto. 2015. Intonational variation in Spanish. European and American varieties. In Sónia Frota & Pilar Prieto (eds.), *Intonation in Romance*, 350–391. Oxford: Oxford University Press.

Hualde, José Ignacio & Pilar Prieto. 2016. Towards an international prosodic alphabet (IPrA). *Laboratory Phonology* 7(1). 1–25.

Hülsmann, Christoph. 2019. *Initiale Topiks und Foki im gesprochenen Französisch, Spanisch und Italienisch*. Tübingen: Narr Francke Attempto.

Hyman, Larry M. 2014. Do all languages have word accent? In Harry van der Hulst (ed.), *Word stress: Theoretical and typological issues*, 56–82. Cambridge: Cambridge University Press.

Hyslop, Gwendolyn. 2011. *A grammar of Kurtöp*. Eugene, Oregon: University of Oregon. (Doctoral dissertation). https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/11466/Hyslop_Gwendolyn_phd2011wi.pdf?sequence=1&isAllowed=y (12 December, 2020).

Jackendoff, Ray. 2002. *Foundations of language: Brain, meaning, grammar, evolution*. Oxford: Oxford University Press.

Jary, Mark. 2010. *Assertion* (Palgrave Studies in Pragmatics, Language, and Cognition). Houndmills: Palgrave Macmillan.

Kasper, Gabriele & Merete Dahl. 1991. Research methods in interlanguage pragmatics. *Studies in Second Language Acquisition* 13(2). 215–247.

Kay, Paul & Charles J. Fillmore. 1999. Grammatical constructions and linguistic generalizations: The what's X doing Y? construction. *Language* 75(1). 1–33.

Kellert, Olga. 2015. *Interrogative und Exklamative: Syntax und Semantik von multiplen wh-Elementen im Französischen und Italienischen* (Linguistische Arbeiten 560). Berlin & Boston: De Gruyter. DOI: 10.1515/9783110424188.

Kellert, Olga, Daniele Panizza & Caterina Petrone. 2018. On the role of prosody in disambiguating wh-exclamatives and wh-interrogatives in Cosenza Italian. In Ingo Feldhausen, Jan Fliessbach & Maria del Mar Vanrell (eds.), *Methods in prosody: A Romance language perspective* (Studies in Laboratory Phonology 6), 165–188. Berlin: Language Science Press. DOI: 10.5281/zenodo.1441342.

Kendrick, Kobin H. & Francisco Torreira. 2015. The timing and construction of preference: A quantitative study. *Discourse Processes* 52(4). 255–289. DOI: 10.1080/0163853X.2014.955997.

Kohler, Klaus J. 2005. Timing and communicative functions of pitch contours. *Phonetica* 62(2-4). 88–105. DOI: 10.1159/000090091.

Koller, Manuel. 2016. robustlmm: An R package for robust estimation of linear mixed-effects models. *Journal of Statistical Software* 75(6). 1–26. DOI: 10.18637/jss.v075.i06.

Koopman, Hilda & Dominique Sportiche. 1991. The position of subjects. *Lingua* 85. 211–258.

Kratzer, Angelika. 1981. The notional category of modality. In Hans J. Eikmeyer & Hannes Rieser (eds.), *Words, worlds, and contexts*, 38–74. Berlin: De Gruyter.

Kratzer, Angelika. 1991. Modality. In Arnim von Stechow & Dieter Wunderlich (eds.), *Semantik* (Handbücher zur Sprach- und Kommunikationswissenschaft 6), 639–650. Berlin: De Gruyter. DOI: https://doi.org/10.1515/9783110126969.

Kratzer, Angelika. 2012. *Modals and conditionals* (Oxford Studies in Theoretical Linguistics 36). Oxford: Oxford University Press.

Kraus, Kelsey Nicole. 2018. *Great intonations*. Santa Cruz: University of California. (PhD thesis). https://escholarship.org/uc/item/9sz4k1rm (12 December, 2020).

Krifka, Manfred. 2014. Embedding illocutionary acts. In Tom Roeper & Margaret Speas (eds.), *Recursion: Complexity in cognition* (Studies in Theoretical Psycholinguistics), 59–87. Cham, Heidelberg & New York: Springer.

Krifka, Manfred & Renate Musan. 2012. Information structure: Overview and linguistic issues. In Manfred Krifka & Renate Musan (eds.), *The expression of information structure* (The expression of cognitive categories), 1–44. Berlin & Boston: Mouton de Gruyter.

Kuznetsova, Alexandra, Per B. Brockhoff & Rune H. B. Christensen. 2017. lmerTest package: Tests in linear mixed effects models. *Journal of Statistical Software* 82(13). 1–26. DOI: 10.18637/jss.v082.i13.

Ladd, D. Robert. 1980. *The structure of intonational meaning: Evidence from English*. Bloomington & London: Indiana University Press.

Ladd, D. Robert. 2008. *Intonational phonology*. 2nd edn. Cambridge: Cambridge University Press.

Landis, J. Richard & Gary G. Koch. 1977. The measurement of observer agreement for categorical data. *Biometrics* 33(1). 159–174. DOI: 10.2307/2529310.

Landone, Elena. 2012. Discourse markers and politeness in a digital forum in Spanish. *Journal of Pragmatics* 44(13). 1799–1820. DOI: 10.1016/j.pragma.2012.09.001.

Lee, Chungmin. 2017. Contrastive topic, contrastive focus, alternatives, and scalar implicatures. In Chungmin Lee, Ferenc Kiefer & Manfred Krifka (eds.), *Contrastiveness in information structure, alternatives and scalar implicatures* (Studies in Natural Language and Linguistic Theory 91), 3–21. Cham: Springer. DOI: 10.1007/978-3-319-10106-4.

Lenci, Alessandro. 2018. Distributional models of word meaning. *Annual Review of Linguistics* 4(1). 151–171. DOI: 10.1146/annurev-linguistics-030514-125254.

Leonetti, Manuel & Victoria Escandell-Vidal. 2009. Fronting and verum focus in Spanish. In Andreas Dufter & Daniel Jacob (eds.), *Focus and background in Romance languages* (Studies in Language companion series), 155–204. Amsterdam: John Benjamins.

Liberman, Mark & Ivan Sag. 1974. Prosodic form and discourse function. In Michael W. Lagaly, Robert A. Fox & Anthony Bruck (eds.), *Papers from the tenth regional meeting of the Chicago Linguistic Society*, 416–427. Chicago: Chicago Linguistic Society.

Lieberman, Philip. 1986. The acquisition of intonation by infants: Physiology and neural control. In Catherine Johns-Lewis (ed.), *Intonation in discourse*, 239–257. London & San Diego, CA: Croom Helm & College-Hill Press.
Lieberman, Philip & Sheila Blumstein. 1988. *Speech physiology, speech perception, and acoustic phonetics* (Cambridge studies in speech science and communication). Cambridge: Cambridge University Press.
LPL, Laboratoire parole et langage – UMR 7309. 2008. *MOMEL*. Ortolang. https://hdl.handle.net/11403/sldr000031/v3 (12 December, 2020).
Lyons, John. 1977. *Semantics*, vol. 2. Cambridge, London, New York & Melbourne: Cambridge University Press.
MacFarlane, John. 2014. *Assessment sensitivity: Relative truth and its applications*. Oxford: Oxford University Press.
Martín Butragueño, Pedro. 2015. Acercamiento a la prosodia de los actos de habla expresivos. Datos del español de México. In Esther Hernández & Pedro Martín Butragueño (eds.), *Variación y diversidad lingüística: Hacía una teoría convergente*, 259–349. México, D.F.: El Colegio de México.
Martín Butragueño, Pedro & Érika Mendoza Vázquez. 2018. Prosodic nuclear patterns in narrow and broad focus utterances: Pragmatic and social factors in Central Mexican Spanish. In Marco García García & Melanie Uth (eds.), *Focus realization in Romance and beyond* (Studies in language companion series 201), 131–172. Amsterdam: John Benjamins. DOI: 10.1075/slcs.201.05mar.
Michelas, Amandine, Cristel Portes & Maud Champagne-Lavau. 2016. When pitch accents encode speaker commitment: Evidence from French intonation. *Language and Speech* 59(2). 266–293. DOI: 10.1177/0023830915587337.
Miestamo, Matti. 2010. Negatives without negators. In Jan Wohlgemuth & Michael Cysouw (eds.), *Rethinking universals* (Empirical approaches to language typology 45), 169–194. Berlin & New York: Mouton de Gruyter.
Molina Martos, Isabel, Florentino Paredes García & Ana María Cestero Mancera. 2014. *La lengua hablada en Madrid: Corpus Preseea-Madrid (Distrito de Salamanca). II. Hablantes de Instrucción Media* (Monografías. Humanidades 51). Alcalá de Henares: Universidad de Alcalá.
Muntendam, Antje G. 2010. *Linguistic transfer in Andean Spanish: Syntax or pragmatics?* Urbana-Champaign: University of Illinois at Urbana-Champaign. (Doctoral dissertation).
Navarro Tomás, Tomás. 1944. *Manual de entonación española*. New York: Hispanic Institute in the United States.
Nespor, Marina & Irene Vogel. 2007. *Prosodic phonology* (Studies in Generative Grammar 28). Berlin: Mouton de Gruyter.

Nibert, Holly J. 1999. A perception study of intermediate phrasing in Spanish intonation. In Javier Gutiérrez-Rexach & Fernando Martínez-Gil (eds.), *Advances in Hispanic linguistics*, 231–247. Somerville, MA: Cascadilla Press.

Nibert, Holly J. 2000. *Phonetic and phonological evidence for intermediate phrasing in Spanish intonation*. Urbana-Champaign: University of Illinois. (Doctoral dissertation).

Niebuhr, Oliver, Mariapaola D'Imperio, Barbara Gili Fivela & Francesco Cangemi. 2011. Are there "shapers" and "aligners"? Individual differences in signalling pitch accent category. In *Proceedings of the 17th ICPhs, Hong Kong, China: Special session on tones and shapes*, 120–123.

Niebuhr, Oliver & Alexis Michaud. 2015. Speech data acquisition: The underestimated challenge. *KALIPHO – Kieler Arbeiten zur Linguistik und Phonetik* 3. 1–42.

Nuyts, Jan. 2006. Modality: Overview and linguistic issues. In William Frawley, Erin Eschenroeder, Sarah Mills & Thao Nguyen (eds.), *The expression of modality*, 1–26. Berlin & New York: Mouton de Gruyter.

Olbertz, Hella. 2012. The place of exclamatives and miratives in grammar: A functional discourse grammar view. *Revista LinguíStica / Revista do Programa de Pós-Graduação em Linguística da Universidade Federal do Rio de Janeiro* 8(1). 76–98.

Ortega-Llebaria, Marta & Pilar Prieto. 2011. Acoustic correlates of stress in central Catalan and Castilian Spanish. *Language and Speech* 54(1). 73–97. DOI: 10.1177/0023830910388014.

Osgood, Charles Egerton, George J. Suci & Percy H. Tannenbaum. 1967. *The measurement of meaning*. Urbana: University of Illinois Press.

Palmer, Frank Robert. 2001. *Mood and modality*. 2nd ed. Cambridge: Cambridge University Press.

Paredes García, Florentino, Ana María Cestero Mancera & Isabel Molina Martos. 2015. *La lengua hablada en Madrid: Corpus Preseea-Madrid (distrito de Salamanca). III. Hablantes de Instrucción Primaria* (Monografías. Humanidades 52). Alcalá de Henares: Universidad de Alcalá.

Persson, Rasmus. 2018. On some functions of salient initial accents in French talk-in-interaction: Intonational meaning and the interplay of prosodic, verbal and sequential properties of talk. *Journal of the International Phonetic Association* 48(1). 77–102. DOI: 10.1017/S0025100317000585.

Pešková, Andrea. 2015. *Sujetos pronominales en el español porteño: Implicaciones pragmáticas en la interfaz sintáctico-fonológica* (Beihefte zur Zeitschrift für romanische Philologie 394). Berlin & Boston: de Gruyter.

Pierrehumbert, Janet B. 1980. *The phonology and phonetics of English intonation*. Bloomington: MIT. (Doctoral dissertation).
Pierrehumbert, Janet B. & Mary E. Beckman. 1988. *Japanese tone structure* (Linguistic Inquiry Monographs 15). Cambridge, MA: MIT Press.
Pierrehumbert, Janet B. & Julia B. Hirschberg. 1990. The meaning of intonational contours in the interpretation of discourse. In Philip R. Cohen, Jerry Morgan & Martha E. Pollack (eds.), *Intentions in communication*, 271–311. Cambridge, MA: MIT Press.
Pinheiro, Jose, Douglas Bates, Saikat DebRoy, Deepayan Sarkar & R Core Team. 2020. *nlme: Linear and nonlinear mixed effects models*. R package version 3.1-148. https://cran.r-project.org/package=nlme (9 May, 2023).
Pinker, Steven. 1994. *The language instinct*. New York: Penguin Books.
Pons Bordería, Salvador. 2011a. claro[1]. In Antonio Briz, Salvador Pons Bordería & José Portolés (eds.), *Diccionario de partículas discursivas del español*. Valencia. http://www.dpde.es/#/entry/claro1 (12 December, 2020).
Pons Bordería, Salvador. 2011b. claro[2]. In Antonio Briz, Salvador Pons Bordería & José Portolés (eds.), *Diccionario de partículas discursivas del español*. Valencia. http://www.dpde.es/#/entry/claro2 (12 December, 2020).
Porroche Ballesteros, Margarita. 2011. pues[1]. In Antonio Briz, Salvador Pons Bordería & José Portolés (eds.), *Diccionario de partículas discursivas del español*. Valencia. http://www.dpde.es/#/entry/pues1 (12 December, 2020).
Portes, Cristel & Claire Beyssade. 2015. Is intonational meaning compositional? *Verbum* 37(2). 207–233. https://hal.archives-ouvertes.fr/hal-01486716.
Portes, Cristel, Claire Beyssade, Amandine Michelas, Jean-Marie Marandin & Maud Champagne-Lavau. 2014. The dialogical dimension of intonational meaning: Evidence from French. *Journal of Pragmatics* 74. 15–29.
Portes, Cristel & Uwe Reyle. 2014. The meaning of French "implication" contour in conversation. In Nick Campbell, Dafydd Gibbon & Daniel Hirst (eds.), *Speech prosody 2014*, 413–417. Dublin, Ireland.
Portner, Paul. 2009. *Modality* (Oxford surveys in semantics and pragmatics 1). Oxford: Oxford University Press.
Potts, Christopher. 2007. The expressive dimension. *Theoretical Linguistics* 33(2). 165–198. DOI: 10.1515/TL.2007.011.
Potts, Christopher. 2012. Conventional implicature and expressive content. In Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), *Semantics*, vol. 3 (Handbücher zur Sprach- und Kommunikationswissenschaft 33), 2516–2535. Berlin: De Gruyter Mouton.

Potts, Christopher. 2015. Presupposition and implicature. In Shalom Lappin & Chris Fox (eds.), *The handbook of contemporary semantic theory*, 168–202. Chichester, UK: John Wiley & Sons. DOI: 10.1002/9781118882139.ch6.

PRESEEA. 2014–2020. *Corpus del Proyecto para el estudio sociolingüístico del español de España y de América*. Alcalá de Henares. https://preseea.uah.es/ (7 March, 2023).

Prieto, Pilar. 2001. L'entonació dialectal del català: El cas de les frases interrogatives absolutes. In August Bover i Font, Maria-Rosa Lloret, Joseph Gulsoy, Victòria Alsina & Janet Ann DeCesaris (eds.), *Actes del novè col·loqui d'estudis catalans a nord-amèrica* (Biblioteca Abat Oliba), 347–377. Barcelona: Publ. de l'Abadia de Montserrat.

Prieto, Pilar. 2005. Syntactic and eurhythmic constraints on phrasing decisions in Catalan. *Studia Linguistica* 59(2-3). 194–222. DOI: 10.1111/j.1467-9582.2005.00126.x.

Prieto, Pilar. 2006. Phonological phrasing in Spanish. In Fernando Martínez-Gil & Sonia Colina (eds.), *Optimality-theoretic studies in Spanish phonology* (Linguistik Aktuell/Linguistics Today), 39–61. Amsterdam: John Benjamins.

Prieto, Pilar. 2015. Intonational meaning. *Wiley Interdisciplinary Reviews: Cognitive science* 6(4). 371–381. DOI: 10.1002/wcs.1352.

Prieto, Pilar, Joan Borràs-Comes & Paolo Roseano. 2010–2014. *Interactive atlas of Romance intonation*. http://prosodia.upf.edu/iari/ (12 December, 2020).

Prieto, Pilar & Paolo Roseano. 2009–2013a. *Atlas interactivo de la entonación del español*. Accessed. http://prosodia.upf.edu/atlasentonacion/ (8 May, 2023).

Prieto, Pilar & Paolo Roseano. 2009–2013b. *Atlas interactivo de la entonación del español: Encuesta para el español peninsular central*. http://prosodia.upf.edu/atlasentonacion/metodologia/encuestas/encuesta-castilla.doc (12 December, 2020).

Prieto, Pilar, Chilin Shih & Holly Nibert. 1996. Pitch downtrend in Spanish. *Journal of Phonetics* 24(4). 445–473. DOI: 10.1006/jpho.1996.0024.

Prieto, Pilar, Jan van Santen & Julia Hirschberg. 1995. Tonal alignment patterns in Spanish. *Journal of Phonetics* 23. 429–451.

R Core Team. 2019. *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/ (12 December, 2020).

Real Academia Española. 2020. *Banco de datos (CORDE): Corpus diacrónico del español*. https://www.rae.es/banco-de-datos/corde (12 December, 2020).

Real Academia Española. 2010. *Ortografía de la lengua española*. Madrid: Espasa Libros.

Reich, Uli. 2008. Vor lauter Syntax. In Elisabeth Stark (ed.), *Romanische Syntax im Wandel*, 49–65. Tübingen: Gunter Narr.
Reich, Uli. 2018. Presupposed modality. In Marco García García & Melanie Uth (eds.), *Focus realization in Romance and beyond* (Studies in Language Companion Series), 203–227. Amsterdam & Philadelphia: John Benjamins.
Repp, Sophie. 2016. Contrast: Dissecting an elusive information-structural notion and its role in grammar. In Caroline Féry & Shinichiro Ishihara (eds.), *The Oxford handbook of information structure* (Oxford Handbooks in Linguistics), 1–33. Oxford: Oxford University Press.
Rett, Jessica. 2011. Exclamatives, degrees and speech acts. *Linguistics and Philosophy* 34(5). 411–442. DOI: 10.1007/s10988-011-9103-8.
Rett, Jessica. 2021a. A comparison of expressives and miratives. In Andreas Trotzke & Xavier Villalba (eds.), *Expressive meaning across linguistic levels and frameworks*, 191–215. Oxford: Oxford University Press. DOI: 10.1093/oso/9780198871217.003.0010.
Rett, Jessica. 2021b. The semantics of emotive markers and other illocutionary content. *Journal of Semantics* 38(2). 305–340. DOI: 10.1093/jos/ffab005.
Rett, Jessica & Sarah Murray. 2013. A semantic account of mirative evidentials. *Semantics and Linguistic Theory* 23. 453–472. DOI: 10.3765/salt.v23i0.2687.
Rett, Jessica & Beth Sturman. 2020. Prosodically marked mirativity. In *Proceedings of the West Coast Conference on Formal Linguistics (WCCFL)*, vol. 38. Vancouver, B.C.: University of British Columbia. DOI: 10.14288/1.0389873.
Roberts, Craige. 2006. Context in dynamic interpretation. In Laurence R. Horn & Gregory Ward (eds.), *The handbook of pragmatics* (Blackwell Handbooks in Linguistics), 197–220. Malden, MA: Blackwell.
Roberts, Craige. 2012. Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics* 5. Article 6. DOI: 10.3765/sp.5.6.
Roberts, Craige. 2017. *Agreeing and assessing: Epistemic modals and the question under discussion.* https://www.asc.ohio-state.edu/roberts.21/Roberts.A&A.pdf (12 December, 2020).
Roettger, Timo B. 2017. *Tonal placement in Tashlhiyt: How an intonation system accommodates to adverse phonological environments* (Studies in Laboratory Phonology 3). Berlin: Language Science Press. DOI: 10.5281/zenodo.814472.
Roettger, Timo B., Tim Mahrt & Jennifer Cole. 2019. Mapping prosody onto meaning: The case of information structure in American English. *Language, Cognition and Neuroscience* 34(7). 841–860. DOI: 10.1080/23273798.2019.1587482.
Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1(1). 75–116.

Rudin, Deniz. 2018. *Rising above commitment*. Santa Cruz: University of California. (Doctoral dissertation). https://escholarship.org/uc/item/23s699cd (12 December, 2020).

Sacks, Harvey, Emanuel A. Schegloff & Gail Jefferson. 1974. A simplest systematics for the organization of turn-taking for conversation. *Language* 50(4). 696–735. DOI: 10.1353/lan.1974.0010.

Sag, Ivan & Mark Liberman. 1975. The intonational disambiguation of indirect speech acts. In Robin E. Grossman, L. James San & Timothy J. Vance (eds.), *Papers from the eleventh regional meeting of the Chicago Linguistic Society*, 487–497. Chicago: Chicago Linguistic Society.

Sandalo, Filomena & Hubert Truckenbrodt. 2002. Some notes on phonological phrasing in Brazilian Portuguese. *MIT Working Papers in Linguistics* 42. 285–310.

Sarkar, Deepayan. 2008. *Lattice: Multivariate data visualization with R*. New York: Springer. http://lmdvr.r-forge.r-project.org (12 December, 2020).

Schegloff, Emanuel A. & Harvey Sacks. 1973. Opening up closings. *Semiotica* 8(4). 289–327. DOI: 10.1515/semi.1973.8.4.289.

Schneider, Johannes. 2017. *On the felicity conditions of* ja. Potsdam. (MA thesis).

Schröder, Peter. 2006. Das Vorvorfeldkonzept aus gesprächsanalytischer Sicht: Plädoyer für eine handlungsorientierte Einheitenbildung in einer Grammatik der gesprochenen Sprache. In Arnulf Deppermann, Reinhard Fiehler & Thomas Spranz-Fogasy (eds.), *Grammatik und Interaktion*, 203–243. Radolfszell: Verlag für Gesprächsforschung.

Schweitzer, Katrin, Michael Walsh, Sasha Calhoun, Hinrich Schütze, Bernd Möbius, Antje Schweitzer & Grzegorz Dogil. 2015. Exploring the relationship between intonation and the lexicon: Evidence for lexicalised storage of intonation. *Speech Communication* 66. 65–81. DOI: 10.1016/j.specom.2014.09.006.

Schwenter, Scott A. 2016. Meaning and interaction in Spanish independent si-clauses. *Language Sciences* 58. 22–34. DOI: 10.1016/j.langsci.2016.04.007.

Searle, John R. 1969. *Speech acts: An essay in the philosophy of language*. Cambridge: Cambridge University Press.

Searle, John R. 1979. A taxonomy of illocutionary acts. In John R. Searle (ed.), *Expression and meaning*, 1–29. Cambridge, MA: Cambridge University Press.

Selkirk, Elisabeth. 2011. The syntax-phonology interface. In John A. Goldsmith, Jason Riggle & Alan C. L. Yu (eds.), *The handbook of phonological theory* (Blackwell Handbooks in Linguistics), 435–484. Chichester, West Sussex, UK & Malden, MA: Wiley-Blackwell.

Shannon, Claude Elwood. 1948. A mathematical theory of communication. *The Bell System Technical Journal* 27(3). 379–423. DOI: 10.1002/j.1538-7305.1948.tb01338.x.

Shi, Feng, Jinyu Zhang, Xuejun Bai & Zhaohong Zhu. 2010. Intonation and respiration: A preliminary analysis. *Journal of Chinese Linguistics* 38(2). 323–335.

Simons, Mandy, Judith Tonhauser, David I. Beaver & Craige Roberts. 2010. What projects and why. In Nan Li & David Lutz (eds.), *Proceedings of the 20th Semantics and Linguistic Theory Conference (SALT 20)*, 309–327. Ithaca, NY: CLC.

Skeat, Walter W. 1896. "Whoa!" *Notes and Queries* 236. DOI: 10.1093/nq/s8-X.236.6e.

Sosa, Juan M. 2003. Wh-questions in Spanish: Meanings and configuration variability. *Catalan Journal of Linguistics* 2. 229–247.

Speer, Shari R. & Anouschka Foltz. 2015. The implicit prosody of corrective contrast primes appropriately intonated probes (for some readers). In Lyn Frazier & Edward Gibson (eds.), *Explicit and implicit prosody in sentence processing* (Studies in Theoretical Psycholinguistics 46), 263–285. Cham: Springer. DOI: 10.1007/978-3-319-12961-7_14.

Stalnaker, Robert C. 1974. Pragmatic presuppositions. In Milton K. Munitz & Peter Unger (eds.), *Semantics and philosophy*, 197–213. New York: New York University Press.

Stalnaker, Robert C. 1978. Assertion. In Peter Cole (ed.), *Pragmatics* (Syntax and semantics), 315–332. New York, San Francisco & London: Academic Press.

Steedman, Mark. 2007. Information-structural semantics for English intonation. In Chungmin Lee, Matthew Gordon & Daniel Büring (eds.), *Topic and focus: Cross-linguistic perspectives on meaning and intonation*, 245–264. Dordrecht: Springer Netherlands.

Steedman, Mark. 2014. The surface-compositional semantics of English intonation. *Language* 90(1). 2–57. DOI: 10.1353/lan.2014.0010.

Stowell, Timothy Angus. 1981. *Origins of phrase structure*. Cambridge, MA: MIT. (Doctoral dissertation). http://dspace.mit.edu/handle/1721.1/15626 (12 December, 2020).

Stubbs, Michael. 1995. Collocations and semantic profiles: On the cause of the trouble with quantitative studies. *Functions of Language* 2(1). 23–55. DOI: 10.1075/fol.2.1.03stu.

Tanghe, Sanne. 2015. Prosodia y polifuncionalidad de los marcadores anda, vamos, vaya y venga. *Círculo de lingüística aplicada a la comunicación* 62. 125–147. DOI: 10.5209/rev_CLAC.2015.v62.49501.

Tanghe, Sanne. 2016. *Marcadores derivados de verbos de movimiento: Una aproximación cognitiva a su polifuncionalidad* (Beihefte zur Zeitschrift für romanische Philologie 408). Berlin & Boston: De Gruyter.

Taniguchi, Ai. 2017. *The dimensions of inversion exclamatives (in discourse).* Presentation held at the workshop on Non-at-issue Meaning and Information Structure. Oslo: University of Oslo.

Tonhauser, Judith, David I. Beaver, Craige Roberts & Mandy Simons. 2013. Toward a taxonomy of projective content. *Language* 89. 66–109.

Torreira, Francisco & Mirjam Ernestus. 2012. Weakening of intervocalic /s/ in the Nijmegen corpus of casual Spanish. *Phonetica* 69(3). 124–148. DOI: 10.1159/000343635.

Torreira, Francisco & Martine Grice. 2018. Melodic constructions in Spanish: Metrical structure determines the association properties of intonational tones. *Journal of the International Phonetic Association* 48(01). 9–32. DOI: 10.1017/S0025100317000603.

Trubeckoj, Nikolaj Sergeevich. 1939. *Grundzüge der Phonologie: Publié avec l'appui du Cercle linguistique de Copenhague et du ministère de l'instruction publique de la République tchéco-slovaque* (Travaux du Cercle Linguistique de Prague 7). Prague.

Truckenbrodt, Hubert. 1995. *Phonological phrases: Their relation to syntax, focus, and prominence.* Massachusetts Institute of Technology. (Doctoral dissertation).

Uth, Melanie. 2014. Spanish preverbal subjects in contexts of narrow information focus: Non-contrastive focalization or epistemic-evidential marking? *Grazer Linguistische Studien* 81. 87–104.

Uth, Melanie & Marco García García. 2018. Introduction: Core issues of focus realization in Romance. In Marco García García & Melanie Uth (eds.), *Focus realization in Romance and beyond* (Studies in Language companion series), 1–30. Amsterdam & Philadelphia: John Benjamins.

VandenBos, Gary R. 2015. *APA dictionary of psychology.* 2nd edn. Washington: American Psychological Association. DOI: 10.1037/14646-000.

Vanrell, Maria del Mar. 2011. *The phonological relevance of tonal scaling in the intonational grammar of Catalan.* Barcelona: Universitat Autònoma de Barcelona. (Dissertation).

Vanrell, Maria del Mar, Ingo Feldhausen & Lluïsa Astruc. 2018. The discourse completion task in Romance prosody research: Status quo and outlook. In Ingo Feldhausen, Jan Fliessbach & Maria del Mar Vanrell (eds.), *Methods in prosody: A Romance language perspective* (Studies in Laboratory Phonology 6), 191–227. Berlin: Language Science Press. DOI: 10.5281/zenodo.1441345.

Vanrell, Maria del Mar & Olga Fernández Soriano. 2018. Language variation at the prosody-syntax interface: Focus in European Spanish. In Marco García García & Melanie Uth (eds.), *Focus realization in Romance and beyond* (Studies in Language companion series), 33–70. Amsterdam & Philadelphia: John Benjamins.
Villalba, Xavier. 2017. At-issue material in Spanish degree exclamatives: An experimental study. In Ignacio Bosque (ed.), *Advances in the analysis of Spanish exclamatives* (Theoretical Developments in Hispanic Linguistics), 139–157. Columbus: Ohio State University Press.
Villalta, Elisabeth. 2007. *Context dependence in the interpretation of questions and subjunctives*. Tübingen. (Doctoral dissertation).
von Fintel, Kai & Anthony S. Gillies. 2007. An opinionated guide to epistemic modality. In John P. Hawthorne & Tamar Gendler (eds.), *Oxford studies in epistemology*, vol. 2, 32–62. Oxford: Oxford University Press.
Waltereit, Richard. 2006. *Abtönung: Zur Pragmatik und historischen Semantik von Modalpartikeln und ihren funktionalen Äquivalenten in romanischen Sprachen* (Beihefte zur Zeitschrift für romanische Philologie 338). Tübingen: Max Niemeyer Verlag. DOI: 10.1515/9783110948295.
Warnes, Gregory R., Ben Bolker, Thomas Lumley & Randall C. Johnson. 2018. *Gmodels: Various R programming tools for model fitting*. R package version 2.18.1. https://cran.r-project.org/package=gmodels (12 December, 2020).
Wells, John C. 1995. *Computer-coding the IPA: A proposed extension of SAMPA*. UCL Phonetics & Linguistics. https://www.phon.ucl.ac.uk/home/sampa/ipasam-x.pdf (9 May, 2023).
Westera, Matthijs. 2017. *Exhaustivity and intonation: A unified theory* (ILLC dissertation series DS-2017-03). Amsterdam: Institute for Logic, Language and Computation, Universiteit van Amsterdam.
Westera, Matthijs. 2018. Rising declaratives of the quality-suspending kind. *Glossa* 3(1). Article 121. DOI: 10.5334/gjgl.415.
Wiltschko, Martina. 2021. *The grammar of interactional language*. Cambridge: Cambridge University Press. DOI: 10.1017/9781108693707.
Wittgenstein, Ludwig. 1953. *Philosophical investigations*. Rev. 4th ed. by P.M.S. Hacker and Joachim Schulte, 2009. Chichester: Wiley-Blackwell.
Wu, Jiun-Shiung. 2008. Antonyms? Presuppositions? On the semantics of two evaluative modals jingran and guoran in Mandarin. *Journal of Chinese Language and Computing* 18(4). 161–173.
Xiang, Ming & Gina Kuperberg. 2014. Reversing expectations during discourse comprehension. *Language, Cognition and Neuroscience* 30(6). 648–672.
Zanuttini, Rafaela & Paul Portner. 2003. Exclamative clauses at the syntax-semantics interface. *Language* 79(1). 39–81.

Zimmermann, Malte. 2008. Contrastive focus and emphasis. *Acta Linguistica Hungarica* 55(3-4). 347–360. DOI: 10.1556/ALing.55.2008.3-4.9.

Zimmermann, Malte. 2011. Discourse particles. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics* (Handbücher zur Sprach- und Kommunikationswissenschaft), 2012–2038. Berlin & Boston: de Gruyter.

Zimmermann, Malte. 2019. Als ob-mirative clauses: A novel sentence type in younger speakers' variety of German. In Gerrit Kentner, Frank Kügler, Beata Moskal & Stavros Skopeteas (eds.), *Tweets 'n greets for Caroline Féry*, 125–134. Frankfurt am Main.

Zimmermann, Thomas Ede & Wolfgang Sternefeld. 2013. *Introduction to semantics: An essential guide to the composition of meaning*. Berlin & Boston: De Gruyter Mouton.

Zubizarreta, Maria Luisa. 1998. *Prosody, focus, and word order*. Cambridge, MA: MIT Press.

Zubizarreta, Maria Luisa. 1999. Las funciones informativas: Tema y foco. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática descriptiva de la lengua española*, 4215–4244. Madrid: Espasa-Calpe.

Zubizarreta, Maria Luisa. 2016. Nuclear stress and information structure. In Caroline Féry & Shinichiro Ishihara (eds.), *The Oxford handbook of information structure* (Oxford Handbooks in Linguistics), 165–184. Oxford, United Kingdom: Oxford University Press.

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The intonation of expectations

This book provides a new perspective on prosodically marked declaratives, *wh*-exclamatives, and discourse particles in the Madrid variety of Spanish. It argues that some marked forms differ from unmarked forms in that they encode modal evaluations of the at-issue meaning. Two epistemic evaluations that can be shown to be encoded by intonation in Spanish are obviousness and mirativity, which present the at-issue meaning as expected and unexpected, respectively. An empirical investigation via a production experiment finds that they are associated with distinct intonational features under constant focus scope, with stances of (dis)agreement showing an impact on obvious declaratives. Wh-exclamatives are found not to differ significantly in intonational marking from neutral declaratives, showing that they need not be miratives. Moreover, we find that intonational marking on different discourse particles in natural dialogue correlates with their meaning contribution without being fully determined by it. In part, these findings quantitatively confirm previous qualitative findings on the meaning of intonational configurations in Madrid Spanish. But they also add new insights on the role intonation plays in the negotiation of commitments and expectations between interlocutors.